

Preliminary Site Investigation

Byron Bay Transport Interchange: Water Tower Site

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Executive Summary

The Byron Bay Transport Interchange (the Proposal) is being developed by Sydney Trains as part of the Transport Access Program. Sydney Trains is undertaking the delivery of the upgrades on behalf of Transport NSW. The proposed new bus interchange will be located on Butler Street adjacent to the former Byron Bay Train Station, Byron Bay NSW. The interchange facilities will include buildings, pedestrian and cycle access paths, pedestrian linkages, commuter car park, bus stops, shelters, taxi stands and bicycle facilities.

The proposed new interchange will be built on the historical site referred to as the 'water tower site.'

In conjunction with a Geotechnical Investigation reported separately, this contamination Preliminary Site Investigation (PSI) was conducted at the water tower site (the site). This PSI was required to inform the relevant sections of the Review of Environmental Factors (REF) for the Proposal.

Three areas of environmental concern were established at the site, including:

- AEC1 potential uncontrolled fill (site wide)
- AEC2 steam train turn table and ash pit (in line with former or buried rail siding tracks, located south south-east of the water tower), coal stage and rail corridor
- AEC3 groundwater (site wide)

A test pitting investigation consisting of ten test pits (TP01, TP02, TP03, TP04, TP6, TP7, TP8, HA1, HA3, HA4, and HA5) targeting identified AECs revealed residual alluvial sands extending to at least 2.5 m below ground level. Anthropogenic waste including discarded rails, concrete blocks, coal, ballast and coal ash was observed in testpits located in AEC2 to a maximum depth of 0.6m below ground level. No asbestos containing material (ACM) or odours were observed within any of the test pits. Groundwater influx was observed at approximately 1.4 m below ground level (bgl) and 0.9 m bgl in the north and south of the Site respectively. Soil sampling was carried out on near surface and subsurface material excavated from TP01, TP02, TP03, TP6, TP7, TP8, HA1, HA4, and HA5 and analysed for potential contaminants of concern. No soil samples were obtained from TP04, given the sandy material encountered was observed to be all natural material. All reported contaminant concentrations were reported below the more conservative site adopted HIL C 'Recreational' criteria with the exception of Benzo(a)pyrene TEQ calc (PQL) in TP6 at a depth of 0.0-0.1m bgl. This exceedance (3.6mg/kg) reported above HIL C (3mg/kg) and is likely attributed to the presence of coal ash and/or fragments of coal in near surface material in the vicinity of the former coal stage. It is understood that surficial material in the vicinity of TP6 (former coal stage area) is likely going to be removed from site as spoil for offsite disposal. The conceptual site model for the Proposal site indicates that there will be limited access to soils, further reducing the risk of exposure.

Concentrations of metals were above NSW EPA General Solid Waste (CT1) criteria in surface/shallow soils including: mercury in HA5/0.0-0.2, HA5/0.2-0.4 and TP8/0.2-0.4, arsenic in TP8/0.2-0.4 and nickel in HA5/0.0-0.2, TP6/0.0-0.1, TP7/0.0-0.2.

Concentrations of nickel were also reported above NSW Restricted Solid Waste (CT2) criteria in TP8/0.2-0.4.

As part of this PSI, two groundwater monitoring wells (GW01 and GW06) were installed to a maximum screened depth of 2.5 m bgl at the northern and southern boundaries respectively. One round of groundwater monitoring was conducted at each groundwater well.

Elevated heavy metal concentrations of dissolved zinc and minor exceedances of dissolved copper and dissolved lead reported above site adopted groundwater investigation levels (GILs). These exceedances are considered typical of groundwater in urban environments. SMEC considers that no further groundwater investigation is warranted at the site.

Elevated concentrations of TRH above laboratory practical quantitative limits (PQL) were reported in two soil and one groundwater sample.

Based on the results of the desktop assessment, preliminary site investigations targeting potential sources of contamination, soil laboratory analytical results SMEC considers the site is or can reasonably be made suitable for its intended land use as a bus interchange depot in accordance with Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (1998), subject to the implementation of an appropriate waste classification program and unexpected finds protocol during construction.

SMEC recommend that construction activities be managed via a Construction Environmental Management Plan (CEMP) be developed prior to the commencement of site construction activities.

The purpose of the CEMP will be to provide a structured approach to the management of environmental impacts during the construction activities.

Implementing this CEMP effectively will ensure any contractors or suppliers to the project meet regulatory and policy requirements in a systematic manner and continually improve environmental performance. The CEMP will include an unexpected finds protocol that specifies requirements for training off staff in the event that signs of unexpected contamination are observed, and the key protocols in managing the unexpected finds.

As and when required, environmental monitoring procedures may be considered such as visual/olfactory observations (i.e. visual staining or odours from petroleum hydrocarbons).

It should be noted that if excavated material is proposed to be taken offsite for disposal to a licensed landfill facility, soil will require sampling and testing for waste classification prior to disposal in accordance with the NSW EPA Waste Classification Guidelines (November 2014). If contamination is observed/detected, it is also recommended that the underlying soils are assessed through validation sampling.

1. Introduction

SMEC Australia Pty Ltd (SMEC) was engaged by Sydney Trains to carry out a Preliminary Site Investigation (Contamination) (PSI) at the proposed Byron Bay Transport Interchange (the Proposal) located between Butler Street and the former Byron Bay Train Station, Byron Bay NSW (the site).

This PSI was required to inform the relevant sections of the Review of Environmental Factors (REF) for the Proposal.

The site area is approximately 10,396m² and is shown on **Figure 1, Appendix A.**

1.1. Background Information

The Proposal is being developed by Sydney Trains as part of the Transport Access Program (TAP). Sydney Trains is undertaking the delivery of the upgrades on behalf of Transport NSW. The proposed interchange facilities will include buildings, pedestrian and cycle access paths, pedestrian linkages, commuter car park, bus stops, shelters, taxi stands and bicycle facilities.

The Transport Access Program is an initiative by Transport for New South Wales (TfNSW) to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most.

The aim of the program is to provide:

- Interchange precincts that are accessible to the mobility impaired, elderly and people with prams
- Inclusive interchange and facilities for all modes that meet the needs of a growing population
- Modern interchanges that support an integrated network and allow seamless transfers between all modes for all customers
- Safety improvements including extra lighting, help points, fences and security measures for car parks and interchanges, including bus stops and wharfs
- Signage improvements so customers can more easily use public transport and transfer between modes at interchanges
- Other improvements and maintenance.

1.2. Objectives

The purpose of this PSI was to assess the nature and extent of historical contamination on site and determine if there are any potential risks to sensitive receptors. This information can then be utilised to assess the suitability of the site for the proposed commercial/industrial land use. Specific objectives include:

- Understanding the history of the site
- Developing a Preliminary Conceptual Site Model and identify potential sources of contamination and potential contaminants of concern, and human and ecological receptors
- Visually identifying any fill materials uncovered at the site
- Assessing the depth and quality of local groundwater
- Providing recommendations on the need for further investigations and/or management measures based on preliminary findings.

1.3. Scope of Work

To meet the above objectives, the following scope of works and staging was undertaken with reference to the:

- National Environment Protection Council, National Environmental Protection (Assessment of Site Contamination) Measure, 2013
- NSW EPA, Guidelines for the NSW Site Auditor Scheme (3rd edition), 2017
- NSW Office of Environment and Heritage, Contaminated Sites Guidelines for Consultants Reporting on Contaminated Sites, 1997 (reprinted 2011)
- 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

Desktop assessment

A review of publicly available information was undertaken including:

- Previous site investigation reports
- Historical aerial imagery
- NSW EPA contaminated land registers and Protection of the Environment Operations (POEO) records
- Geological, soil landscape and topographical maps
- Acid sulfate soil risk maps, and NSW Groundwater records

Field Investigations

Site inspections were conducted in March and May of 2019 by a suitably qualified environmental scientist to verify the findings of the desktop assessment, where possible close out on any data gaps identified and note any visual or olfactory signs of contamination

SMEC carried out two site investigations comprising:

Preliminary site investigation (5-6 March 2018)

- Site walkover documenting site conditions and potential contamination issues
- Excavation of four test pits and drilling of two boreholes at targeted locations on the site within AEC 1 and AEC 3
- Collection of soil samples from the fill and natural soil where encountered
- Drilling and installation of two groundwater wells on the northern and southern boundaries
- Collection of two groundwater samples
- Submission of selected soil and groundwater samples at a NATA Accredited laboratory for analysis of contaminants of concern including: TRH, BTEX, PAH, Heavy metals, OCP, OPP, PCB and Phenols.

Preliminary site investigation (15 May 2019)

- Site walkover documenting site conditions and potential contamination issues
- Manual excavation of 7 testpits to 1m below ground level (bgl), which were further excavated by hand auger to a maximum depth of 2.0m bgl at targeted locations within AEC 2
- Collection of soil samples from the fill and natural soil where encountered
- Screening of all soil samples collected in the field with a Photoionization Detector (PID) to assess the presence of ionisable volatile organic compounds (VOCs)

 Submission of selected soil samples at a NATA Accredited laboratory for analysis of contaminants of concern including: TRH, BTEX, PAH, Heavy metals, OCP, OPP, PCB, Phenols and asbestos.

PSI Report

- Reporting of the findings of this PSI in accordance with the requirements of relevant NSW EPA guidelines including but not limited to:
 - National Environment Protection (Assessment of Site Contamination) Measure (1999), (Amended 2013)
 - NSW EPA (2017) Contaminated Land Management Guidelines for the NSW EPA Site Auditor Scheme (3rd Edition)
 - Managing Land Contamination Planning Guidelines SEPP 55 Remediation of Land (1998)
- Providing recommendations for further investigations and/or management and mitigation measures for the construction and operational phases
- Provide a statement of whether the site can be made suitable for its intended future land use

2. Site Information

2.1. Proposal Construction Activities

Construction activities associated with the Proposal are expected to include:

- Establishment of construction site access roads
- Pre-construction clearing of signage, fences and selected vegetation
- Bulk Earthworks involving:
 - Excavation of geotechnically unsuitable materials
 - Stockpiling of various fill types for either off-site disposal or re-use
 - Placement of fill for the establishment of temporary roads
 - Widespread placement of imported fill for geotechnical and site elevation purposes
 - Site stormwater drainage and temporary erosion controls and subsoil drainage
- Construction of the Interchange involving:
 - Road pavements, kerb and gutter, crash barriers for the taxi / kiss and ride, bus drop
 off, bus / car entry and exit points
 - Amenities and Café building (potential)
 - Pedestrian link through to railway park
 - Refurbishment of the flexible open space area
 - Building of the raingarden and planting (potential).

2.2. Desktop Review

SMEC carried out a desktop review of available published information relating to the site and surrounding areas including:

- Review of available published maps (incl. Geological, Landscape, Acid Sulfate Soils, Topographic and Groundwater bores)
- Review of site historical aerial photographs (1947, 1965, 1971, 1973, 1979, 1987, 1997, 2012 and 2018)
- Review of Section 149(2) & 149(5) Planning Certificates
- NSW EPA contaminated land registers and Protection of the Environment Operations (POEO)
- Anecdotal and secondary information supplied by Sydney Trains.

The details of relevant findings are included in the Section 2.2 and summarised in Section 2.4 below.

2.2.1. Site Identification and Details

Table 2-1 Site identification and details

Aspect	Description
Title identifier	Part of Lot 4729 in Deposition Plan 1228104 owned by TfNSW
Approx. Study Area	The investigation site extends approximately 212m in a north-south direction at the longest point in the east of the site, and approximately 112m east-west at the widest point in the southern portion of the site. The investigation area covers an area of approximately 10,396m ² .
	The study area is boarded by an unsealed vehicle parking area on Butler Street to the west and the disused Murwillumbah rail corridor to the east. Thickly vegetated areas border the study area to the north and south. The study area contains an unnamed access road for the rail corridor, unsealed vehicle parking area and pedestrian link from Butler Street to Jonson Street in the southern portion of the site.
	The investigated site is shown in Figure 2, Appendix A .
Zoning	The investigation site is located within the Local Government Area of Byron, Parish of Byron and the County of Rous.
	Under the Byron Local Environmental Plan 2014, the site is zoned as Zone SP2 infrastructure. The surrounding land adjacent to the west of the site is zoned as RE1 Recreation and R2 Low Density Residential.
Land use	Land use at the site is divided in to five general areas including:
	Northern area: currently covered by thick vegetation and trees with unsealed vehicle parking along the western edge
	Central area: currently covered by thick vegetation and tress, and former rail siding infrastructure items including a water tower and turntable, with unsealed vehicle parking along the western edge
	Southern area: includes unnamed paved rail corridor access road and unsealed road verge area currently utilised for parking, grassed road verge area with some trees, Butler Street road pavement and grassed road verge to the west.
	North eastern area: includes rail corridor area running from the northern boundary of the site to the pedestrian walkthrough from Butler Street to Jonson Street. Railway tracks have been removed from this area of the rail corridor. Surface material comprises of sand with some grass cover.
	South western area: includes a paved construction lay down area and carpark
Surrounding land use	During the field investigation and from review of the 2018 aerial photograph the following was observed:
	North – thickly vegetated area of the rail corridor then Byron Motor Lodge Motel. Butler Street reserve is located across Butler Street and Somerset Street to the northwest.

Aspect	Description
	South – bound immediately by thickly vegetated area of the rail corridor then low density residential dwellings.
	West - bound immediately by an unsealed vehicle parking area then Butler Street then low and medium density residential dwellings.
	East – bound immediately by the disused rail line then commercial premises (former railway station buildings, Byron tourist information centre and Byron Bay travel centre).

2.2.2. Topography and Drainage

The area is reclaimed swamp land which is relatively flat situated at approximately RL 7 m AHD. The site is oriented in a north-south direction over a slightly raised ridgeline running east-west with the highest elevation at the water tower in the central area of the site. No designated surface drainage lines were observed on the site. Rainwater falling to the north of the highpoint of the site in the central area would drain to the north into an offsite trapped low point. Rainwater falling on the southern side of the central area would drain to the south into existing natural low-lying drainage channels.

2.2.3. Geology and Hydrogeology

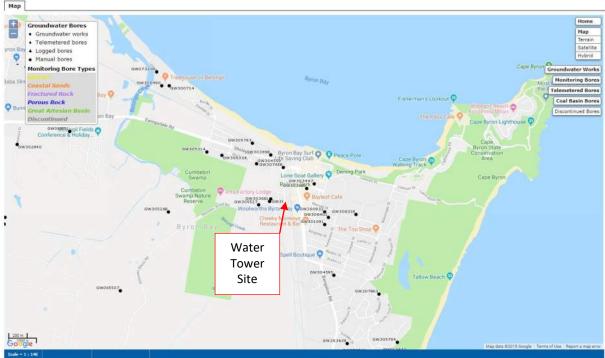
Reference to the NSW Department of Industry Resources & Energy 1:250,000 Tweed Heads Geology Map (Sheet SH 56-3 1st Edition, 1972) indicates that the site is inferred to be located on Quaternary Alluvium comprising of 'River gravels, alluvium, sand, clay'.

Figure 2-1 Excerpt from 1:125,000 Geological Series Sheet Tweed Heads SH 56-3 (Ref: Geol. Survey of NSW, 1974)



A search for nearby registered groundwater bores was carried out on the NSW Department of Primary Industries, Office of Water website on 14 May 2019. The search revealed that eleven groundwater bores were located within 500 m of the site, as shown in Figure 2-2 below.

Figure 2-2: Groundwater bore search (ref: NSW Department of Primary Industries, Office of Water, 2019)



Based on the site topography and elevation, regional groundwater is expected to be very shallow, at depths from 1-2 m below ground level (bgl) and is expected to flow within alluvial sediments. Regional groundwater flow direction is likely to flow in an approximate westerly direction towards Cumbebin Swamp.

Based on field observations during the geotechnical and environmental investigations carried out on 4-5 March 2018, water depth across the site was observed to be between 0.9-1.4 m below ground level. Steady water influx was noted within test pits and groundwater wells. Although the site is potentially tidally influenced the investigation did not include a measurement of its influence. The use of piezometers was not included at this stage of the investigation.

Groundwater was not observed within testpits or auger holes to a maximum depth of 2m during site investigations carried out on 15 May 2019.

Groundwater bore search results are included in **Appendix B** and summarised in Table 2-2 below.

Table 2-2 Registered Groundwater Bore

Bore Number	Completion date	Property	Construction	Comments
GW303447	N/A	"Phillips'" 21-25 Fletcher Street Byron Bay 2481	13.0 m bgl	N/A
GW303498	06/02/2003	Body Corporate Sp 50789 9 - 13 Shirley Street Byron Bay 2481	3.8m bgl	SWL 3.0 m
GW303643	01/01/1983	Harrow's 7 Burns Street Byron Bay 2481	N/A	N/A
GW303661	01/01/1913	Dynan's 9 Burns Street Byron Bay 2481	N/A	N/A

Bore Number	Completion date	Property	Construction	Comments
GW303689	01/06/1981	Birmingham's 28 Fletcher Street Byron Bay 2481	3.10 m bgl	SWL 1.8 m
GW304559	01/01/1956	Brown's 8 Milton Street Byron Bay 2481	5 m bgl	SWL 1.60 m
GW305527	20/01/2006	Simmons 91 Wordsworth Street Byron Bay 2481	N/A	N/A
GW300932	15/10/1997	Lot1 DP867038	10 m bgl	N/A
GW306401	20/12/2007	Cadastre 11/32/758207	1.50 m bgl	N/A
GW301091	20/05/1995	Lot2 Sec43 DP758207	7.0 m bgl	N/A
GW307658	14/03/2014	Cadastre 50//844342	9.0m bgl	N/A

2.2.4. Soil Landscape

Reference to the NSW Office of Environment and Heritage 1:100,000 Lismore-Ballina Soil Landscape Map (Sheet 9540-9640, Second edition) indicates that the site is situated over the Tyagarah landscape. The Tyagarah soil landscape typically comprises sediment basins of mixed estuarine and Aeolian origin forming level to gently undulating plains. Slopes are generally <1% and elevation is <5 m with <3 m of relief. This landscape predominantly consists of extensively cleared open and closed forest. Soil types are expected to be deep (>150cm), well-drained Humus Podzols and Acid Peats near barrier systems.

The limitations of the Tyagarah landscape consist of very strong acidic soils, permeable in nature, often consisting of waterlogged soils of low fertility and low water-holding capacity with localised salinity. Permanently high-water tables and moderate wind erosion hazards are indicated.

2.2.5. Acid Sulfate Soils

Acid Sulfate Soils (ASS) are naturally occurring soils, sediments and peats that contain iron sulphides, predominantly in the form of pyrite materials. In an undisturbed and waterlogged state these soils are harmless, but when disturbed and exposed to oxygen through drainage or excavation, a process of oxidation can produce sulfuric acid in large quantities. In the undisturbed state the soils are called Potential Acid Sulfate Soils (PASS). Once they are disturbed and start oxidising, they are called Actual Acid Sulfate Soils (AASS). Collectively this material is referred to as Acid Sulfate Soils (ASS).

Oxidation of ASS has the potential to have the following impacts:

- Kill fish and result in a loss of biodiversity in wetlands and waterways
- Contamination of groundwater by acid and mobilisation of arsenic, heavy metals and other contaminants
- Corrosion of infrastructure from acidic soil and water
- Degradation of agricultural land.

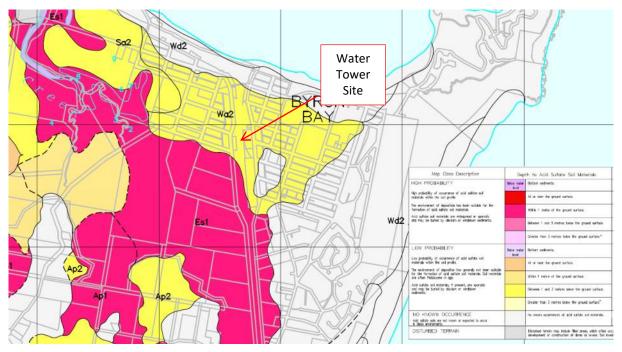
The site is mapped over an area which is considered to have low probability of ASS between 1 and 3 metres below ground level (bgl). The ASS landform process soils are classed as Wa2, comprising aeolian alluvial soils at 2-4 m bgl.

The site is considered to be reclaimed swamp land and has been filled with uncontrolled soils, waste and quarried sands. The fill and waste materials uncovered during the investigation were dry, above

the intertidal zone, heterogeneous, did not contain organic material and as such were not considered to pose an ASS risk.

The proposed land use is not expected to interact with groundwater or the natural soils within the groundwater table. There is the potential that minimal construction activities will interact with soils below the water table, these construction methods were not expected to bring potential ASS or water logged soil to the surface.

Figure 2-3 Byron Bay Acid Sulfate Soil Risk Map – Edition Two (ref: NSW Department of Land and Water Conservation 1:25,000, December 1997)



2.2.6. Historical Aerial Photos

Historical aerial photography can provide important insights into the change in land use activities overtime and the potential for site contamination to have occurred.

A review of nine historical aerial photographs of the site from 1947, 1965, 1971, 1973, 1979, 1987, 1997, 2012 and 2019 was carried out and copies are included in **Figures 3A to 3G, Appendix A**. A summary of the aerial photograph observations review is including in Table 2-3 below.

Table 2-3 Historical aerial photograph review

Aerial Photo Date	Description
1947	The site appears cleared with no development except for the water tower and rail siding. The main line and station platform lies immediately to the east. The site is grassed with some trees and shrubs. Beyond the rail line and Byron Bay station platform are commercial and low density residential structures. Butler and Burns Streets are visible to the west of the site and some residential structures have been developed to the north and south of Burns Street. Somerset Street further north of Burns Street and the unnamed access road to the rail corridor south of the site have yet to be constructed.
1965	The site itself appears to be grassed but cleared of more established vegetation. Railway station buildings east of the track have been constructed.

Aerial Photo Date	Description
	A 'Y' junction rail siding enters the central portion of the site from the north, leading to the water tower and turning circle evident in the photograph. The rail siding appears to continue beyond the turning circle into what appears to be a long trench at the end of the rail tracks. Anecdotal discussions post field investigation (4-5 March 2018) noted the potential for an 'ash pit' located near the turn table.
	There is evidence of stockpiles in the northern portion of the site. Light grey in colour these could potentially represent ash emptied from the steam locomotives. A known former landfill site is evident immediately northwest of the site with similar coloured stockpiles and a well-defined access track present. The surrounding land uses appear predominantly unchanged from the 1947 photograph.
1971	The site and immediate surrounding area appear to have changed very little compared to the 1965 aerial photograph. There appears to be a stockpile in the northern portion of the site, light grey in colour.
1973	The site and immediate surrounding area appear to have changed very little compared to the 1971 aerial photograph. The circular turn table feature is still visible on the site in line with rail siding tracks approximately 30 m southeast of the water tower.
1979	The site itself appears to have changed very little compared to the 1973 aerial photograph, with potential filling and/or stockpiling evident on both sides of the rail siding track. Scaring and access tracks have increased in the area of the former landfill site immediately northwest of the site. Somerset Street and a large shed (adjacent to Butler Lane) have been constructed. Clearing of the area south east of the site has occurred.
1987	Scaring is evident on the site north east of the water tower, which suggests potential cutting and/or filling activities. The rail corridor access lane within the southern section of the investigation area has been constructed and appears to cross the rail line and connect the station and Jonson Street with Butler Street. The area south east of the site where scaring was previously visible has been redeveloped and now contains present day commercial structures. The former landfill site appears to have been covered with grass and some additional residential structures have been constructed to the west of the site. Other than that, the immediate surrounding area appears to have changed very little compared to the 1979 aerial photograph.
1997	Some vegetation regrowth has occurred on the site but the scaring visible in the 1987 image is still visible. The vegetation immediately north of the investigation area appears to be in its current condition. Trucks appear to be parked on the area just south of the water tower. The immediate surrounding area appears to have changed little compared to the 1987 aerial photograph.
2012	Other than some vegetation regrowth in the area east of the water tower and unsealed vehicle parking areas to the west and around the rail corridor access lane there is very little change to the investigation area itself compared to the 1997 photograph.

Aerial Photo Date	Description				
	Other than the minor addition of a residential dwelling to the corner of Butler and Somerset Streets and commercial redevelopment of the area immediately east of the station there are no notable changes to the surrounding area from the 1997 photograph to 2012				
2019	Thick vegetation growth has occurred immediately south of the water tower in the central area of the site. A sand access track is no present running in a north-south direction down the centre of the northern area of the site. This was created during the site investigations of 4-5 March 2018. The south western area of the site has been converted into a paved carpark area. Other than some minor land use changes to the north-east of the site, the surrounding area remains largely unchanged compared with the 2012 photograph.				

2.2.7. NSW EPA Online Databases

Contaminated Land Notifications Database Search

A search of the NSW EPA Contaminated Land records on 16 May 2019 indicated there are seven contaminated sites notified to the NSW EPA within the Byron Shire Council area. Of these seven, only one site is considered to be located in close proximity to the Proposal site. 'Butler Street Reserve' is located approximately 30m to the north east of the Proposal and is currently listed as 'Under Assessment'. Based on historical activities and investigations conducted at Butler Street Reserve and as outlined in Preliminary Investigation Order 20181009, the EPA reasonably suspects that the specified land is contaminated with methane, carbon dioxide, and metals.

The NSW EPA notices for the site are provided in **Appendix B** and summarised in Table 2-4 below.

Table 2-4: Summary of notices for NSW EPA notified site 'Butler Street Reserve'

Suburb	Address	Site Name	Notices relating to site	Status
Byron Bay	Butler Street	Butler Street Reserve	Current Notices: Preliminary Investigation Order (20181009) Amendment or Repeal of Order or Notice (2194406)	Under Assessment Amendment of Order 20181009 was granted by the NSW EPA to extend the timeline for the completion of all works required by the Sampling Analysis and Quality Plan (SAQP) for the site by no later than 31 May 2019.

There are currently no NSW EPA contaminated land notices for the Proposal site.

Protection of the Environment Operations (POEO) Database Search

A search of the NSW EPA Protection of the Environment Operations (POEO) database on 16 May 2019 within the Byron Bay Shire Council found that there are no 'issued' environmental protection licences (EPL) for sites within 1km of the Proposal.

2.3. Summary of Previous Assessments

2.3.1. Extent Heritage Pty Ltd (Extent) Statement of Heritage Impact (SOHI): Byron Bay Bus Interchange Redevelopment (November 2018)

Information from the Extent SOHI report relevant to this PSI is summarised below:

- In the 1890's the proposal area was used as a 'Loco Service siding' to the railway station,
 west of the main line. The area was equipped with the key elements necessary for facilitating
 steam locomotives including a water tower, coal stage, ash pit and turntable. Later, the loco
 siding was used for loading and unloading live animals, usually pigs.
- The turntable located at the proposal area was a 15.4 m diameter railway turntable, comprising a central iron or steel bridge revolving on a central pivot and an outer circular rail. The turntable bridge is missing and the pit has been filled with soil to its uppermost level, leaving only a circle of bricks and concrete visible in the ground. Consequently, it is unknown what remains within the pit.
- An ash pit is shown on historic plans for the proposal area, located adjacent to the water tower. Ashes were typically hot and were characteristically dropped into a brick-lined pit excavated below the railway track, between the rails. The size of the pit varied according to the typical size of engine being serviced and the frequency of use. During the site inspection, there was no obvious evidence of a brick structure visible at ground level at the proposal area, although there was a distinct concentration of coal ash observed
- a number of other historic features and elements were identified on or in the ground at the proposal area including:
 - circle of brick/concrete at ground level which is the top of the wall of the turntable pit
 - The concrete slab pier on the north side of the turntable pit
 - The large concrete slab pier on the southern side of the turntable pit, outside of the fence within the side road
 - A concentration of coal ash in the soil in the vicinity of the location of the ash pit
 - Scatters of old rail and remains of railway fence lines
 - The turntable pit and concrete piers are related items, with the concrete piers supporting the railway track where it crossed over the edge of the pit.
- A coal stage is shown on drawings located immediately adjacent to the east of the railway siding approximately 2m north of the water tower. The coal stage structure is comprised of an elevated timber platform approximately 6 feet above the ground level

2.4. Summary of Site History

Based on information above, the site was historically used as a rail siding from as early as the 1890's to fill steam trains with water, empty the steam locomotive firebox into an ash pit and stockpile ash on site prior to transporting of site. The following historical timeline has been determined:

- 1890's: the site was constructed for use as a railway siding with associated infrastructure including a water tower, ash pit, coal stage and turntable
- 1947 the site appears cleared with a water tower present. The site appears covered with grass, sand with some trees and shrubs. The main rail line and station platform is present immediately to the east
- Between 1947 and 1965 the rail siding site appears largely unchanged. Residential development has occurred to the east of the train station and west of the water tower site

- Little change between 1965 and 1973, with potential filling and/or stockpiling evident on both sides of the rail siding in 1979
 - Between 1979 and 1987 the rail siding appears to have potentially been disused as the unnamed access road appears to have been constructed immediately south of the turntable. Scaring is evident on the investigation area in the immediate area north east of the water tower suggesting potential cutting and/or filling activities. The rail corridor access lane within the southern section of the investigation area has also been constructed and the circular feature has disappeared
- Post 1987 to present day there has been significant vegetation regrowth on the site. The area
 immediately west of the site and either side of the rail corridor access road have become
 unsealed vehicle parking areas. The southwestern are of the site has been paved and turned
 into a carpark. Other than the addition of some residential and dwellings and redevelopment
 of some commercial areas the wider area has remained relatively unchanged.

2.5. Site Observations

Site activities for this PSI were undertaken by two experienced Environmental Scientists on 5 and 6 March 2018, and by one Experienced Environmental Scientist on 15 May 2019.

A summary of relevant observations is included below:

Preliminary Site Investigation (5-6 March 2018)

- At the time of the investigation, the northern and central portions of the site were contained within a fenced section of the rail corridor. The southern portion of the site was publicly accessible
- The northern third and central portion of the site was covered in dense vegetation with trees greater than 5m in height and a thick understorey. The site was cleared around the water tower and buried turn table area. The southern portion of the site comprised an unnamed road and grass road verge
- Some scattered anthropogenic litter that appeared to be a squatter's camp, included a disused tent and camping equipment in the northern portion of the site
- The inferred natural surface water drainage direction was to the north in the northern and central portions of the site, and to the south from the southern side of the Water Tower
- No pooled water was observed on the site
- The vegetation appeared to be healthy showing no signs of stress.

Preliminary Site Investigation (15 May 2019)

- Thick vegetation cover is present across most of the northern and central areas of the site except for the area immediately north of the water tower, the turntable
- The south eastern paved carpark area appears to have been used as a laydown area for other construction works
- Sporadic presence of anthropogenic litter across the site including: glass, brick fragments, plastics, bottles, scrap metal
- Coal ash and ballast was observed on the surface within the former coal stage area and ash
 pit area
- Ballast was observed in the near surface material throughout the rail corridor in the north eastern area
- An asphalt slab (approx. 4m x 2.5m) was present immediately adjacent to the west of the turntable area
- No pooled water was observed on the site

 The vegetation appeared to be healthy showing no signs of stress.
Site photographs are included in Appendix C.

3. Sampling, Analysis and Quality Plan

3.1. Overview

The SAQP is an essential requirement in the assessment and management of contaminated sites. It provides the blueprint for the collection and analysis of samples. The details of the SAQP are outlined below and includes information pertaining to:

- The proposed soil and groundwater sampling locations
- The contaminants that need to be analysed at each location
- The appropriate guideline against which to compare measured contaminant concentrations
- The data quality objectives (DQOs) to ensure works are appropriate to the proposed outcomes
- A summary of the proposed quality control sampling
- The quality assurance information that supports the DQOs.

3.2. Data Quality Objectives

A seven-step Data Quality Objective (DQO) process was undertaken to assess the sampling, analysis and quality requirements for the contamination investigation. The design of the DQO approach was undertaken in accordance with Appendix IV of the NSW EPA Guidelines for the NSW EPA Site Auditor Scheme (3rd Edition), 2017.

3.2.1. Step 1: State the Problem

The Byron Bay Transport Interchange is being developed by Sydney Trains as part of the Transport Access Program. Sydney Trains is undertaking the delivery of the upgrades on behalf of Transport NSW. The site historically operated as a rail easement and the current contamination status is unknown.

A PSI was required to develop an understanding of the potential contamination status of the site given its historical land use as a rail easement and to inform the client of the site suitability considering the proposal, and potential contamination risks and remedial options.

3.2.2. Step 2: Identify the Decisions

The key decisions requiring assessment include:

- What are the horizontal and vertical extents of potential waste material?
- Does the potential waste material extend beyond property boundaries? Yes/No
- What type and concentration of contaminants are currently present within residual natural soil, imported fill, local groundwater? Are contaminant concentrations in soils, groundwater and landfill gas at levels above relevant criteria? Yes/No
- Are the current risks to human and environmental receptors from potential waste acceptable (i.e. assuming no change)? Are the future risks to human and environmental receptors from potential disturbance of potential waste acceptable (i.e. during and after management / future remediation earthworks / capping)? Yes/No
- Is there sufficient chemical testing data to assess the potential contamination risks to identified human health and environmental receptors? Yes/No

- Is there sufficient spatial data to inform remediation options and allow preparation of potential waste management and / or remediation? Yes/No
- What are the subsurface conditions and geotechnical properties of the site? Do the existing site conditions pose geotechnical risks/constraints/opportunities for capping design? Yes/No
- Can identified risks be reasonably controlled or managed to acceptable levels? Yes/No

3.2.3. Step 3: Identify Inputs to the Decision

The inputs required to make the above decisions are as follows:

- Historical data including published maps, topographic surveys, historical aerial photographs, and anecdotal information
- Historical primary data including previous geotechnical and additional assessments. Specific inputs include previous borehole logs, subsurface conditions, site observations and environmental testing data
- Field logs of subsurface conditions and visual observations for evidence of contamination including fill, odours, staining and/or soil vapour screening
- Laboratory analysis results of environmental samples within soil and groundwater samples
- Comparison of the results with respect to adopted assessment criteria (refer to Section 3.4).

3.2.4. Step 4: Define the Study Boundary

The boundaries of the contamination assessment are as follows:

 Horizontally: The study boundary is confined to the Site boundary outlined in Table 3-1 below:

Table 3-1: Site boundary summary table

Direction	Boundary
North	Dense vegetation
East	Disused railway tracks and commercial business precinct
South	Dense vegetation
West	Butler Street

Site boundaries are shown on Figure 2, Appendix A.

- Vertically: The study boundaries extend vertically to the water table at no deeper than approximately 2.5 m bgl
- Temporal: The study was limited to a contamination field investigation involving a series of test pits, submission of soil samples for laboratory analysis and one round of groundwater analysis.

3.2.5. Step 5: Develop a Decision Rule

Adopted decision rules for this investigation are as follows:

- Sampling density was adopted to preliminarily characterise potential offsite migration (if any)
 of potential contaminants of concern in areas hydraulically and topographically
 downgradient of areas of environmental concern
- Sample concentrations were compared with adopted assessment criteria for each contaminant tested. In accordance with NEPM 2013, comparison of sample data with investigation and screening levels was confirmed by contaminant range (minimum and maximum), standard deviation, arithmetic mean and 95% upper confidence limits (UCL).

Adopted assessment criteria are included in Section 3.4. The following decisions will be made:

- 95% UCLs which exceed adopted criteria are considered to pose an unacceptable risk to human and environmental receptors and will therefore undergo a further assessment, management and/or remediation. These further inputs may be carried out as part of site validation monitoring/sampling during remediation stages
- 95% UCLs which are below adopted criteria are not considered to pose an unacceptable risk to human and environmental receptors and no further assessment will be required.
- A data validation assessment was carried out for all results. The Quality Assurance and Quality Control (QA/QC) program carried out will determine if the data collected is useable, partially useable with some limitations, or unusable in forming conclusions to the assessment.

3.2.6. Step 6: Specify Limits of Decision Error

We have assumed the following to be true in the absence of contrary evidence (i.e. the null hypothesis):

• Contamination within soil or groundwater at the site currently pose a potential risk to human and environmental receptors.

The possibility exists of making the following decision errors based on the data obtained during this investigation:

- Type 1 error Deciding the above null hypothesis is false, when it is true
- Type 2 error Deciding the above null hypothesis is true, when it is false.

The consequence of making a Type 1 error is more detrimental as it can result in adverse consequences or may include material impact to human and environmental health. The consequence of making a Type 2 error may result in 'over-conservatism' and unnecessary expense of conceptual remediation options and capping design.

The potential for decision errors will be minimised by completing a robust QA/QC program and by completing this preliminary investigation with an appropriate sampling and analytical density, allowing for budget and unknown heritage constraints.

3.2.7. Step 7: Optimise the Design for Obtaining Data

The design for obtaining data is outlined in Section 3.4. The sampling and analysis plan was developed to enable the collection of data from appropriate locations, in appropriate quantities and of acceptable quality to allow the objectives of the study to be addressed. SMEC consider optimising the design for obtaining data may be achieved by:

- Undertaking a thorough review of available desktop information at the site, in order to:
 - Inform the preliminary conceptual site model
 - Identify potentially contaminated media and contaminants of concern
 - Develop an appropriate sampling and analysis plan
- Using suitable investigation techniques to characterise vertical extent of potential contamination (if any) in the deepest areas and to assess the horizontal extent of potential contamination (if any) via test pits
- Use information from detailed site survey of test locations and respective laboratory results to enable preliminary contamination modelling

- Targeting samples at locations where contamination levels are anticipated to be the highest based on historical information, topography, hydrology, and anticipated hydrogeological conditions, and visual observations at the time
- Allowing for the collection of sufficient data to complete an assessment of contamination extents at the test locations
- The development and implementation of rigorous QA/QC procedures in field and laboratory
- Using appropriately qualified and experienced sampling personnel.

3.3. Preliminary Conceptual Site Model

3.3.1. General

A critical element of any site assessment is the development of a conceptual site model (CSM). The CSM describes the environmental setting, identifies contaminant sources (potential areas of concern and associated contaminants), modes of contaminant movement (migration pathways), the person/ecosystem components/environmental values potentially affected by the contamination (potential receptors) and how exposure may occur (exposure routes)

The preliminary conceptual site model has been based on available desktop information, results from previous investigations, and current preliminary site investigation based on the provided project brief.

3.3.2. Areas of Environmental Concern

Based on the results of the above site information, three areas of environmental concern (AEC) have been identified and discussed in Table 3-2 and are shown on **Figure 4**, **Appendix A**. A qualitatively assessment was undertaken in terms of the potential for contamination to be present and the requirements for this PSI.

Table 3-2 Areas of Environmental Concern

AEC No.	Location description / extent	Assessment of potential for contamination
AEC1	Uncontrolled fill	A medium contamination potential is considered for the presence of uncontrolled fill, either buried or at surface in former stockpile locations. The aerial photographs show areas of disturbed soil and stockpiles. There is a potential for ash to be buried on site, but more likely it was transferred to the nearby landfill. There is also a potential for uncontrolled fill imported to the site, potentially used to cover the former rail siding tracks or reshape the surface.
AEC2	Steam train turn table, ash pit, coal stage, rail corridor	 A high contamination potential exists for the presence of contaminated fill material: potentially used to backfill the turn table and former ash pit in the vicinity of the former elevated coal stage area from historical coal storage in fill material in the north eastern area of the site from historical use as a rail corridor

AEC No.	Location description / extent	Assessment of potential for contamination		
AEC3	Groundwater	A low to medium contamination potential is considered for the impacts to local groundwater via potential contaminated fill.		
		 Groundwater beneath the site is potentially tidally influenced with standing water level between 0.9 and 1.2 m bgl 		
		 Eleven registered groundwater bores were located within 500 m of the site at various hydraulic gradients. No water quality results were captured. Potable groundwater extraction is unlikely to occur due to existing town's main water supply. 		

3.3.3. Potential Contaminants of Concern

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

Primary

- Total Petroleum Hydrocarbons (TPH). Conservatively these may be initially assessed as Total Recoverable Hydrocarbons (TRH)
- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Heavy metals, including arsenic (As), chromium (Cr), cobalt (Co), copper (Cu), mercury (Hg), manganese (Mn), nickel (Ni), lead (Pb), and zinc (Zn)
- Asbestos (in materials and soil).

Secondary

- Organochlorine pesticides (OCPs)
- Organophosphorus Pesticides (OPPs)
- Polychlorinated Biphenyl's (PCBs)
- Speciated Phenols.

3.3.4. Potential Receptors

Based on the environmental setting, the potential receptors have been identified as follows:

Human receptors

- Transient users of the recreational space, Intrusive maintenance workers within the site (i.e. future maintenance of buried services, landscaping maintenance, service pits and pipes)
- Construction workers associated with the Project (short-term only)
- The residents of Butler Street
- Groundwater beneficial users (i.e. irrigation and domestic use).

Ecological receptors

- Communities within Byron Drain and Cumbebin Swamp located hydrologically downgradient of the site
- Vegetation along the northern and southern boundaries
- Groundwater receivers

Future landscaping.

3.3.5. Exposure Pathways

The pathways of exposure consist of:

- A transport mechanism
- A route of exposure.

Based on site information, it is likely that the exposure pathways include:

- Disturbance of 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
- Ignition of potential explosive atmospheres within volatile vapours
- Rainwater infiltration and leachate seepage into underlying soils, rock and groundwater bearing layers' exposure by ingestion, dermal contact or inhalation.

3.3.6. 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
- Arsenic and lead
- Asbestos
- Some PAHs
- Longer chain hydrocarbons (i.e. >C29).

3.3.7. Potential Source-pathway-receptor Linkages

Potential source-pathway-receptor (S-P-R) linkages are where soil and groundwater contamination has the potential for adverse impact on human health or ecological values for the site via complete exposure pathways.

For a risk to exist all three components (source, pathway, receptor) of the CSM must exist.

Table 3-3 below summarises the potential source-pathway-receptor linkages for each of the identified human and ecological sensitive receptors. The additional requirements for management and/or further investigation are also noted.

Table 3-3 Potential source-pathway-receptor linkages

Sensitive Receptor	Release mechanism	Exposure route	Potential S-P-R linkage and requirements
Human receptors			
Butler Street Residents	Vapour intrusion Soil disturbance Dust	Surface vapour emissions Direct contact, inhalation and injection	Incomplete

Sensitive Receptor	Release mechanism	Exposure route	Potential S-P-R linkage and requirements
Transient users of the recreational space	Vapour intrusion Soil disturbance Dust	Surface vapour emissions Direct contact, inhalation and injection	Incomplete
Construction workers	Vapour intrusion Soil disturbance Groundwater interaction Dust	Direct contact, inhalation and ingestion	Potentially incomplete Observed contamination (if any) to be managed under unexpected finds protocols
Intrusive maintenance workers	ntenance Soil disturbance gas accumulation		Potentially incomplete Observed contamination (if any) to be managed under unexpected finds protocols
Groundwater beneficial users	Rainwater infiltration and vertical leachate seepage into water bearing layers.	No downgradient water users identified	Incomplete
Ecological			
Ecological communities of Cumbebin Swamp	Surface water run off Groundwater flows	Fauna direct contact and ingestion Flora uptake	Incomplete
Planted vegetation and future landscaping	Direct contact	Fauna direct contact and ingestion Flora uptake	Incomplete
Groundwater receivers	Rainwater infiltration and vertical leachate seepage into water bearing layers	Direct contact via surface water	Incomplete

Legend:

Potentially complete = Indicates source-pathway-receptor linkage is likely to be complete, unless additional management actions are implemented.

Potentially incomplete = Indicates source-pathway-receptor linkage is unlikely to be complete. Further investigation may be required to confirm risks.

Sensitive Receptor	Release mechanism	Exposure route	Potential S-P-R linkage and requirements
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Incomplete = Indicates source-pathway-receptor linkage is not complete based on current assessment information.

3.4. Adopted Methodology and Assessment Criteria

This contamination assessment applied a site-specific assessment methodology for soil and groundwater in general accordance with current applicable environmental guidelines. The source and rationale for selection of adopted assessment criteria and methodology for this site is included in Table 3-4 below.

Table 3-4 Summary of adopted sampling methodology and assessment criteria

Source reference	Adopted Sampling Methodology	Adopted Assessment Criteria		
Soil Assessment Criteria				
Adopted human health investigation levels (HILs) and health screening levels (HSL) assessment criteria have been sourced from: NEPM 1999 (amended 2013), Schedule B2 Soil and groundwater investigation levels Friebel, E. and Nadebaum, P. (2011) CRC CARE Technical Report No.10 - Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater.	The preliminary soil sampling methodology was carried out with reference to: NEPM Schedule B1 Site Characterisation NSW EPA (1995) Sampling Design Guidelines As this investigation was only at the preliminary stage, a Judgmental sampling pattern was adopted to target specific portions of the site based on the design requirements, known site features such as the turntable, former ash pit area, former coal stage area, former north eastern rail corridor area and other areas of potential contamination. As per the design at the time of the investigation, test pits were positioned to target the hydraulically and topographically downgradient subsurface material underlying the proposed bus interchange pavement. The following soil sampling plan was adopted: Preliminary Site Investigation (5-6 March 2018) Four test pits, TPO1 to TPO4 were excavated across the site TPO1, TPO2, and TPO4 were excavated in the northern area of the site TPO3 was excavated in the east of the southern area of the site at the former pig race site Samples were collected and analysed from various depths between the surface top soils and residual estuarine muds at 2.5 m bg it to enable assessment of the vertical distribution of contaminants throughout the soil layers. Sample selection analysis was informed firstly surface conditions then the observations of staining, buried uncontrolled fill, presence/quantity of ACM and olfactory observations 10 samples (not including QA/QC) were collected from 3 sample points across the site. Preliminary Site Investigation (15 May 2019) To avoid potential mechanical damage to heritage items, 7 testpits were manually excavated with a shovel (TP) to 1m bgl and then further excavated using a hand auger (HA) to a maximum depth of 2.0m bgl. Investigation locations were either labelled HA or TP based on which method was used at the termination depth of the excavation HA1, HA3, and HA4 were excavated within the turntable area in the central area of the site HA5 was excavated in the former coal stage area T	Adopted soil assessment criteria (HILs and HSLs) are included in Table D1 , Appendix D . Considering zoning and surrounding land use (open space and residential), criteria applicable to 'HIL C/HSL C – Recreational' and 'public open space land use' were conservatively adopted. Exposure scenarios considered relevant included direct contact.		
Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) in soil from: NEPM 1999 (amended 2013), Schedule B2 Soil and groundwater investigation levels.	EILs and ESLs are relevant where ecological receptors are likely to be present and exposure pathways are complete. However, based on the site being used as an active rail corridor and the future design of a built-up transport interchange area, potential terrestrial ecological receptors are not considered relevant, provided imported soils are used in proposed future landscape areas. Therefore, an assessment of fill and natural soils with respect to EILs/ESLs was not necessary.	NEPM 1999 consider areas of ecological concern is one where planning provision or land use designation is for the primary intention of conserving and protecting the natural environmentalinclude national parks, state parks, wilderness areas and designated conservation areas.' Considering the close proximity to Cumbebin Swamp and further Belongil Creek, 'areas of ecological concern' were conservatively adopted for this assessment. Potential aquatic ecological receptors were assessed directly		

Source reference	Adopted Sampling Methodology	Adopted Assessment Criteria
		with respect to groundwater investigation levels presented in Table 3 , Appendix D .
Asbestos assessment criteria have been sourced from: NEPM 1999 (amended 2013) and WA DOH (2009), Guidelines for the Assessment Management and Remediation of Asbestos Contaminated Site.	A preliminary assessment of asbestos-contaminated soils was carried out with reference to: NEPM Schedule B2, Chapter 4 Asbestos materials in soil WA DOH (2009), Section 3.2 Sampling and Analysis Asbestos assessment methodology comprised: Preliminary Site Investigation (5-6 March 2018) A site walkover was carried out to identify asbestos at the ground surface Detailed visual observations were made during test pitting to assess the presence, condition and approximate number of ACM within each waste unit No ACM was sighted at the ground surface or within any test pit. Preliminary Site Investigation (15 May 2019) A site walkover was carried out to identify asbestos at the ground surface Detailed visual observations were made during manual test pitting to assess the presence, condition and approximate number of ACM within each waste unit No ACM was sighted at the ground surface or within any test pit.	Adopted asbestos assessment criteria applicable to this Site are discussed below. Criteria applicable to 'Recreational C public open spaces' were conservatively adopted to apply to the following thresholds: No visible asbestos in surface soils Asbestos content for asbestos fines (AF) and/or friable asbestos (FA) is below 0.001% 0.02% w/w asbestos in soil for ACM (being asbestos in bonded ACM soil) for public open space land use.

Groundwater assessment criteria have been sourced from:

- ANZECC & ARMCANZ 2000, National Water Quality Management Strategy, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Protection of Aquatic Ecosystems:
- Chapter 3.3 Physical and chemical stressors
- Chapter 3.4 Water quality guidelines for toxicants.

As a preliminary assessment of groundwater, a judgemental sampling pattern was adopted as part a tiered assessment approach recommended by the NEPM 1999 (amended 2013).

Groundwater assessment and sampling methodology comprised:

- A site walkover to make visual observations of inferred surface water drainage pathways
- Detailed visual observations during test pitting/boreholes to assess the presence and depth of groundwater at each test location
- Two groundwater wells (GW01 and GW06) installed to intercept shallow groundwater within the residual estuarine soils. The wells were installed at the northern and southern site boundaries to intercept groundwater flowing off site from the central hydraulic high point recreational), the 95% level of protection applying to slightly-moderately disturbed systems (saltwater) were considered applicable. Where available, low reliability trigger values were adopted from ANZECC &
- Groundwater and standing water levels were collected from both groundwater wells.

Groundwater assessment criteria adopted at this site are outlined in ANZECC & ARMCANZ 2000;

- Chapter 3.3 Physical and chemical stressors
- Chapter 3.4 Water quality guidelines for toxicants.

Considering site topography (being low lying and expected to be tidally influenced) and surrounding land use (of natural swamplands and recreational), the 95% level of protection applying to slightly-moderately disturbed systems (saltwater) were considered applicable. Where available, low reliability trigger values were adopted from ANZECC & ARMCANZ (2000) for toxicants assigning protection 95% of species. Furthermore, where toxicants are noted to be potentially bio accumulative (i.e. mercury), the trigger value for the protection of 99% of species was adopted.

At a preliminary level, results which exceed these assessment criteria are considered to warrant a further assessment to confirm actual risks to identified receptors.

3.5. Sampling Methods

3.5.1. Soil Sampling

The following procedure was adopted for soil sampling for contamination testing:

- Each soil sample was collected within clean laboratory-supplied 250 ml containers. A clean pair of nitrile gloves were worn during each sample collection and logging
- To ensure there was no cross-contamination risks, with the exception of the excavator bucket, no tools were used to assist with sample collection. Soils in contact with the bucket were not collected
- Samples were placed in an ice-filled esky to keep the samples below at or below the recommended preservation temperature of approximately 6°C. Samples were kept in the ice filled esky until delivered to the testing laboratory
- A laboratory test request form or Chain of Custody (CoC) form was filled in with the sample names, sampling date, sample container type and number and required analyses to be performed. The laboratory test request or CoC documentation and the samples were sent to the laboratory for analysis promptly to meet laboratory recommended holding times.

3.5.2. Groundwater Sampling

The following procedure was adopted for groundwater sampling for contamination testing:

- No surface water drainage lines were present across the site
- Monitoring wells were checked using an interface probe to measure the depth to standing water level, total well depth and presence of phase-separated hydrocarbons (if present)
- Groundwater wells were developed on the day of production
- Groundwater monitoring wells were purged to the equivalent of 5 well volumes using a dedicated bailer on the morning of sampling. Wells were allowed to recharge before sampling
- Wells were sampled using the dedicated bailer. A calibrated water quality meter (TPS Unit)
 was used to take measurements of field water quality parameters including pH, EC,
 temperature, redox and dissolved oxygen
- Following purging, representative groundwater samples were collected into laboratory supplied containers for the specified analytical suite (refer to Section 3.6)
- The following minimum sample volumes will be collected for groundwater analysis:
 - 2 x 40 mL HCl vials (volatile organics)
 - 1 x 500 mL glass (semi-volatile organics)
 - 2 x 50 ml HNO₃ (heavy metals, major cations and hardness, phosphorus).

3.6. Field and Laboratory Testing Schedule

The field and laboratory testing schedule is outlined in Table 3-5 below. Samples were submitted to the following laboratory for testing for potential contaminants of concern:

- Primary samples: Envirolab Services, at 12 Ashley Street, Chatswood, NSW
- Envirolab is accredited by the National Association of Testing Authorities Australia (NATA) for tests performed.

Table 3-5 Field and laboratory testing schedule

Analytical / Measurement parameter	Testing type	PSI 5-6 March 2018 Number of primary samples tested (Number of QAQC samples, where required)		PSI 15 May 2019 Number of primary samples tested (Number of QAQC samples, where required)	
		Soil	Groundwater	Soil	Groundwater
Contaminants of concern					
TRH, BTEX PAH	Laboratory	10 (1)	2 (1)	7 (1)	-
Heavy Metals – standard suite (As, Cd, Cr, Cu, Pb Hg, Ni, Zn)	Laboratory	10 (1)	2 (1)	7 (1)	-
OCP	Laboratory	10 (1)	2 (1)	7 (1)	-
РСВ	Laboratory	10 (1)	2 (1)	7 (1)	-
Total Phenolics (as Phenol)	Laboratory	10 (1)	2 (1)	7 (1)	-
Asbestos - in soil	Laboratory	10 (1)	-	-	-
Asbestos – in material ACM	Field observation	Continuous	-	-	-
Water quality parameters characteristics					
Field water quality parameters (dissolved oxygen, pH, EC, redox potential, temperature, and turbidity)	Field measurement	-	2	-	-

3.7. Quality Assurance and Quality Control Plan

The following quality assurance and quality control plan was adopted for this contamination assessment in general accordance with NEPM 2013 requirements.

3.7.1. Sample Handling, Storage and Transportation

During fieldworks, samples were placed in an ice-filled esky to keep the samples below at or below the recommended preservation temperature of approximately 6°C. Samples were kept in an ice-filled esky until delivered to the testing laboratory.

Samples, including QA samples, were transported to the laboratories with relevant Chain of Custody (COC) documentation. The COC form was completed with the sample names, sampling date and required analyses. The samples were sent in a sealed esky to the laboratory for analysis within the prescribed analyte holding times.

3.7.2. Equipment Decontamination

Reusable sampling equipment with the potential to cross contaminate samples was not used in the soil or groundwater sampling process. All groundwater equipment was dedicated for individual sampling points.

The interface probe used to dip each well was washed in diluted Decon-90 solution and thoroughly rinsed in potable water between each dipping of the wells.

3.7.3. Equipment Calibration

Monitoring equipment used to collect data (water quality meters and Interface probes) were calibrated and/or serviced at regular frequency in accordance with manufacturers recommendations. Calibration certificates are included in **Appendix E.**

3.7.4. Trip Blank and Trip Spike Samples

One laboratory-prepared soil and water trip blank and trip spike was taken into the field, transported and analysed together with samples collected within this project. The trip blank and spike samples were analysed for volatile contaminants (i.e. BTEX, TRH C6-C9 fraction). The results were assessed to be within the Data Quality Indicators in Table 3-6 below.

3.7.5. Field Duplicates Samples

For each matrix (soil and surface water) the following samples were collected and tested for each analyte to assess precision in field sampling techniques and laboratory methods. Duplicate soil and water samples were collected and analysed for contaminants of concern at the rate of 1 intralaboratory duplicate every 10 primary samples.

These results are shown in **Appendix D**.

3.7.6. Laboratory QA/QC

Laboratory QA/QC, including matrix spikes, laboratory method blanks and laboratory duplicates, were performed in accordance with the laboratory NATA accreditation and the requirements of the NEPM 1999.

3.7.7. Summary of Data Quality Indicators				
A summary of the data quality indicators (DQIs) adopted for this assessment are presented in Table 3-6 below.				

Table 3-6 Data Quality indicators

Data Quality Indicator	Field	Laboratory (see note 1)	Criteria for acceptance (see note 1)
Precision	Experienced and trained staff to carry out sampling. Sampling methodologies appropriate and complied with. Collection and analysis of field duplicate samples including: • Field intra-laboratory duplicate samples (1 in 10 samples).	Laboratory quality controls tested in order to meet or exceed NEPM requirements including: • Laboratory duplicates (1 in 10 samples) Standard and NATA accredited laboratory test methods carried out for each analyte.	Field and laboratory duplicates have relative percentage difference (RPD) control limit: Less than <50%, where result is greater than 5 times PQL. No limit where result is less than 5 times PQL.
Accuracy	Sampling methodologies appropriate and complied with. Decontamination procedures complied with. Transporting samples with laboratory prepared trip spikes and blanks.	Laboratory quality controls tested in order to meet or exceed NEPM requirements including: • Method blanks (1 per batch of 20) • Matrix spikes / matrix spike duplicates (1 per 20 samples) • Surrogate spikes (1 per sample) • Laboratory control spikes (1 per 20 samples) • Reagent blanks and reference materials (as required).	Non-detection within field and laboratory blanks. • Matrix Spikes or Laboratory control spikes: Recoveries between 70% to 130% (inorganics), or 60 to 140% (organics) • Surrogate spikes: Recoveries between 70% to 130% (inorganics), or 50 to 150% (organics)
Representativeness	Appropriate media and depth intervals sampled according to sampling and analysis plan.	All samples analysed according to sampling and analysis plan.	Trip spike recoveries between 60% and 110%. Trip blanks non-detect.
Sensitivity	Appropriate LORs selected for comparison to adopted assessment criteria and for decision making.	All samples analysed according to appropriate laboratory detection limits.	Limits of reporting (LORs) less than or equal to adopted assessment criteria

Data Quality Indicator	Field	Laboratory (see note 1)	Criteria for acceptance (see note 1)
Comparability	Experienced and trained staff to carry out sampling. Sampling methodologies appropriate and complied with. Sample methods consistent with applicable standards/guidance publications.	Standard and NATA accredited laboratory test methods carried out for each analyte. All samples analysed according to appropriate laboratory detection limits.	As per requirements of NEPM (2013)
Completeness	All critical locations/media sampled and all samples collected according to SAQP. Experienced and trained staff to carry out sampling. Sampling methodologies appropriate and complied with. Field documentation complete and checked.	All critical samples analysed and all analytes analysed according to SAQP. Standard and NATA accredited laboratory test methods carried out for each analyte. Laboratory documentation complete. Sample holding times complied with.	As per requirements of NEPM (2013)

4. Field Investigations

4.1. General

SMEC prepared a site-specific Safe Work Method Statement (SWMS) to manage and control the risks of SMEC workers and subcontractors within the investigation area.

All aspects of the field investigations were carried out under the supervision of experienced SMEC environmental scientists.

Field works took place on 5 and 6 March 2018 and 15 May 2018. Table 4-1 summarises the field investigations as part of this assessment of the water tower site.

Investigation locations are shown on **Figure 2**, **Appendix A**, while engineering logs of boreholes, test pits and monitoring wells are presented in **Appendix F**.

Table 4-1 Summary of field investigations

Date	Field investigation activities
Monday 5 th March 2018	 Site induction for plant operator and service locator Check all field equipment is working order Confirm scope of works with all personnel involved Establish communication protocols with the public Service location and agree on intrusive locations Field scientists 1: drilling and installation of two groundwater wells at the northern and southern boundaries the site with the aid of an auger mounted drill rig, and the development / commissioning of the groundwater wells for preparation of next day sampling. Field scientists 2: test pitting of four test pits. Soil samples were collected at varying depths within the testpits to target visually impacted fill and potentially clean natural soils (where encountered). Surface reinstatement was carried out to repair the site surface to a visual acceptable and safe standard.
Tuesday 6 th March 2018	 Tool box with personnel to confirm the day's tasks and to confirm if everybody is fit for work. Check all field equipment is working order and has been calibrated. Due to the wet weather, extra care was taken in establishing a working area that would not compromise the integrity of the samples. Field scientists 1: purge the groundwater wells to dry or 5 well volumes (3 well volumes is required) for that days sampling. Groundwater wells were purged and sampled with dedicated bailer. Groundwater samples were collected in laboratory prepared bottles and couriered to the laboratory for analysis. Samples were couriered to the laboratory for analysis. Field equipment was couriered to supplier.
Wednesday 15 May 2019	 Site induction for SMEC and Sydney Trains staff Confirm scope of works with all personnel involved Field scientist: manually excavate testpits to a maximum depth of 1m bgl at which point excavation method was changed to hand augering to reach a maximum depth of 2.0m bgl Soil samples were collected at varying depths within the testpits to target visually impacted fill and potentially clean natural soils (where encountered).

Date	Field investigation activities
	 Surface reinstatement was carried out to repair the site surface to a visual acceptable and safe standard.
	 Samples were analysed using a photoionization detector (PID) at the conclusion of works
	 Soil samples were delivered to NATA Accredited laboratory for scheduled analysis

4.2. Soil Observations

Preliminary Site Investigation (5-6 March 2018)

Soil test pit locations were selected in conjunction with the geotechnical site assessment.

TP01 and TP02 were located in the northern portion of the site to assess the potential former stockpile area evident in historic aerial photos. Both test pits were designed to locate any uncontrolled fill on the site. However, no ash fill or anthropogenic material was observed.

TP03 was located on the southern boundary of the site to the south of the unnamed access road / path. This was located to capture any potential migration of contaminants associated with the steam train turn table or ash pit.

TP04 was located for visual inspection only on the mid-eastern boundary within an area of potential cutting and/or filling activities, observed in the 1987 aerial photo. However, the material homogenous with what was encountered across the remainder of the site with no anthropogenic material or engineered fill observed, therefore no environmental sampling was conducted at this location.

It should be noted that test pitting was not conducted in the central area of the site due to the unknown heritage status and structural integrity of the water tower. At the time of this preliminary site investigation, the SOHI had not yet taken place. Therefore, the excavation of test pits within this vicinity posed an unacceptable safety risk and potential damage to heritage risk.

Although the turn table is considered an area of environmental concern, the designers have indicated there is the potential to use the turn table as part of the final design. There is the potential that the turn table could be considered a heritage item. As such, during this stage of the preliminary site investigation, a test pit in the turn table or the adjacent trench location was not advised.

Two groundwater boreholes were drilled at the northern and southern end of the site. No soil materials returned from the drill rig suggested contamination in the form of fill, ash or railway sleepers present in the ground.

Preliminary Site Investigation (5-6 March 2018)

HA1, HA3 and HA4 were located in the central area of the site to assess the former turntable area. These excavations were designed to assess the composition and quality of material used to backfill the turntable structure. Fill material observed from 0.0-0.6m comprised of interbedded layers of brown and white sand with rusted train rails, concrete blocks and some sporadic occurrences of ballast present throughout. Some coal ash staining was observed in HA1 and HA4 at a depth of 0.3m bgl. White sand fill material was observed from 0.6-1.65m bgl in HA1 before refusal on rock or potential concrete base of turntables structure, and from 0.6-2.0m bgl in HA4. This underlying white sand material appears to be comprised of the same material as the residual alluvial sediments underlying the remainder of the site. No anthropogenic material was observed within this underlying material.

HA5 was located in the central area of the site to both confirm the location of the former ash pit, and assess the composition and quality of material used for backfill. Coal ash staining and sporadic

occurrences of coal and ballast were observed from 0.0-0.2m bgl in brown sand fill material, 0.2-0.5m bgl and 0.6-0.8m bgl and grey sand fill material. White residual alluvial sand was observed from 0.8m to the excavation termination depth of 1.5m bgl. No anthropogenic material or evidence of staining was observed in the alluvial material.

Roughly in the centre of the excavation, a large 0.6m wide x 0.4m deep concrete and brick structure was observed running in the approximate alignment of the former ash pit wall. At the southern edge of the test pit, the structure was observed running 90° east towards the rail corridor.

TP6 was excavated in the central area of the site to assess the former coal stage area. The excavation was designed to assess the composition and quality of material that was located directly underneath the elevated former coal stage. Coal ash and coal fragments were observed in near surface brown sand fill material from 0.0-0.1m bgl. White residual alluvial sand was observed from 0.1-1.0m bgl. No anthropogenic material or evidence of staining was observed in the alluvial material.

TP7 and TP8 were excavated in the northeastern area of the site to assess the composition and quality of material underlying the former rail corridor. Sporadic occurrences of ballast were observed near surface brown sandy fill material from 0.0-0.2m bgl in TP7, and in dark brown silty sand fill material in TP8. Pale brown clayey sand material containing ballast and coal fragments was observed from 0.1-0.4m bgl in TP8. White residual alluvial sand was observed from 0.2-1.0m bgl and 0.4-1.0m bgl in TP7 and TP8 respectively. No anthropogenic material or evidence of staining was observed in the alluvial material.

An inspection of the inside of the water tower noted anthropogenic litter spread across a bare soil surface including: spray cans, plastic bags, melted plastic, glass bottles, rusted metal and paper.

No groundwater was encountered in excavations carried out during the site investigation.

Photographs of excavations are provided in **Appendix C.**

4.3. Groundwater Observations

Groundwater wells GW01 and GW06 were installed at the northern and southern boundaries of the site respectively. Given the low-lying nature of the site and the inferred groundwater flow direction flowing generally to the north and south from the central portion of the site, the following locations were chosen:

- GW01 northern boundary: Determine quality of the groundwater flowing off site having originated from hydraulically up gradient areas near the water tower. Groundwater at this location is expected to flow towards natural swamp lands
- GW06 southern boundary: Determine quality of the groundwater flowing off site having originated from hydraulically up gradient areas of the turn table and anecdotal ash pit.
 Groundwater at this location is expected to flow south and then east under the railway.

Groundwater monitoring wells were purged and sampled on 6 March 2018.

The nearest weather station recording rainfall (Cape Byron, Station ID 60801) recorded 0.4 mm on 5 March, while 53 mm fell on 6 March with much that falling in the early hours of the morning. This volume is considered to have had a high impact on groundwater levels with increased rates of infiltration through highly pervious alluvial sands. It is also expected to have an influence on groundwater quality as a result of increased dilution. A summary of groundwater wells is outlined in Table 4-2 below.

Table 4-2 Groundwater observations and climate data

Well Id	Groundwater Observations			
	Gauged Depth of monitoring well (m bgl)	Gauged Depth to standing water level (m)	Gauged depth of water (m)	Volume of water present (L)
GW01	2.4	1.57 m btoc, or 0.97 m bgl	0.83	1.63
GW06	2.5	0.1 m bgl	2.4	4.8

A summary of groundwater field parameters in provided in Table 4-3 below.

Table 4-3: Summary of groundwater field parameters

Well Id	O ₂ (ppm)	Electrical Conductivity (μS)	рН	Redox (mV)	Turbidity (NTU)	Temperatur e (°C)
GW01	2.03	216.3	4.20	-12	12.2	21.3
GW06	2.57	328	4.89	215	12.2	23.1

4.4. Well Installations

Groundwater well installations were completed on 5 March 2018 and carried out as follows:

- Pre-screened and slotted PVC pipe (50 mm diameter) were installed through residual alluvial sands into the underlying groundwater
- The 1.5 m length of slotted screens were installed 1-1.2 m into the groundwater with the remainder of the well consisting of unslotted PVC pipe
- Due to the unconsolidated nature of the alluvial sands, pre-screened wells were chosen as
 the mesh wrapping the slotted PVC reduces the potential for sediment to build up and block
 the PVC well. This aids in the groundwater recover process and does not jeopardise the
 quality of water sampled
- The residual alluvial sands readily collapsed around the base of the well, while a combination
 of cuttings from the well and screening sand was used as back fill material for upper
 screened portion and lower casing to approximately 0.5 m bgl
- A bentonite plug seal was installed above the filter media following by cement to the ground surface
- At GW01, approximately 600 mm PVC blank stickup was installed due to the unconsolidated nature of surface material at the site and for the ease of future location due to the thick regrowth of vegetation that is expected to occur around the well
- At GW06, a lockable monument cover was installed at the ground surface level with a concrete based and surrounds
- Following installation, the wells were developed using a dedicated plastic bailer:
 - Each well was developed by removing 5 well volumes of water
 - It should be noted minimal free sediment was encountered and removed from each well.

5. Results

Laboratory analytical certificates are provided in **Appendix G** and summarised as follows:

5.1. Soil Analytical Results

The results of laboratory analytical testing are summarised in **Appendix D** with exceedances shown on **Figure 4**, **Appendix A**:

- **Table D1, Appendix D** includes Soil Analytical results. Where exceedance of adopted Health and Ecological assessment criteria are highlighted within the table
- **Table D2, Appendix D** includes Soil Analytical Waste Classification results. Where exceedances of specific Waste Disposal Criteria are highlighted within the table
- **Table D3, Appendix D** includes relative percentage difference (RPD) of field and laboratory blind duplicate and triplicate samples and trip spike / trip blank results.

Laboratory soil analytical results are summarised below:

- No asbestos was detected in any sample analysed
- Sample concentration of benzo(a)pyrene TEQ calc(PQL) and Benzo(a)pyrene in TP6/0.0-0.1 exceeded HIL C criteria and General Solid Waste (CT1) respectively
- Sample concentration of arsenic exceeded General Solid Waste (CT1) criteria in TP8/0.2-0/4
- Sample concentration of mercury exceeded General Solid Waste (CT1) criteria in TP5/0.2-0.4 and TP8/0.2-0.4
- Sample concentration of **nickel** exceeded Restricted Solid Waste (CT2) criteria in TP8/0.2-0.4 and General Solid Waste (CT1) criteria in TP6/0.0-0.1 and TP7/0.0-0.2
- Sample concentration of **lead** was above the General Solid Waste (CT1) in TP1 at 0-0.2 m bgl
- Remaining soil samples reported concentrations of heavy metals and PAH below the adopted assessment criteria in all samples analysed
- Soil sample concentrations of OCP, OPP, PCB, TRH, BTEX and phenol were either below the laboratory limit of reporting (LOR) or below the adopted site assessment criteria.

5.2. Groundwater Analytical Results

The results of laboratory analytical testing are summarised in **Appendix D**, with exceedances shown on **Figure 4**, **Appendix A**:

- Table D4, Appendix D includes Groundwater Analytical results. Where exceedance of adopted ANZECC and ARMCANZ (2000) assessment criteria are highlighted within the table
- **Table D5, Appendix D** includes relative percentage difference (RPD) of field and laboratory blind duplicate and triplicate samples and trip spike / trip blank results.

Laboratory groundwater analytical results are summarised below:

- Concentrations of **dissolved zinc** were above the criteria of 15 μ g/L in both samples analysed (51 μ g/L in GW01 and 24 μ g/L in GW06)
- Concentrations of **dissolved copper** were above the criteria of 1.3 μ g/L in both samples analysed (2 g/L in both GW01 and GW06)
- Although no groundwater thresholds are determined within the NEPM (2013) for Total Recoverable Hydrocarbons, it should be noted that detectable levels of low-fraction TRH $>C_{10}-C_{16}$, and mid-fraction TRH $>C_{16}-C_{34}$ were reported.

5.3. Data Validation Assessment

A data validation assessment was carried out with respect to the adopted Quality Assurance and Quality Control plan and Data Quality Indicators (DQIs) outlined in Section 3.7.

All soil analytes within laboratory duplicate samples were reported below 50% RPD.

All groundwater analytes within laboratory duplicate samples were reported below 50% RPD, except for dissolved lead (67% RPD), however, both the parent sample and duplicate sample were reported at <5 times the laboratory PQL and are therefore considered acceptable.

5.3.1. Field QA/QC

Soil RPDs for field soil duplicates are presented in **Table D3, Appendix D**. Two intra-laboratory duplicate sample was analysed. Groundwater RPDs for field groundwater duplicates are presented in **Table D5, Appendix D**. One intra-laboratory duplicate sample was analysed.

SMEC consider a sufficient overall number of duplicates were analysed for contaminants of concern within the project.

5.3.2. Laboratory QA/QC

Laboratory reported comments are identified below.

Envirolab Report 186714

- Dissolved Metals: The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through 0.45 μm filter at the lab.
 Note: there is a possibility some elements may be underestimated.
- Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according
 to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire
 sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 186714-1 to 11 were sub-sampled from jars provided by the client.

Envirolab Report 217583

- Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis
 according to Envirolab procedures. We cannot guarantee that these sub-samples are
 indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own
 container. Note: Samples requested for asbestos testing were sub-sampled from jars
 provided by the client.
- Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 217583-19 for Ni. Therefore, a triplicate result has been issued as laboratory sample number 217583-25.

6. Contamination Assessment

6.1. Asbestos Contamination

No ACM products were readily visible on the surface or within any of the test pit or hand auger excavations carried out during the site investigations on 5-6 March 2018 and 15 May 2019. This does however does not preclude the potential for ACM to be present within fill material located in other areas of the site. No ACM was observed during the concurrent Geotechnical Investigation (SMEC 2018) carried out at the site.

No asbestos was detected in any soil sample analysed by the laboratory. No asbestos fragments were observed during field works, however due to dense grass and vegetation cover, the entire ground surface of the site was not thoroughly inspected.

Asbestos contamination risks

We note that a full assessment in accordance with WA DoH (2010) guidelines was not carried out to quantify the degree, extent and nature of potential asbestos contamination. This assessment was carried out to determine the presence of asbestos and to assess the requirements for additional investigations.

6.2. Soil Contamination

Upon review of the laboratory data, SMEC considers the following:

Organic contamination risks

Benzo(a)pyrene TEQ calc (PQL) concentration (3.6mg/kg) above HIL C Recreational criteria (3mg/kg) was reported at one isolated location in surficial soils TP6 at 0.0-0.1m (not at depth). The exceedance is likely attributed to the presence of coal ash and/or fragments of coal in near surface material in the vicinity of the former coal stage.

It's understood that surficial material in the vicinity of TP6 (former coal stage area) is likely going to be removed from site as spoil for offsite disposal The CSM for the Proposal site indicates that there will be limited access to soils, further reducing the risk of exposure. During construction activities, this area would be defined in a Construction Environmental Management Plan (CEMP) with suitable management measures applied to limit worker's exposure to material potentially impacted by benzo(a)pyrene. Additionally, although the more conservative HIL C for Recreational land use has been adopted for this PSI, the future land use of the site would be considered commercial/industrial and HIL D 'Commercial/Industrial' criteria would be adopted, and as such, Benzo(a)pyrene TEQ calc(PQL) in TP6/0.0-0.1 would not exceed HIL D (40mg/kg).

TRH concentrations (160 mg/kg) marginally above laboratory EQLs (100 mg/kg) were reported in TP03 at 1.6-1.7 m bgl. A comparison of the laboratory supplied chromatogram and TRH reference library showed that the sample chromatogram did not match any common synthetic/industrial petroleum based product and is likely the product of organic processes within the natural estuarine alluvial sands and not anthropogenic sources.

Heavy metals contamination risks

Metal concentrations were reported below the site adopted HILs. However, given site soils were not assessed against EILs in terms of potential terrestrial ecological receptors, SMEC recommends the use of imported fill as the growing medium in proposed future planting/landscape areas.

Concentration of **nickel** in TP8 at 0.2-0.4m bgl exceeded the NSW EPA maximum value of specific contaminant concentration (SCC) for classification for restricted solid waste (CT2) criteria without toxicity characterisation leachate procedure (TCLP). Further TCLP testing of the sample should be

carried out in accordance with the NSW EPA Waste Classification Guidelines prior to construction activates commencing.

6.3. Groundwater

Upon review of the laboratory data, SMEC considers the following:

Heavy metals contamination risks

Elevated heavy metal concentrations of dissolved zinc and minor exceedances of dissolved copper and dissolved lead reported above site adopted GILs. These exceedances are considered typical of groundwater in urban environments. In addition to this provided groundwater is not abstracted for irrigation or drinking water purpose on site then SMEC considers the risk to be low to sensitive receptors and that no further groundwater investigation is warranted at the site.

Organic contamination risks

Elevated TRH concentrations above laboratory EQLs were reported in GW01. A comparison of the laboratory supplied chromatogram and TRH reference library showed that the sample chromatogram did not match any common synthetic/industrial petroleum based product and is likely the product of organic processes within the natural estuarine alluvial sands. As outlined above provided groundwater is not abstracted for irrigation or drinking water purpose on site then SMEC considers the risk to be low to sensitive receptors and that no further groundwater investigation is warranted at the site for TRH.

7. Conclusions and Recommendations

SMEC concludes the following:

Based on the results of the desktop assessment, preliminary site investigations targeting potential sources of contamination and soil laboratory analytical results, SMEC considers the site is or can reasonably be made suitable for its intended land use as a bus interchange depot in accordance with Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (1998) subject to the implementation of an appropriate waste classification program and unexpected finds protocol during construction.

SMEC recommend that construction activities be managed via a Construction Environmental Management Plan (CEMP) be developed prior to the commencement of site construction activities.

The purpose of the CEMP will be to provide a structured approach to the management of environmental impacts during the construction activities.

Implementing this CEMP effectively will ensure any contractors or suppliers to the project meet regulatory and policy requirements in a systematic manner and continually improve environmental performance.

The CEMP should include but not be limited to:

- Outlining development details and civil earthworks program
- Detailing statutory and legislative requirements
- Defining performance objectives
- Detailing health and safety requirements, including a full risk assessment identifying controls for asbestos management, and an unexpected finds protocol.
- Detailing Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE) requirements
- Identifying roles and responsibilities
- Specifying training and competency requirements
- Summarising monitoring and reporting requirements
- A procedure for observation of visual and/or olfactory signs of contamination
- Planning appropriate mitigation and management measures e.g. dust and odours, water and noise management, air quality, stockpiling controls, and waste management.

As and when required, environmental monitoring procedures may be considered such as visual/olfactory observations (i.e. visual staining or odours from petroleum hydrocarbons) and/or vapour monitoring within worker breathing zone using photo-ionisation detector at suitable frequency.

It should be noted that if excavated material is proposed to be taken offsite for disposal to a licensed landfill facility, soil will require sampling and testing for waste classification prior to disposal in accordance with the NSW EPA Waste Classification Guidelines (November 2014). If contamination is observed/detected, it is also recommended that the underlying soils are assessed through validation sampling.

Based on the results of the PSI and groundwater laboratory analytical results and the CSM, SMEC also considers that no remedial action is required with regard to groundwater contamination. Current designs indicate that excavations requiring dewatering are not required, as such SMEC recommend that any construction activities be managed via a CEMP. As and when required, environmental monitoring of groundwater may be required if it is proposed to utilise groundwater on site for drinking water or irrigation purposes and to confirm it is suitable for its proposed beneficial use.

8. References

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Appendix A Figures

Figure 1 - Site	Locality	/ Plan
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Figure 2 - Investigation area

Figure 3A – Historical Aerial Photo – 1947

Figure 3B - Historical Aerial Photo - 1965

Figure 3C – Historical Aerial Photo – 1971

Figure 3D – Historical Aerial Photo – 1973

Figure 3E – Historical Aerial Photo – 1979

Figure 3F – Historical Aerial Photo – 1987

Figure 3G – Historical Aerial Photo – 1997

Figure 3H – Historical Aerial Photo – 2012

Figure 3H – Historical Aerial Photo – 2019

Figure 4 – Location of contamination investigations and AECs

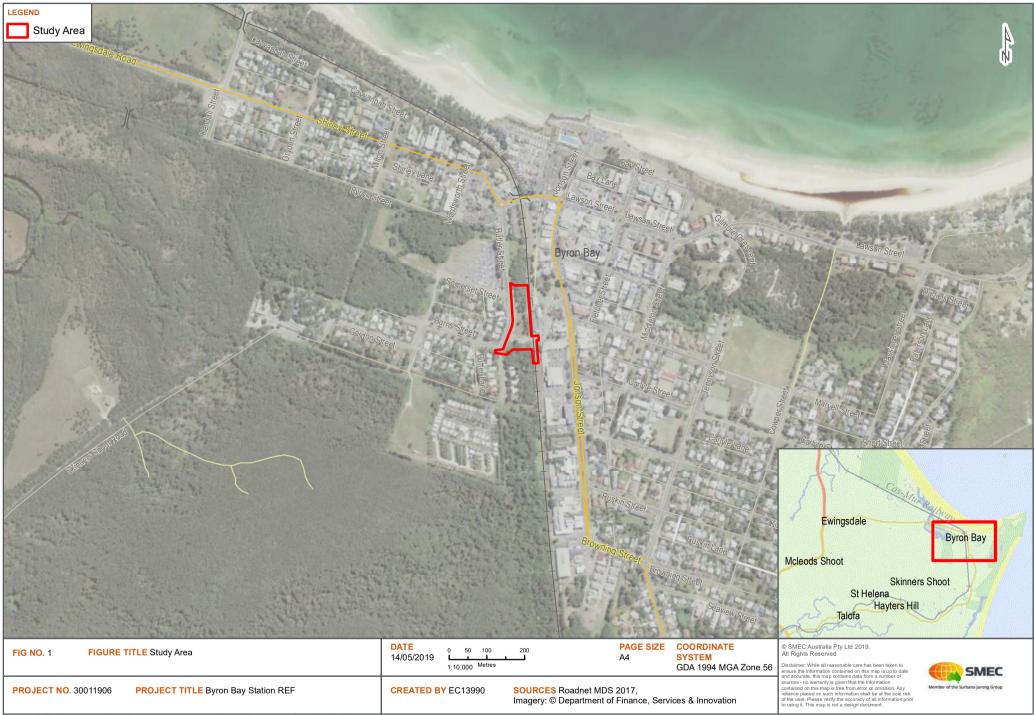






Figure Appendix 3A Approved DC 16/04/2018 Date Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Project No': 30011906

Aerial Photograph 1947



Figure Appendix 3B

Approved DC

Date 16/04/2018

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



SMEC AUSTRALIA PTY LTD A.C.N. 065 475 149 Aerial Photograph 1965



Figure	Appendix 3C
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Aerial Photograph 1971



Figure	Appendix 3D
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Aerial Photograph 1973



Figure	Appendix 3E	•
Approved	DC	
Date	16/04/2018	,
Scale	N/A	

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Aerial Photograph 1979



Figure	Appendix 3F
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Aerial Photograph 1987



Figure	Appendix 3G
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



Aerial Photograph 1997



Figure	Appendix 3F
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



SMEC AUSTRALIA PTY LTD A.C.N. 065 475 149 Aerial Photograph 2012

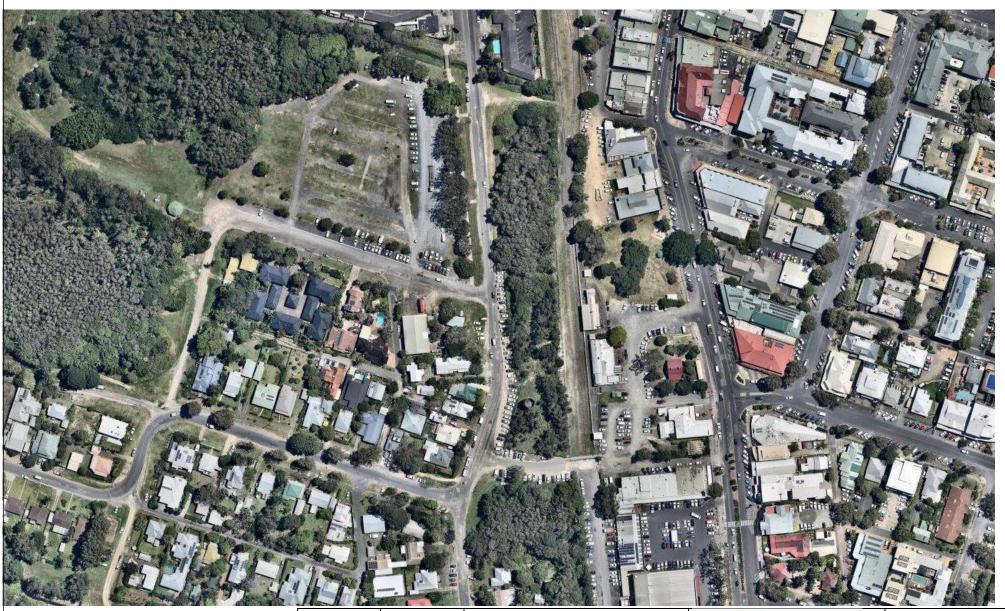


Figure	Appendix 3I
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



SMEC AUSTRALIA PTY LTD A.C.N. 065 475 149 Aerial Photograph 2019



Appendix B	Desktop Information



Your environment

Reporting and incidents

Licensing and regulation

Working together

About us

Contaminated land

+ Management of contaminated land

+ Consultants and site auditor scheme

+ Underground petroleum storage systems

Guidelines under the CLM Act

NEPM amendment

+ Further guidance

- Record of notices

About the record

Search the record

Search tips

Disclaimer

List of NSW contaminated sites notified to EPA

Frequently asked questions

Forms

+ Other contamination issues

+ Contaminated Land Management Program Home Contaminated land Record of notices

Search results

Your search for: LGA: Byron Shire Council

Matched 8 notices relating to 6 sites.

		S	earch Again	Refine Search
Suburb	Address	Site Name	Notices related to	
			this site	
BANGALOW	Ashton STREET	Dip 4057 Bangalow Saleyards	1 current	
BYRON BAY	Corner Beachcomber Drive and	Dip 4207 Byron Bay	1 current	
	Cooper STREET			
FEDERAL	3-6 Federal DRIVE	Federal General Store	2 former	
MAIN ARM	Upper Main Arm ROAD	Dip 5393 Tooland	1 current	
MULLUMBIMBY	Left Bank ROAD	Dip 4944 Mooyabil	1 former	
SUFFOLK PARK	Cnr Broken Head Road & Beech	Suffolk Park dip site	2 former	
	DRIVE			

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Matched 3 notices relating to 2 sites.

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Notices related to

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Address Site Name Notices related to this site

YRON BAY Butler STREET Butler Street Reserve Byron Bay 2 current

YRON BAY Corner Beachcomber Drive and Cooper STREET

Dip 4207 Byron Bay 1 current

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returned 7 results

Export to ex	cel	1 of 1 Pages			Search Again
Number	<u>Name</u>	<u>Location</u>	<u>Туре</u>	<u>Status</u>	<u>Issued date</u>
<u>2548</u>	BYRON BAY GOLF CLUB LTD	BROKEN HEAD ROAD, BYRON BAY, NSW 2481	POEO licence	Surrendere	ed26 Apr 2000
<u>1589</u>	BYRON SHIRE COUNCIL	BROKEN HEAD ROAD, BYRON BAY, NSW 2481	POEO licence	Surrendere	ed16 Jun 2000
<u>3404</u>	BYRON SHIRE COUNCIL	BAYSHORE DRIVE, BYRON BAY NSW 2481	, POEO licence	Issued	06 Jul 2000
<u>20731</u>	BYRON SHIRE COUNCIL	8-12 Bayshore Drive, BYRON BAY, NSW 2481	POEO licence	Surrendere	ed07 Jul 2016
<u>3546</u>	HANSON CONSTRUCTION MATERIAL PTY LTD	SLOT 41 BANKSIA DRIVE, BYRON BAY, NSW 2481	POEO licence	No longer force	in 12 Jan 2001
<u>1869</u>	HOLCIM (AUSTRALIA) PTY LTD	BYRON BAY ROAD, BYRON BAY NSW 2481	, POEO licence	No longer force	in 15 Mar 2000
<u>3605</u>	MANGA SINGH & SONS PTY. LIMITED) 178 MIDGEN FLAT ROAD, BYRON BAY, NSW 2481	POEO licence	Surrendere	ed24 Nov 2000

16 May 2019

Environment Protection Authority

Notice to Amend Preliminary Investigation Order

(Section 44 of the Contaminated Land Management Act 1997)

General Manager Byron Shire Council PO Box 219 MULLUMBIMBY NSW 2482

Notice Number: 20194406, Area Number: 3437

Background

The land to which this notice applies has been the subject of a Preliminary Investigation Order No. <u>20181009</u> (the Order) issued by the Environment Protection Authority (EPA) on 1 November 2018.

Land to which this notice applies

Description	Address
Butler Street Reserve Byron Bay	Butler Street Reserve, Butler Street, Byron Bay, NSW (being Lot 389 DP728537, Lot 390 DP728538 and Lot 391 DP728539)

Amendment

Due to limited availability of drillers to undertake the intrusive works, and with key personnel on leave when the final report is due, Byron Shire Council anticipate delays to the investigation required by the Order.

Byron Shire Council have submitted a revised timeframe for undertaking the investigation works and have incorporated a contingency to allow appropriate review time. Byron Shire Council required a further 5 weeks to comply with Action 5B) of the Order. The expected completion date is **31 May 2019**.

The EPA are satisfied with the revised timeline, expected completion date and with the reasons stated for requiring the extension.

An amendment to the Order has been approved and Byron Shire Council are required to perform all actions as stated in Action 5B) of the Order by no later than **31 May 2019**.

Action 5B) of the Order is replaced by:

- B. By no later than **31 May 2019** complete all works required under the Sampling Analysis, and Quality Plan, and provide a report to the EPA detailing the findings of the investigations:
 - i. The report must include a summary of all historical and current results for the site, a discussion of the findings, a conceptual site model and an assessment of the risks to both onsite and offsite receptors; and

ii. The report must be prepared, or reviewed and approved, by a contaminated land consultant certified by an EPA-recognised scheme (refer to note section for detail).

[Signed]

ROB HOGAN Manager Contaminated Land Regulation Environment Protection Authority

Date: 18 February 2019

NOTE:

Information recorded by the EPA

Section 58 of the CLM Act requires the EPA to maintain a public record. A copy of this notice will be included in the public record.

Information provided to councils

Section 59 of the CLM Act requires the EPA to provide a copy of this notice to the relevant local council. The council may then make appropriate consequential modifications to the planning certificate issued in relation to the land to which this notice applies pursuant to s.10.7(2) of the *Environmental Planning and Assessment Act* 1979. However, Council should record the existence of this notice for any enquirers to ensure transparency. The EPA will notify council as soon as practicable when the notice is no longer in force.

Relationship to other regulatory instrument

This notice does not affect the provisions of any relevant environmental planning instruments which apply to the land or provisions of any other environmental protection legislation administered by the EPA.

Previous regulatory instrument

As of 1 July 2009, all current declarations of investigation area and declarations of remediation site are taken to be declarations of significantly contaminated land, all current investigation orders and remediation orders are taken to be management orders and all current agreed voluntary investigation proposals and agreed voluntary remediation proposals are taken to be approved voluntary management proposals.

Note: On 18th February 2019, the Environment Protection Authority issued notice No. 20194406 to amend this order.

Environment Protection Authority

Preliminary investigation order

(Section 10 of the Contaminated Land Management Act 1997)

Service: Email

General Manager Byron Shire Council PO Box 219 MULLUMBIMBY NSW 2482

Order Number 20181009, Area Number: 3437

The Environment Protection Authority ("EPA") issues this preliminary investigation order ("the Order") for the following land under section 10 of the Contaminated Land Management Act 1997 ("the Act"):

1. Specified Land to which this order applies

- A. The specified land to which this Order applies is Butler Street Reserve, Butler Street, Byron Bay (being Lot 389 DP728537, Lot 390 DP728538 and Lot 391 DP728539) located within Byron Local Government Area.
- B. A map of the specified land is attached to this Order.

2. Background

- A. The site is the Butler Street Reserve located at Butler Street (corner of Butler and Somerset Streets), Byron Bay, NSW. The Butler Street Reserve is owned by the State of NSW (Crown Lands), however Byron Shire Council is the corporate manager of the Byron Bay Reserve Trust (R88993) and is responsible for the maintenance and management of the land.
- B. In late 1959, Byron Shire Council applied to the District Surveyor Lands Board Office to use Section 24 (now the Butler Street Reserve) as a non-putrescible rubbish depot. At the time, the site was natural swamp land and permanently inundated with water. It was thought that by using the land as a rubbish depot, it would eventually be reclaimed.
- C. In late 1960, Byron Shire Council was appointed Trustee of the Byron Bay Rubbish Depot located on Section 24 (now the Butler Street Reserve).
- D. During the 1960's and 1970's, the site was used as a rubbish depot for disposal of non-putrescible waste, however the type and extent of the waste was not well known or documented.
- E. The Byron Bay Rubbish Depot appeared to be in operation until 1976, when due to reaching capacity it was approved for use as a public reserve R88993.
- F. In 1977, Byron Shire Council gained approval and commenced using Section 23 (natural swamp land to the west of the Butler Street Reserve) and part of Wordsworth Street (street immediately west of Butler Street Reserve) as an extension of the Byron Bay Rubbish Depot.

- G. In 1978, Byron Shire Council documents confirmed that Lots 1-6, Section 34 of Marvel Street (now Somerset Street) had been declared Unhealthy Building Land under Section 55 of the *Public Health Act 1902*. The declaration was due to low lying lands. The presence of rubbish across the land was identified as an additional issue.
- H. In 1979, Byron Shire Council documents confirmed that rubbish had been removed from Lots 1-6, Section 34 Marvel Street (now Somerset Street) and replaced with clean fill material. The Unhealthy Building Land notation for these properties was revoked by Council.
- I. In 1985, Byron Shire Council documents indicated that the rubbish depot (including Section 23 and the partly closed Wordsworth Street) would need to be reworked to allow additional rubbish to be added above the existing levels, as a result of limited disposal options.
- J. In 2001, Byron Shire Council documents indicated that reserve R90874 (including Section 23 and the partly closed Wordsworth Street) would be added to public reserve R88993 (Butler Street Reserve) for public recreation.
- K. In 2017, Sydney Trains on behalf of Transport NSW had planned to develop the Byron Bay Transport Interchange. The preferred site was the Butler Street Reserve, Butler Street (corner of Somerset and Butler Streets) Byron Bay.
- L. In July 2017, Sydney Trains on behalf of Transport NSW commissioned due diligence investigations for the site. Due diligence included a geotechnical investigation for design considerations and subsequently a contamination and groundwater investigation after identifying anthropogenic wastes onsite related to historical landfilling activities.
 - i. The Butler Street Reserve was not considered a suitable location for the largescale excavation and construction activities, associated with the proposed Byron Bay Transport Interchange development.
- M. In February 2018, Sydney Trains on behalf of Transport NSW informed Crown Lands as owners of the Butler Street Reserve, that the site was contaminated due to uncontrolled landfilling activities and to consider notifying the site under s60 of the CLM Act.
- N. In February 2018, Crown Lands notified the EPA of contamination at the Butler Street Reserve Byron Bay and provided the following information:
 - i. SMEC (2017) Detailed Site Investigation, Byron Bay Transport Interchange. Prepared for Sydney Trains. Reference No: 30011906-DSI-R0. SMEC Australia Pty Limited. Dated 07 December 2017.
 - ii. SMEC (2018a) Geotechnical Investigation Report, Byron Bay Interchange. Prepared for: Sydney Trains. Reference No: 30011906-GT-R-0001. SMEC Australia Pty Limited. Dated 09 January 2018.
 - iii. SMEC (2018b) Additional Groundwater Assessment, Byron Bay Transport Interchange at Somerset and Butler Street, Byron Bay, NSW. Prepared for Sydney Trains. SMEC Australia Pty Limited. Dated 08 February 2018.
 - iv. NSW Transport Sydney Trains (2018) Letter Proposed Byron Bay Transport Interchange Butler Street Reserve (Lot 389 DP728537, Lot 390 DP728538, Lot 391 DP728539). Letter from NSW Transport Sydney Trains to NSW Industry Crown Lands and Water Division. Dated 20 February 2018.
- O. Byron Shire Council commissioned an independent review of the Butler Street Reserve Byron Bay, and provided the following report:

- i. TFA (2018a) Independent Environmental Review of Detailed Site Investigation (Contamination) Report Byron Bay Transport Interchange. Tim Fitzroy and Associates. Dated 13 March 2018.
- P. As a result of the independent review, Byron Shire Council commissioned additional works to address missing information and data gaps and provided the following report:
 - i. TFA (2018b) Final Draft Site Investigation Stage 2, Butler Street Reserve, Lot 389 DP728537 and Lot 393 DP728539, Byron Bay. Tim Fitzroy and Associates. Dated 03 August 2018.
- Q. Further assessment of the contamination at the specified land is warranted given the following:
 - i. Elevated landfill gases including methane, carbon dioxide and 100% lower explosive limit were reported in the south eastern (and to a lesser degree the south western) corners of the site, with the potential to impact a series of underground services and properties on the southern side of Somerset Street.
 - ii. Shallow groundwater has been impacted by selected metals and has the potential to reach a number of active domestic groundwater bores located in close proximity to the site (e.g. both upgradient and down gradient of the site).
 - iii. Anthropogenic wastes (including asbestos containing materials) have been identified at the site and were found in close proximity to the surface at selected locations.
 - iv. Whilst there is limited documentation indicating that non-putrescible waste was removed from the properties on the southern side of Somerset Street, there is a lack of physical evidence confirming this and no description of the backfill material used.

3. Specified Substances to which this Order relates

- A. Based on historical activities and investigations conducted at the specified land and as outlined in this Order, the EPA reasonably suspects that the specified land is contaminated with the following substances ("the specified substances"):
 - i. Identified contaminants including but not limited to:
 - 1) Methane
 - 2) Carbon Dioxide
 - 3) Metals

4. Power to serve a Preliminary Investigation Order

- A. Under section 10(1) of the Act, the EPA may serve a preliminary investigation order to direct a person to:
 - i. investigate whether the specified land is contaminated with the substances specified in the Order (the *specified substances*) being the substances that the EPA reasonably suspects contaminate the specified land; and
 - ii. investigate the nature and extent of any such contamination; and
 - iii. provide to the EPA such information with respect to the investigation as it may require.
- B. Under the Act, the EPA may serve a preliminary investigation order on one or more of the persons listed under section 10(3) of the Act.

- C. This Order is served on Byron Shire Council as the person responsible for the contamination, pursuant to section 10(3)(a) of the Act.
- D. The purpose of this Order is to:
 - i. Delineate the nature and extent of the contamination on the specified land by the substances specified in this Order; and
 - ii. Investigate whether the contamination originating at the specified land has impacted adjacent underground services, nearby properties and local groundwater quality; and
 - iii. Document the findings of those investigations.

5. Action required by this Order

By this Order the EPA directs Byron Shire Council to do the following:

- A. By no later than **30 November 2018** prepare and submit to the EPA a Sampling, Analysis and Quality Plan which outlines the proposed investigations to delineate the nature and extent of contamination on the specified land by the specified substances and determine whether offsite migration has occurred:
 - i. The plan must include sampling and analysis of soils, groundwater, landfill gases and drainage water for potential contaminants of concern; and
 - ii. The plan must be prepared, or reviewed and approved, by a contaminated land consultant certified by an EPA-recognised scheme (refer to note section for detail).
- B. By no later than **30 April 2019** complete all works required under the Sampling, Analysis and Quality Plan, and provide a report to the EPA detailing the findings of the investigations:
 - i. The report must include a summary of all historical and current results for the site, a discussion of the findings, a conceptual site model and an assessment of the risks to both onsite and offsite receptors; and
 - ii. The report must be prepared, or reviewed and approved, by a contaminated land consultant certified by an EPA-recognised scheme (refer to note section for detail).
- C. All directions, works and reporting required by this Order must be carried out consistently with all relevant guidelines made or approved under section 105 of the Act.

 See https://www.epa.nsw.gov.au/your-environment/contaminated-land/statutory-guidelines for further guidance.

6. Provision of documents and correspondence

All documents required to be provided to the EPA under this Order and correspondence with the EPA in relation to this Order may be provided or sent by:

(a) post to: Manager Regulation, CLM Section

NSW EPA, PO Box A290, Sydney South, NSW, 1232

or

(b) email to: <u>contaminated.sites@epa.nsw.gov.au</u>

[Signed]

ROB HOGAN Manager Contaminated Land Regulation Environment Protection Authority

Dated: 1 November 2018

NOTE:

Declaration of significantly contaminated land/Management order may follow

If the preliminary investigation of the specified land or part of the specified land identifies land contamination, the EPA may declare the land to be significantly contaminated land under s. 11 of the Act if it believes that the land contamination is significant enough to warrant regulation as per s. 12 of the Act and may issue a management order under s.14 of the Act.

Amendment/Repeal

This Order may be varied by subsequent notices. It remains in force until it is otherwise amended or repealed. The subsequent order must state the reasons for the amendment or repeal (s.44 of the Act).

Information recorded by the EPA

Section 58 of the CLM Act requires the EPA to maintain a public record. A copy of this Order will be included in the public record.

Information provided to councils

The EPA will notify the relevant local council of the existence of the Order. There is no legal obligation to note on its planning certificate issued pursuant to s.10.7 of the *Environmental Planning and Assessment Act 1979* that the land is currently subject to a preliminary investigation order. However, Council should record the existence of this order for any enquirers to ensure transparency. The EPA will notify council as soon as practicable when the Order is no longer in force.

Relationship to other regulatory instrument

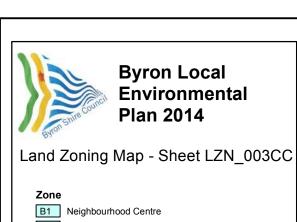
This Order does not affect the provisions of any relevant environmental planning instruments which apply to the land or provisions of any other environmental protection legislation administered by the EPA.

Refusal of entry onto land

In accordance with s. 32 of the Act, this Order does not confer any power to enter land, remain on land or do anything on land, without the permission of the occupier of the land. However if the occupier withholds or withdraws that permission, the EPA may revoke or suspend the order and instead issue an order to the occupier.

Provision of reports to comply with requirements of this Order

Any report submitted to the EPA to comply with this Order must be prepared, or reviewed and approved, by a practitioner certified by an EPA-recognised scheme. Evidence of certification under a recognised scheme must be affixed to the front cover of the report. A list of contaminated land consultant certification schemes recognised by the EPA is available on the EPA's website at http://www.epa.nsw.gov.au/your-environment/contaminated-land/managing-contaminated-land/managing-consultant



B2 Local Centre

B4 Mixed Use

B7 Business Park

E1 National Parks and Nature Reserves

IN1 General Industrial

IN2 Light Industrial

R2 Low Density Residential

R3 Medium Density Residential

R5 Large Lot Residential

RE1 Public Recreation

RE2 Private Recreation

RU1 Primary Production

RU2 Rural Landscape

RU5 Village

SP2 Infrastructure

SP3 Tourist

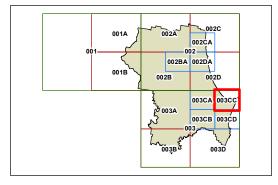
W1 Natural Waterways

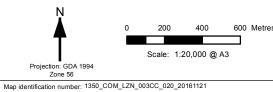
W2 Recreational Waterways

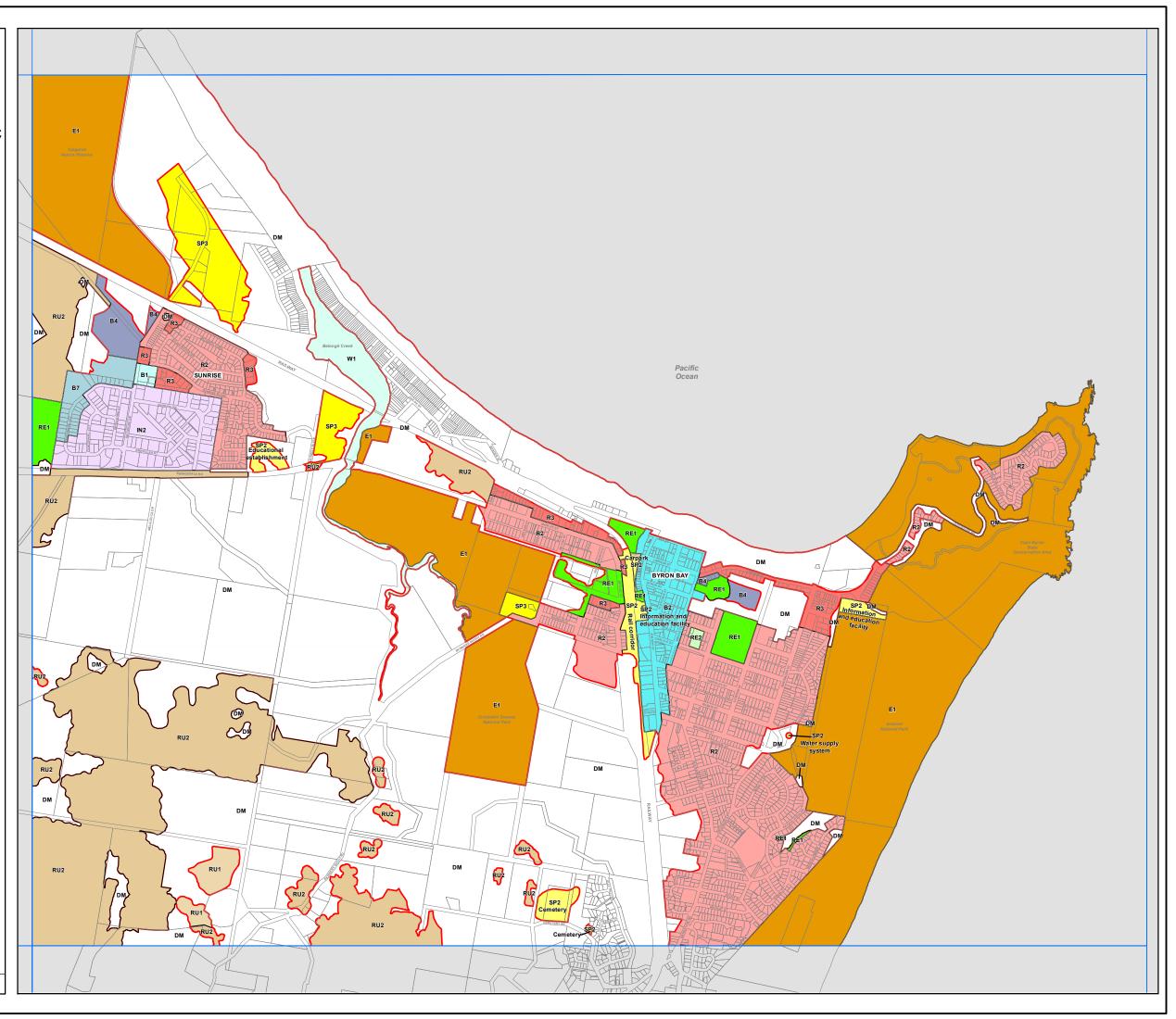
DM Deferred Matter

Cadastre

Base data 01/07/1991 © Land and Property Information (LPI)
Addendum data 26/09/2016 © Byron Shire Council









Certificate No: 20180239

Date: 02/03/2018

Receipt No: 12299

Your Reference: 30011906.400.412

SMEC Australia Pty Ltd By email: amy.ward@smec.com

PLANNING CERTIFICATE PURSUANT TO SECTION 149(2) & 149(5) ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Property: Lawson Street BYRON BAY 2481

Description: LOT: 4729 DP: 1228104

Parish: Byron County: Rous Parcel No: 268546

- 1. Names of relevant planning instruments and DCPs
 - (1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

Byron Local Environmental Plan 1988

Byron Local Environmental Plan 2014

State Environmental Planning Policies – refer to Annexure 1

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

Draft State Environmental Planning Policies – refer to Annexure 1

Draft Coastal Management SEPP 2016 (whole of lot).

Planning Proposals – refer to Annexure 2.

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

Byron Shire Development Control Plan (DCP) 2010 applies to the part of the land to which Byron LEP 1988 applies.

Byron Shire Development Control Plan (DCP) 2014 applies to the part of the land to which Byron LEP 2014 applies.



2. Zoning and land use under relevant LEPs

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described):

- (a) the identity of the zone
- (b) the purpose for which the instrument provides that development may be carried out within the zone without the need for development consent,
- (c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent,
- (d) the purposes for which the instrument provides that development is prohibited within the zone.
- (e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions fixed,
- (f) whether the land includes or comprises critical habitat,
- (g) whether the land is in a conservation area (however described),
- (h) whether an item of environmental heritage (however described) is situated on the land.

BYRON LOCAL ENVIRONMENTAL PLAN 1988

2(a) - (d) Land zoning & permissibility of development

ZONE No. 5(a)(SPECIAL USES ZONE)

1. Objectives of zone

The objectives of this zone is to designate land for certain community facilities and services including areas for off-street parking in private ownership.

2. Without development consent

Bushfire hazard reduction.

3. Only with development consent

Drainage; markets; roads; the particular purpose indicated by black lettering on the map, utility installations; any other public purpose. **ins Amd.65 11/12/98**

4. Prohibited

Any purpose other than a purpose specified in item 2 or 3.

ZONE No. 7(a)(WETLANDS ZONE)

1. Objectives of zone

The objectives are-

- (a) to identify all lands covered by State Environmental Planning Policy No. 14 Coastal Wetlands:
- (b) to identify and preserve estuaries and wetlands and allow them to continue to function as feeding and breeding areas for wildlife, shellfish and fish;

- (c) to prohibit development within the zone that is likely to have a detrimental effect on the habitat or landscape qualities or the flood mitigation function of the wetlands:
- (d) to enable development of public works and environmental facilities where such development would not have a significant detrimental effect on the habitat or landscape qualities of the wetland and other significant coastal habitat areas; and
- (e) to enable the careful control of noxious plants and weeds by means not likely to be significantly detrimental to the native ecosystem. **Om/ins Amd.90 22/3/02**

2. Without development consent

Nil. ins/om Amd.55 17/7/98

3. Only with development consent

Agriculture (other than animal establishments); building of levees, bushfire hazard reduction; clearing of land; environmental facilities; drains; home industries; oyster farming; primitive camping grounds; roads; utility installations. om Amd.70 17/3/00; om Amd.90 22/3/02

4. Prohibited

Any purpose other than a purpose specified in item 2 or 3.

ZONE No. 7(f2)(URBAN COASTAL LAND ZONE)

1. Objectives of zone

The objectives of the zone are-

- (a) to identify urban land likely to be influenced by coastal processes;
- (b) to permit urban development within the zone subject to the council having due consideration to the intensity of that development and the likelihood of such development being adversely affected by, or adversely affecting, coastal processes;
- (c) to permit urban development within the zone subject to the council having due consideration to-
 - (i) the need to relocate buildings in the long term;
 - (ii) the need for development consent to be limited to a particular period;
 - (iii) the form, bulk, intensity and nature of the development; and
 - (iv) continued safe public access to the site; and
- (d) to allow detailed provisions to be made, by means of a development control plan, to set aside specific areas within the zone for different land uses and intensities of development.

2. Without development consent

Bushfire hazard reduction. om Amd.55 17/7/98

3. Only with development consent

Any purpose other than a purpose specified in item 2 or 4.

4. Prohibited

Abattoirs; aerodromes; brothels; bulk stores; car repair stations; cemeteries and crematoriums; drive-in banks; drive-in take-away food shops; extractive industries; forestry; generating works (including solar generating works); heliports; industries (other than light industries); institutions; junk yards; liquid fuel depots; mines; motor showrooms; recreation vehicle areas; roadside stalls; rural tourist facilities; sawmills; service stations; stock and sale yards; warehouses; waste recycling centres. ins Amd.8 2/11/90; ins Amd.55 17/7/98; ins Amd.65 11/12/98; ins Amd.90 22/3/02; om Am.103 14/11/03

ZONE No. 9(a)(PROPOSED ROAD ZONE)

1. Objectives of zone

The objective of this zone is to set aside land (being land that the council or a Government instrumentality intends to acquire) for various proposed roads.

2. Without development consent

Bushfire hazard reduction.

3. Only with development consent

In the case of land to be acquired for the purpose of arterial roads - arterial roads.

In the case of land to be acquired for the purpose of road widening - drainage; roads; recreation areas; utility installations. **Om Amd.90 22/3/02**

4. Prohibited

Any purpose other than a purpose included in item 2 or 3.

All land within Byron Shire Council area is affected by a Tree Preservation Order adopted under clause 52 of Byron Local Environmental Plan 1988.

Regard must be had for other clauses in Byron Local Environmental Plan 1988, which may affect the purpose for which development may be carried out.

- 2(e) The dimensions of the land have no bearing as to whether or not a dwelling-house may be erected on the land. Further information in regard to whether a dwelling-house is permissible with the consent of council is contained in Section 149(5) of this certificate (if applied for).
- 2(f) The land does not include or comprise critical habitat
- 2(g) The land is not in a conservation area
- 2(h) An item of environmental heritage is not situated on the land

NOTE: An item of State Heritage listed under the Heritage Act 1977 (NSW) and in the State Heritage Inventory is situated on the land.

BYRON LOCAL ENVIRONMENTAL PLAN 2014

Zone SP2 Infrastructure

1 Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

2 Permitted without consent

Environmental protection works

3 Permitted with consent

Environmental facilities; Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4 Prohibited

Any development not specified in item 2 or 3 Regard must be had for other clauses in Byron Local Environmental Plan 2014, which may affect the purpose for which development may be carried out.

- 2(e) The dimensions of the land have no bearing as to whether or not a dwelling-house may be erected on the land.
- 2(f) The land does not include or comprise critical habitat
- 2(g) The land is in a heritage conservation area
- 2(h) An item of environmental heritage is situated on the land

NOTE: An item of State Heritage listed under the Heritage Act 1977 (NSW) and in the State Heritage Inventory is situated on the land.

2A. Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

Not applicable

3. Complying Development

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

Complying development under General Housing Code

Land subject to Byron LEP 1988

Complying development may not be carried out on any part of the land due to the zoning of the land.

Land subject to Byron LEP 2014

Complying development may not be carried out on any part of the land due to the zoning of the land.

Complying development under the Rural Housing Code

Land subject to Byron LEP 1988

Complying development may not be carried out on any part of the land due to the zoning of the land.

Land subject to Byron LEP 2014

Complying development may not be carried out on any part of the land due to the zoning of the land.

Complying development under the Commercial & Industrial (New/Additions) Code

Land subject to Byron LEP 1988

Complying development may not be carried out on any part of the land due to the zoning of the land.

Land subject to Byron LEP 2014

Complying development may not be carried out on any part of the land due to the zoning of the land.

Complying development under the Container Recycling Facilities Code

Land subject to Byron LEP 1988

Complying development may not be carried out on any part of the land due to the zoning of the land.

Land subject to Byron LEP 2014

Complying development may not be carried out on any part of the land due to the zoning of the land.

<u>Complying development under the General Development Code and Housing</u> Alterations Code

Land subject to Byron LEP 1988

- Complying development may be carried out on the part of the land that is not land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land that State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the

provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

And

- Complying development may be carried out on the part of the land that is not within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

Land subject to Byron LEP 2014

Complying development may be carried out on the part of the land that is not: land that comprises, or on which there is, an item listed on the State Heritage Register under the Heritage Act 1977; or, is not land subject to an interim heritage order under the Heritage Act 1977 because of the provisions of clause 1.17A(2) or 1.17A(3) of SEPP (Exempt & Complying Development Codes) 2008.

And

• Complying development may be carried out on the part of the land that is not land that comprises or contains a heritage item because of the provisions of clause 1.17A(4).

And

• Complying development may be carried out on the part of the land that is not land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.

And

- Complying development may be carried out on the part of the land that is not within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land that comprises, or on which there is, an item listed on the State Heritage Register under the Heritage Act 1977 or is land subject to an interim heritage order under the Heritage Act 1977 because of the provisions of clause 1.17A(1)(d) of SEPP (Exempt & Complying Development Codes) 2008.

And

 Complying development may not be carried out on the part of the land that comprises or contains a heritage item because of the provisions of clause 1.17A(1)(d) of SEPP (Exempt & Complying Development Codes) 2008.

And

• Complying development may not be carried out on the part of the land that State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

And

 Complying development may not be carried out on the part of the land within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

Complying development under the Commercial and Industrial Alterations Code, Subdivision Code, Demolition Code and Fire Safety Code

Land subject to Byron LEP 1988

- Complying development may be carried out on the part of the land that is not land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land that State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

And

- Complying development may be carried out on the part of the land that is not within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

Land subject to Byron LEP 2014

Complying development may be carried out on the part of the land that is not: land that comprises, or on which there is, an item listed on the State Heritage Register under the Heritage Act 1977; or, is not land subject to an interim heritage order under the Heritage Act 1977 because of the provisions of clause 1.17A(2) or 1.17A(3) of SEPP (Exempt & Complying Development Codes) 2008.

And

• Complying development may be carried out on the part of the land that is not land that comprises or contains a heritage item because of the provisions of clause 1.17A(4).

And

• Complying development may be carried out on the part of the land that is not land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.

And

- Complying development may be carried out on the part of the land that is not within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies.
- Complying development may not be carried out on the part of the land that comprises, or on which there is, an item listed on the State Heritage Register under the Heritage Act 1977 or is land subject to an interim heritage order under the Heritage Act 1977 because of the provisions of clause 1.17A(1)(d) of SEPP (Exempt & Complying Development Codes) 2008.

And

 Complying development may not be carried out on the part of the land that comprises or contains a heritage item because of the provisions of clause 1.17A(1)(d) of SEPP (Exempt & Complying Development Codes) 2008.

And

 Complying development may not be carried out on the part of the land that State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

And

 Complying development may not be carried out on the part of the land within 100m of land to which State Environmental Planning Policy No 14 - Coastal Wetlands applies because of the provisions of clause 1.17A(1)(e) of SEPP (Exempt & Complying Development Codes) 2008.

4. Coastal protection

Whether or not the land is affected by the operation of section 38 or 39 of the <u>Coastal Protection Act 1979</u>, but only to the extent that the council has been notified by the Department of Services, Technology and Administration.

The land is not affected.

4A. Certain information relating to beaches and coasts

(1) Whether an order has been made under Part 4D of the <u>Coastal Protection Act1979</u> in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

Such an order has not been made.

(2) (a) Whether the council has been notified under section 55X of the <u>Coastal</u> <u>Protection Act 1979</u> 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), and

Council has not been notified of such works.

(b) If works have been so placed – whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

Not applicable.

4B. Annual charges for coastal protection services under <u>Local Government Act 1993</u> for coastal protection services that relate to existing coastal protection works. Whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the <u>Local Government Act 1993</u> for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Council is not aware of such a consent.

5. Mine subsidence

whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

The land is not proclaimed to be a mine subsidence district.

- 6. Road widening and road realignment whether or not the land is affected by any road widening or road realignment under:
 - (a) Division 2 of Part 3 of the *Roads Act 1993*, or

Not affected

(b) any environmental planning instrument, or

Not affected

(c) any resolution of the council

- 7. Council and other public authority policies on hazard risk restrictions whether or not the land is affected by a policy:
 - (a) adopted by the council, or
 - (b) adopted by any other public authority and notified to the council for the express purpose of its 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, inundation, subsidence, acid sulphate soils or any other risk (other than flooding).
 - (a) The land is affected by a policy adopted by the council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soil and any other risk (other than flooding) known as:

Management of Contaminated Land Policy No 5.61.

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Acid Sulfate Soils - Class 2 - Refer to Byron Local Environmental Plan 1988. Acid Sulfate Soils - Class 2 - Refer to Byron Local Environmental Plan 2014.
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Acid Sulfate Soils - Class 3 - Refer to Byron Local Environmental Plan 1988. Acid Sulfate Soils - Class 3 - Refer to Byron Local Environmental Plan 2014.

Acid Sulfate Soils - Class 5 - Refer to Byron Local Environmental Plan 1988.

Coastal Erosion Precinct 2 - Refer to Byron Shire Development Control Plan 2010, Chapter 1, Part J - Coastal Erosion Lands.

Coastal erosion hazard area - Refer to Byron Shire Development Control Plan 2014

The land or part of the land is identified as bush fire prone land in Council's records.

(b) The land is not affected by a policy adopted by another public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soil and any other risk (other than flooding).

7A. Flood related development controls information

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

The land or part of the land is subject to flood related development controls.

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

The land or part of the land is subject to flood related development controls.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

BYRON LOCAL ENVIRONMENTAL PLAN 1988

No provision is made for acquisition of the land.

BYRON LOCAL ENVIRONMENTAL PLAN 2014

No provision is made for acquisition of the land.

PROPOSED ENVIRONMENTAL PLANNING INSTRUMENT

Not applicable.

9. Contributions plans

The name of each contributions plan applying to the land.

Applications lodged after 21 November, 2001 and prior to 1 January 2013 are subject to contributions levied in accordance with the Byron Shire Council Section 94 Development Contributions Plan 2005 (incorporating Amendment No 1) for community facilities, open space, roads, car parking, cycleways, civic and urban improvements, shire support facilities and administration. The Byron Shire Council Section 94 Development Contributions Plan 2005 (incorporating Amendment No 1) remains in force for the purposes of collection of contributions levied under its terms.

Applications lodged after 1 January 2013 are subject to contributions levied in accordance with the Byron Shire Developer Contributions Plan 2012 (Amendment No 2). The plan is split into two parts, Part A being the Byron Section 94 plan that applies to all residential development and Part B being the Byron Section 94A plan that applies to all non residential development.

9A. Biodiversity certified land

The land is not biodiversity certified land.

10. Biobanking agreements

Council is not aware of a biobanking agreement under Part 7A of the <u>Threatened Species</u> <u>Conservation Act 1995</u> relating to this land.

11. Bush fire prone land

The land or part of the land is identified as bush fire prone land in Council's records.

12. Property vegetation plans

A property vegetation plan under the Native Vegetation Act 2003 does not apply to the land.

13. Orders under <u>Trees (Disputes Between Neighbours) Act 2006</u>

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

An order under the Trees (Disputes Between Neighbours) Act 2006 has not been made.

14. Directions under Part 3A

No direction by the Minister pursuant to section 75P (2) (c1) of the *Environmental Planning & Assessment Act* is in force.

15. Site compatibility certificates and conditions for seniors housing

- (a) Council is not aware of any current site compatibility certificates (seniors housing) in respect of proposed development on the land.
- (b) No terms referred to in clause 18(2) of <u>State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004</u> have been imposed as conditions of consent to a development application for the land granted after 11 October 2007.

16. Site compatibility certificates for infrastructure

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

17. Site compatibility certificates and conditions for affordable rental housing

- (1) Council is not aware of any current site compatibility certificate (affordable rental housing) in respect of proposed development on the land.
- (2) No terms referred to in clause 17(1) or 37(1) of <u>State Environmental Planning Policy</u> (<u>Affordable Rental Housing</u>) 2009 have been imposed as conditions of consent to a development application in respect of the land.

18. Paper subdivision information

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
- (2) The date of any subdivision order that applies to the land.
- (1) Not applicable.
- (2) Not applicable.

19. Site verification certificates

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

NOTE: The following matters are prescribed by section 59 (2) of the <u>Contaminated Land Management Act 1997</u> as additional matters to be specified in a planning certificate:

- (a) that the land to which the certificate relates is significantly contaminated if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,
- (b) that the land to which the certificate relates is subject to a management order if it is subject to such an order at the date when the certificate is issued,
- (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal if it is the subject of such an approved proposal at the date when the certificate was issued,

- (d) that the land to which the certificate relates is subject to an ongoing maintenance order if it is subject to such an order at the date when the certificate is issued,
- (e) that the land to which the certificate relates is the subject of a site audit statement if a copy of such a statement has been provided at any time to the local authority issuing the certificate.
- (a) The land (or part of the land) is not significantly contaminated as at the date this certificate is issued.

Note: the answer given above only relates to "significantly contaminated" land as defined under the Contaminated Land Management Act 1997. If Council holds sufficient information about whether or not land is contaminated land (as defined under Part 7A of the Environmental Planning and Assessment Act 1979), this information will be given in the 149(5) certificate.

- (b) The land is not subject to a management order as at the date this certificate is issued.
- (c) The land is not the subject of an approved voluntary management proposal as at the date this certificate is issued.
- (d) The land is not subject to an ongoing maintenance order as at the date this certificate is issued.
- (e) The land is not the subject of a site audit statement as at the date this certificate is issued.

20. Loose-fill asbestos insulation

The land does not include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division.

In accordance with s149(5) of the Environmental Planning & Assessment Act 1979 as amended, Council provides the following additional advice on other relevant matters that it is aware.

1. a) Is a dwelling-house permitted to be erected on the land with the development consent of Council pursuant to Byron Local Environmental Plan 1988?

Yes, within the 7(f2) zone only.

<u>Note:</u> Other legislation including Part 4, Division 10 Existing Uses of the *Environmental Planning & Assessment Act 1979* and State Environmental Planning Policy (SEPP) Exempt and Complying Development Codes 2009 contain provisions that may allow a dwelling house to be erected on the land under certain circumstances. Please consult those provisions to determine if they apply to the land.

b) Is a dwelling-house permitted to be erected on land with the development consent of Council pursuant to Byron LEP 2014?

No

Note: Other legislation including Part 4, Division 10 Existing Uses of the *Environmental Planning & Assessment Act 1979* and State Environmental Planning Policy (SEPP) Exempt

and Complying Development Codes 2009 contain provisions that may allow a dwelling house to be erected on the land under certain circumstances. Please consult those provisions to determine if they apply to the land.

- 2. Council records do not have sufficient information about previous use of the land subject of this certificate to determine whether or not the land is contaminated as defined in Part 7A of the Environmental Planning & Assessment Act 1979. Restrictions imposed by State legislation and Council's Management of Contaminated Land Policy 5.61 will need to be considered in respect of any proposal to develop, remediate or rezone the land.
- 3. Burials on Private Land.

Not applicable.

Any advice provided pursuant to S149(5) of the Environmental Planning & Assessment Act, 1979 as amended, has been taken from Council's records, after a search thereof, but Council cannot accept responsibility for any omission or inaccuracy.

Any statement made or information given in this certificate does not relieve the property owner of obtaining Council's approval required under the Local Government Act 1993, the Environmental Planning & Assessment Act 1979 as amended, or any other Act.

Mark Arnold Acting General Manager

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Per

ANNEXURE 1

State Environmental Planning Policies and Draft State Environmental Planning Policies applicable to land within Byron Shire

SEPP NO.	TITLE	LAND AFFECTED
1	Development Standards	Only land to which Byron LEP 1988 applies.
14	Coastal Wetlands	Applies to the Shire- refer SEPP 14 maps. Except where SEPP No.26 applies
21	Caravan Parks	Applies to the State.
22	Shops and Commercial Premises	Applies to the State
26	Littoral Rainforests	Refer SEPP No.26 maps. See Clause 4(1)(b) of the policy
30	Intensive Agriculture	Applies to the Shire
32	Urban Consolidation (Redevelopment of Urban Land)	Urban Land
33	Hazardous and Offensive Development	Applies to the State.
36	Manufactured Home Estates	Applies to the Shire.
44	Koala Habitat Protection	Applies to the Shire.
50	Canal Estate Development	Applies to the Shire
55	Remediation of Land	Applies to the State
62	Sustainable Aquaculture	Applies to North Coast Region
64	Advertising and Signage	Applies to the State
65	Design Quality of Residential Flat Development	Applies to the State but only to developments of 3 storeys or more
65	Amendment to SEPP 65 Design Quality of Residential Flat Development	Applies to the State
71	Coastal Protection	Applies to the State
	State Environmental Planning Policy (Major Development) 2005	Applies to the State
	State Environmental Planning Policy (Building Sustainability Index: Basix) 2004	Applies to the State
	State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007	Applies to the State
	State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004	Applies to the State – See Clause 4 of the Policy
	State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007	Applies to the State
	State Environmental Planning Policy (Infrastructure) 2007	Applies to the State
	State Environmental Planning Policy (Rural Lands) 2008	Applies to the Shire
	State Environmental Planning Policy (Exempt and Complying Development Codes) 2008	Applies to the State
	State Environmental Planning Policy	Applies to the State
	(Affordable Rental Housing) 2009 State Environmental Planning Policy (State and Regional Powelsment) 2011	Applies to the State
	(State and Regional Development) 2011 State Environmental Planning Policy (Coastal Management) 2016	This Policy applies to land within the coastal zone as <u>defined</u> under the Coastal Management Act 2016
	State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017	Applies to non-rural lands of the State

DRAFT LOCAL ENVIRONMENTAL PLAN/S No/S PLACED ON EXHIBITION PURSUANT TO S.57(2) OF THE ACT

Amendment to Byron LEP 2014 - Planning Proposal to define and then require development consent for short term rental accommodation. It also establishes the circumstances in which short term rental accommodation would be exempt development. This planning proposal directly affects all land within zones where dwelling houses are permitted under Byron LEP 2014.

Amendment to Byron LEP 2014 - Planning Proposal in regards to Council owned land at the Tyagarah Airfield. The proposal will facilitate future inclusion of a heliport at the Airfield and allow subdivision of the subject land to: rectify lots that were previously created for lease purposes but not registered; formalise an existing internal roadway; and create additional lots to utilise operational Council land to ensure that the Airfield is economically sustainable.

Amendment to Byron LEP 2014 - Planning Proposal by Byron Shire Council to reclassify part of the public land within the Suffolk Beachfront Holiday Park, described as Part Lot 100 DP 1023737, Alcorn Street, Suffolk Park, from 'community land' to 'operational land' status under Part 2 of Chapter 6 of the *Local Government Act 1993*, and to discharge interests in the land. The purpose of the proposed reclassification is to enable Council to formalise leasing arrangements with long-term residents of the caravan park and to bring the existing caravan park operations into compliance with the provisions of the *Local Government Act 1993*. There is no intention by Council to sell any part of the land.

GW303498

Water Bearing Zones

Thickness WBZ Type

0.60 Unknown

(m)

3.80

To

(m)

3.20

From

(m)

Licence Status: Licence: Authorised Purpose(s): Intended Purpose(s): DOMESTIC Work Type: Bore Work Status: Construct.Method: Rotary Owner Type: Commenced Date: Final Depth: 3.80 m Completion Date: 06/02/2003 Drilled Depth: 3.80 m Contractor Name: (None) Driller: Brian William Mills Assistant Driller: Property: Standing Water Level (m): 3.000 GWMA: Salinity Description: GW Zone: Yield (L/s): 0.500 Site Details Site Chosen By: County Parish Cadastre Form A: ROUS BYRON LT 5 DP 844928 Licensed: Region: 30 - North Coast CMA Map: River Basin: - Unknown Grid Zone: Scale: Area/District Elevation: 0.00 m (A.H.D.) Northing: 6831642.000 Latitude: 28°38'27.4"S

Elev	vation S	Source: Unknow	n			Eas	ting: 5595	78.000	Longitude: 153°38'34.5"E	
	G	S Map: -				MGA Z	Zone: 58		Coordinate Source: Map Interpre	
Negati				mented; S	SL-Slot Le	ength; A-Ap	erture; GS-(Grain Size	; Q-Quantity; PL-Placement of Gravel Pack; PC-Press	ure
Hole	Pipe	Component	Type	From	To	Outside	Inside	Interval	D-t-il-	
				(m)	(m)	Diameter (mm)		interval	Details	
1		Hole	Hole	(m) 0.00	(m) 3.80	(mm)	Diameter		Rotary	
1	1		Hole Pvc Class 12		. ,	(mm) 97	Diameter			

SWL

(m)

DDL

(m)

3.00

Yield

(L/s)

3.30

Hole

(m)

0.50

Depth

Duration

(hr)

3.80 01:00:00

Salinity

(mg/L)

GW303643 Licence Status: Licence:

Authorised Purpose(s):

Final Depth: 4.00 m

Drilled Depth:

Yield (L/s):

County

Form A: ROUS

Licensed:

CMA Map:

Grid Zone:

Standing Water Level (m): Salinity Description:

Intended Purpose(s): DOMESTIC

Work Type: Bore

Work Status:

Construct.Method:

Owner Type:

Commenced Date: Completion Date: 01/01/1983

Contractor Name:

Driller Assistant Driller:

Property: GWMA:

GW Zone:

Site Details

Site Chosen By:

Region: 30 - North Coast River Basin: - Unknown Area/District:

GS Map: -

Elevation Source: Unknown

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

Northing: 6831206.000

Easting: 559574.000

MGA Zone: 58

*** End of GW303643 *** Warning to Clients: This raw data has been supplied to the NSW Office of Water by dirillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. I'refessional hydrogeological advice should be sought in interpreting and using this data.

Parish

BYRON

Coordinate Source: Map Interpre

Scale:

Latitude: 28°38'41.6"S

Longitude: 153°38'34.5"E

Cadastre

LT 14 DP 758207

Authorised Purpose(s):

GW304559

Licence Status: Licence:

Intended Purpose(s): DOMESTIC

Work Status: Construct Method: Jetted

Owner Type: Private

Commenced Date: Completion Date: 01/01/1958

Work Type: Spear

Contractor Name: Driller:

Assistant Driller:

Property: GWMÁ: GW Zone:

Site Details

Site Chosen By:

Region: 30 - North Coast

River Basin: 202 - BRUNSWICK RIVER

Elevation: 0.00 m (A.H.D.) Elevation Source: (Unknown) GS Map: -

Area/District

From

0.00

(m)

To

(m)

5.00

5.00

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

5.00 Unknown

Construction Cemented; S-Sump; CE-Centralisers Hole Pipe Component

Hole Hole 1 Casing Galvinised Steel

Water Bearing Zones From To Thickness WBZ Type (m) (m) (m)

5.00

0.00

County Form A: ROUS Licensed: CMA Map: Grid Zone:

Inside

(mm)

Diameter Diameter

0

43

Outside

(mm)

Northing: 6831554.000 Easting: 559434.000 MGA Zone: 58

S.W.L.

(m)

Final Depth: 5.00 m

Yield (L/s): 1.800

Drilled Depth:

Standing Water Level (m): 1.800

Salinity Description:

Jetted

D.D.L.

(m)

1.60

Interval Details

Parish

BYRON

Yield

(L/s)

1.80

Hole

(m)

Depth

Scale:

Coordinate Source: Map Interpre

Latitude: 28°38'30.3"S

Longitude: 153°38'29.2"E

(hr)

Duration

Cadastre

LT1 DP781457

Salinity

(mg/L)

GW305527

Licence: Licence Status:

> Authorised Purpose(s): Intended Purpose(s): DOMESTIC

Work Type: Spear

Work Status: New Bore

Construct Method:

Owner Type: Private

Commenced Date:

Final Depth: 7.00 m

Completion Date: 20/01/2008 Drilled Depth:

Contractor Name: (None)

Driller: Unknown Unknown Assistant Driller:

Property: GWMA: Standing Water Level (m):

Salinity Description: GW Zone: Yield (L/s):

Site Details

Site Chosen By:

Region: 30 - North Coast

River Basin: - Unknown Area/District

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

Elevation Source: Unknown

GS Map: -

MGA Zone: 58

Easting: 559454.000

Northing: 6831145.000

County

Form A: ROUS

Licensed:

CMA Map:

Grid Zone:

Parish

BYRON

Scale: Latitude: 28°38'43.5"S

Longitude: 153°38'30.0'E Coordinate Source: Map Interpre

Cadastre

B//370263

*** End of GW305527 ***

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Licence Status: Authorised Purpose(s):

Final Depth: 10.00 m

Drilled Depth: 10.00 m

Yield (L/s): 0.821

Standing Water Level (m):

Salinity Description:

County

Form A: ROUS

Northing: 6831072.000

Easting: 560115.000

Licensed:

CMA Map: Grid Zone:

MGA Zone: 56

Incide

(mm)

Unknown

Geological Material

Diameter Diameter (mm)

Interval Details

Hand Dug

Comments

Outside

Intended Purpose(s): DOMESTIC, RECREATION (GROUNDWATER)

Parich

BYRON

Cadactre

Scale:

Coordinate Source: Map Interpre

Latitude: 28"38'45.8"S

Longitude: 153°36'54.4"E

LOT 1 D P 867038

GW300932

Work Type: Bore

Licence:

Work Status: Construct.Method: Auger

Owner Type: Commenced Date:

Completion Date: 15/10/1997 Contractor Name: RAYMOND KINIGHT

Driller: Raymond Knight Assistant Driller:

Property: GWMA: GW Zone: Site Details

8lfe Chosen By:

River Basin: - Unknown Area/District: Elevation: 0.00 m (A.H.D.)

Elevation Source: Unknown G 8 Map: -

Construction

Drillers Loa

(m)

From To

Cemented; S-Sump; CE-Centralisers Hole Pipe Component

Region: 30 - North Coast

Thickness Drillers Description

Negative deoths indicate Above Ground Level: C-Cemented: SL-Slot Length: A-Aperture: GS-Grain Size: Q-Quantity: PL-Placement of Gravel Pack: PC-Pressure

From (m)

To

(m)

Work Summary GW301091 Licence: Licence Status:

Authorised Purpose(s): Intended Purpose(s): DOMESTIC Work Type: Spear Work Status: Construct.Method: Auger Owner Type: Commenced Date: Final Depth: 7.00 m Completion Date: 20/05/1995 Drilled Depth: 7.00 m Contractor Name: RAYMOND KINIGHT Driller: Raymond Knight Assistant Driller:

WaterNSW

Standing Water Level (m): Property: GWMA: Salinity Description: GW Zone: Yield (L/s): 0.210

Site Details

Site Chosen By:

GS Map: -

Cemented; S-Sump; CE-Centralisers Hole Pipe Component

Hole

Casing

Construction

Drillers Log

(m) (m)

0.00 7.00

From To

Region: 30 - North Coast

River Basin: - Unknown Area/District:

Type

Hole

Lining

Thickness Drillers Description

7.00 Sand

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

From

0.00

(m)

To

(m)

7.00

Northing: 6830946.000

MGA Zone: 58

Outside

(mm)

Diameter

100

Easting: 580116.000

Inside

(mm)

Sand

Diameter

Geological Material

County

Form A: ROUS

Licensed:

CMA Map:

Grid Zone:

Comments

Parish

BYRON

Latitude: 28°38'49.9"S Coordinate Source: Map Interpre

Scale:

Longitude: 153°38'54.5"E

Cadastre

LOT2 SEC43 DP758207

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Interval Details Hand Drilled

GW303447

Licence Status: Licence: Authorised Purpose(s): Intended Purpose(s): DEWATERING (GROUNDWATER) Work Type: Bore Work Status: Construct.Method: Owner Type: Commenced Date: Final Depth: Completion Date: Drilled Depth: 13.00 m Contractor Name: (None) Driller: Assistant Driller: Property: GWMA: Standing Water Level (m): Salinity Description: GW Zone: Yield (L/s): Site Details Site Chosen By: County Parish Cadastre Form A: ROUS LT A DP 343802 BYRON Licensed: Region: 30 - North Coast CMA Map: River Basin: - Unknown Grid Zone: Scale: Area/District: Elevation: 0.00 m (A.H.D.) Northing: 6831354.000 Latitude: 28°38'38.7"S Elevation Source: Unknown Easting: 580011.000 Longitude: 153°38'50.5"E MGA Zone: 58 GS Map: -Coordinate Source: Map Interpre Drillers Loa From To Thickness Drillers Description Comments Geological Material (m) (m) (m) 0.00 2.00 2.00 sand - light grey brown Sand 2.00 4.00 2.00 sand dark brown trace of silt Sand 8.00 4.00 4.00 sand dark brown some gravel sandy clay - grey Sand 12.00 4.00 silty sand - grey. gravelly sand - light grey. sandy Invalid Code clay- dark brown 12.00 13.00 1.00 clay- light grey. mudstone - light grey and brown Clay

Remarks

04/11/2002: Form A Remarks: excavation licensed for 6 months for dewatering - expires 15/4/2003

Work Summary Licence Status:

Authorised Purpose(s):

Intended Purpose(s): DOMESTIC

Final Depth:

Drilled Depth:

Standing Water Level (m):

Salinity Description:

Yield (L/s):

County

Form A: ROUS

Licensed:

CMA Map:

Grid Zone:

MGA Zone: 58

the End of CIMPORCES the

WaterNSW

GW303661

Work Type: Bore

Work Status:

Licence:

Construct.Method: Owner Type: Private

Commenced Date: Completion Date: 01/01/1913

Contractor Name: SELF DRILLED Driller: Assistant Driller:

Property: GWMA: GW Zone:

Site Details Site Chosen By:

Region: 30 - North Coast River Basin: - Unknown Area/District:

Elevation: 0.00 m (A.H.D.) Elevation Source: Unknown GS Map: -

Remarks

01/01/1913: Form A Remarks:

03/12/2009: Reviewed data - nothing to update.

THIS BORE WAS PLACED ON THIS PROPERTY BY MY LATE FATHER 80 - 90 YEARS AGO, INFORMATION REGARDING THIS BORE IS UNKNOWN TO ME.

Northing: 6831181.000

Easting: 559562.000

Longitude: 153°38'34.0'E Coordinate Source: Map Interpre

Scale:

Latitude: 28°38'42.4"S

Cadastre

LT 15 DP 758207

Parish

BYRON

GW303689

Licence: Licence Status: Authorised Purpose(s): Intended Purpose(s): DOMESTIC Work Type: Bore Work Status: Construct Method: Owner Type: Commenced Date: Final Depth: 3.10 m Completion Date: 01/06/1981 Drilled Depth: Contractor Name: SELF DRILLED Driller Assistant Driller: Property: Standing Water Level (m): 1.800 GWMÁ: Salinity Description: GW Zone: Yield (L/s): Parish Cadastre LT 6 DP 758207 Form A: ROUS BYRON Licensed: CMA Map: Region: 30 - North Coast River Basin: - Unknown Grid Zone: Scale: Area/District Elevation: 0.00 m (A.H.D.) Latitude: 28°38'38.3"S Northing: 6831305.000

Construction

Elevation Source: Unknown

GS Map: -

1 Casing

P.V.C.

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers Hole Pipe Component Outside Inside Interval Details From To

105

2.50

0.00

(m) (m) Diameter Diameter (mm) (mm) Hole Hole 0.00 3.10 105 Other

MGA Zone: 58

Easting: 559936.000

Longitude: 153°38'47.8"E

Coordinate Source: Map Interpre

Site Details	
Site Chosen By:	
	County

GW306401

0.40 1.50

1.10 Sand, grey to dark grye, fine to medium grained.

Moist, Wet at 0.6m. Groundwater odourous.

Licence Status: Licence: Authorised Purpose(s): Intended Purpose(s): MONITORING BORE Work Type: Bore Work Status: Equipped Construct.Method: Hand Auger Owner Type: Private Commenced Date: Final Depth: 1.50 m Completion Date: 20/12/2007 Drilled Depth: 1.50 m Contractor Name: (None) **Driller:** Craig Bede Pullman Assistant Driller: Shannon Simon Standing Water Level (m): 0.600 Property: GWMA: **Salinity Description:** GW Zone: Yield (L/sl: Site Details 8lte Chosen By: Cadastre County Parish Form A: ROUS BYRON 11/32/758207 Licensed: Region: 30 - North Coast CMA Map: 9640-45 River Basin: 202 - BRUNSWICK RIVER Grid Zone: Scale: Area/District: Elevation: 0.00 m (A.H.D.) Northing: 6831019.000 Latitude: 28°38'47.5°S Elevation Source: Unknown Easting: 560153,000 Longitude: 153"36"55.8"E G3 Map: -MGA Zone: 56 Coordinate Source: GPS - Global Construction Negative depths indicate Above Ground Level: C-Cemented: SL-Stot Length: A-Aperture: GS-Grain Stat. O-Quantity: PL-Placement of Gravel Pack: PC-Pressure Cemented: S-Sump: CE-Centralisers Hole Pipe Component Interval Details From To Outside incide Diameter Diameter (mn): (mn) (mm) (mm) Hole Hole: Hand Auger Bentonita Annulus 0.50 Waterworn/Rounded Casing - Hand Sawn Slot, FVC Class 12, Glued, SL. Siots - Diagonal 50.0mm, A: 2.00mm Drillers Log From To Thickness Drillers Description Geological Material Comments (m) (m) 0.00 0.40 Clayey Sand/Sandy Clay: dark brown, trace of roots. Clayey Sand low to medium plasticity, moist. Friable, High organics @ 0.3m.

Sand

Work Summary Licence Status:

WaterNSW

GW307658

Licence:

Authorised Purpose(s): Intended Purpose(s): MONITORING BORE Work Type: Bore Work Status: Equipped Construct.Method: Rotary Air Owner Type: Private Commenced Date: Final Depth: 9.00 m Completion Date: 14/03/2014 Drilled Depth: 9.00 m Contractor Name: AQUABORE DRILLING Driller: Harold John Hensen Assistant Driller: B Ferris Property: Standing Water Level (m): 4,500 GWMA: **8alinity Description:** GW Zone: Yield (L/s): 0.750 Site Details 8lfe Chosen By: County Parich Cadactre Form A: ROUS RYRON 50//844342 Licensed: CMA Map: 9640-48 Region: 30 - North Coast River Basin: 202 - BRUNSWICK RIVER Orld Zone: Snale: Area/District: Elevation: 0.00 m (A.H.D.) Northing: 6831518.000 Latitude: 28*38*31.4*S Elevation Source: Unknown Easting: 559702.000 Longitude: 153*36'39.1"E G 8 Map: -MGA Zone: 56 Coordinate Source: Unknown Construction Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers Hole Pipe Component From Τo Outside Inclde Interval Details (m) (m) Diameter Diameter

Water Bearing Zones Τo

(m)

Drillers Loa From To

(m)

(m) (m) (m)

Waterworn/Rounded Pvc Class 9 Pvc Class 9 Pvc Class 9

(m)

Screen - Gauze/Mesh

Thickness WBZ Type

Thickness Drillers Description

3.50 Unknown

(mm)

(mm)

8.W.L.

(m)

Geological Material

Rotary Air Rotary Ai Graded

D.D.L.

(m)

(L/c)

Comments

0 Stainless Steel 304, Glued, A: 1.00mm

Hole

(m)

Depth

(hr)

8allnity

(mg/L)

Appendix C	Site Photographs



Figure	Appendix 🛚	Title:
Approved	DC	Preliminary Site Investigation
Date	16/04/2018	Water Tower Site, Byron Bay
Scale	N/A	, , , , , , , , , , , , , , , , , , , ,



Site Photograph – Groundwater at TP01

Project No': 30011906



Figure	Appendix 🛚	
Approved	DC	
Date	16/04/2018	
Scale	N/A	

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

Site Photograph – Alluvial sand of TP02

Project No': 30011906



Figure	Appendix 🛭
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – Natural sand of TP03

Project No': 30011906

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



Figure	Appendix 🛚
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



A.C.N. 065 475 149

sands and waste dumped at TP02

Site Photograph – Alluvial

Project No': 30011906



Figure	Appendix 🛽
Approved	DC
Date	16/04/2018
Scale	N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – Layered natural alluvial sands consistent across the site

Project No': 30011906

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



Figure Appendix ☑

Approved DC

Date 16/04/2018

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – Re-worked natural sands at TP04

Project No': 30011906



Figure Appendix C Approved DC 15/05/2019 Date Scale N/A

Preliminary Site Investigation

Water Tower Site, Byron Bay



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Site Photograph – HA4, buried rails

Project No: 30011906



Figure Appendix C

Approved DC

Date 15/05/2019

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – HA5 Left: coal ash layers Right: ash pit wall

Project No: 30011906



Figure Appendix C

Approved DC

Date 15/05/2019

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



SMEC AUSTRALIA PTY LTD A.C.N. 065 475 149 Site Photograph – TP6 Left: coal ash layers Right: residual alluvium

Project No: 30011906



Figure	Appendix C	7
Approved	DC	ı
Date	15/05/2019	١
Scale	N/A	

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – TP7

Project No: 30011906



Figure Appendix C

Approved DC

Date 15/05/2019

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay

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

Site Photograph – TP8

Project No: 30011906



Figure Appendix C

Approved DC

Date 15/05/2019

Scale N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – Inside water tower

Project No: 30011906

ALISTRALIA PTY LTD Project No. 3001190



Figure	Appendix C
Approved	DC
Date	15/05/2019
Scale	N/A

Title:

Preliminary Site Investigation

Water Tower Site, Byron Bay



Site Photograph – HA3

Project No: 30011906

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

Appendix D Laboratory Summary Tables

Table E1 – Soil Analytical Results

Table E2 – Soil Waste Classification Results

Table E3 - Soil QA / QC Results

Table E4 – Groundwater Analytical Results

Table E5 – Groundwater QA / QC Results

Sommerset Street & Butler Street, Byron Bay

Sommerset Street & Butler Street, Byro Appendix D Table 1: Soil HIL & EIL Resu																						
Laboratory Report number Units PQL Project Number	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	186714 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906	NEPM (2013) Table 1A(1): Health	NEPM (2013) Table 1A(6): Health	Appendix A Table A1	Table 1B(6)	Table1 B(6)
Sample ID Date Sampled	TP1/0.0-0.2 05/03/2018	TP1/0.4-0.5 05/03/2018	TP1/1.0-1.1 05/03/2018	TP2/0.0-0.2 05/03/2018	TP2/0.4-0.5 05/03/2018	TP2/1.1-1.2	TP3/0.0-0.1	TP3/0.4-0.5	TP3/1.6-1.7 05/03/2018	TP3/2.4-2.5	HA4/0.3-0.4	HA5/0.0-0.2	HA5/0.2-0.4	HA5/0.6-0.8 15/05/2019	TP6/0.0-0.1	TP7/0.0-0.2	TP8/0.2-0.4	(HIL C) for soil	Screening Levels (HS C) direct soil contact		F1-F4, BTEX and BaP	for TRH fractions F1-
Type of sample	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	contaminants (mg/kg) HIL C: Includes dev		arks, playgrounds, playin	in Soil (mg/kg) g fields (e.g. ovals), see	F4 (mg/kg)
Date analysed	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018	00/03/2018	00/03/2018	00/03/2018	09/03/2018	09/03/2018	16/05/2010	16/05/2019	16/05/2010	16/05/2019	16/05/2019	16/05/2019	16/05/2010		not include undevelo	ped public open space where the contract of th	nere the potential for e	
Metals Arsenic mg/kg 4	17	<4	<4	12	<4	<4	<4	<4	<4	<4	<4	5.1	<4	<4	12	44	152	300		100		
Cadmium mg/kg 0.4 Chromium mg/kg 1	<0.4	<0.4 <1	<0.4	<0.4	<0.4	<0.4 <1	<0.4 <1	<0.4 <1	<0.4	<0.4 <1	<0.4	<0.4 2.5	<0.4	<0.4	<0.4 5.6	<0.4	<0.4 5.9	90 300		75-160		
Copper mg/kg 1 Lead mg/kg 1	23 100	<1 <1	<1 1	9 48	6 34	<1 <1	2 15	<1 <1	<1 <1	<1 <1	3.2 <0.1	14 0.3	7.0 <0.1	1.5 <0.1	12 <0.1	14.7 <0.1	42 <0.1	17000 600		1100		
Mercury mg/kg 0.1 Nickel mg/kg 1	<0.1 4	<0.1 <1	<0.1 <1	<0.1 4	<0.1 <1	<0.1 <1	<0.1 <1	<0.1 <1	<0.1 <1	<0.1 <1	1.1 8.6	6.9 69	7.3 6.7	<1 1.7	3.8 42	3.6 120	8.3 258	80 1200		30-560		
Zinc mg/kg 1 BTEX	49	9	6	36	26	<1	8	<1	<1	<1	5.4	23	20	<1	23	58	101	30000		25-500		
TRH C6 - C9 mg/kg 25 TRH C6 - C10 mg/kg 25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25	<25 <25		3800		100	700
vTPH C6 - C10 lessBTEX (F1) mg/kg 25 Benzene mg/kg 0.2 Toluene mg/kg 0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5	<25 <0.2 <0.5		18000		180 65 105	
Ethylbenzene mg/kg 1 m+p-xylene mg/kg 2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2	<1 <2		5300		125	
o-Xylene mg/kg 1 Total +ve Xylenes mg/kg 1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1		15000		45	
naphthalene mg/kg 1 Total Recoverable Hydrocarbons	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		1900	170		
TRH C10 - C14 mg/kg 50 TRH C15 - C28 mg/kg 100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 <100	<50 213	<50 <100	<50 <100					
TRH C29 - C36 mg/kg 100 TRH >C10-C16 mg/kg 50	<100 <50	<100 <50	<100 <50	<100 <50	<100 <50	<100 <50	<100 <50	<100 <50	160 <50	<100 <50	<100 <50	<100 <50	<100 <50	<100 <50	170 <50	<100 <50	<100 <50				400	4000
TRH >C10 - C16less Naphthalene (F2) mg/kg 50 TRH >C16-C34 mg/kg 100 TRH >C34-C40 mg/kg 100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 150 200	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 <100 <100	<50 322 100	<50 <100 <100	<50 <100 <100		5300 7400		120 1300 5600	1000 2500 10000
Total +ve TRH (>C10-C40) mg/kg 50 Polyaromatic Hydrocarbons	<50	<50	<50	<50	<50	<50	<50	<50	350	<50	<100	<100	<100	<100	420	<100	<100		7400		3800	10000
Naphthalene mg/kg 0.1 Acenaphthylene mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.1 <0.1	<0.1 <0.1	<0.1 <0.1			170		
Acenaphthene mg/kg 0.1 Fluorene mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 0.3	<0.1 <0.1	<0.1 <0.1					
Phenanthrene mg/kg 0.1 Anthracene mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.2 <0.1	<0.1 <0.1	<0.1 <0.1	3.8 0.6	0.1 <0.1	0.1 <0.1					
Fluoranthene mg/kg 0.1 Pyrene mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.2	<0.1 <0.1	<0.1 <0.1	7.5 6.4	0.3	0.3					
Benzo(a)anthracene mg/kg 0.1 Chrysene mg/kg 0.1 Benzo(b,j+k)fluoranthene mg/kg 0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	0.1 0.2 <0.2	<0.1 <0.1 <0.2	<0.1 <0.1 <0.2	2.9 3.5 5	0.2 0.2 0.3	0.1 0.2 0.3					
Benzo(a)pyrene mg/kg 0.05 Indeno(1,2,3-c,d)pyrene mg/kg 0.1	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	<0.05	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	<0.05 <0.1	0.08	<0.05	<0.05	2.6	0.2	0.2 <0.1				0.7	
Dibenzo(a,h)anthracene mg/kg 0.1 Benzo(g,h,i)perylene mg/kg 0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <0.1					
Benzo(a)pyrene TEQ calc (zero) mg/kg 0.5 Benzo(a)pyrene TEQ calc(half) mg/kg 0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	3.5 3.6	<0.5 <0.5	<0.5 <0.5					
Benzo(a)pyrene TEQ calc(PQL) mg/kg 0.5 Total +vePAH's mg/kg 0.05	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 0.2	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 <0.05	<0.5 1	<0.5 <0.05	<0.5 <0.05	3.6 35	<0.5 1.6	<0.5 1.6	3 300				
Organochlorine pesticides HCB mg/kg 0.1 alpha-BHC mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	10				
gamma-BHC mg/kg 0.1 beta-BHC mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1					
Heptachlor mg/kg 0.1 delta-BHC mg/kg 0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <0.1					
Aldrin mg/kg 0.1 Heptachlor Epoxide mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	10 10				
gamma-Chlordane mg/kg 0.1 alpha-chlordane mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	70 70				
Endosulfan I mg/kg 0.1 pp-DDE mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1 <0.1	340				
Dieldrin mg/kg 0.1 Endrin mg/kg 0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	10 20				
pp-DDD mg/kg 0.1 Endosulfan II mg/kg 0.1 pp-DDT mg/kg 0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1			180		
Endrin Aldehyde mg/kg 0.1 Endosulfan Sulphate mg/kg 0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1 <0.1			200		
Methoxychlor mg/kg 0.1 Total +ve DDT+DDD+DDE mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	400 400				
Organophosphate Pesticide Azinphos-methyl (Guthion) mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Bromophos-ethyl mg/kg 0.1 Chlorpyriphos-methyl mg/kg 0.1 Chlorpyriphos-methyl mg/kg 0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	250				
Chlorpyriphos-methyl mg/kg 0.1 Diazinon mg/kg 0.1 Dichlorvos mg/kg 0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1					
Dimethoate mg/kg 0.1 Ethion mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1					
Fenitrothion mg/kg 0.1 Malathion mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1					
Parathion mg/kg 0.1 Ronnel mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1					
Polychlorinated biphenyl Aroclor 1016 mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Aroclor 1221 mg/kg 0.1 Aroclor 1232 mg/kg 0.1 Aroclor 1242 mg/kg 0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1					
Aroclor 1242 mg/kg 0.1 Aroclor 1248 mg/kg 0.1 Aroclor 1254 mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1					
Aroclor 1260 mg/kg 0.1 Total +ve PCBs (1016-1260) mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	1				
Phenols Total Phenolics (as Phenol) mg/kg 5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	40000				
Asbestos ID g/kg 0.1	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	No detect	0.01								

Laboratory Report number Units PQL	186714 30011906	217583	217583 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906	217583 30011906		lues of specific	Maximum value	es for leachable conc concentration wh		fic contaminant									
Project Number Sample ID	TP1/0.0-0.2	TP1/0.4-0.5	TP1/1.0-1.1	TP20.0-0.2	TP2/0.4-0.5		TP3/0.0-0.1					HA5/0.0-0.2						classification	without TCLP	General so		Restricted :	solid waste
Date Sampled	05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018				05/03/2018	05/03/2018	15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019	General solid waste1	Restricted solid waste	Leachable concentration	Specific contaminant	Leachable concentration	Specific contamina
Type of sample Date analysed -	soil 09/03/2018	soil 16/05/2019	CT1 (mg/kg)	CT2 (mg/kg)	TCLP1 (mg/L)	concentration SCC1 (mg/kg)	TCLP2 (mg/L)	concentrati SCC2 (mg/l															
Metals	47	-4	-44	12	-4													100	400		500	20	2,000
Arsenic mg/kg 4 Cadmium mg/kg 0.4	17 <0.4	<4 <0.4	<4 <0.4	12 <0.4	<4 <0.4	5.1 <0.4	<4 <0.4	<4 <0.4	12 <0.4	44 <0.4	152 <0.4	20	80	5.0 ² 1.0 ²	100	4	400						
Chromium mg/kg 1 Copper mg/kg 1	6 23	<1 <1	2 <1	4 9	1 6	<1 <1	<1 2	<1 <1	<1 <1	<1 <1	<1 3.2	2.5 14	<1 7.0	<1 1.5	5.6 12	2.7 14.7	5.9 42	100	400	5 ²	1,900	20	7,600
Lead mg/kg 1 Mercury mg/kg 0.1	100 <0.1	<1 <0.1	1 <0.1	48 <0.1	34 <0.1	<1 <0.1	15 <0.1	<1 <0.1	<1 <0.1	<1 <0.1	<0.1 1.1	0.3 6.9	<0.1 7.3	<0.1 <1	<0.1 3.8	<0.1 3.6	<0.1 8.3	100	400 16	5 ² 0.2 ²	1,500 50	20 0.8	6,000 200
Nickel mg/kg 1	4	<1	<1	4	<1 26	<1	<1	<1	<1	<1	8.6 5.4	69	6.7	1.7	42	120 58	258 101	40	160	2 ¹⁰	1,050	8	4,200
Zinc mg/kg 1 BTEX	49	9	6	36	20	<1		<1	<1	<1													
TRH C6 - C9 mg/kg 25 TRH C6 - C10 mg/kg 25	<25 <25	650	2,600	N/A ¹²	650	N/A ¹²	2,600																
vTPH C6 - C10 lessBTEX (F1) mg/kg 25 Benzene mg/kg 0.2	<25 <0.2	10	40	0.5 ²	18	2	72																
Toluene mg/kg 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	288	1,152	14.414	518	57.6	2,073
Ethylbenzene mg/kg 1 m+p-xylene mg/kg 2	<1 <2	600	2,400	30 ¹⁰	1,080	120	4,320																
o-Xylene mg/kg 1 Total +ve Xylenes mg/kg 1	<1 <1	1,000	4,000	50 ¹⁸	1,800	200	7,200																
naphthalene mg/kg 1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-,,	,		-,		.,
Total Recoverable Hydrocarbons TRH C10 - C14 mg/kg 50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50						
TRH C15 - C28 mg/kg 100 TRH C29 - C36 mg/kg 100	<100 <100	<100 160	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	213 170	<100 <100	<100 <100													
TRH >C10-C16 mg/kg 50 TRH >C10 - C16less Naphthalene (F2) mg/kg 50	<50 <50																						
TRH >C16-C34 mg/kg 100	<100	<100	<100	<100	<100	<100	<100	<100	150	<100	<100	<100	<100	<100	322	<100	<100						
TRH >C34-C40 mg/kg 100 Total +ve TRH (>C10-C40) mg/kg 50	<100 <50	200 350	<100 <50	<100 <100	<100 <100	<100 <100	<100 <100	100 420	<100 <100	<100 <100	10,000	40,000	N/A ¹²	10,000	N/A ¹²	40,000							
Polyaromatic Hydrocarbons Naphthalene mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1						
Acenaphthylene mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1						
Acenaphthene mg/kg 0.1 Fluorene mg/kg 0.1	<0.1 <0.1	<0.1 0.3	<0.1 <0.1	<0.1 <0.1																			
Phenanthrene mg/kg 0.1 Anthracene mg/kg 0.1	<0.1 <0.1	0.2 <0.1	<0.1 <0.1	<0.1 <0.1	3.8 0.6	0.1 <0.1	0.1 <0.1																
Fluoranthene mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	7.5	0.3	0.3						
Pyrene mg/kg 0.1 Benzo(a)anthracene mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0.2	<0.1 <0.1	<0.1 <0.1	6.4 2.9	0.2	0.3 0.1						
Chrysene mg/kg 0.1 Benzo(b,j+k)fluoranthene mg/kg 0.2	<0.1 <0.2	0.2 <0.2	<0.1 <0.2	<0.1 <0.2	3.5 5	0.2 0.3	0.2 0.3																
Benzo(a)pyrene mg/kg 0.05 Indeno(1,2,3-c,d)pyrene mg/kg 0.1	<0.05 <0.1	0.08 <0.1	<0.05 <0.1	<0.05 <0.1	2.6 1.3	0.2 <0.1	0.2 <0.1	0.8	3.2	0.044	10	0.16	23										
Dibenzo(a,h)anthracene mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	<0.1	<0.1	<0.1						
Benzo(g,h,i)perylene mg/kg 0.1 Benzo(a)pyrene TEQ calc (zero) mg/kg 0.5	<0.1 <0.5	1.3 3.5	<0.1 <0.5	<0.1 <0.5																			
Benzo(a)pyrene TEQ calc(half) mg/kg 0.5 Benzo(a)pyrene TEQ calc(PQL) mg/kg 0.5	<0.5 <0.5	3.6 3.6	<0.5 <0.5	<0.5 <0.5																			
Total +vePAH's mg/kg 0.05 Organochlorine pesticides	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	<0.05	<0.05	<0.05	<0.05	1	<0.05	<0.05	35	1.6	1.6	200	800	N/A ¹²	200	N/A ¹²	800
HCB mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
alpha-BHC mg/kg 0.1 gamma-BHC mg/kg 0.1	<0.1 <0.1																						
beta-BHC mg/kg 0.1 Heptachlor mg/kg 0.1	<0.1 <0.1																						
delta-BHC mg/kg 0.1 Aldrin mg/kg 0.1	<0.1 <0.1	<0.1	<0.1 <0.1																				
Heptachlor Epoxide mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
gamma-Chlordane mg/kg 0.1 alpha-chlordane mg/kg 0.1	<0.1 <0.1																						
Endosulfan I mg/kg 0.1 pp-DDE mg/kg 0.1	<0.1 <0.1																						
Dieldrin mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1						
Endrin mg/kg 0.1 pp-DDD mg/kg 0.1	<0.1 <0.1																						
Endosulfan II mg/kg 0.1 pp-DDT mg/kg 0.1	<0.1 <0.1																						
Endrin Aldehyde mg/kg 0.1 Endosulfan Sulphate mg/kg 0.1	<0.1 <0.1																						
Methoxychlor mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
Total +ve DDT+DDD+DDE mg/kg 0.1 Organophosphate Pesticide	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
Azinphos-methyl (Guthion) mg/kg 0.1 Bromophos-ethyl mg/kg 0.1	<0.1 <0.1																						
Chlorpyriphos mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	<0.1	<0.1						
Chlorpyriphos-methyl mg/kg 0.1 Diazinon mg/kg 0.1	<0.1 <0.1																						
Dichlorvos mg/kg 0.1 Dimethoate mg/kg 0.1	<0.1 <0.1																						
Ethion mg/kg 0.1 Fenitrothion mg/kg 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1												
Malathion mg/kg 0.1	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	<0.1	< 0.1	<0.1	<0.1						
Parathion mg/kg 0.1 Ronnel mg/kg 0.1	<0.1 <0.1																						
Polychlorinated biphenyl Aroclor 1016 mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
Aroclor 1221 mg/kg 0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	<0.1	<0.1						
Aroclor 1232 mg/kg 0.1 Aroclor 1242 mg/kg 0.1	<0.1 <0.1																						
Aroclor 1248 mg/kg 0.1 Aroclor 1254 mg/kg 0.1	<0.1 <0.1																						
Aroclor 1260 mg/kg 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	< 0.1	<0.1	<0.1				. 60		
Total +ve PCBs (1016-1260) mg/kg 0.1 Phenols	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<50	<50	N/A ¹²	< 50	N/A ¹²	< 50
		<5	<5	<5	<5	<5	<5	<5	<5	<5													

Appendix D Table 3: Soil HIL & EIL Results				=:				1101/00				T=	I =	
				Field C	QA/QC		Fi	eld QA/QC		Tr	ip Spike	Trip Blank	Trip Spike	Trip Blank
Laboratory Report number	Units	PQL		186714			217583	217583	_		186714	186714	217583	217583
Project Number			30011906	30011906			30011906	30011906		30	0011906	30011906	30011906	30011906
Sample ID			TP1/0.0-0.2	QC1			HA5/0.6-0.8	QC1			TS	ТВ	TS	ТВ
Date Sampled			05/03/2018	05/03/2018			15/05/2019	15/05/2019	9		5/03	/2018	15/05	/2019
			.,		Blind Duplicat	e / Triplicate	11		Blind				.,	.,
Type of sample Date analysed	_		soil 09/03/2018	soil 09/03/2018	Average	RPD (%)	soil 16/05/2019	soil 16/05/2019	Duplicate 9		soil 09/03	soil 3/2018	soil 16/05	soil /2019
Metals			00,00,000	,,	Average	2 (/0)		-0,00,-00			00,00	-,	20,00	,
Arsenic	mg/kg	4	17	15	16	12.5	<4	<4	0.0 0.0					
Cadmium Chromium		0.4	<0.4 6	<0.4 6	<0.4 6	0 0	<0.4 <1	<0.4 <1	0.0 0.0 0.0 0.0					
Copper			23	14	18.5	48.6	1.5	1	1.3 36.9					
	mg/kg		100	90	95	10.5	<0.1	<0.1	0.0 0.0					
Mercury Nickel	mg/kg mg/kg		<0.1 4	<0.1 4	<0.1 4	0 0	<1 1.7	<1 2	0.0 0.0 1.9 15.4					
	mg/kg	1	49	41	45	17.8	<1	<1	0.0 0.0					
BTEX TRH C6 - C9	mg/kg	25	<25	<25	<25	0	<25	<25	0.0 0.0			<25		<25
TRH C6 - C10			<25	<25	<25	0	<25	<25	0.0 0.0			<25		<25
vTPH C6 - C10 lessBTEX (F1)			<25	<25	<25	0	<25	<25	0.0 0.0	100	004	<25	00%	<25
Benzene Toluene			<0.2 <0.5	<0.2 <0.5	<0.2 <0.5	0 0	<0.2 <0.5	<0.2 <0.5	0.0 0.0 0.0 0.0		0% 0%	<0.2 <0.5	99% 99%	<0.2 <0.5
Ethylbenzene	mg/kg	1	<1	<1	<1	0	<1	<1	0.0 0.0	979		<1	99%	<1
m+p-xylene o-Xylene		2 1	<2 <1	<2 <1	<2 <1	0 0	<2 <1	<2 <1	0.0 0.0 0.0 0.0	99 ⁹	% 0%	<2 <1	99% 99%	<2 <1
Total +ve Xylenes			<1	<1	<1	0	<1	<1	0.0 0.0		0 70	<1	3370	<1
naphthalene	mg/kg	1	<1	<1	<1	0	<1	<1	0.0 0.0	+		<1		<1
Total Recoverable Hydrocarbons TRH C10 - C14	mg/kg	50	<50	<50	<50	0	<50	<50	0.0 0.0	+				
TRH C15 - C28	mg/kg	100	<100	<100	<100	0	<100	<100	0.0 0.0					
TRH C29 - C36 TRH >C10-C16			<100 <50	<100 <50	<100 <50	0 0	<100 <50	<100 <50	0.0 0.0 0.0 0.0					
TRH >C10 - C16less Naphthalene (F2)	mg/kg	50	<50	<50	<50	0	<50	<50	0.0 0.0					
TRH >C16-C34			<100 <100	<100 <100	<100 <100	0 0	<100 <100	<100 <100	0.0 0.0 0.0 0.0					
TRH >C34-C40 Total +ve TRH (>C10-C40)			<100 <50	<100 <50	<100 <50	0	<100 <100	<100 <100	0.0 0.0 0.0 0.0					
Polyaromatic Hydrocarbons														
Naphthalene Acenaphthylene			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Acenaphthylene			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Fluorene			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Phenanthrene Anthracene			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Pyrene Benzo(a)anthracene	mg/kg mg/kg		<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Chrysene			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Benzo(b,j+k)fluoranthene			<0.2 <0.05	<0.2 <0.05	<0.2 <0.05	0 0	<0.2 <0.05	<0.2 <0.05	0.0 0.0 0.0 0.0					
Benzo(a)pyrene Indeno(1,2,3-c,d)pyrene			<0.05	<0.05	<0.05	0	<0.05	<0.05	0.0 0.0					
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.5	<0.5	0.0 0.0					
Benzo(g,h,i)perylene Benzo(a)pyrene TEQ calc (zero)			<0.1 <0.5	<0.1 <0.5	<0.1 <0.5	0 0	<0.5 <0.1	<0.5 <0.1	0.0 0.0 0.0 0.0					
Benzo(a)pyrene TEQ calc(half)			<0.5	<0.5	<0.5	0	<0.1	<0.1	0.0 0.0					
Benzo(a)pyrene TEQ calc(PQL) Organochlorine Pesticide	mg/kg	0.5	<0.5	<0.5	<0.5	0	<0.1	<0.1	0.0 0.0	-				
	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
alpha-BHC			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
gamma-BHC beta-BHC			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
delta-BHC Aldrin	mg/kg mg/kg		<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Heptachlor Epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
gamma-Chlordane			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
alpha-chlordane Endosulfan I			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
pp-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Dieldrin Endrin	mg/kg mg/kg		<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
pp-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Endosulfan II pp-DDT			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Endosulfan Sulphate			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Methoxychlor Total +ve DDT+DDD+DDE			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0	_ [
Organophosphate Pesticide										\blacksquare				
Azinphos-methyl (Guthion) Bromophos-ethyl			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Chlorpyriphos			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Chlorpyriphos-methyl			<0.1	<0.1	<0.1	0 0	<0.1	<0.1	0.0 0.0					
Diazinon Dichlorvos			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Dimethoate	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Ethion Fenitrothion	mg/kg mg/kg		<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Malathion	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Parathion Ronnel			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
polychlorinated biphenyl	6/ ^ B	J.1	,U.1	-V.1	~U.1		\U.1	~0.1	5.5 0.0	十				
Aroclor 1016			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0	\top				
Aroclor 1221 Aroclor 1232			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0 0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Aroclor 1242	mg/kg	0.1	<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0					
Aroclor 1248 Aroclor 1254	0, 0		<0.1	<0.1	<0.1	0 0	<0.1 <0.1	<0.1	0.0 0.0					
Aroclor 1254 Aroclor 1260			<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	0	<0.1 <0.1	<0.1 <0.1	0.0 0.0 0.0 0.0					
Total +ve PCBs (1016-1260)			<0.1	<0.1	<0.1	0	<0.1	<0.1	0.0 0.0	\bot				
Phenols Total Phenolics (as Phenol)	mø/ka	.5	<5	<5	<5	<5	<5	<5	0.0 0.0	+				
. otal i neliolica (as r lieliol)	ი/ ∿გ	,			~~	٠,٠	``	٠,٥	3.5 0.0					

Sommerset Street & Butler Street, Byron Bay Appendix D Table 4: Soil HIL & EIL Results

Appendix D Table 4: Soil HIL	& EIL K	esuits			.		
Laboratory Report number	Units	DOI.	Primary Sample 186714	s Field Duplicate 186714	Trip Spike Trip Blank 177527		
Project Number	Offics	rul	30011906	30011906	30011906	NEPM (2013) Table 1C Groundwater Investigation Levels (GILs) (μg/L)	NSW EPA: Guidelines for Service Station Sites (1994)
Sample ID				V06 QC1	TS Water TB Water		
Date Sampled			6/03/2018	6/03/2018	10/10/2017		
			Water	Water	Water	Marine Waters (typical slightly-moderately disturbed systems)	Marine - Protection of aquatic ecosystems
Type of sample							
Physical Field Results	i						
Standing Water Leve		0.01		.1			
Dissolved Oxyger		0.01		56			
Electrical Conductivity		1		28			
ph Eh / Redox		0.01 0.7		.9 2.2			
Temperature		0.1		3.1			
Dissolved Metals			21.0				
Arsenic-Dissolved		1	27	2 2			
Cadmium-Dissolved		0.1	<0.1 <0	0.1 <0.1		0.7	
Chromium-Dissolved	l μg/L	1	<1 <	<1 <1		27	
Copper-Dissolved		1		2		1.3	
Lead-Dissolved		1		2 1		4.4	5
Mercury-Dissolved		0.05		0.05 < 0.05		7	
Nickel-Dissolved Zinc-Dissolved		1 1		1 24 21		7 15	
BTE			31 2	. 7 21		15	
TRH C6 - C9		10	<10 <	10 <10	<10		
TRH C6 - C10		10		10 <10	<10		
TRH C6 - C10 lessBTEX (F1)	μg/L	10	<10 <	10 <10	<10		
Benzene		1		<1 <1	105% <1	500	300
Toluene		1		(1 <1	106% <1		
Ethylbenzene m+p-yylene		1		<1 <1 <1 <2 <2	110% <1 115% <2		
m+p-xylene o-xylene		2 1		<2 <2 <1 <1	115% <2 115% <1		180
Naphthalene		1		(1 <1	<1 <1		
Total Recoverable Hydrocarbons		_		·-			
TRH C10 - C14		50	340 <	50 <50			
TRH C15 - C28	μg/L	100	100 <1	100 <100			
TRH C29 - C36		100		100 <100			
TRH >C10 - C16		50		50 <50			
TRH >C10 - C16less Naphthalene (F2) TRH >C16 - C34		50 100		50 <50 100 <100			
TRH >C34 - C40		100		100 <100			
Polyaromatic Hydrocarbons				1200			
Naphthalene		1	<1 <	:1 <1		50	
Acenaphthylene	μg/L	1	<1 <	<1 <1			
Acenaphthene		1		<1 <1			
Fluorene		1		<1 <1			
Phenanthrene		1		(1 <1			
Anthracene Fluoranthene		1 1		<1 <1 <1 <1			
	μg/L μg/L	1		(1 <1			
Benzo(a)anthracene		1		<1 <1			
Chrysene		1		<1 <1			
Benzo(b,j+k)fluoranthene	μg/L	2	<2 <	<2 <2			
Benzo(a)pyrene		1		<1 <1			
Indeno(1,2,3-c,d)pyrene		1		<1 <1			
Dibenzo(a,h)anthracene		1		(1 <1			
Benzo(g,h,i)perylene Benzo(a)pyrene TEC		1 5		<1 <1 <5 <5			
Organochlorine pesticides							
	μg/L	0.2	<0.2 <0	0.2 <0.2			
alpha-BH0		0.2		0.2 <0.2			
gamma-BHC		0.2		0.2 <0.2			
beta-BHC		0.2		0.2 < 0.2			
Heptachloi		0.2		0.2 <0.2 0.2 <0.2			
delta-BHC Aldrir	. μg/L ι μg/L	0.2		0.2 <0.2 0.2 <0.2			
Heptachlor Epoxide		0.2		0.2 < 0.2			
gamma-Chlordane		0.2		0.2 <0.2			
alpha-Chlordane	μg/L	0.2		0.2 <0.2			
Endosulfan		0.2		0.2 <0.2			
	μg/L	0.2		0.2 < 0.2			
Dieldrir Endrir		0.2 0.2		0.2 < 0.2 0.2 < 0.2			
pp-DDD		0.2		0.2 < 0.2			
Endosulfan I		0.2		0.2 < 0.2			
	μg/L	0.2		0.2 <0.2			
Endrin Aldehyde		0.2		0.2 <0.2			
Endosulfan Sulphate		0.2		0.2 < 0.2			
Methoxychlor Organophosphate Pesticide		0.2	<0.2 <0	0.2 <0.2			
Azinphos-methyl (Guthion		0.2	<0.2 <0	0.2 <0.2			
Bromophos ethy		0.2		0.2 <0.2			
Chlorpyripho	μg/L	0.2	<0.2 <0	0.2 <0.2			
Chlorpyriphos-methy		0.2		0.2 <0.2			
Diazinor		0.2		0.2 < 0.2			
Dichlorovos Dimethoate		0.2 0.2		0.2 < 0.2 0.2 < 0.2			
Ethior		0.2		0.2 < 0.2			
Fenitrothion		0.2		0.2 < 0.2			
Malathion		0.2		0.2 <0.2			
Parathior		0.2		0.2 <0.2			
	l μg/L	0.2	<0.2 <0	0.2 <0.2			
Polychlorinated biphenyl			-n	·2 -2			
Aroclor 1016 Aroclor 1221		2		<2 <2 <2 <2			
Aroclor 1223		2		2 <2			
Aroclor 1232 Aroclor 1242		2		2 <2			
7,100,01 1242	μg/L	2		2 <2			
Aroclor 1248		2		<2 <2			
Aroclor 1248 Aroclor 1254							
Arocior 1248 Arocior 1254 Arocior 1260	μg/L	2		<2 <2			
Aroclor 1248 Aroclor 1254	μg/L		<2 <	2 <2			

Sommerset Street & Butler Street, Byron Bay

Appendix D Table 5: Soil HIL & E	IL Resu	lts		Field C	M/OC		Trin Chiles Trin Dlan
Laboratory Report	Units	PQL	17	Field C 7527	(A/ UC		Trip Spike Trip Blar 177527
Project Number				11906			30011906
Sample ID			GW06	QC1			TS Water TB Wate
Date Sampled			10/10	0/2017	Blind Du	uplicate	10/10/2017
Type of sample			Primary	Field Blind Duplicate	Average	RPD	Trip Spike Trip Blar
Dissolved Metals			_				
Arsenic-Dissolved Cadmium-Dissolved	μg/L μg/L	1 0.1	2 <0.1	2 <0.1	2 N/A	0% N/A	
Chromium-Dissolved	μg/L	1	<1	<1	N/A	N/A	
Copper-Dissolved	μg/L	1	2	2	2	0%	
Lead-Dissolved Mercury-Dissolved	μg/L μg/L	1 0.05	2 <0.05	1 <0.05	1.5 N/A	67% N/A	
Nickel-Dissolved	μg/L μg/L	0.03	1	1	1	0%	
Zinc-Dissolved	μg/L	1	24	21	22.5	13%	
BTEX TRH C6 - C9	μg/L	10	<10	<10	N/A	N/A	<10
TRH C6 - C10	μg/L μg/L	10	<10	<10	N/A N/A	N/A N/A	<10
TRH C6 - C10 lessBTEX (F1)	μg/L	10	<10	<10	N/A	N/A	<10
Benzene	μg/L	1	<1	<1	N/A	N/A	105% <1
Toluene Ethylbenzene	μg/L μg/L	1 1	<1 <1	<1 <1	N/A N/A	N/A N/A	106% <1 110% <1
m+p-xylene	μg/L	2	<2	<2	N/A	N/A	115% <2
o-xylene	μg/L	1	<1	<1	N/A	N/A	115% <1
Naphthalene	μg/L	1	<1	<1	N/A	N/A	<1
Total Recoverable Hydrocarbons TRH C10 - C14	μg/L	50	<50	<50	N/A	N/A	
TRH C15 - C28	μg/L μg/L	100	<100	<100	N/A	N/A	
TRH C29 - C36	μg/L	100	<100	<100	N/A	N/A	
TRH >C10 - C16	μg/L	50 50	<50	<50 <50	N/A	N/A	
•C10 - C16less Naphthalene (F2) TRH >C16 - C34	μg/L μg/L	50 100	<50 <100	<50 <100	N/A N/A	N/A N/A	
TRH >C34 - C40	μg/L μg/L	100	<100	<100	N/A	N/A	
Polyaromatic Hydrocarbons							
Naphthalene Acenaphthylene	μg/L	1	<1 <1	<1 <1	N/A N/A	N/A N/A	
Acenaphthylene Acenaphthene	μg/L μg/L	1 1	<1 <1	<1 <1	N/A N/A	N/A N/A	
Fluorene	μg/L	1	<1	<1	N/A	N/A	
Phenanthrene	μg/L	1	<1	<1	N/A	N/A	
Anthracene Fluoranthene	μg/L μg/L	1 1	<1 <1	<1 <1	N/A N/A	N/A N/A	
Pyrene	μg/L μg/L	1	<1	<1	N/A	N/A	
Benzo(a)anthracene	μg/L	1	<1	<1	N/A	N/A	
Chrysene	μg/L	1	<1	<1	N/A	N/A	
Benzo(b,j+k)fluoranthene Benzo(a)pyrene	μg/L μg/L	2 1	<2 <1	<2 <1	N/A N/A	N/A N/A	
Indeno(1,2,3-c,d)pyrene	μg/L	1	<1	<1	N/A	N/A	
Dibenzo(a,h)anthracene	μg/L	1	<1	<1	N/A	N/A	
Benzo(g,h,i)perylene	μg/L	1 5	<1 <5	<1 <5	N/A	N/A	
Benzo(a)pyrene TEQ Organochlorine pesticides	μg/L	3		\3	N/A	N/A	
НСВ	μg/L	0.2	<0.2	<0.2	N/A	N/A	
alpha-BHC	μg/L	0.2	<0.2	<0.2	N/A	N/A	
gamma-BHC beta-BHC	μg/L μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
Heptachlor	μg/L μg/L	0.2	<0.2	<0.2 <0.2	N/A N/A	N/A N/A	
delta-BHC	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Aldrin	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Heptachlor Epoxide gamma-Chlordane	μg/L μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
alpha-Chlordane	μg/L μg/L	0.2	<0.2	<0.2	N/A N/A	N/A	
Endosulfan I	μg/L	0.2	<0.2	<0.2	N/A	N/A	
pp-DDE	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Dieldrin Endrin	μg/L μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
pp-DDD	μg/L μg/L	0.2	<0.2	<0.2	N/A N/A	N/A	
Endosulfan II	μg/L	0.2	<0.2	<0.2	N/A	N/A	
pp-DDT	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Endrin Aldehyde Endosulfan Sulphate	μg/L μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
Methoxychlor	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Organophosphate Pesticide							
Azinphos-methyl (Guthion) Bromophos ethyl	μg/L	0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
Bromopnos etnyi Chlorpyriphos	μg/L μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
Chlorpyriphos-methyl	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Diazinon	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Dichlorovos Dimethoate	μg/L	0.2 0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
	μg/L μg/L	0.2	<0.2 <0.2	<0.2 <0.2	N/A N/A	N/A N/A	
Ethion	μg/L	0.2	<0.2	<0.2	N/A	N/A	
Ethion Fenitrothion	M8/ -		< 0.2	<0.2	N/A	N/A	
Fenitrothion Malathion	μg/L	0.2			N/A	N/A	
Fenitrothion Malathion Parathion	μg/L μg/L	0.2	<0.2	<0.2			
Fenitrothion Malathion Parathion Ronnel	μg/L			<0.2 <0.2	N/A	N/A	
Fenitrothion Malathion Parathion	μg/L μg/L	0.2	<0.2				
Fenitrothion Malathion Parathion Ronnel Polychlorinated biphenyl Aroclor 1016 Aroclor 1221	μg/L μg/L μg/L μg/L μg/L	0.2 0.2 2 2	<0.2 <0.2 <2 <2	<0.2 <2 <2	N/A N/A N/A	N/A N/A N/A	
Fenitrothion Malathion Parathion Ronnel Polychlorinated biphenyl Aroclor 1016 Aroclor 1221 Aroclor 1232	μg/L μg/L μg/L μg/L μg/L μg/L	0.2 0.2 2 2 2	<0.2 <0.2 <2 <2 <2 <2	<0.2 <2 <2 <2 <2	N/A N/A N/A N/A	N/A N/A N/A N/A	
Fenitrothion Malathion Parathion Ronnel Polychlorinated biphenyl Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242	μg/L μg/L μg/L μg/L μg/L μg/L μg/L	0.2 0.2 2 2 2 2	<0.2 <0.2 <2 <2 <2 <2 <2	<0.2 <2 <2 <2 <2	N/A N/A N/A N/A N/A	N/A N/A N/A N/A	
Fenitrothion Malathion Parathion Ronnel Polychlorinated biphenyl Aroclor 1016 Aroclor 1221 Aroclor 1232	μg/L μg/L μg/L μg/L μg/L μg/L	0.2 0.2 2 2 2	<0.2 <0.2 <2 <2 <2 <2	<0.2 <2 <2 <2 <2	N/A N/A N/A N/A	N/A N/A N/A N/A	
Fenitrothion Malathion Parathion Ronnel Polychlorinated biphenyl Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	0.2 0.2 2 2 2 2 2	<0.2 <0.2 <2 <2 <2 <2 <2 <2	<0.2 <2 <2 <2 <2 <2 <2 <2	N/A N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A N/A	





Calibration & Service Report Gas Monitor

Company: Active Environmental Solutions Hire

Contact: Aleks Todorovic Address: 2 Merchant Avenue

Thomastown Vic 3074

Phone: 03 9464 2300 | Fax: 03 9464 3421 Email: Hire@aesolutions.com.au

Manufacturer: RAE Systems

Serial #: 592-901211

Instrument: MiniRAE 3000 Model: PGM 7320 Configuration: VOC

Asset #: -Part #: -Sold: -

Last Cal: -Wireless: -Jo**b** #: -Network ID: -Cal Spec: Std Unit ID: -

ltem	Test	Pass/Fail	Comments
Battery	Li lon	✓	
Charger	Charger, Power supply	1	
	Cradle	✓	
Pump	Flow	1	>500 mL/min
Filter	Filter, fitting, etc	✓	
Alarms	Audible, visual, vibration	1	
Display	Operation	1	
РСВ	Operation	1	
Connectors	Condition	1	
Firmware	Version	1	2.16
Datalogger	Operation	1	
Monitor Housing	Condition	1	
Case	Condition/Type	1	
Sensors			
Oxygen		-	
LEL		-	
PID	10.6eV	✓	
Toxic 1		-	
Toxic 2		1.00	
Toxic 3		4	
Toxic 4		-	
Toxic 5		-	

Engineer's Report

Setup, service and calibration for hire

Calibration Certificate

Sensor	Type	Serial No:	Span	Concentration	Traceability	CF	Read	ding
301301	Gas	•		Lot#		Zero	Span	
Oxygen								
LEL								100 0014
PID	10.6eV	23030131UB	Isobutylene	100 PPM	2440-3-1	1	0	100 PPM
Тохіс 1								
Toxic 2								
Toxic 3								
Toxic 4							-	
Toxic 5			100	1				

Milenko Sisic Calibrated/Repaired by: 16/05/2019 Date: 16/11/2019 Next due:

Head Office - Melbourne

2 Merchant Avenue Thomastown VIC 3074 Australia T: +61 3 9464 2300

NSW Office - Ashfield Level 2. Suite 14.6 - 8 Holden Street Ashfield NSW 2131 Australia T: +61 2 9716 5966

Unit 6,41 Holder Way Malaga WA 6090 Australia T: +61 8 9249 5663

QLD Office - Banyo Unit 17, 23 Ashten Place Banyo QLD 4014 Australia T: +61 7 3267 1433

sales@aesolutions.com.au



www.aesolutions.com.au

c/lusers\milanko\daskton\2019 calibration\nid water\592-901211\592-901211 16.05 2019 docv

RENTALS

Equipment Certification Report - TPS 90FLT Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

	Standard	Span 1	,	Span 2	Traceability Lot #	Pass?
рН	pH 4.00/ pH 7.00	4.00 pH	7	.02 pH	3127251310933	
Conductivity	12.88 mS/cm	O ' () μS/cm	12.	88 mS/cm	306044	
TDS	36.0 ppk	0 · 0 ppm	3.	6.0 ppk	309 444	
Dissolved Oxygen	Sodium Sulphite / Air	0,00 ppm in Sodium Sulphite	Sa Sa	.88 ppm turation in Air	1705243881	Ø
Turbidity	0 / 90 / 900 NTU	0.0 NTU 90	NTU	900 NTU	312932 1304256	Ø
Check only Electrode operability to	est			ron		
	Electrode operability test	240mV +/- 10%	2	47 mV	305343 1310585	
Tag No:	Tag attached (AS/NZ	7.2V) ZS 3760)		Temperature Électrodes cl	21-1 °C eaned and checked	
Disease also als the state	a fallouine itama	ropoived and that a	II itomo	are cleaned a	and decontaminated	hefore
return. A minimum S	\$30 cleaning / service vill be billed for at the ed Item 90FLT Unit. Open pH sensor with Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Managuick Guide Storage solution Carry Case	e / repair charge ma full replacement cos s check/Battery stat wetting cap, 5m 0S/Temperature K=1 en YSI5739 sensor of r, 5m 40V to 12V DC 2000	y be apposit. Us: //c 0 sensowith wet mA	or, 5m ting cap, 5m	and decontaminated I nclean or damaged it	before rems.
return. A minimum s Items not returned w Sent Returne	\$30 cleaning / service vill be billed for at the ed Item 90FLT Unit. Open pH sensor with Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Managuick Guide Storage solution Carry Case	e / repair charge ma full replacement cos s check/Battery stat wetting cap, 5m 0S/Temperature K=1 en YSI5739 sensor of r, 5m 40V to 12V DC 2000 ual	y be apposit. Us: //c 0 sensowith wet mA	or, 5m ting cap, 5m	nclean or damaged it	before ems.
return. A minimum soltems not returned with sent Returned with sent Returned with sent Returned by the sent Return	\$30 cleaning / service vill be billed for at the ed Item 90FLT Unit. Open pH sensor with Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Managuick Guide Storage solution Carry Case	e / repair charge ma full replacement cos s check/Battery stat wetting cap, 5m 0S/Temperature K=1 en YSI5739 sensor of r, 5m 40V to 12V DC 2000 ual	y be apposit. Us: //c 0 sensowith wet mA	or, 5m ting cap, 5m	nclean or damaged it	before rems.
return. A minimum soltems not returned with sent Returned with sent Returned with sent Returned by the sent Return	\$30 cleaning / service will be billed for at the ed Item 90FLT Unit. Open ph sensor with Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Manual Quick Guide Storage solution Carry Case Check to confirm	e / repair charge ma full replacement con s check/Battery stat wetting cap, 5m 0S/Temperature K=1 en YSI5739 sensor of r, 5m 40V to 12V DC 2000 ual on for pH and ORP set m electrical safety (to	y be apposit. us: /// 0 sensowith wet mA ensors ag must	or, 5m ting cap, 5m	nclean or damaged it	before rems.
return. A minimum solutions not returned with sent Returned with sent Returned with sent Returned by the sent Retu	\$30 cleaning / service will be billed for at the ed Item 90FLT Unit. Open ph sensor with a Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Manual Quick Guide Storage solution Carry Case Check to confirm the confirm of the confirm the confirmation that the c	e / repair charge ma full replacement con s check/Battery stat wetting cap, 5m 0S/Temperature K=1 en YSI5739 sensor of r, 5m 40V to 12V DC 2000 ual on for pH and ORP set m electrical safety (to	y be apposit. us: /// 0 sensowith wet mA ensors ag must	or, 5m ting cap, 5m	nclean or damaged it	before rems.
return. A minimum solutions not returned with sent Returned win sent Returned with sent Returned with sent Returned with sent R	\$30 cleaning / service will be billed for at the ed Item 90FLT Unit. Open ph sensor with Conductivity/TD Dissolved oxygen Turbidity sensor Power supply 24 Instruction Managuick Guide Storage solution Carry Case Check to confirm the Conductivity Case Check to Ca	e / repair charge ma full replacement con s check/Battery stat wetting cap, 5m DS/Temperature K=1 en YSI5739 sensor r, 5m 40V to 12V DC 2000 ual n for pH and ORP se m electrical safety (to	y be apposit. us: /// 0 sensowith wet mA ensors ag must	or, 5m ting cap, 5m	nclean or damaged it	before rems.

 Sydney Branch
 Sydney Branch

 firme
 Level 1, 4 Talavera Road

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 ax: (Free Call) 1800 67
Adelaide Branch
27 Beulah Road, Norwood,
South Australia 5057 Perth Branch 121 Beringarra Ave Malaga WA 6090 elbourne Branch Caribbean Drive coresby 3179 Aug 15

Issue 8

G0564

RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0.0 ppm	100-0 ppm	205 276	1
Alarm Limits		R	ump Test	-		
High	100 ppm		Date	Target Gas	Reading	Pass?
Low	50 ppm		1/3/18	100 ppm	99.7 ppm	9
Valid to:	e following items ng / service / repart part cost. turned tem Prote Inlet Spart Chart Calib Data Carry Carr	are received and the	erational Check of Set to: isobut boot PID) Qty	Data cleared and decord and decor	ntaminated before ret litems. Items not ret	urn A
gned:	nr					
TFS Refere	ence CBoo	344.5 Retur	n Date:	1 1		
Customer Refere			n Time:			
Equipmen	22-1					
Equipmen	tid PID300	00 - Z 0 Cond	ition on return:			

Phone: (Fre	e Call) 1300 735 295	Fax: (Free Call) 1800 675 1:	23	Email: RentalsAU@Thermofisher.com
Melbourne Branch 5 Canbbean Drive Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 5090
Issue 6		Nov 12	***************************************	G055

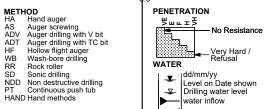
Appendix F	Excavation Logs

TP01 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS** DRILLING MATERIAL MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 0.0 MARINE DEPOSITS **Silty SAND** fine to medium grained, pale grey-brown, trace fine grained sand PID 0.0ppm SM D L 0.40: Bulk Sample Taken B-1 Silty SAND fine to medium grained, pale grey. PID 0.0ppm water SM M MD **Silty SAND** fine to medium grained, dark grey - black, odourous PID 0.0ppm 0.90: indurated sand 0.90: Bulk Sample Taken B-2 1.0 • VD M to W Hole Terminated at 2.00 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Very Loose Loose EX Hydraulic Excavator Vane Shear; P-Peak, 10 Oct., 73 Water Level on Date shown Moist L MD D VD EH Excavator with Hamme R-Remouded (uncorrected kPa W Medium Dense Dense Wet PBT SUPPORT water inflow Plate Bearing Test Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

TP02 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS** DRILLING MATERIAL MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 0.0 MARINE DEPOSITS **Silty SAND** fine to medium grained, pale brown-grey, trace fine sand. PID 0.0ppm SM М SAND: fine to medium grained, pale grey. PID 0.0ppm SP MD М 0.80m 0.80: Bulk Sample taken Silty SAND fine to medium grained, grey. PID 0.0ppm B-1 1.0 SP MD water Hole Terminated at 2.00 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Dry Very Loose Loose EX Hydraulic Excavator Vane Shear; P-Peak, 10 Oct., 73 Water Level on Date shown Moist L MD D VD EH Excavator with Hamme R-Remouded (uncorrected kPa W Medium Dense Dense Wet PBT SUPPORT water inflow Plate Bearing Test Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

TP03 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2.5 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS DRILLING** MATERIAL 3 PEP mm MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 핌 SM 0.10m Silty SAND fine to medium grained, dark-brown, with trace organic material. PID 0.0ppm D to M MD MARINE DEPOSITS SAND: fine to medium grained, grey. PID 0.0ppm SP MD 1.0 1.00: Bulk Sample taken water .60m Silty SAND fine to medium grained, dark-grey, grey. PID 0.0ppm 1.60: Bulk Sample taken 2.0 2.20m 2.20: Bulk Sample taken B-3 Silty SAND fine to medium grained, brown- grey. PID 0.0ppm SM MD Hole Terminated at 2.50 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Dry EX Hydraulic Excavator Vane Shear; P-Peak, Very Loose Loose 10 Oct., 73 Water Level on Date shown Moist L MD D VD EΗ Excavator with Hamme R-Remouded (uncorrected kPa W Wet Medium Dense PBT SUPPORT water inflow Plate Bearing Test Dense Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

HOLE NO: **BH01** NON-CORE DRILL HOLE - ENGINEERING LOG PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange -CLIENT : Sydney Trains SHEET: 1 OF 2 LOCATION : Butler St FINAL DEPTH: 10.42 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS ASSIFICATION MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION Ξ ELEVATION GRAPHIC LOG SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor components LES STRUCTURE DRILLING FLUID DEPTH & CASING SAMPL FIELD T & Other Observations TOPSOIL SAND: fine to medium grained, grey to dark grey, with rootlets and SP 0.50m SPT 1 5,6,6 N=12 MARINE DEPOSITS Sandy Silty SAND fine to medium grained, pale grey Q.95n SPT 2 3,5,9 N=14 1.0 06/03/18 09:00 ADT 1.45m D to M ∇ MD : 0: SM 2.50m SPT 3 7,14,14 N=28 2.50: Zip lock bag: Slight organic/sulphurous Below 2.50m: grey 2.95m 3.0 4.00m SPT 4 11,21,30 N=51 4.0 4.00: SPT Shoe fell off - No sample recovered 4.15m Silty SAND fine to medium grained, dark brown, partly indurated 4.45m Polymer RETURN W WB 5.50m SPT 5 30/110mm HB N=R 5.61m %06 5.50: Zip lock bag, insufficient sample size for 6.0 SM VD 7.00: Insufficient sample size for testing SPT 6 30/120mm HB Below 7.70m: with fine to medium sub-angular & sub-rounded gravel 7.90m



water outflow

SAMPLES & FIELD TESTS Bulk Disturbed Sample Disturbed Sample

Disturbed Sample
Undisturbed Sample
Environmental Sample
Water Sample
Water Sample
Hand Penetrometer (kPa)
Standard Penetration Test
Result of SPT ("ssample taken)
Hammer Bouncing / Refusal
Undisturbed Sample (50mm dia)
Undisturbed Sample (75mm dia)
Vane Shear; peak/remouded(kPa)
Push Tube
Moisture Content

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION Based on Unified Classification System

MOISTURE Dry М Moist W Wet Plastic limit Liquid limit

 $\mathsf{L}\mathsf{L}$

CONSISTENCY/ RELATIVE DENSITY VS

- Very Soft - Soft - Firm St - Stiff VSt H Fb VL - Very Stiff - Hard - Friable - Very Loose - Loose - Medium Dense

D Dense VD - Very Dens

BYRON BAY.GPJ | Lib: SMEC 1.06.4 Prj: SMEC 1

AND

PROJECT: Rural and Regional Interchange -

HOLE NO: **BH01** PROJECT NUMBER: 30011906

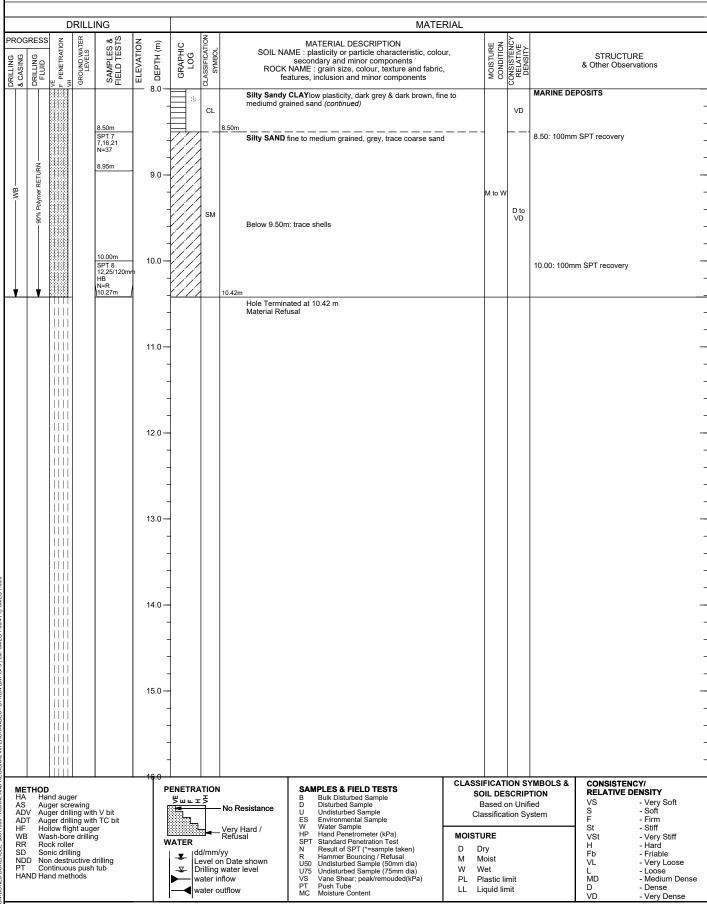
SHEET: 2 OF 2

FINAL DEPTH: 10.42 m

LOCATION : Butler St POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW



CLIENT

: Sydney Trains

NON-CORE DRILL HOLE - ENGINEERING LOG CLIENT : Sydney Trains LOCATION : Butler St POSITION : SURFACE ELEVATION : INCLINAT RIG TYPE : P160 MOUNTING : Track CONTRACTOR : North Coast Drilling HO

LOCATION : Butler St FINAL DEPTH: 10.27 m POSITION INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS SSIFICATION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION MOISTURE CONDITION Ξ SAMPLES 8 FIELD TEST ELEVATION GRAPHIC LOG 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 STRUCTURE DRILLING FLUID DEPTH & CASING & Other Observations TOPSOIL Silty SAND fine to medium grained, grey & pale brown, with some 20mm roots, trace coarse gravel and timber fragements SM D to M 0.20m MARINE DEPOSITS SAND: fine to medium grained, pale brown to off white & pale grey 0.50m SPT 1 5,6,6 N=12 0.50: 0.5-1.0m Bulk Bag Sample 9.95m 1.0 ADT 1.45m MD SP 2.50m SPT 3 7,14,14 N=28 2.50: No recovery SPT 2.50: trace fine angular gravel 2.95m 3.0 4.00m SPT 4 11,21,30 N=51 4.0 4.00: 100mm SPT Recovery 4.20: partly indurated 4.20: Slight Organic odour Silty SAND fine to medium grained, dark brown 4.45m Polymer RETURN WB М %06 SPT 5 30/110mm HB N=R 5.61m 5.50: Ziplock bag sample 6.0 SM VD SPT 6 30/120mm HB 7.00m: trace fine - medium grained gravel METHOD

HA Hand auger
AS Auger screwing
ADV Auger drilling with V bit
ADT Auger drilling with TC bit
HF Hollow flight auger
WB Wash-bore drilling
RR Rock roller
SD Sonic drilling
NDD Non destructive drilling
PT Continuous push tub
HAND Hand methods CLASSIFICATION SYMBOLS & CONSISTENCY/ PENETRATION SAMPLES & FIELD TESTS RELATIVE DENSITY SOIL DESCRIPTION <u>™™∓</u>₹ Bulk Disturbed Sample Disturbed Sample - Very Soft - Soft - Firm Based on Unified VS No Resistance Disturbed Sample
Undisturbed Sample
Environmental Sample
Water Sample
Water Sample
Hand Penetrometer (kPa)
Standard Penetration Test
Result of SPT ("ssample taken)
Hammer Bouncing / Refusal
Undisturbed Sample (50mm dia)
Undisturbed Sample (75mm dia)
Vane Shear; peak/remouded(kPa)
Push Tube
Moisture Content Classification System St Very Hard / Refusal - Stiff VSt H Fb VL - Very Stiff - Hard MOISTURE WATER Dry dd/mm/yy Level on Date shown Drilling water level water inflow - Friable М Moist - Very Loose - Loose - Medium Dense ∇ W Wet Plastic limit water outflow $\mathsf{L}\mathsf{L}$ Liquid limit D Dense VD - Very Dens

BYRON BAY.GPJ | Lib: SMEC 1.06.4 Prj: SMEC 1.06.0

AND



HOLE NO:

SHEET: 1 OF 2

BH02

PROJECT NUMBER: 30011906

PROJECT: Rural and Regional Interchange -

HOLE NO: BH02 PROJECT NUMBER: 30011906

SHEET: 2 OF 2

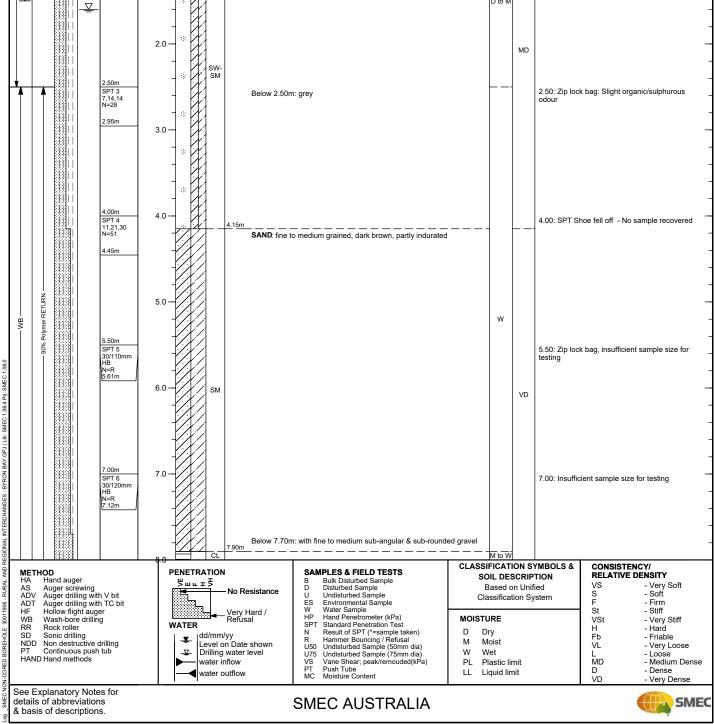
CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH : 10.27 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

DATE	IAKIE	:D : U	16/03/201	ם או	AIE	COMPL	EIE	D : 06/03/2018	3 DATE LOGGED : 06/03/201	8 LOGGED E	3Y : I	BVV		CHECKED BY: BW
		RILLI												
DRILLING & CASING DRILLING FLUID	_	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	© DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	ROCK	MATERIAL DESCRIPTION AME: plasticity or particle characterist secondary and minor components KNAME: grain size, colour, texture an- eatures, inclusion and minor componer	d fabric,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTURE & Other Observations
					8.0 —			Silty SAND	fine to medium grained, dark brown <i>(cor</i>	ntinued)			MARINE DE	EPOSITS
			8.50m		-		SM	Below 8.30n	m: with fine to medium grained sub-angu	lar gravel		VD		
		D.	SPT 7 2,3,3 N=6		-			Silty Sandy	CLAYlow to medium plasticity, dark greium grained sand, trace timber fragments	ey & dark brown,				
B - B		Not Observed	8.95m	-	9.0		sc				M	S to F	8.90: < 25kP	Pa Pocket penetrometer
WB WB		Not			-						""			
,06					_		_	9.60m	AND medium to coarse grained, grey, coa	- — — — — — arse grained.				
			10.00m		- 10.0 		sw	sub-angular		g		VD		
			SPT 8 23,30/120m HB N=R		-			10.27m						
			N=R 10.27m	1	-			Hole Termin Material Ref	nated at 10.27 m fusal					
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META A A THE RESTORAGE OF THE PROPERTY OF THE	land aug	er ewing			16.0 Pi	ENETRA	₹	No Resistance	SAMPLES & FIELD TESTS B Bulk Disturbed Sample D Disturbed Sample	so	IFICAT OIL DE Based o	SCRIP		CONSISTENCY/ RELATIVE DENSITY VS - Very Soft
ADV A	luger scr luger dril luger dril lollow flig	ling with tht auge	n TC bit er					Very Hard / Refusal	U Undisturbed Sample ES Environmental Sample W Water Sample HP Hand Penetrometer (kPa)	MOIST	assifica	tion Sy	vstem	S - Soft F - Firm St - Stiff
RR R SD S NDD N	Vash-bor Rock rolle Sonic drill Ion destr	r ing	-		w	/ATER	l/mm/	уу	SPT Standard Penetration Test N Result of SPT (*=sample taken) R Hammer Bouncing / Refusal	D D	ORE Ory Moist			VSt - Very Stiff H - Hard Fb - Friable
PT C HAND H	Continuou	is push				₩:	rilling ater in		U50 Undisturbed Sample (50mm dia) U75 Undisturbed Sample (75mm dia) VS Vane Shear; peak/remouded(kPa PT Push Tube	W V PL P	Vet Plastic li			VL - Very Loose L - Loose MD - Medium Dens D - Dense
See Expl						wa	ater o	utflow	MC Moisture Content		iquid lir	nit		VD - Very Dense
details of & basis of	f abbre	viation	IS						SMEC AUSTRALIA	Α				SM

HOLE NO: BH03 NON-CORE DRILL HOLE - ENGINEERING LOG PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange -CLIENT : Sydney Trains SHEET: 1 OF 2 LOCATION : Butler St FINAL DEPTH: 10.42 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS ASSIFICATION MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION Ξ ELEVATION GRAPHIC LOG SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor components LES STRUCTURE DEPTH & CASING SAMPL FIELD T & Other Observations TOPSOIL SAND: fine to medium grained, grey to dark grey, with rootlets and SP 0.50m SPT 1 5,6,6 N=12 MARINE DEPOSITS Sandy Silty SAND fine to medium grained, pale grey Q.95n SPT 2 3,5,9 N=14 1.0 06/03/18 09:00 ADT 1.45m D to M ∇ MD SW-SM : 0: 2.50m SPT 3 7,14,14 N=28 Below 2.50m: grey 2.95m 4.00m SPT 4 11,21,30 N=51 4.0 4.15m SAND fine to medium grained, dark brown, partly indurated 4.45m



CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange -

HOLE NO: BH03
PROJECT NUMBER: 30011906

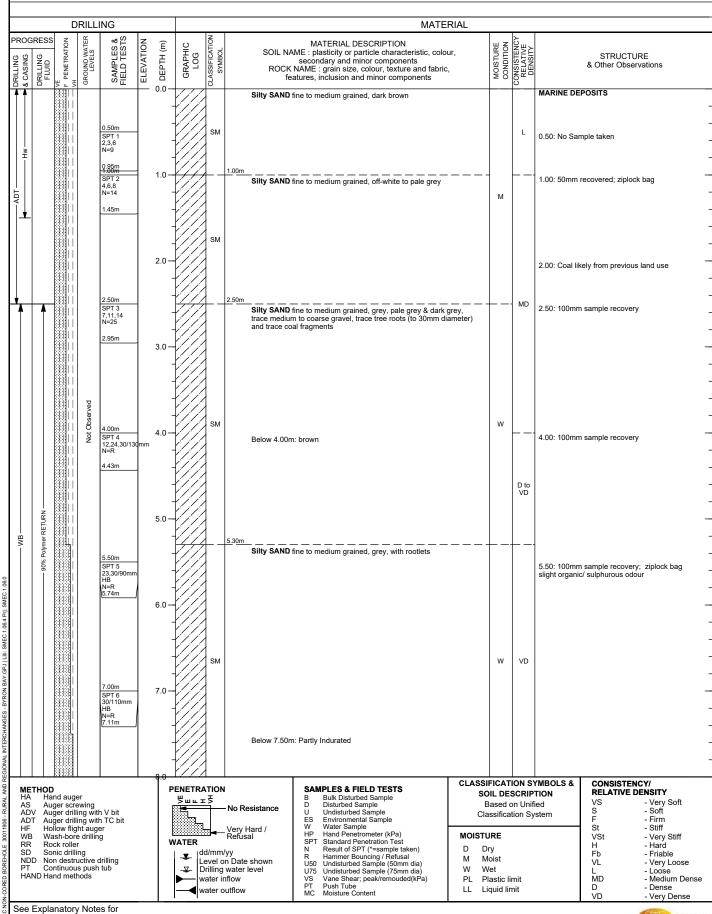
SHEET: 1 OF 2

 LOCATION: Butler St
 FINAL DEPTH: 10.28 m

 POSITION:
 SURFACE ELEVATION:
 INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW



details of abbreviations & basis of descriptions.

PROJECT: Rural and Regional Interchange -

CLIENT : Sydney Trains LOCATION : Butler St

HOLE NO: BH03 PROJECT NUMBER: 30011906

SHEET: 2 OF 2 FINAL DEPTH : 10.28 m

POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

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			DRILL		1			MATERIAL O O MATERIAL DESCRIPTION U. Z. D. U. Z									
DRILLING & CASING	_	⊣	GROUND WATER	SAMPLES & FIELD TESTS	ELEVATION	° DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NA ROCK fe	MATERIAL DE ME : plasticity or pa secondary and mi NAME : grain size, atures, inclusion and	rticle characteristic nor components colour, texture and	fabric,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTU & Other Obser	RE vations
	90% Polymer RETURN		Not Observed	8.50m SPT 7 7,10,13 N=23 8.95m 10.00m SPT 8 11,26/130m HB	1	9.0 —		SM		fine to medium graine	ed, grey, with rootlets	s (continued)	w	MD	MARINE DE	ample recovery	- - - - -
SWEC NOW-CORED BOREHOLLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ. Lb: SMEC 1.06.0 P A LAIS SUBJECT OF BY THE CONTRACT OF BY THE CHANGES - BYRON BAY GPJ. Lb: SMEC 1.06.0 THE CONTRACT OF BY THE CHANGES - BYRON BAY GPJ. Lb: SMEC 1.06.0				(10.28m		11.0 —			Material Ref			CIASSI	FICAT	ON S	/MBOLS &	CONSISTEN	CY
METHOD HA Hand auger AS Auger screwing ADV Auger drilling with V bit ADT Auger drilling with TC bit HF Hollow flight auger WB Wash-bore drilling RR Rock roller SD Sonic drilling NDD Non destructive drilling PT Continuous push tub HAND Hand methods PENETRATION Wu L T S No Resistance Very Hard / WATER WATER dd/mm/yy Level on Date shown Drilling water level water inflow water outflow						N Result of SP' R Hammer Boo U50 Undisturbed U75 Undisturbed VS Vane Shear; PT Push Tube	ad Sample mple Sample al Sample be e ometer (kPa) netration Test f ("=sample taken) nicing / Refusal Sample (50mm dia) Sample (75mm dia) peak/remouded(kPa)	MOISTU D D M N W W PL P	OIL DES Based cassifica URE Pry Moist Vet Plastic lii	on Unifition Sy	ied	RELATIVE D VS S F St VSt H Fb VL L MD D VD					
See deta & ba	See Explanatory Notes for											SMEC					

CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange - LOCATION : Butler St

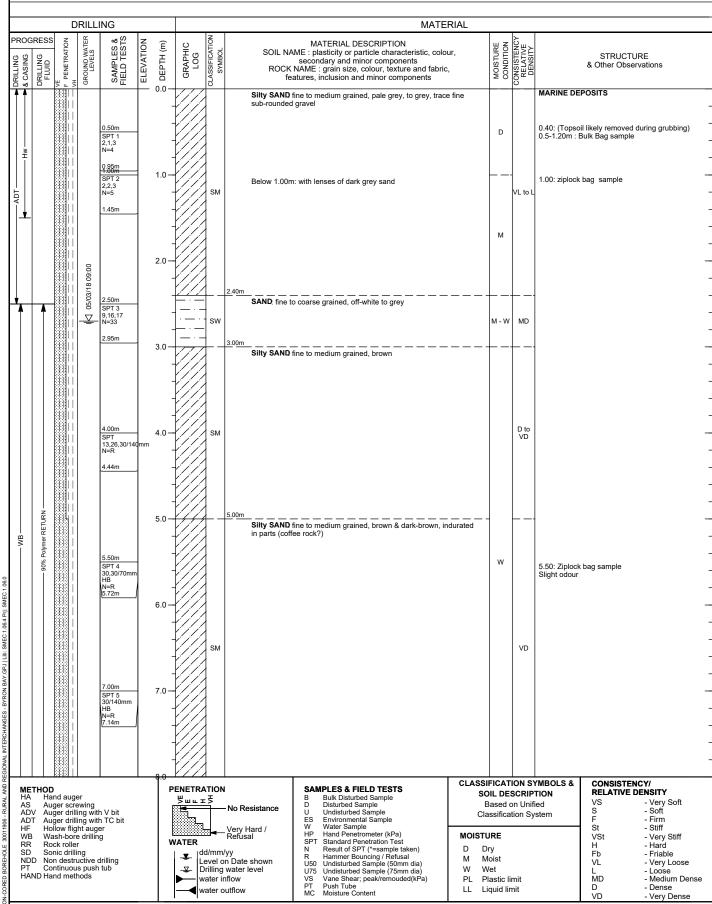
HOLE NO: BH04 PROJECT NUMBER: 30011906

SHEET: 1 OF 2 FINAL DEPTH: 10.45 m

POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW



PROJECT: Rural and Regional Interchange -

HOLE NO: BH04 PROJECT NUMBER: 30011906

SHEET: 2 OF 2 FINAL DEPTH : 10.45 m

CLIENT : Sydney Trains LOCATION : Butler St POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW

DATES	PIARIE	<u>-</u> D. С	13/03/20	10 D	AIE	JOIVIFL	L L	D . 05/03/2016	DATE LOGGED	. 05/05/2016 L	.OGGED B	1	5 V V		CHECKEL	DRA: RAM
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& CASING DRILLING DRILLING	— ≧	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NA ROCK fe:	MATERIAL DESC ME: plasticity or partic secondary and minor NAME: grain size, col atures, inclusion and m	le characteristic, colo components our. texture and fabric	our, c,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTI & Other Obse	JRE rvations
- WB			8.50m SPT 6 9,13,19 N=32 8.95m	-	8.0 — - - 9.0 — - -		SM	Silty SAND in parts (coff	fine to medium grained, ee rock?) (continued) bands of fine to medium,		ndurated	w	VD MD	MARINE DE	POSITS	-
V V	,		10.00m SPT 7 14,23,30 N=53 10.45m	•	10.0 			10.45m	ce gravels. trace clay				VD			-
SWECT NOW-CONED BOREHOLD. 300/11906. RURAN, AND REGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1064 Pp; SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU Lib. SMECT 1067 BY THE CASH AND PEGIONAL INTERCHANGES - BYRON BAY GPU LIB. SMECT 1067 BY THE CASH AND PEGIONAL INT							TION	Material Refu	SAMPLES & FIELD) TECTO				/MBOLS &	CONSISTE	
HA A A H V F S N C H A A DT H WB R S N C H A A DT H WB R S N C H A A DT H WB R S N C H A A DT H WB R S N C H	Hand aug Auger scr Auger dril Augler dril Hollow flig Wash-bor Rock rolle Sonic drill Non destr Continuou Hand met	ewing ling with ling with ght aug- e drillin er ling ructive ous us push	er g drilling		No Resistance						- Very Soft - Soft - Soft - Firm - Stiff - Very Stiff - Hard - Friable - Very Loose - Loose - Medium Dense - Dense - Very Dense					
See Exp details o & basis o	See Explanatory Notes for										SME					

PROJECT: Rural and Regional Interchange -

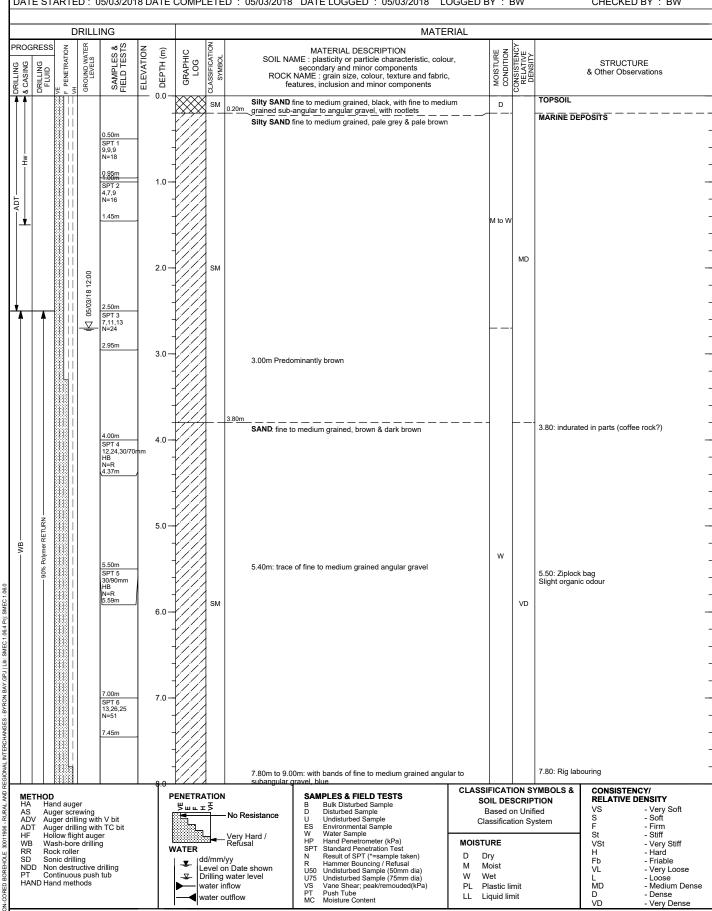
HOLE NO: **BH05** PROJECT NUMBER: 30011906

SHEET: 1 OF 2 FINAL DEPTH: 10.45 m

POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW



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

CLIENT

LOCATION : Butler St

: Sydney Trains



SMEC

PROJECT: Rural and Regional Interchange -

HOLE NO: BH05 PROJECT NUMBER: 30011906

SHEET: 2 OF 2

CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH : 10.45 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW

DATE	JIAI	\	.D. U	3/03/201	10 D	AIL V	JOIVII L		D . 03/03/2010	DATE LOGGE	. 03/03/2010	8 LOGGED E	, , ,	D V V		CHECKED	DI . DVV
			RILLI		_			MATERIAL O O O MATERIAL DESCRIPTION U Z O U Z									
BRILLING & CASING DRILLING	FLUID	F PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NA ROCK fe	MATERIAL DE AME : plasticity or pa secondary and mi NAME : grain size, atures, inclusion an	article characteristic		MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTU & Other Obser	RE vations
				8.50m SPT 7 13.24,30/13/ N=R 8.93m 10.00m SPT 8 11,18,30/11/ HB N=R 10.41m	Gmm	8.0 —		SM	SAND: fine t	ated at 10.45 m	rown & dark brown ((continued)	w	VD	MARINE DE	ample recovery	
METHOD HA Hand auger AS Auger screwing ADV Auger drilling with V bit ADT Auger drilling with TC bit HF Hollow flight auger WB Wash-bore drilling RR Rock roller SD Sonic drilling NDD Non destructive drilling PT Continuous push tub HAND Hand methods HAND Hand methods PENETRATION Wu I I I I I I I I I I I I I I I I I I I						D Disturbed Si U Undisturbed ES Environmen W Water Samp HP Hand Penet SPT Standard Pe N Result of SP R Hammer Bo U50 Undisturbed	ed Sample ample Sample Sample tal Sample le rometer (kPa) remetation Test rT ("=sample taken) uncing / Refusal Sample (50mm dia) Sample (75mm dia) peak/remouded(kPa	SC E Cla	OIL DE Based o	SCRIP on Unifition Sy	ied	CONSISTEN RELATIVE D VS S F St VSt H Fb VL L MD D VD					
See Ex details & basis	of ab	bre۱	/iation	S						SMEC AL	JSTRALIA	4					SMEC

PROJECT: Rural and Regional Interchange -

CLIENT

: Sydney Trains

HOLE NO: BH06
PROJECT NUMBER: 30011906

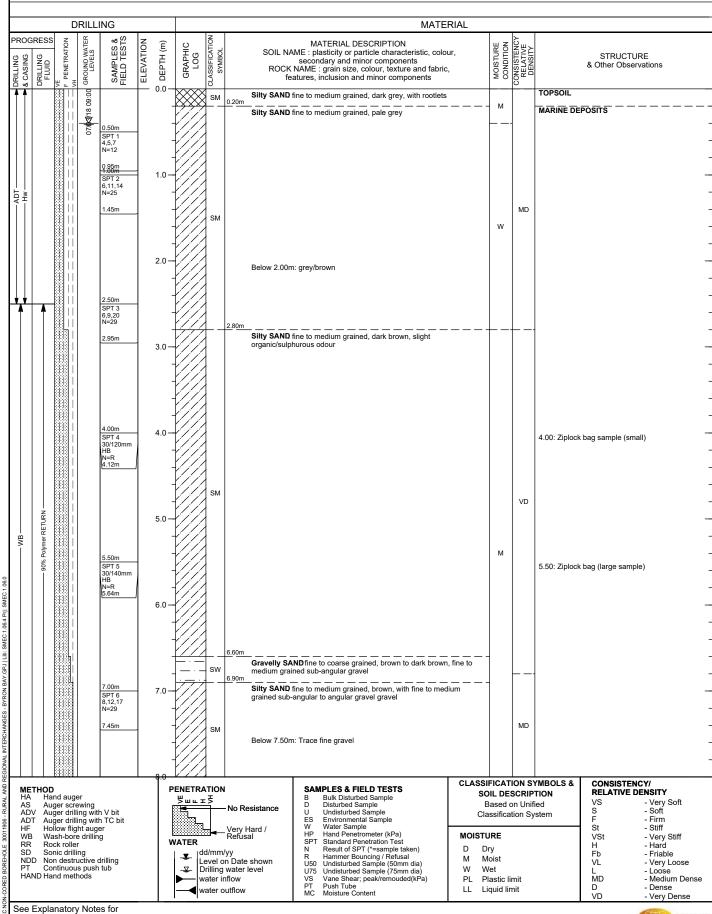
SHEET: 1 OF 2

 LOCATION: Butler St
 FINAL DEPTH: 10.45 m

 POSITION:
 SURFACE ELEVATION:
 INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 07/03/2018 DATE COMPLETED: 07/03/2018 DATE LOGGED: 07/03/2018 LOGGED BY: BW CHECKED BY: BW



details of abbreviations & basis of descriptions.

CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange - LOCATION : Butler St

HOLE NO: BH06
PROJECT NUMBER: 30011906

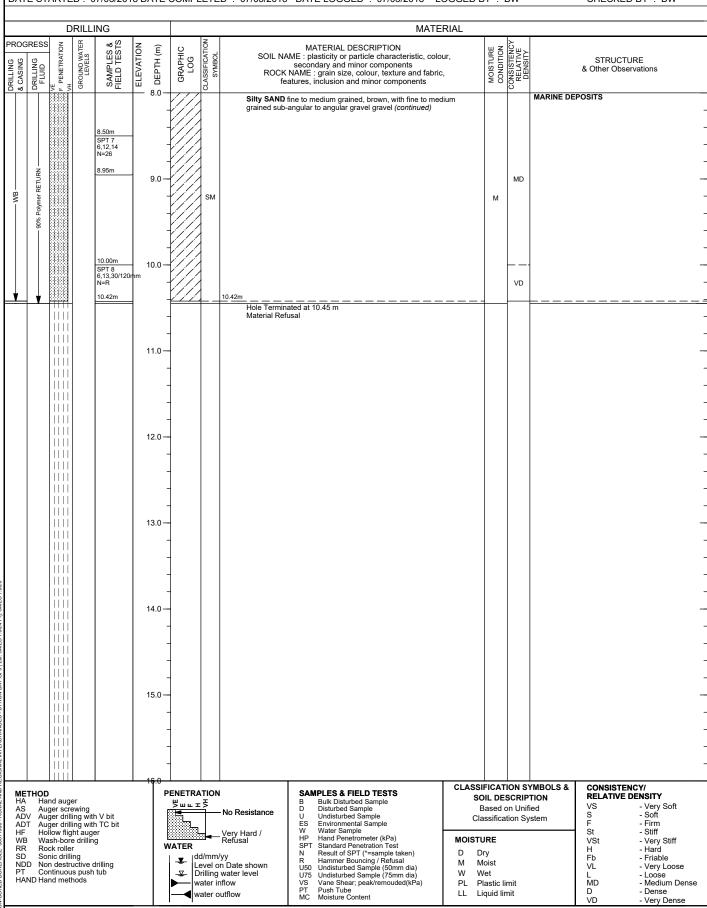
SHEET: 2 OF 2

FINAL DEPTH : 10.45 m

POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 07/03/2018 DATE COMPLETED: 07/03/2018 DATE LOGGED: 07/03/2018 LOGGED BY: BW CHECKED BY: BW



PROJECT: Rural and Regional Interchange -

HOLE NO: BH07 PROJECT NUMBER: 30011906

SHEET: 1 OF 1

CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH: 1 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 180 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

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		DRILL	ING						MA	TERIAL					
DRILLING & CASING	DRILLING SS FLUID SS	F PENETRATION WH GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	, DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NA ROCK fe	MATERIAL DESCRIPTION AME: plasticity or particle characteristic, c secondary and minor components NAME: grain size, colour, texture and fal atures, inclusion and minor components	colour, bric,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTU & Other Obser	RE vations
A				T	0.0				o medium grained, off-white & pale grey				MARINE DE	POSITS	
₩ - AS	000000000000000000000000000000000000000	Not Observed	0.50m B-1		- - 1.0—		SP	1.00m			D to M	MD	0.50: Bulk sa	mple taken	
	li.				-			Hole Termin Target Depti	ated at 1.00 m h						
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Y.GPJ Li					-										
RON BAY	l li				7.0										
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ND REGIC	TUCE	Ш	1		8.0 _	ENETR <i>A</i>	TICL		SAMPLES & FIELD TESTS	CLASSI	FICAT	ION S	YMBOLS &	CONSISTEN	
NON-CORED BOREHOLE 30011908 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ Lib. SMEC 1.08.4 Ptj. SMEC D T T G G J J J J J J J J J J J J J J J J	Auger / Auger T Auger	screwing drilling wi	th TC bit			ENEIKA Vuui		-No Resistance	B Bulk Disturbed Sample D Disturbed Sample U Undisturbed Sample ES Environmental Sample W Water Sample	В	ased o	SCRIP on Unif tion Sy	ied	RELATIVE D VS S F	Very SoftSoftFirm
HF WB	HF Hollow flight auger WB Wash-bore drilling Very Refus			Very Hard / Refusal	HP Hand Penetrometer (kPa)	MOISTU				St VSt	- Stiff - Very Stiff - Hard				
REHOLE DN DS	Sonic D Non d	c drilling v dd/mm/yy N Result of SPT (*=sample taken) D Dry Dry D				VL	FriableVery Loose								
HA BY	Contir ND Hand	nuous pus methods	n tub			w w	rilling ater ir	water level nflow	level				- Loose - Medium Dense - Dense		
NON-CC	Evnlana	4 NI-4				w	ater o	utflow	MC Moisture Content	LL Li	quia iir	HIL		VD	- Very Dense



GEOLOGICAL LOG BORE HOLE WITH STANDPIPE / PIEZOMETER

 HOLE No:
 GW01

 SHEET No:
 1 of 1

PROJECT No: 30011906

PROJECT : Byron Bay Transport Interchange
PURPOSE : Groundwater Monitoring Well

CLIENT : Sydney Trains

SURFACE ELEVATION: TOP OF CASING:

LOCATION : Byron Bay

FINAL DEPTH: 2.4m

POSITION :

ANGLE FROM HORIZONTAL: 90°

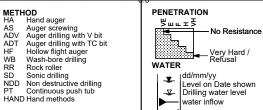
		_	Byron l	Bay			FINAL DEPTH: 2.4m	T			ROM HORIZONTAL: 90°
Drill	ing	De	pth	-			MATERIAL		Standpipe Cor	nstruction	OTHER OBSERVATIONS
Method	Support	Elev (AHD)	Depth (m)	Water	Moisture Condition	- Graphic Log	MATERIAL DESCRIPTION SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor components	Constru	uction Details	Construction notes	Notes (Structure, origin, etc)
_									GW01	Bentonite: Stick up 0.6m Cuttings:	
-			- 1 -							— Start Slotted 1.1m	-
-			- 2 -	-						Sand: Collapsed natural sand	-
-									-	End Slotted 2.4m	
_			- 3 -	_							-
-			<u> </u>	-							
			- 4 -								-
			- 5 -	_							
-				_							
_			- 6 -	-							-
-				_							
Note	s: ▶	l —Inflo	w —	Outflow -	I <u>V</u> Star	l nding Wa	ater Level Pipe Description:		Pipe	e Screen Details:	I
CON	TRAC	CTOR:		cavator			COMMEN COMPLE		3/2018		LOGGED BY: LJ CHECKED BY: LJ

TP01 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS** DRILLING MATERIAL MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 0.0 MARINE DEPOSITS **Silty SAND** fine to medium grained, pale grey-brown, trace fine grained sand PID 0.0ppm SM D L 0.40: Bulk Sample Taken B-1 Silty SAND fine to medium grained, pale grey. PID 0.0ppm water SM M MD **Silty SAND** fine to medium grained, dark grey - black, odourous PID 0.0ppm 0.90: indurated sand 0.90: Bulk Sample Taken B-2 1.0 • VD M to W Hole Terminated at 2.00 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Very Loose Loose EX Hydraulic Excavator Vane Shear; P-Peak, 10 Oct., 73 Water Level on Date shown Moist L MD D VD EH Excavator with Hamme R-Remouded (uncorrected kPa W Medium Dense Dense Wet PBT SUPPORT water inflow Plate Bearing Test Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

TP02 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS** DRILLING MATERIAL MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 0.0 MARINE DEPOSITS **Silty SAND** fine to medium grained, pale brown-grey, trace fine sand. PID 0.0ppm SM М SAND: fine to medium grained, pale grey. PID 0.0ppm SP MD М 0.80m 0.80: Bulk Sample taken Silty SAND fine to medium grained, grey. PID 0.0ppm B-1 1.0 SP MD water Hole Terminated at 2.00 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Dry Very Loose Loose EX Hydraulic Excavator Vane Shear; P-Peak, 10 Oct., 73 Water Level on Date shown Moist L MD D VD EH Excavator with Hamme R-Remouded (uncorrected kPa W Medium Dense Dense Wet PBT SUPPORT water inflow Plate Bearing Test Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

TP03 PIT NO **EXCAVATION - GEOLOGICAL LOG** PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange - Byron Bay CLIENT : Sydney Trains SHEET: 1 OF 1 LOCATION : Butler St FINAL DEPTH: 2.5 m **POSITION** SURFACE ELEVATION EQUIPMENT TYPE: 8 tonne Excavator METHOD: Toothed Bucket DATE EXCAVATED: 05/03/2018 LOGGED BY: DL CHECKED BY: BW **EXCAVATION DIMENSIONS DRILLING** MATERIAL 3 PEP mm MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY MATERIAL DESCRIPTION PENETRATION $\widehat{\mathbb{E}}$ SAMPLES 8 FIELD TEST GRAPHIC LOG 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 SUPPORT GROUND WAT LEVELS STRUCTURE DEPTH & Other Observations 핌 SM 0.10m Silty SAND fine to medium grained, dark-brown, with trace organic material. PID 0.0ppm D to M MD MARINE DEPOSITS SAND: fine to medium grained, grey. PID 0.0ppm SP MD 1.0 1.00: Bulk Sample taken water .60m Silty SAND fine to medium grained, dark-grey, grey. PID 0.0ppm 1.60: Bulk Sample taken 2.0 2.20m 2.20: Bulk Sample taken B-3 Silty SAND fine to medium grained, brown- grey. PID 0.0ppm SM MD Hole Terminated at 2.50 m Target Depth 3.0 4.0 5.0 6.0-7.0 8.0 PHOTOGRAPHS NOTES YES ___ NO CLASSIFICATION SYMBOLS & CONSISTENCY/ RELATIVE DENSITY PENETRATION SAMPLES & FIELD TESTS METHOD SOIL DESCRIPTION <u>шшт</u>₹ Natural Exposure Based on Unified Undisturbed Sample No Resistance S F St Existing Excavation Classification System D Disturbed Sample Firm RR Backhoe Bucket Bulk Disturbed Sample Stiff MOISTURE VSt H VL Bulldozer Blade Very Stiff Hard В MC Moisture Content Ripper HP Hand Penetrometer (kPa) WATER Dry EX Hydraulic Excavator Vane Shear; P-Peak, Very Loose Loose 10 Oct., 73 Water Level on Date shown Moist L MD D VD EΗ Excavator with Hamme R-Remouded (uncorrected kPa W Wet Medium Dense PBT SUPPORT water inflow Plate Bearing Test Dense Very Dense Timbering water outflow See Explanatory Notes for details of abbreviations & basis of descriptions. **SMEC AUSTRALIA** SMEC

HOLE NO: **BH01** NON-CORE DRILL HOLE - ENGINEERING LOG PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange -CLIENT : Sydney Trains SHEET: 1 OF 2 LOCATION : Butler St FINAL DEPTH: 10.42 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS ASSIFICATION MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION Ξ ELEVATION GRAPHIC LOG SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor components LES STRUCTURE DRILLING FLUID DEPTH & CASING SAMPL FIELD T & Other Observations TOPSOIL SAND: fine to medium grained, grey to dark grey, with rootlets and SP 0.50m SPT 1 5,6,6 N=12 MARINE DEPOSITS Sandy Silty SAND fine to medium grained, pale grey Q.95n SPT 2 3,5,9 N=14 1.0 06/03/18 09:00 ADT 1.45m D to M ∇ MD : 0: SM 2.50m SPT 3 7,14,14 N=28 2.50: Zip lock bag: Slight organic/sulphurous Below 2.50m: grey 2.95m 3.0 4.00m SPT 4 11,21,30 N=51 4.0 4.00: SPT Shoe fell off - No sample recovered 4.15m Silty SAND fine to medium grained, dark brown, partly indurated 4.45m Polymer RETURN W WB 5.50m SPT 5 30/110mm HB N=R 5.61m %06 5.50: Zip lock bag, insufficient sample size for 6.0 SM VD 7.00: Insufficient sample size for testing SPT 6 30/120mm HB Below 7.70m: with fine to medium sub-angular & sub-rounded gravel 7.90m



water outflow

SAMPLES & FIELD TESTS Bulk Disturbed Sample Disturbed Sample

Disturbed Sample
Undisturbed Sample
Environmental Sample
Water Sample
Water Sample
Hand Penetrometer (kPa)
Standard Penetration Test
Result of SPT ("ssample taken)
Hammer Bouncing / Refusal
Undisturbed Sample (50mm dia)
Undisturbed Sample (75mm dia)
Vane Shear; peak/remouded(kPa)
Push Tube
Moisture Content

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION Based on Unified Classification System

MOISTURE Dry М Moist W Wet Plastic limit

Liquid limit

 $\mathsf{L}\mathsf{L}$

CONSISTENCY/ RELATIVE DENSITY

VD

- Very Soft - Soft - Firm VS St - Stiff VSt H Fb VL - Very Stiff - Hard - Friable - Very Loose - Loose - Medium Dense D Dense

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

BYRON BAY.GPJ | Lib: SMEC 1.06.4 Prj: SMEC 1

AND



- Very Dens

PROJECT: Rural and Regional Interchange -

CLIENT

details of abbreviations & basis of descriptions.

: Sydney Trains

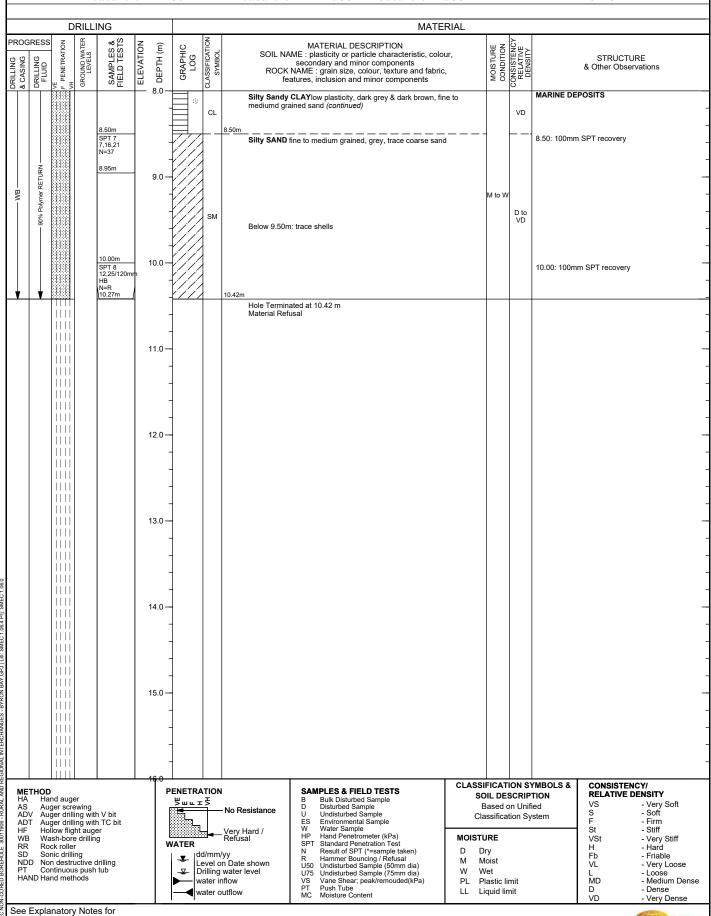
HOLE NO: **BH01** PROJECT NUMBER: 30011906

SHEET: 2 OF 2

LOCATION : Butler St FINAL DEPTH: 10.42 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW



NON-CORE DRILL HOLE - ENGINEERING LOG PROJECT: Rural and Regional Interchange -CLIENT : Sydney Trains SURFACE ELEVATION: MOUNTING: Track CONTRACTOR: North Coast Drilling

HOLE NO: BH02

PROJECT NUMBER: 30011906 SHEET: 1 OF 2 FINAL DEPTH: 10.27 m

LOCATION : Butler St POSITION INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS SSIFICATION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION MOISTURE CONDITION Ξ SAMPLES 8 FIELD TEST ELEVATION GRAPHIC LOG 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 STRUCTURE DRILLING FLUID DEPTH & CASING & Other Observations TOPSOIL Silty SAND fine to medium grained, grey & pale brown, with some 20mm roots, trace coarse gravel and timber fragements SM D to M 0.20m MARINE DEPOSITS SAND: fine to medium grained, pale brown to off white & pale grey 0.50m SPT 1 5,6,6 N=12 0.50: 0.5-1.0m Bulk Bag Sample 9.95m 1.0 ADT 1.45m MD SP 2.50m SPT 3 7,14,14 N=28 2.50: No recovery SPT 2.50: trace fine angular gravel 2.95m 3.0 4.00m SPT 4 11,21,30 N=51 4.0 4.00: 100mm SPT Recovery 4.20: partly indurated 4.20: Slight Organic odour Silty SAND fine to medium grained, dark brown 4.45m Polymer RETURN WB М %06 SPT 5 30/110mm HB N=R 5.61m 5.50: Ziplock bag sample 6.0 SM VD SPT 6 30/120mm HB 7.00m: trace fine - medium grained gravel METHOD

HA Hand auger
AS Auger screwing
ADV Auger drilling with V bit
ADT Auger drilling with TC bit
HF Hollow flight auger
WB Wash-bore drilling
RR Rock roller
SD Sonic drilling
NDD Non destructive drilling
PT Continuous push tub
HAND Hand methods CLASSIFICATION SYMBOLS & CONSISTENCY/ PENETRATION SAMPLES & FIELD TESTS RELATIVE DENSITY SOIL DESCRIPTION <u>™™∓</u>₹ Bulk Disturbed Sample Disturbed Sample - Very Soft - Soft - Firm Based on Unified VS No Resistance Disturbed Sample
Undisturbed Sample
Environmental Sample
Water Sample
Water Sample
Hand Penetrometer (kPa)
Standard Penetration Test
Result of SPT ("ssample taken)
Hammer Bouncing / Refusal
Undisturbed Sample (50mm dia)
Undisturbed Sample (75mm dia)
Vane Shear; peak/remouded(kPa)
Push Tube
Moisture Content Classification System St Very Hard / Refusal - Stiff VSt H Fb VL - Very Stiff - Hard MOISTURE WATER Dry dd/mm/yy Level on Date shown Drilling water level water inflow - Friable М Moist - Very Loose - Loose - Medium Dense ∇ W Wet Plastic limit water outflow $\mathsf{L}\mathsf{L}$ Liquid limit D Dense

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

BYRON BAY.GPJ | Lib: SMEC 1.06.4 Prj: SMEC 1.06.0

AND



- Very Dens

VD

PROJECT: Rural and Regional Interchange -

HOLE NO: BH02 PROJECT NUMBER: 30011906

SHEET: 2 OF 2

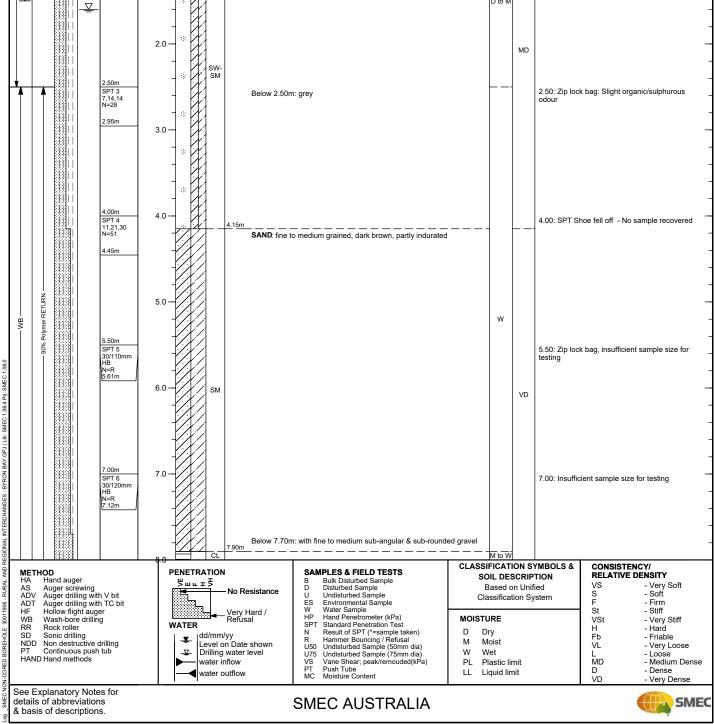
CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH : 10.27 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

D/ (1		74(1	LD. (00/03/20	10 0	, (I L (OOWII E		D . 00/00/2010	: 06/03/2018 DATE LOGGED : 06/03/2018 LOGGED BY : BW CHECKED BY : BW						
		т —	DRILL		1			7			MATERIAL	1	I.			
DRILLING & CASING	DRILLING FLUID	-1 ≥	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	ROCK	MATERIAL DESCRIPTION MME: plasticity or particle charact secondary and minor compone NAME: grain size, colour, textur- atures, inclusion and minor comp	nts e and fabric,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTU & Other Obser	RE vations
						8.0 —			Silty SAND	fine to medium grained, dark brown	(continued)			MARINE DE	POSITS	
				8.50m		-		SM	Below 8.30n 8.55m	n: with fine to medium grained sub-a	angular gravel		VD			
				SPT 7 2,3,3 N=6		-			Silty Sandy	CLAYlow to medium plasticity, dar um grained sand, trace timber fragn	k grey & dark brown, nents					
	RETURN		Not Observed	8.95m		9.0 —								8.90: < 25kF	Pa Pocket penetro	meter _
- WB	90% Polymer RETURN		NotO			-		SC				M	S to F			
	%06—					-			9.60m							
						-			Gravelly SA sub-angular	ND medium to coarse grained, grey gravel	r, coarse grained,					
				10.00m SPT 8 23,30/120m	1	10.0	_:-	SW					VD			_
	V			HB N=R 10.27m		-			10.27m Hole Termin Material Ref	ated at 10.27 m usal						
						-										
						- 11.0										-
		111				-										
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SMEC 1.0						-										
GPJ Lib:						-										
RON BAY						- 15.0										-
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GIONAL IN						_										
AH RE	THOD Ha) ind au	ner	•	1	16.0 P	ENETRA			SAMPLES & FIELD TESTS B Bulk Disturbed Sample		SIFICAT		YMBOLS &	CONSISTEN RELATIVE D	ENSITY
AD AD	Au V Au T Au	ger sc ger dr ger dr	rewing Iling wit Iling wit	h V bit h TC bit			<u> </u>	1	No Resistance	D Disturbed Sample U Undisturbed Sample ES Environmental Sample	C	Based lassifica			VS S F	Very SoftSoftFirm
HF WE RR	Ho Wa Ro	ollow fli ash-bo ock roll	ght aug re drillir er	er		w	/ATER	⊒ <	Very Hard / Refusal	W Water Sample HP Hand Penetrometer (kPa) SPT Standard Penetration Test	MOIST				St VSt H	- Stiff - Very Stiff - Hard
DIA	So D No Co	nic dri on dest ontinuo	lling ructive us push	drilling n tub			Le	d/mm/ evel o rilling	yy n Date shown water level	N Result of SPT (*=sample tal R Hammer Bouncing / Refusa U50 Undisturbed Sample (50mm U75 Undisturbed Sample (75mm	dia) M	Dry Moist Wet			Fb VL L	- Friable - Very Loose - Loose
SWEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1.064 PJ; SMEC NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL	ND Ha	ind me	thods				w	ater ir		VS Vane Shear; peak/remoude PT Push Tube MC Moisture Content	d(kPa) PL	Plastic I Liquid li			MD D VD	- Medium Dense - Dense - Very Dense
See deta & ba	ils of	abbre	ry Note eviation cription	าร						SMEC AUSTRA	LIA					SMEC

HOLE NO: BH03 NON-CORE DRILL HOLE - ENGINEERING LOG PROJECT NUMBER: 30011906 PROJECT: Rural and Regional Interchange -CLIENT : Sydney Trains SHEET: 1 OF 2 LOCATION : Butler St FINAL DEPTH: 10.42 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW DRILLING **MATERIAL** PROGRESS GROUND WATER LEVELS ASSIFICATION MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY PENETRATION MATERIAL DESCRIPTION Ξ ELEVATION GRAPHIC LOG SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor components LES STRUCTURE DEPTH & CASING SAMPL FIELD T & Other Observations TOPSOIL SAND: fine to medium grained, grey to dark grey, with rootlets and SP 0.50m SPT 1 5,6,6 N=12 MARINE DEPOSITS Sandy Silty SAND fine to medium grained, pale grey Q.95n SPT 2 3,5,9 N=14 1.0 06/03/18 09:00 ADT 1.45m D to M ∇ MD SW-SM : 0: 2.50m SPT 3 7,14,14 N=28 Below 2.50m: grey 2.95m 4.00m SPT 4 11,21,30 N=51 4.0 4.15m SAND fine to medium grained, dark brown, partly indurated 4.45m



CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange LOCATION : Butler St

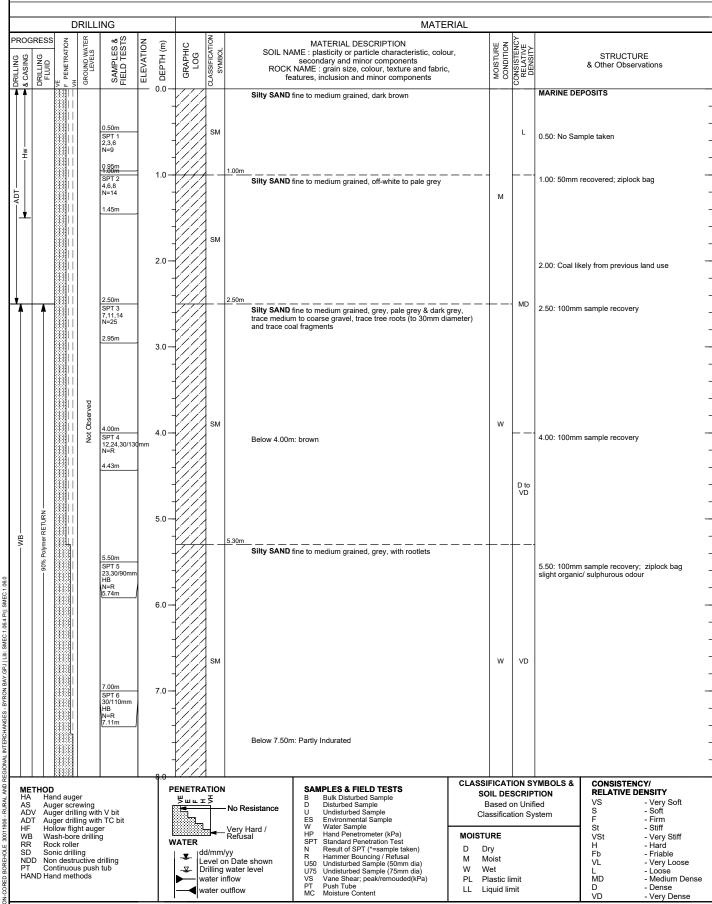
HOLE NO: BH03
PROJECT NUMBER: 30011906

SHEET: 1 OF 2 FINAL DEPTH: 10.28 m

POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW



PROJECT: Rural and Regional Interchange -

HOLE NO: BH03 PROJECT NUMBER: 30011906

SHEET: 2 OF 2 FINAL DEPTH : 10.28 m

CLIENT : Sydney Trains LOCATION : Butler St POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

						COMPLETED : 00/03/2010 DATE EGGED : 00/03/2010 EGGED B1 : BW										
PROGRE		DRILL		T_		MATERIAL ::										
	FLUID SS VE F PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NA ROCK fe	MATERIAL DESC AME : plasticity or particl secondary and minor NAME : grain size, colc satures, inclusion and mi	le characteristic, colo components our, texture and fabric		MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCT & Other Obse	
- WB		Not Observed	8.50m SPT 7 7,10,13 N=23 8.95m 10.00m SPT 8 11,26/130m HB		9.0 —		SM	Silty SAND	fine to medium grained, ç	grey, with rootlets <i>(con</i>	itinued)	w	MD VD	MARINE DE	ample recovery	
SMEC MON-CORED BOREHOLE. 30011998. RURAL AND REGIONAL INTERCHANGES. BYRON BAY GPJ I.Lb. SMEC 1.060 THE SMEC TOOL AND THE COLOUR SMECT TOOL AND SMECT TOOL A			N=R (10.28m		11.0 —	ENETRA	TION	Material Ref	sated at 10.28 m usal	TESTS			ION SY	/MBOLS &	CONSISTE	
N-CORED BOREHOLE 30011906 - RURAL - N-CORED BOREHOLE - RURAL - N-CORED BOREHOLE - N-CORED BORED BOREHOLE - N-CORED BOREHOLE - N-CORED BOREHOLE - N-CORED BORE	AS Auger screwing ADV Auger drilling with V bit ADT Auger drilling with TC bit HF Hollow flight auger WB Wash-bore drilling RR Rock roller SD Sonic drilling NDD Non destructive drilling Level on Date shown								B Bulk Disturbed San D bisturbed Sampl U Undisturbed Sampl ES Environmental S W Water Sample HP Hand Penetrome SPT Standard Penetrome N Result of SPT (*: R Hammer Bounci U50 Undisturbed San V5 Vane Shear; pea PT Push Tube MC Moisture Conten	e ' nple ample ter (kPa) ation Test sample taken) ng / Refusal nple (50mm dia) nple (75mm dia) k/remouded(kPa)	MOISTU D DI M M W W PL PI	sased of ssificar	on Unifition Sy	ed	VS S F St VSt H Fb VL L MD D VD	- Very Soft - Soft - Firm - Stiff - Very Stiff - Hard - Friable - Very Loose - Loose - Medium Dense - Dense - Very Dense
See Explosed details of & basis	of abbr	eviatio	ns										SME			

CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange - LOCATION : Butler St

HOLE NO: BH04 PROJECT NUMBER: 30011906

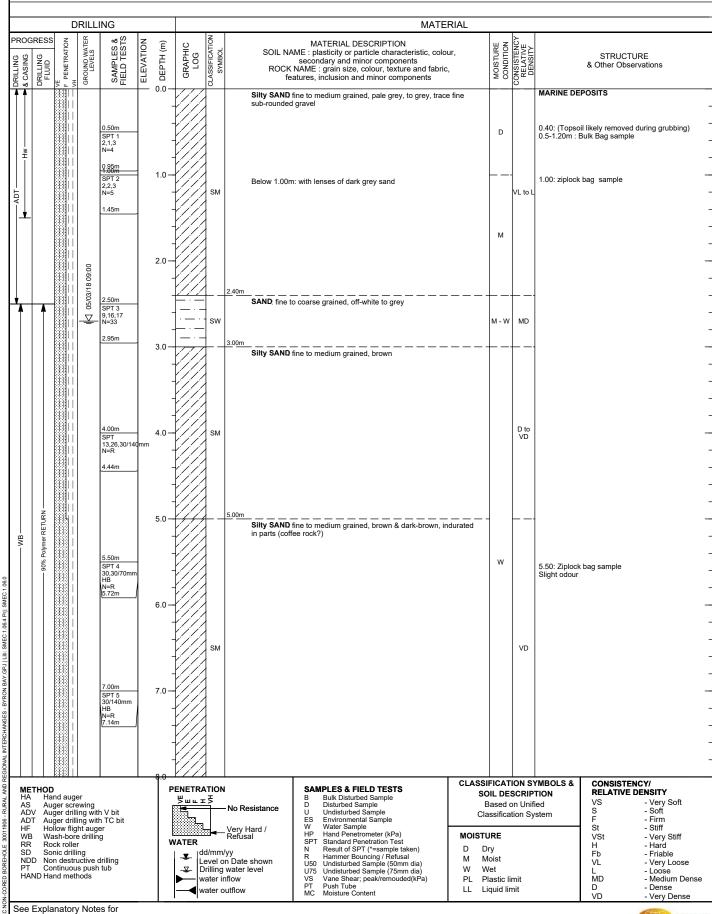
SHEET: 1 OF 2

LOCATION: Butter St FINAL DEPTH: 10.45 m

POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW



details of abbreviations & basis of descriptions.

PROJECT: Rural and Regional Interchange -

HOLE NO: BH04 PROJECT NUMBER: 30011906

SHEET: 2 OF 2

CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH : 10.45 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 110 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW

			0,00,20			COMPLETED : 03/03/2010 DATE EOGGED : 03/03/2010 EOGGED BT : BW											
PD225==		RILLI		1.		MATERIAL >-											
BRILLING & CASING DALLING PLUID FLUID	VE F PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAM S ROCK NA featu	MATERIAL DESCRIPTI E: plasticity or particle cha secondary and minor comp AME: grain size, colour, te ures, inclusion and minor co	racteristic, colour, onents xture and fabric,		MOISTURE	CONSISTENCY RELATIVE DENSITY		& Other Ob	CTURE oservations	
- WB - 60% Polymer RETURN - 60%			8.50m SPT 6 9,13,19 N=32 8.95m	-	8.0 — - - 9.0 — - -		SM	Silty SAND fine in parts (coffee	e to medium grained, brown rock?) (continued) nds of fine to medium, angul			w	VD MD	MARINE DE	POSITS		- - - - -
•			10.00m SPT 7 14,23,30 N=53 10.45m		10.0 - -			10.00m: Trace	gravels. trace clay				VD				 -
I NTERCHANGES - BYRON BAY GPJ Lb: SMEC 1 08.4 Pg. SMEC 1 08.0						ENETRA		Hole Terminate Material Refusa	SAMPLES & FIELD TES'		CLASSIFI	ICATI	/s no	MBOLS &	CONSIST		
HA Han AS Aug ADT Aug HF Holling Was RR Roc SD Son NDD Non PT Con HAND Han	AS Auger screwing ADV Auger drilling with V bit ADT Auger drilling with TC bit HF Hollow flight auger WB Wash-bore drilling RR Rock roller SD Sonic drilling NDD Non destructive drilling Level on Date shown								B Bulk Disturbed Sample U Disturbed Sample U Lindisturbed Sample ES Environmental Sample W Water Sample HP Hand Penetrometer (kF ST) Standard Penetration T N Result of SPT ("=sample (5) Undisturbed Sample (5) U75 Undisturbed Sample (5) V5 Vane Shear; peak/remc PT Push Tube MC Moisture Content	est le taken) fusal l'Indiana l'Indi	MOISTUF D Dry M Moi W We PL Pla:	sed o sificat RE , ist		ed	VS S F St VSt H Fb VL L MD D VD	/E DENSITY - Very So: - Soft - Firm - Stiff - Very Stif - Hard - Friable - Very Loc - Loose - Medium - Dense - Very De	ff ose Dense
See Explar details of a & basis of o	bbrev	riation	S										5MEC				

PROJECT: Rural and Regional Interchange -

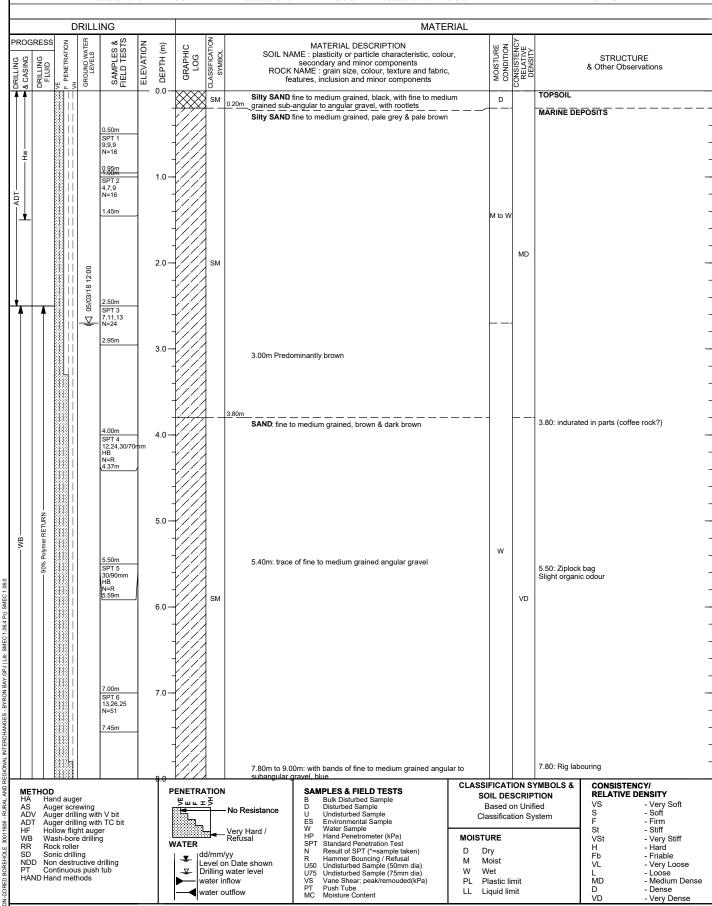
HOLE NO: **BH05** PROJECT NUMBER: 30011906

SHEET: 1 OF 2

FINAL DEPTH: 10.45 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW



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

CLIENT

LOCATION : Butler St

: Sydney Trains

SMEC AUSTRALIA

SMEC

PROJECT: Rural and Regional Interchange -

HOLE NO : BH05 PROJECT NUMBER: 30011906

SHEET: 2 OF 2

CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH : 10.45 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

RIG TYPE: P160 HOLE DIA: 110 mm MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 05/03/2018 DATE COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW

DAT				AIE	COMPLETED: 05/03/2018 DATE LOGGED: 05/03/2018 LOGGED BY: BW CHECKED BY: BW											
			PRILL							MATERIA	TERIAL					
DRILLING & CASING	DRILLING	-1 ≧	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION	DEPTH (m)	GRAPHIC LOG CLASSIFICATION	SOIL NA ROCK fe	MATERIAL DESCRIPTION AME: plasticity or particle charact secondary and minor compone NAME: grain size, colour, textur eatures, inclusion and minor comp	nts e and fabric.		MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTU & Other Obse	IRE rvations
WB	90% Polymer RETURN			8.50m SPT 7 13,24,30/13 N=R 8.93m 10.00m SPT 8 11,18,30/11 HB N=R		8.0 — - - 9.0 — - - - 10.0 —	SM	SAND fine t	to medium grained, brown & dark br	own (continued		w	VD	MARINE DE	POSITS mple recovery	
						- - 11.0 — - - - 12.0 —		Hole Termir Material Ref	nated at 10.45 m fusal							
SMEC 1.06.4 Prj: SMEC 1.06.0						- 13.0 — - - - 14.0 —										
DB - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ Lbb : D P P H D C S B	THOD Ha Au V Au T Au) nd augger scr ger scr ger dril ger dril	er ewing ling wit ling wit	h V bit h TC bit		15.0 —	ENETRATIO Sur. 15	N - No Resistance	SAMPLES & FIELD TESTS B Bulk Disturbed Sample D bisturbed Sample U Undisturbed Sample ES Environmental Sample		SOI Ba	L DES	ION SY SCRIP on Unifition Sy	ed	CONSISTEN RELATIVE I VS S F	DENSITY - Very Soft - Soft - Firm
NON-CORED BOREHOLE 300190	METHOD HA Hand auger As Auger screwing ADV Auger drilling with V bit ADT Auger drilling with TC bit HF Hollow flight auger WB Wash-bore drilling Rock roller Sonic drilling NDD Non destructive drilling HAND Hand methods Te Explanatory Notes for			v	→ Drilling water	on Date shown water level	W Water Sample HP Hand Penetrometer (kPa) SPT Standard Penetration Test N Result of SPT ("=sample tal R Hammer Bouncing / Refusa U50 Undisturbed Sample (50mm U75 Undisturbed Sample (75mm VS Vane Shear, peak/remoude PT Push Tube MC Moisture Content	dia)		y oist			St VSt H Fb VL L MD D VD	- Stiff - Very Stiff - Hard - Friable - Very Loose - Loose - Medium Dens - Dense - Very Dense		

PROJECT: Rural and Regional Interchange -

CLIENT

LOCATION : Butler St

: Sydney Trains

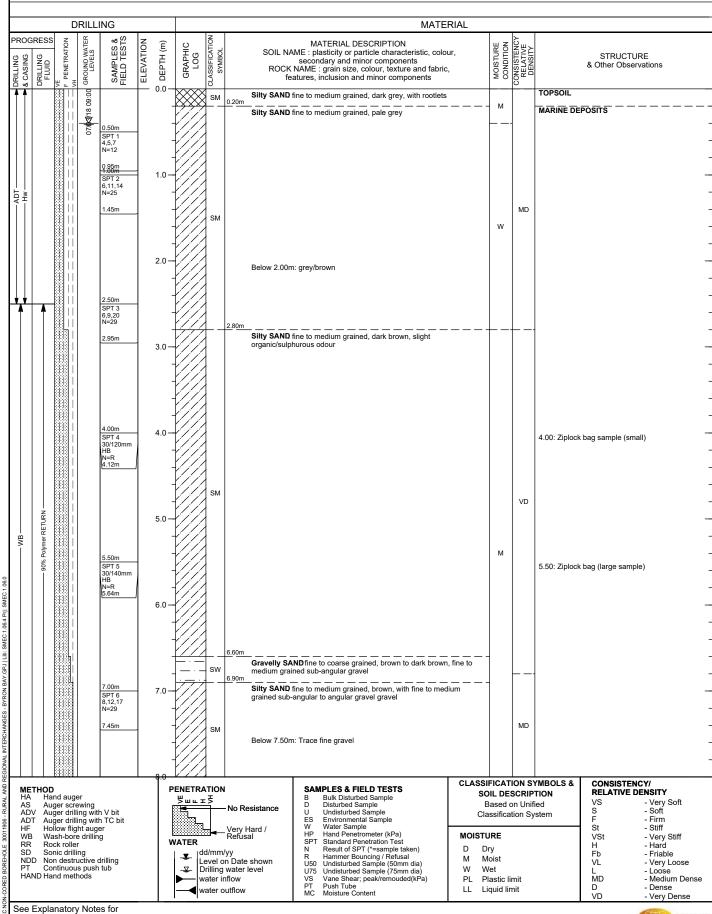
HOLE NO: **BH06** PROJECT NUMBER: 30011906

SHEET: 1 OF 2

FINAL DEPTH: 10.45 m POSITION SURFACE ELEVATION: INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 07/03/2018 DATE COMPLETED: 07/03/2018 DATE LOGGED: 07/03/2018 LOGGED BY: BW CHECKED BY: BW



details of abbreviations & basis of descriptions.

CLIENT : Sydney Trains PROJECT: Rural and Regional Interchange -

HOLE NO: BH06
PROJECT NUMBER: 30011906

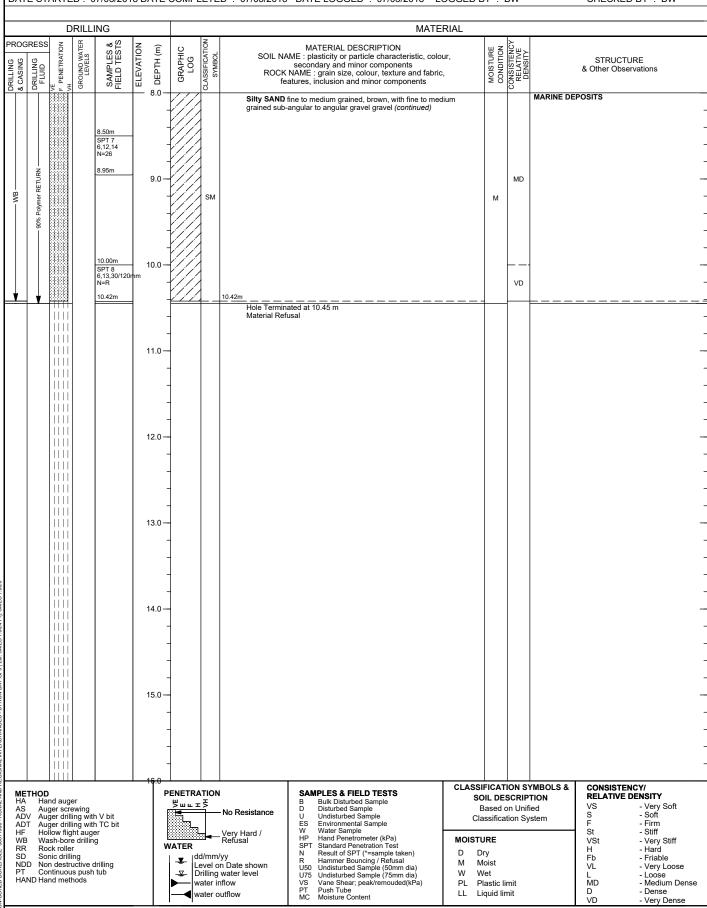
SHEET: 2 OF 2

 LOCATION: Butler St
 FINAL DEPTH: 10.45 m

 POSITION:
 SURFACE ELEVATION:
 INCLINATION° / ORIENTATION°: 90° / N/A

RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling HOLE DIA: 110 mm

DATE STARTED: 07/03/2018 DATE COMPLETED: 07/03/2018 DATE LOGGED: 07/03/2018 LOGGED BY: BW CHECKED BY: BW



PROJECT: Rural and Regional Interchange -

HOLE NO: BH07 PROJECT NUMBER: 30011906

SHEET: 1 OF 1

CLIENT : Sydney Trains LOCATION : Butler St FINAL DEPTH: 1 m POSITION: SURFACE ELEVATION: INCLINATION° / ORIENTATION° : 90° / N/A

HOLE DIA: 180 mm RIG TYPE: P160 MOUNTING: Track CONTRACTOR: North Coast Drilling

DATE STARTED: 06/03/2018 DATE COMPLETED: 06/03/2018 DATE LOGGED: 06/03/2018 LOGGED BY: BW CHECKED BY: BW

		DATE STARTED: 06/03/2018 DAT										S LOGGED B				CHECKED	
-			DR	ILLII	NG			MATERIAL									
⊢		DRILLING SS FLUID SS	F PENETRATION VH	LEVELS	SAMPLES & FIELD TESTS	ELEVATION	, DEРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	ROCK	MATERIAL DESCRIPTION ME : plasticity or particle characteristic secondary and minor components NAME : grain size, colour, texture and atures, inclusion and minor component	fabric,	MOISTURE	CONSISTENCY RELATIVE DENSITY		STRUCTUI & Other Observ	RE vations
	A	80888		p _o		T	0.0			SAND: fine to	o medium grained, off-white & pale grey				MARINE DEI	POSITS	
	AS				0.50m B-1	-			SP	1.00m			D to M	MD	0.50: Bulk sa	mple taken	
							-			Hole Termin Target Deptl	ated at 1.00 m า						
		l li					-										
		Į į					-										
							2.0-										
							2.0 -										
							-										
		1.7					-										
		Į į					3.0—										_
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		Į į					-										
							-										
1.06.0							-										
		Į į					6.0										
.06.4 Prj							-										
: SMEC :		Į į	111				-										
.GPJ Lib							-										
RON BAY		1.	111				7.0 —										
ES - BYF							-										
RCHANG							-										
VAL INTE							-										
D REGIOI			<u>iiil</u>				8.0					CLASSI	FICAT	ION S	YMBOLS &	CONSISTEN	CY/
NON-CORED BOREHOLE 30011906 - RURAL AND REGIONAL INTERCHANGES - BYRON BAY GPJ LB; SMEC 1,064 Ptj SMEC	HA AS AD\ ADT HF WB RR SD NDI	Auge / Auge Hollo Wasl Rock Sonio	w flight n-bore d roller drilling destruct	with auge rilling	TC bit			- L	d/mm/	Very Hard / Refusal	SAMPLES & FIELD TESTS B Bulk Disturbed Sample D Disturbed Sample U Undisturbed Sample ES Environmental Sample W Water Sample HP Hand Penetrometer (kPa) SPT Standard Penetration Test N Result of SPT ("sample taken) R Hammer Bouncing / Refusal U50 Undisturbed Sample (50mm dia)	MOISTL D DI M M	ry oist	on Unif	ied	RÉLATIVE D VS S F St VSt H Fb VL	
N-CORED BO	PT HAN	Cont ND Hand	inuous p I metho	oush i	tub			w D	rilling ater ir	water level	U50 Undisturbed Sample (50mm dia) U75 Undisturbed Sample (75mm dia) VS Vane Shear; peak/remouded(kPa) PT Push Tube MC Moisture Content	PL PI	et astic li quid lir			MD D VD	- Loose - Medium Dense - Dense - Very Dense



GEOLOGICAL LOG BORE HOLE WITH STANDPIPE / PIEZOMETER

HOLE No: GW06 SHEET No: 1 of 1

PROJECT No: 30011906

SURFACE ELEVATION:

TOP OF CASING:

PROJECT : Byron Bay Transport Interchange CLIENT : Sydney Trains
PURPOSE : Groundwater Monitoring Well POSITION :

LOCATION : Byron Bay FINAL DEPTH: 2.5m

ANGLE FROM HORIZONTAL : 90°

Drill	ing	De	pth				MATERIAL	Standpipe Co	nstruction	OTHER OBSERVATIONS
Method	Support	Elev (AHD)	Depth (m)	Water	Moisture Condition	Graphic Log	MATERIAL DESCRIPTION SOIL NAME: plasticity or particle characteristicolour, secondary and minor components ROCK NAME: grain size, colour, texture and fabric, features, inclusion and minor componen	Construction Details	Construction notes	Notes (Structure, origin, etc)
								0000	Concrete: Gatic cover Bentonite:	
-									Cuttings:	
-			- 1 -						Start Slotted 1m	-
-				-					Sand: Collapsed natural sand	
_			- 2 -							-
								-	End Slotted 2.5m	
-			- 3 -							-
-										-
_			- 4 -							-
-										-
-			- 5 -							-
-										
-			- 6 -							_
-										_
Note	s: Þ	— Inflo	w —	Outflow _	V Stor	nding W	ater Level Pipe Description:	Pir	e Screen Details: Slotted PV0	<u> </u>
CON	TRAC	TOR:			5.61		COMME	NCED: 5/03/2018		LOGGED BY: LJ CHECKED BY: LJ

Appendix G	Laboratory Certificates



Envirolab Services Pty Ltd

ABN 37 112 535 645 12 Ashley St Chatswood NSW 2067 ph 02 9910 6200 fax 02 9910 6201 customerservice@envirolab.com.au www.envirolab.com.au

CERTIFICATE OF ANALYSIS 186714

Client Details	
Client	SMEC Australia
Attention	Lachlan Bollen, Luke Jenkins
Address	Level 5, 20 Berry St, North Sydney, NSW, 2060

Sample Details	
Your Reference	30011906 - Byron Bay Transport Interchange
Number of Samples	19 soil, 5 water
Date samples received	07/03/2018
Date completed instructions received	07/03/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details		
Date results requested by	15/03/2018	
Date of Issue	15/03/2018	
NATA Accreditation Number 290	. This document shall not be reproduced except in full.	
Accredited for compliance with IS	O/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Paul Ching Authorised by Asbestos Approved Signatory: Paul Ching

Results Approved By

Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Senior Chemist
Jeremy Faircloth, Organics Supervisor
Long Pham, Team Leader, Metals
Nick Sarlamis, Inorganics Supervisor
Paul Ching, Senior Analyst
Priya Samarawickrama, Senior Chemist
Steven Luong, Senior Chemist

Authorised By

David Springer, General Manager



vTRH(C6-C10)/BTEXN in Soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	107	103	101	107

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
TRH C6 - C9	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	107	103	101	102

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		186714-11	186714-16	186714-17
Your Reference	UNITS	QC1	ТВ	TS
Depth		-	-	-
Date Sampled		05/03/2018	06/03/2018	06/03/2018
Type of sample		soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	[NA]
TRH C ₆ - C ₁₀	mg/kg	<25	<25	[NA]
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	100%
Toluene	mg/kg	<0.5	<0.5	100%
Ethylbenzene	mg/kg	<1	<1	97%
m+p-xylene	mg/kg	<2	<2	99%
o-Xylene	mg/kg	<1	<1	100%
naphthalene	mg/kg	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	105	107	98

svTRH (C10-C40) in Soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	10/03/2018	10/03/2018	10/03/2018	10/03/2018	10/03/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	83	82	82	82

svTRH (C10-C40) in Soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	10/03/2018	10/03/2018	10/03/2018	10/03/2018	10/03/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	160	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	150	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	200	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	350	<50
Surrogate o-Terphenyl	%	82	81	81	82	82

svTRH (C10-C40) in Soil		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date extracted	-	09/03/2018
Date analysed	-	10/03/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	80

PAHs in Soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	101	103	103	101

PAHs in Soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.2	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	103	100	100	101	106

PAHs in Soil		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date extracted	-	09/03/2018
Date analysed	-	09/03/2018
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	95

Organochlorine Pesticides in soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
нсв	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	80	86	87	82

Organochlorine Pesticides in soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
нсв	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	85	86	87	96	87

Organochlorine Pesticides in soil		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date extracted	-	09/03/2018
Date analysed	-	09/03/2018
нсв	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	84

Organophosphorus Pesticides						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	80	86	87	82

Organophosphorus Pesticides						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	85	86	87	96	87

Organophosphorus Pesticides		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date extracted	-	09/03/2018
Date analysed	-	09/03/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate TCMX	%	84

PCBs in Soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	87	80	86	87	82

PCBs in Soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	85	86	87	96	87

PCBs in Soil		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date extracted	-	09/03/2018
Date analysed	-	09/03/2018
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCLMX	%	84

Acid Extractable metals in soil						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	10/03/2018	10/03/2018	10/03/2018	10/03/2018	10/03/2018
Arsenic	mg/kg	17	<4	<4	12	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	<1	2	4	1
Copper	mg/kg	23	<1	<1	9	6
Lead	mg/kg	100	<1	1	48	34
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	<1	<1	4	<1
Zinc	mg/kg	49	9	6	36	26

Acid Extractable metals in soil						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	10/03/2018	10/03/2018	10/03/2018	10/03/2018	10/03/2018
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	<1	2	<1	<1	<1
Lead	mg/kg	<1	15	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	<1	<1	<1	<1
Zinc	mg/kg	<1	8	<1	<1	<1

Acid Extractable metals in soil		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date prepared	-	09/03/2018
Date analysed	-	10/03/2018
Arsenic	mg/kg	15
Cadmium	mg/kg	<0.4
Chromium	mg/kg	6
Copper	mg/kg	14
Lead	mg/kg	90
Mercury	mg/kg	<0.1
Nickel	mg/kg	4
Zinc	mg/kg	41

Misc Soil - Inorg						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	13/03/2018	13/03/2018	13/03/2018	13/03/2018	13/03/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	13/03/2018	13/03/2018	13/03/2018	13/03/2018	13/03/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date prepared	-	09/03/2018
Date analysed	-	13/03/2018
Total Phenolics (as Phenol)	mg/kg	<5

Moisture						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	12/03/2018	12/03/2018	12/03/2018	12/03/2018	12/03/2018
Moisture	%	19	20	27	14	9.8

Moisture						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	12/03/2018	12/03/2018	12/03/2018	12/03/2018	12/03/2018
Moisture	%	20	14	14	25	24

Moisture		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date prepared	-	09/03/2018
Date analysed	-	12/03/2018
Moisture	%	15

Asbestos ID - soils						
Our Reference		186714-1	186714-2	186714-3	186714-4	186714-5
Your Reference	UNITS	TP1	TP1	TP1	TP2	TP2
Depth		0.0-0.2	0.4-0.5	1.0-1.1	0.0-0.2	0.4-0.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	15/03/2018	15/03/2018	15/03/2018	15/03/2018	15/03/2018
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 35g	Approx. 35g
Sample Description	-	Brown sandy soil	Grey sandy soil	Black sandy soil	Brown sandy soil	Grey sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre				
		detected	detected	detected	detected	detected
Trace Analysis	-	No asbestos detected				

Asbestos ID - soils						
Our Reference		186714-6	186714-7	186714-8	186714-9	186714-10
Your Reference	UNITS	TP2	TP3	TP3	TP3	TP3
Depth		1.1-1.2	0.0-0.1	0.4-0.5	1.6-1.7	2.4-2.5
Date Sampled		05/03/2018	05/03/2018	05/03/2018	05/03/2018	05/03/2018
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	15/03/2018	15/03/2018	15/03/2018	15/03/2018	15/03/2018
Sample mass tested	g	Approx. 30g	Approx. 35g	Approx. 35g	Approx. 30g	Approx. 30g
Sample Description	-	Grey sandy soil	Grey sandy soil	Grey sandy soil	Grey sandy soil	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre				
		detected	detected	detected	detected	detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils		
Our Reference		186714-11
Your Reference	UNITS	QC1
Depth		-
Date Sampled		05/03/2018
Type of sample		soil
Date analysed	-	15/03/2018
Sample mass tested	g	Approx. 30g
Sample Description	-	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibre detected
Trace Analysis	-	No asbestos detected

Soil Aggressivity				
Our Reference		186714-20	186714-22	186714-24
Your Reference	UNITS	BH03	BH04	BH05
Depth		1.0-1.45	1.0-1.45	5.5-5.59
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		soil	soil	soil
pH 1:5 soil:water	pH Units	6.0	6.2	4.8
Electrical Conductivity 1:5 soil:water	μS/cm	25	10	51
Resistivity by calculation	ohm m	410	1,000	200
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10
Sulphate, SO4 1:5 soil:water	mg/kg	<10	<10	62

vTRH(C6-C10)/BTEXN in Water						
Our Reference		186714-12	186714-13	186714-14	186714-18	186714-19
Your Reference	UNITS	GW1	GW6	QC1	ТВ	TS
Depth		-	-	-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water	water	water
Date extracted	-	08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Date analysed	-	09/03/2018	09/03/2018	09/03/2018	09/03/2018	09/03/2018
TRH C ₆ - C ₉	μg/L	<10	<10	<10	<10	[NA]
TRH C ₆ - C ₁₀	μg/L	<10	<10	<10	<10	[NA]
TRH C ₆ - C ₁₀ less BTEX (F1)	μg/L	<10	<10	<10	<10	[NA]
Benzene	μg/L	<1	<1	<1	<1	105%
Toluene	μg/L	<1	<1	<1	<1	106%
Ethylbenzene	μg/L	<1	<1	<1	<1	110%
m+p-xylene	μg/L	<2	<2	<2	<2	115%
o-xylene	μg/L	<1	<1	<1	<1	115%
Naphthalene	μg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	117	118	118	118	118
Surrogate toluene-d8	%	114	115	114	113	119
Surrogate 4-BFB	%	113	113	113	114	124

svTRH (C10-C40) in Water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	10/03/2018	10/03/2018	10/03/2018
TRH C ₁₀ - C ₁₄	μg/L	340	<50	<50
TRH C ₁₅ - C ₂₈	μg/L	100	<100	<100
TRH C ₂₉ - C ₃₆	μg/L	180	<100	<100
TRH >C ₁₀ - C ₁₆	μg/L	340	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	μg/L	340	<50	<50
TRH >C ₁₆ - C ₃₄	μg/L	180	<100	<100
TRH >C ₃₄ - C ₄₀	μg/L	<100	<100	<100
Surrogate o-Terphenyl	%	62	98	77

PAHs in Water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	12/03/2018	12/03/2018	09/03/2018
Date analysed	-	12/03/2018	12/03/2018	09/03/2018
Naphthalene	μg/L	<1	<1	<1
Acenaphthylene	μg/L	<1	<1	<1
Acenaphthene	μg/L	<1	<1	<1
Fluorene	μg/L	<1	<1	<1
Phenanthrene	μg/L	<1	<1	<1
Anthracene	μg/L	<1	<1	<1
Fluoranthene	μg/L	<1	<1	<1
Pyrene	μg/L	<1	<1	<1
Benzo(a)anthracene	μg/L	<1	<1	<1
Chrysene	μg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	μg/L	<2	<2	<2
Benzo(a)pyrene	μg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	μg/L	<1	<1	<1
Dibenzo(a,h)anthracene	μg/L	<1	<1	<1
Benzo(g,h,i)perylene	μg/L	<1	<1	<1
Benzo(a)pyrene TEQ	μg/L	<5	<5	<5
Total +ve PAH's	μg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	76	100	80

Total Phenolics in Water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	12/03/2018	12/03/2018	12/03/2018
Date analysed	-	12/03/2018	12/03/2018	12/03/2018
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05

OCP in water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	13/03/2018	13/03/2018	09/03/2018
нсв	μg/L	<0.2	<0.2	<0.2
alpha-BHC	μg/L	<0.2	<0.2	<0.2
gamma-BHC	μg/L	<0.2	<0.2	<0.2
beta-BHC	μg/L	<0.2	<0.2	<0.2
Heptachlor	μg/L	<0.2	<0.2	<0.2
delta-BHC	μg/L	<0.2	<0.2	<0.2
Aldrin	μg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	μg/L	<0.2	<0.2	<0.2
gamma-Chlordane	μg/L	<0.2	<0.2	<0.2
alpha-Chlordane	μg/L	<0.2	<0.2	<0.2
Endosulfan I	μg/L	<0.2	<0.2	<0.2
pp-DDE	μg/L	<0.2	<0.2	<0.2
Dieldrin	μg/L	<0.2	<0.2	<0.2
Endrin	μg/L	<0.2	<0.2	<0.2
pp-DDD	μg/L	<0.2	<0.2	<0.2
Endosulfan II	μg/L	<0.2	<0.2	<0.2
pp-DDT	μg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	μg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	μg/L	<0.2	<0.2	<0.2
Methoxychlor	μg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	81	73	70

OP Pesticides in water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	13/03/2018	13/03/2018	09/03/2018
Azinphos-methyl (Guthion)	μg/L	<0.2	<0.2	<0.2
Bromophos ethyl	μg/L	<0.2	<0.2	<0.2
Chlorpyriphos	μg/L	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	μg/L	<0.2	<0.2	<0.2
Diazinon	μg/L	<0.2	<0.2	<0.2
Dichlorovos	μg/L	<0.2	<0.2	<0.2
Dimethoate	μg/L	<0.2	<0.2	<0.2
Ethion	μg/L	<0.2	<0.2	<0.2
Fenitrothion	μg/L	<0.2	<0.2	<0.2
Malathion	μg/L	<0.2	<0.2	<0.2
Parathion	μg/L	<0.2	<0.2	<0.2
Ronnel	μg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	81	73	70

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PCBs in Water				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date extracted	-	09/03/2018	09/03/2018	09/03/2018
Date analysed	-	13/03/2018	13/03/2018	09/03/2018
Aroclor 1016	μg/L	<2	<2	<2
Aroclor 1221	μg/L	<2	<2	<2
Aroclor 1232	μg/L	<2	<2	<2
Aroclor 1242	μg/L	<2	<2	<2
Aroclor 1248	μg/L	<2	<2	<2
Aroclor 1254	μg/L	<2	<2	<2
Aroclor 1260	μg/L	<2	<2	<2
Surrogate TCLMX	%	81	73	70

HM in water - dissolved				
Our Reference		186714-12	186714-13	186714-14
Your Reference	UNITS	GW1	GW6	QC1
Depth		-	-	-
Date Sampled		06/03/2018	06/03/2018	06/03/2018
Type of sample		water	water	water
Date prepared	-	13/03/2018	13/03/2018	13/03/2018
Date analysed	-	13/03/2018	13/03/2018	13/03/2018
Arsenic-Dissolved	μg/L	27	2	2
Cadmium-Dissolved	μg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	μg/L	<1	<1	<1
Copper-Dissolved	μg/L	2	2	2
Lead-Dissolved	μg/L	7	2	1
Mercury-Dissolved	μg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	μg/L	2	1	1
Zinc-Dissolved	μg/L	51	24	21

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Stainir Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the result water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayme Lyons. Resistivity is calculated from Conductivity.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyer.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
	F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables (3, 4)). Note Naphthalene is determined from the VOC analysis.
	Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum or positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
	Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <pql "total="" 'eq="" +ve="" 2.="" 3.="" <pql="" a="" above.="" actually="" all="" and="" approach="" approaches="" are="" as="" assuming="" at="" be="" below="" between="" but="" calculation="" can="" conservative="" contribute="" contributing="" false="" give="" given="" half="" hence="" individual="" is="" least="" lowest="" may="" mid-point="" more="" most="" negative="" not="" note,="" of="" pahs="" pahs"="" pahs.<="" positive="" pql="" pql'values="" pql.="" present="" present.="" reflective="" reported="" simply="" stipulated="" sum="" susceptible="" td="" teq="" teqs="" that="" the="" therefore="" this="" to="" total="" when="" zero'values="" zero.=""></pql>
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONT	ROL: vTRH	(C6-C10).	/BTEXN in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date extracted	-			08/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	117	99
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	117	99
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	101	86
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	116	96
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	120	103
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	125	105
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	123	104
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	120	1	103	106	3	122	103

QUALITY CONT	ROL: vTRH	(C6-C10)	/BTEXN in Soil			Du	plicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]	
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			[NT]	
Date analysed	-			[NT]	11	09/03/2018	09/03/2018			[NT]	
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	11	<25	<25	0		[NT]	
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	11	<25	<25	0		[NT]	
Benzene	mg/kg	0.2	Org-016	[NT]	11	<0.2	<0.2	0		[NT]	
Toluene	mg/kg	0.5	Org-016	[NT]	11	<0.5	<0.5	0		[NT]	
Ethylbenzene	mg/kg	1	Org-016	[NT]	11	<1	<1	0		[NT]	
m+p-xylene	mg/kg	2	Org-016	[NT]	11	<2	<2	0		[NT]	
o-Xylene	mg/kg	1	Org-016	[NT]	11	<1	<1	0		[NT]	
naphthalene	mg/kg	1	Org-014	[NT]	11	<1	<1	0		[NT]	
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	11	105	111	6		[NT]	

QUALITY CO	NTROL: svT	RH (C10	-C40) in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date extracted	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			10/03/2018	1	10/03/2018	10/03/2018		10/03/2018	10/03/2018
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	104	106
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	102	98
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	92	99
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	104	106
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	102	98
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	92	99
Surrogate o-Terphenyl	%		Org-003	89	1	83	83	0	94	83

QUALITY CO	NTROL: svT	RH (C10	-C40) in Soil			Du		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			
Date analysed	-			[NT]	11	10/03/2018	10/03/2018			
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	11	<50	<50	0		
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	11	<100	<100	0		
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	11	<100	<100	0		
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	11	<50	<50	0		
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	11	<100	<100	0		
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	11	<100	<100	0		
Surrogate o-Terphenyl	%		Org-003	[NT]	11	80	80	0		

QUALIT	Y CONTRO	L: PAHs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date extracted	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	94	82
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	93	85
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	95	80
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	96	83
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	102	87
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	104	96
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	102	93
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	105	1	101	99	2	102	96

QUA	LITY CONTRO	in Soil		Du		Spike Recovery %				
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Date analysed	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	11	<0.2	<0.2	0		[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	11	<0.05	<0.05	0		[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0		[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	11	95	103	8		[NT]

QUALITY CO	ONTROL: Organo	chlorine I	Pesticides in soil			Du	plicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2		
Date extracted	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018		
Date analysed	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018		
НСВ	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	94		
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	84		
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	80	74		
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	90		
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	90		
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	98	96		
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	101		
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	85	79		
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	88		
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	89	82		
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]		
Surrogate TCMX	%		Org-005	87	1	87	82	6	102	99		

QUALITY CO	NTROL: Organo	chlorine F	Pesticides in soil			Du	plicate	Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Date analysed	-			[NT]	11	09/03/2018	09/03/2018			[NT]
НСВ	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0		[NT]
Surrogate TCMX	%		Org-005	[NT]	11	84	84	0		[NT]

QUALITY CONT	ROL: Organ	ophosph	orus Pesticides			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date extracted	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	110	92
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	108	103
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	115	97
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	114	98
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	102	83
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	110	112
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	126	104
Surrogate TCMX	%		Org-008	87	1	87	82	6	93	82

QUALITY CONT	ROL: Organ	ophospho	orus Pesticides			Du	plicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]	
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			[NT]	
Date analysed	-			[NT]	11	09/03/2018	09/03/2018			[NT]	
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Diazinon	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Dichlorvos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Dimethoate	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Ethion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Fenitrothion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Malathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Parathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Ronnel	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0		[NT]	
Surrogate TCMX	%		Org-008	[NT]	11	84	84	0		[NT]	

QUALIT	Y CONTRO	L: PCBs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date extracted	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	103	95
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0		[NT]
Surrogate TCLMX	%		Org-006	87	1	87	82	6	93	82

QUA	LITY CONTRO	L: PCBs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Date analysed	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0		[NT]
Surrogate TCLMX	%		Org-006	[NT]	11	84	84	0		[NT]

QUALITY CONT	ROL: Acid E	xtractabl	e metals in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date prepared	-			09/03/2018	1	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			10/03/2018	1	10/03/2018	10/03/2018		10/03/2018	10/03/2018
Arsenic	mg/kg	4	Metals-020	<4	1	17	21	21	113	102
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	106
Chromium	mg/kg	1	Metals-020	<1	1	6	6	0	110	105
Copper	mg/kg	1	Metals-020	<1	1	23	37	47	112	103
Lead	mg/kg	1	Metals-020	<1	1	100	110	10	107	106
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	107	103
Nickel	mg/kg	1	Metals-020	<1	1	4	4	0	108	107
Zinc	mg/kg	1	Metals-020	<1	1	49	53	8	107	115

QUALITY CONT	ROL: Acid E	xtractable	e metals in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	09/03/2018	09/03/2018			[NT]
Date analysed	-			[NT]	11	10/03/2018	10/03/2018			[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	15	16	6		[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0		[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	6	6	0		[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	14	15	7		[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	90	98	9		[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0		[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	4	5	22		[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	41	45	9		[NT]

QUALITY	CONTROL	Misc Soi	l - Inorg			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	186714-2
Date prepared	-			13/03/2018	1	09/03/2018	09/03/2018		13/03/2018	13/03/2018
Date analysed	-			13/03/2018	1	13/03/2018	13/03/2018		13/03/2018	13/03/2018
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	100	99

QUALITY	CONTROL	Misc Soi	l - Inorg			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	09/03/2018	09/03/2018		[NT]	[NT]
Date analysed	-			[NT]	11	13/03/2018	13/03/2018		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	11	<5	<5	0	[NT]	[NT]

QUALITY	CONTROL:	Soil Agg	ressivity			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]		[NT]	[NT]	103	[NT]
Electrical Conductivity 1:5 soil:water	μS/cm	1	Inorg-002	<1	[NT]		[NT]	[NT]	100	[NT]
Resistivity by calculation	ohm m	0.1	Inorg-002	<0.1	[NT]		[NT]	[NT]		[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]		[NT]	[NT]	99	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	[NT]	[NT]	109	[NT]

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QUALITY CONT	ROL: vTRH(C6-C10)/E	BTEXN in Water			Du	plicate		Spike Red	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			08/03/2018	[NT]		[NT]	[NT]	08/03/2018	
Date analysed	-			09/03/2018	[NT]		[NT]	[NT]	09/03/2018	
TRH C ₆ - C ₉	μg/L	10	Org-016	<10	[NT]		[NT]	[NT]	113	
TRH C ₆ - C ₁₀	μg/L	10	Org-016	<10	[NT]		[NT]	[NT]	113	
Benzene	μg/L	1	Org-016	<1	[NT]		[NT]	[NT]	108	
Toluene	μg/L	1	Org-016	<1	[NT]		[NT]	[NT]	113	
Ethylbenzene	μg/L	1	Org-016	<1	[NT]		[NT]	[NT]	113	
m+p-xylene	μg/L	2	Org-016	<2	[NT]		[NT]	[NT]	115	
o-xylene	μg/L	1	Org-016	<1	[NT]		[NT]	[NT]	113	
Naphthalene	μg/L	1	Org-013	<1	[NT]		[NT]	[NT]	[NT]	
Surrogate Dibromofluoromethane	%		Org-016	118	[NT]		[NT]	[NT]	117	
Surrogate toluene-d8	%		Org-016	113	[NT]		[NT]	[NT]	121	
Surrogate 4-BFB	%		Org-016	114	[NT]		[NT]	[NT]	122	

QUALITY CON	ITROL: svTF	RH (C10-0	C40) in Water			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	186714-12
Date extracted	-			12/03/2018	14	09/03/2018	09/03/2018		12/03/2018	09/03/2018
Date analysed	-			12/03/2018	14	10/03/2018	10/03/2018		12/03/2018	10/03/2018
TRH C ₁₀ - C ₁₄	μg/L	50	Org-003	<50	14	<50	<50	0	98	93
TRH C ₁₅ - C ₂₈	μg/L	100	Org-003	<100	14	<100	<100	0	100	87
TRH C ₂₉ - C ₃₆	μg/L	100	Org-003	<100	14	<100	<100	0	86	94
TRH >C ₁₀ - C ₁₆	μg/L	50	Org-003	<50	14	<50	<50	0	98	93
TRH >C ₁₆ - C ₃₄	μg/L	100	Org-003	<100	14	<100	<100	0	100	87
TRH >C ₃₄ - C ₄₀	μg/L	100	Org-003	<100	14	<100	<100	0	86	94
Surrogate o-Terphenyl	%		Org-003	81	14	77	80	4	102	62

QUALIT	TY CONTROL	: PAHs ir	Water			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	186714-12
Date extracted	-			12/03/2018	14	09/03/2018	09/03/2018		12/03/2018	09/03/2018
Date analysed	-			12/03/2018	14	09/03/2018	09/03/2018		12/03/2018	09/03/2018
Naphthalene	μg/L	1	Org-012	<1	14	<1	<1	0	87	60
Acenaphthylene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Acenaphthene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Fluorene	μg/L	1	Org-012	<1	14	<1	<1	0	90	63
Phenanthrene	μg/L	1	Org-012	<1	14	<1	<1	0	90	60
Anthracene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Fluoranthene	μg/L	1	Org-012	<1	14	<1	<1	0	93	61
Pyrene	μg/L	1	Org-012	<1	14	<1	<1	0	95	63
Benzo(a)anthracene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Chrysene	μg/L	1	Org-012	<1	14	<1	<1	0	96	67
Benzo(b,j+k)fluoranthene	μg/L	2	Org-012	<2	14	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	μg/L	1	Org-012	<1	14	<1	<1	0	93	67
Indeno(1,2,3-c,d)pyrene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	μg/L	1	Org-012	<1	14	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	96	14	80	80	0	118	83

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QUALITY CO	NTROL: Tot	al Phenol	ics in Water			Du	olicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/03/2018	12	12/03/2018	12/03/2018		12/03/2018	
Date analysed	-			12/03/2018	12	12/03/2018	12/03/2018		12/03/2018	
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	12	<0.05	<0.05	0	100	

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QUAL	LITY CONTRO	L: OCP ir	water			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	186714-12
Date extracted	-			09/03/2018	14	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			13/03/2018	14	09/03/2018	13/03/2018		09/03/2018	09/03/2018
нсв	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
alpha-BHC	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	83	74
gamma-BHC	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	80	69
Heptachlor	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	81	74
delta-BHC	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
Aldrin	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	79	70
Heptachlor Epoxide	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	82	68
gamma-Chlordane	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	79	75
Dieldrin	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	93	82
Endrin	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	88	76
pp-DDD	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	81	72
Endosulfan II	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
Endrin Aldehyde	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	90	79
Methoxychlor	μg/L	0.2	Org-005	<0.2	14	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	72	14	70	88	23	72	74

QUALITY (CONTROL: O	P Pesticid	les in water			Du	Spike Recovery %					
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	186714-13		
Date extracted	-			09/03/2018	14	09/03/2018	09/03/2018		09/03/2018	09/03/2018		
Date analysed	-			13/03/2018	14	09/03/2018	13/03/2018		09/03/2018	09/03/2018		
Azinphos-methyl (Guthion)	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	[NT]	[NT]		
Bromophos ethyl	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	[NT]	[NT]		
Chlorpyriphos	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	98	76		
Chlorpyriphos-methyl	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	[NT]	[NT]		
Diazinon	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	[NT]	[NT]		
Dichlorovos	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	87	84		
Dimethoate	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	[NT]	[NT]		
Ethion	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	88	75		
Fenitrothion	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	114	100		
Malathion	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	105	104		
Parathion	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	110	117		
Ronnel	μg/L	0.2	Org-008	<0.2	14	<0.2	<0.2	0	107	84		
Surrogate TCMX	%		Org-008	72	14	70	88	23	85	70		

QUALITY	CONTROL	: PCBs ir		Du	plicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	186714-13
Date extracted	-			09/03/2018	14	09/03/2018	09/03/2018		09/03/2018	09/03/2018
Date analysed	-			13/03/2018	14	09/03/2018	13/03/2018		09/03/2018	09/03/2018
Aroclor 1016	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Aroclor 1221	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Aroclor 1232	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Aroclor 1242	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Aroclor 1248	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Aroclor 1254	μg/L	2	Org-006	<2	14	<2	<2	0	103	108
Aroclor 1260	μg/L	2	Org-006	<2	14	<2	<2	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	72	14	70	88	23	85	70

QUALITY CO	NTROL: HN	1 in water		Du		Spike Recovery %				
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			13/03/2018	12	13/03/2018	13/03/2018		13/03/2018	
Date analysed	-			13/03/2018	12	13/03/2018	13/03/2018		13/03/2018	
Arsenic-Dissolved	μg/L	1	Metals-022	<1	12	27	[NT]		100	
Cadmium-Dissolved	μg/L	0.1	Metals-022	<0.1	12	<0.1	[NT]		100	
Chromium-Dissolved	μg/L	1	Metals-022	<1	12	<1	[NT]		100	
Copper-Dissolved	μg/L	1	Metals-022	<1	12	2	[NT]		99	
Lead-Dissolved	μg/L	1	Metals-022	<1	12	7	[NT]		106	
Mercury-Dissolved	μg/L	0.05	Metals-021	<0.05	12	<0.05	<0.05	0	98	
Nickel-Dissolved	μg/L	1	Metals-022	<1	12	2	[NT]		99	
Zinc-Dissolved	μg/L	1	Metals-022	<1	12	51	[NT]		98	[NT]

Result Definiti	ons
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Contro	ol Definitions
Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking '	Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

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Report Comments

Dissolved Metals: The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through $0.45~\mu m$ filter at the lab.

Note: there is a possibility some elements may be underestimated.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 186714-1 to 11 were sub-sampled from jars provided by the client.

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€ as SN	MEC	<u>-</u>	:		CHAIN OF STODY FORM	<u>1</u>	· · ·				_									
SMEC OFFICE: North Sydney				ROUND REQUIREMEN	rd - 5	5 day TAT LAB: E					ıb, Chatsı	wood	_							
PROJECT: Byron Bay Transport Interchange				Non Standard TAT ((List due date):					ATTENTION:						
PROJECT NUMBER: 30011906				LAB QUOTE NO.:				COC SEQUEN	le)											
PROJECT MANAGER: Bernie Lariviere C				CONTACT PH: 0481133407 (lach) 0419241766 (luke)				DISPATCH TO (ADDRESS & PHONE NO.):								NO.):				
SAMPLED BY: L. Bollen, L. Jenkins								OF: 1 2 3	4 5	6	,									
DATE SAMPLED: 5/3/18				RELINQ	JISHED	BY:	F	RECEIVED BY:	હિં	AR	ELINQI	JI\$HED I	BY:	RE	RECEIVED BY:					
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Email Invoice to (will	1 default to PM if blank):			07/03/20	18			7/3/18.	15.19	<u> </u>										
Special Laboratory I	Instructions:																			
		SAMPLE DETAILS								AN	IAL YSI	S REQUI	RED							
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Soil Combo 8a	Water Combo 8								5 5 5 5 5 5 5					
1	TP1/0.0-0.2	05/03/18	S	JAR	1	X														
_ 2	TP1/0.4-0.5	05/03/18	S	JAR	_1_	X									<u> </u>					
3	TP1/1.0-1.1	05/03/18	S	JAR	1	Х		• _				·								
4	TP2/0.0-0.2	05/03/18	S	JAR	1	Х				(7)	Autria-	Eni#	/ - h . C	vices -∙∵it						
5	TP2/0.4-0.5	05/03/18	S	JAR	1	Х						Chatsw	ood NSW	2087						
6	TP2/1.1-1.2	05/03/18	S	JAR	1	Х				Job	No:		02) 9910	6200						
	TP3/0.0-0.1	05/03/18	S	JAR	1	Х							71 1							
3.	TP3/0.4-0.5	05/03/18	S	JAR	1	Х				Uate Tipe	Receiv	ed: ᠯ [3/18							
9	TP3/1.6-1.7	05/03/18	S	JAR	1	Х				Rece	ived.by	+ 15 5 esc	15							
(i)	TP3/2.4-2.5	05/03/18	S	JAR	1	Х				Term	· COON	Ambiana								
1	QC1	05/03/18	S	JAR	1	Х				Cooli	ng i 😥	cepack								
12	GW1	06/03/18	W	BOTTLES/VIALS	4		Х			~ 9 00	rity:/(inta	keت تاوز	n/None							
13	GW6	06/03/18	W	BOTTLES/VIALS	4	-	X													
19	QC1	06/03/18	W	BOTTLES/VIALS	4		Х								 					
				e de la companya de l					أ											
Notes: Low	reporting limits required for ground	dwater as specified by SMEC	Australia	Pty Ltd.			Copies	: WHITE: send to la	b, YELLOW:	to be pla	ced in pr	oject file, Pl	NK: to be re	etained in	CoC book					

What 15 TP3 Cyossed out Jan
16 TB > Soil
18 TB > Water
19 TS > Water

Aileen Hie

From:

Lachian BOLLEN < Lachian Bollen@smec.com>

Sent:

Wednesday, 7 March 2018 10:26 AM

To:

SydneyMailbox

Cc:

Luke JENKINS

Subject:

30011906 CoC

Attachments:

30011906 Byron Bay Transport Interchange.pdf

Morning All,

Please find the attached CoC for job 30011906 – Byron Bay Transport Interchange (soils + water).

There will be ASS samples in one of the eskys that aren't included on the CoC. If you could provide me with those sample details, I'll liaise with the geotechs to determine the testing requirements.

Many thanks,

Lachlan Bollen Scientist T+61 2 992S S482 E Lachlan.Bollen@smec.com

Local People, Global Experience

SMEC (Member of the Surbana Jurong Group) Level 5, 20 Berry Street, North Sydney, NSW, 2060, Australia www.smec.com | Linkedin

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30011906



Envirolab Services Pty Ltd

ABN 37 112 535 645 12 Ashley St Chatswood NSW 2067 ph 02 9910 6200 fax 02 9910 6201 customerservice@envirolab.com.au www.envirolab.com.au

CERTIFICATE OF ANALYSIS 217583

Client Details	
Client	SMEC Australia
Attention	Lachlan Bollen
Address	Level 5, 20 Berry St, North Sydney, NSW, 2060

Sample Details	
Your Reference	30011906 - Byron Bay Interchange
Number of Samples	24 SOIL
Date samples received	16/05/2019
Date completed instructions received	16/05/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details						
Date results requested by	16/05/2019					
Date of Issue	16/05/2019					
Reissue Details	This report replaces R00 created on 16/05/2019 due to: revised report with additional results.					
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TECHNICAL

Asbestos Approved By

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vTRH(C6-C10)/BTEXN in Soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	77	73	73	79	90

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		217583-17	217583-19	217583-21	217583-22	217583-23
Your Reference	UNITS	TP7	TP8	TRIP SPIKE	TRIP BLANK	QC2
Depth		0.0-0.2	0.2-0.4	-	-	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
TRH C6 - C9	mg/kg	<25	<25	[NA]	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	[NA]	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	[NA]	<25	<25
Benzene	mg/kg	<0.2	<0.2	99%	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	99%	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	99%	<1	<1
m+p-xylene	mg/kg	<2	<2	99%	<2	<2
o-Xylene	mg/kg	<1	<1	99%	<1	<1
naphthalene	mg/kg	<1	<1	[NA]	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	[NA]	<1	<1
Surrogate aaa-Trifluorotoluene	%	78	94	98	85	88

svTRH (C10-C40) in Soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	210
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	170
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	320
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	420
Surrogate o-Terphenyl	%	88	102	102	89	118

svTRH (C10-C40) in Soil				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	96	91	85

PAHs in Soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Phenanthrene	mg/kg	<0.1	0.2	<0.1	<0.1	3.8
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.6
Fluoranthene	mg/kg	<0.1	0.2	<0.1	<0.1	7.5
Pyrene	mg/kg	<0.1	0.2	<0.1	<0.1	6.4
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	2.9
Chrysene	mg/kg	<0.1	0.2	<0.1	<0.1	3.5
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	5.0
Benzo(a)pyrene	mg/kg	<0.05	0.08	<0.05	<0.05	2.6
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.3
Total +ve PAH's	mg/kg	<0.05	1.0	<0.05	<0.05	35
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	3.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	3.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	3.6
Surrogate p-Terphenyl-d14	%	106	93	86	97	114

PAHs in Soil				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.3	0.3	<0.1
Pyrene	mg/kg	0.3	0.3	<0.1
Benzo(a)anthracene	mg/kg	0.2	0.1	<0.1
Chrysene	mg/kg	0.2	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	0.3	<0.2
Benzo(a)pyrene	mg/kg	0.2	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.6	1.6	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	108	99	91

Organochlorine Pesticides in soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
нсв	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	105	96	101	100	101

Organochlorine Pesticides in soil				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
нсв	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	105	86

Organophosphorus Pesticides							
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15	
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6	
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1	
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019	
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL	
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019	
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019	
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Surrogate TCMX	%	105	96	101	100	101	

Organophosphorus Pesticides				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	105	86

PCBs in Soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	105	96	101	100	101

PCBs in Soil				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	96	105	86

Acid Extractable metals in soil						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Arsenic	mg/kg	<4	5	<4	<4	12
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	3	<1	<1	6
Copper	mg/kg	3	14	7	1	12
Lead	mg/kg	9	69	7	2	42
Mercury	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Nickel	mg/kg	1	7	7	<1	4
Zinc	mg/kg	5	23	20	<1	23

Acid Extractable metals in soil					
Our Reference		217583-17	217583-19	217583-23	217583-25
Your Reference	UNITS	TP7	TP8	QC2	TP8 - [TRIPLICATE]
Depth		0.0-0.2	0.2-0.4	-	0.2-0.4
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Arsenic	mg/kg	44	150	<4	210
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.4
Chromium	mg/kg	3	6	<1	5
Copper	mg/kg	15	42	1	43
Lead	mg/kg	120	260	1	240
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	4	8	<1	15
Zinc	mg/kg	58	100	<1	230

Misc Soil - Inorg						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Moisture	%	3.0	8.4	6.9	7.1	11

Moisture				
Our Reference		217583-17	217583-19	217583-23
Your Reference	UNITS	TP7	TP8	QC2
Depth		0.0-0.2	0.2-0.4	-
Date Sampled		15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	16/05/2019	16/05/2019	16/05/2019
Date analysed	-	16/05/2019	16/05/2019	16/05/2019
Moisture	%	5.2	11	3.6

Asbestos ID - soils						
Our Reference		217583-7	217583-10	217583-11	217583-13	217583-15
Your Reference	UNITS	HA4	HA5	HA5	HA5	TP6
Depth		0.3-0.4	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.1
Date Sampled		15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	16/05/2019	16/05/2019	16/05/2019	16/05/2019	16/05/2019
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 40g	Approx. 35g	Approx. 50g
Sample Description	-	Grey sandy soil & rocks	Grey sandy soil & rocks	Grey sandy soil & rocks	Grey sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected			
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils			
Our Reference		217583-17	217583-19
Your Reference	UNITS	TP7	TP8
Depth		0.0-0.2	0.2-0.4
Date Sampled		15/05/2019	15/05/2019
Type of sample		SOIL	SOIL
Date analysed	-	16/05/2019	16/05/2019
Sample mass tested	g	Approx. 45g	Approx. 30g
Sample Description	-	Brown sandy soil & rocks	Grey sandy soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres	No asbestos detected at reporting limit of 0.1g/kg Organic fibres
		detected	detected
Trace Analysis	-	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1/4 (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
	F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 14 (3, 4)). Note Naphthalene is determined from the VOC analysis.
	Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
	Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <pql "total="" 'eq="" +ve="" 2.="" 3.="" <pql="" a="" above.="" actually="" all="" and="" approach="" approaches="" are="" as="" assuming="" at="" be="" below="" between="" but="" calculation="" can="" conservative="" contribute="" contributing="" false="" give="" given="" half="" hence="" individual="" is="" least="" lowest="" may="" mid-point="" more="" most="" negative="" not="" note,="" of="" pahs="" pahs"="" pahs.<="" positive="" pql="" pql'values="" pql.="" present="" present.="" reflective="" reported="" simply="" stipulated="" sum="" susceptible="" td="" teq="" teqs="" that="" the="" therefore="" this="" to="" total="" when="" zero'values="" zero.=""></pql>
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONT	QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						plicate	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10	
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	7	<25	<25	0	101	64	
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	7	<25	<25	0	101	64	
Benzene	mg/kg	0.2	Org-016	<0.2	7	<0.2	<0.2	0	98	60	
Toluene	mg/kg	0.5	Org-016	<0.5	7	<0.5	<0.5	0	100	63	
Ethylbenzene	mg/kg	1	Org-016	<1	7	<1	<1	0	101	69	
m+p-xylene	mg/kg	2	Org-016	<2	7	<2	<2	0	103	65	
o-Xylene	mg/kg	1	Org-016	<1	7	<1	<1	0	103	65	
naphthalene	mg/kg	1	Org-014	<1	7	<1	<1	0	[NT]	[NT]	
Surrogate aaa-Trifluorotoluene	%		Org-016	77	7	77	78	1	121	72	

QUALITY CONT	QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate				
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]	
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			[NT]	
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]	
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	19	<25	<25	0		[NT]	
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	19	<25	<25	0		[NT]	
Benzene	mg/kg	0.2	Org-016	[NT]	19	<0.2	<0.2	0		[NT]	
Toluene	mg/kg	0.5	Org-016	[NT]	19	<0.5	<0.5	0		[NT]	
Ethylbenzene	mg/kg	1	Org-016	[NT]	19	<1	<1	0		[NT]	
m+p-xylene	mg/kg	2	Org-016	[NT]	19	<2	<2	0		[NT]	
o-Xylene	mg/kg	1	Org-016	[NT]	19	<1	<1	0		[NT]	
naphthalene	mg/kg	1	Org-014	[NT]	19	<1	<1	0		[NT]	
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	19	94	81	15		[NT]	

QUALITY CO	NTROL: svT	RH (C10	-C40) in Soil			Du	plicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10	
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	7	<50	<50	0	68	114	
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	7	<100	<100	0	78	131	
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	7	<100	<100	0	72	81	
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	7	<50	<50	0	68	114	
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	7	<100	<100	0	78	131	
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	7	<100	<100	0	72	81	
Surrogate o-Terphenyl	%		Org-003	99	7	88	89	1	77	102	

QUALITY CO	NTROL: svT	RH (C10-	-C40) in Soil			Du	plicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	19	<50	<50	0		
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	19	<100	<100	0		
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	19	<100	<100	0		
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	19	<50	<50	0		
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	19	<100	<100	0		
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	19	<100	<100	0		
Surrogate o-Terphenyl	%		Org-003	[NT]	19	91	95	4		

QUALIT	QUALITY CONTROL: PAHs in Soil						plicate	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10	
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Naphthalene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	104	102	
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Acenaphthene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Fluorene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	107	104	
Phenanthrene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	93	105	
Anthracene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Fluoranthene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	106	123	
Pyrene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	99	113	
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Chrysene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	118	129	
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	7	<0.2	<0.2	0	[NT]	[NT]	
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	7	<0.05	<0.05	0	[NT]	[NT]	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Surrogate p-Terphenyl-d14	%		Org-012	116	7	106	86	21	94	110	

QUA	QUALITY CONTROL: PAHs in Soil						plicate	Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	19	0.1	0.2	67		[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	19	0.3	0.4	29		[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	19	0.3	0.4	29		[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	19	0.1	0.2	67		[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	19	0.2	0.2	0		[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	19	0.3	0.3	0		[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	19	0.2	0.2	0		[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	19	<0.1	0.1	0		[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	19	<0.1	<0.1	0		[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	19	<0.1	0.1	0		[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	19	99	104	5		[NT]

QUALITY COI	NTROL: Organo	chlorine l	Pesticides in soil			Du	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
нсв	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	125	131
gamma-BHC	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	119	135
Heptachlor	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	120	124
delta-BHC	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	114	118
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	108	115
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	104	128
Endrin	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	106	135
pp-DDD	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	114	123
Endosulfan II	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	105	119
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	110	122
Methoxychlor	mg/kg	0.1	Org-005	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	101	7	105	97	8	100	97

QUALITY CC	NTROL: Organo	chlorine f	Pesticides in soil			Du	plicate		Spike Re	ecovery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]
нсв	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	19	<0.1	<0.1	0		[NT]
Surrogate TCMX	%		Org-005	[NT]	19	105	104	1		[NT]

QUALITY CONT	ROL: Organ	ophospho	orus Pesticides			Du	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	124	132
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	99	103
Dimethoate	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	105	119
Fenitrothion	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	88	110
Malathion	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	90	105
Parathion	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	98	104
Ronnel	mg/kg	0.1	Org-008	<0.1	7	<0.1	<0.1	0	101	104
Surrogate TCMX	%		Org-008	101	7	105	97	8	100	97

QUALITY CONT	ROL: Organ	ophospho	orus Pesticides			Du	plicate	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]	
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			[NT]	
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]	
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Diazinon	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Dichlorvos	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Dimethoate	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Ethion	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Fenitrothion	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Malathion	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Parathion	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Ronnel	mg/kg	0.1	Org-008	[NT]	19	<0.1	<0.1	0		[NT]	
Surrogate TCMX	%		Org-008	[NT]	19	105	104	1		[NT]	

QUALIT	QUALITY CONTROL: PCBs in Soil								Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10	
Date extracted	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019	
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	108	110	
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	7	<0.1	<0.1	0	[NT]	[NT]	
Surrogate TCLMX	%		Org-006	101	7	105	97	8	100	97	

QUALI		Du	plicate		Spike Recovery %					
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	19	<0.1	<0.1	0		[NT]
Surrogate TCLMX	%		Org-006	[NT]	19	105	104	1		[NT]

QUALITY CONT	ROL: Acid E	xtractabl	e metals in soil			Du		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	217583-10
Date prepared	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Arsenic	mg/kg	4	Metals-020	<4	7	<4	<4	0	95	101
Cadmium	mg/kg	0.4	Metals-020	<0.4	7	<0.4	<0.4	0	100	89
Chromium	mg/kg	1	Metals-020	<1	7	<1	<1	0	107	96
Copper	mg/kg	1	Metals-020	<1	7	3	4	29	108	110
Lead	mg/kg	1	Metals-020	<1	7	9	11	20	109	126
Mercury	mg/kg	0.1	Metals-021	<0.1	7	<0.1	<0.1	0	97	102
Nickel	mg/kg	1	Metals-020	<1	7	1	1	0	109	96
Zinc	mg/kg	1	Metals-020	<1	7	5	7	33	102	104

QUALITY CON	TROL: Acid E	xtractable	e metals in soil			Du		Spike Recovery %		
Test Description	escription Units PQL Method Blank # Base		Base	Dup.	RPD	[NT]	[NT]			
Date prepared	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Date analysed	-			[NT]	19	16/05/2019	16/05/2019			[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	19	150	160	6		[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	19	<0.4	<0.4	0		[NT]
Chromium	mg/kg	1	Metals-020	[NT]	19	6	8	29		[NT]
Copper	mg/kg	1	Metals-020	[NT]	19	42	55	27		[NT]
Lead	mg/kg	1	Metals-020	[NT]	19	260	230	12		[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	19	<0.1	<0.1	0		[NT]
Nickel	mg/kg	1	Metals-020	[NT]	19	8	14	55		[NT]
Zinc	mg/kg	1	Metals-020	[NT]	19	100	87	14		[NT]

QUALITY	CONTROL:	Misc Soi		Du	Spike Recovery %					
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	217583-10
Date prepared	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Date analysed	-			16/05/2019	7	16/05/2019	16/05/2019		16/05/2019	16/05/2019
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	7	<5	<5	0	104	102

Result Definiti	ons
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Contro	ol Definitions
Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking	Water Cuidelines recommend that Thermatelerent Californ, Faceal Entergage 9 F Cali levels are less than

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

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Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container. Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 217583-19 for Ni. Therefore a triplicate result has been issued as laboratory sample number 217583-25.

Envirolab Reference: 217583 Page | 28 of 28

Revision No: R01

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PROJECT: BY PROJECT NUMBER: PROJECT MANAGER SAMPLED BY: L DATE SAMPLED: Email Reports to (wit	PORTH SYDNEY RON BAY INTE 30011906 BERNIE LARIUM ACHLAN BOLL 15-5-19 Idefault to PM if blank): LALHIL default to PM if blank):	ELE EN	SAM LAB QUOTE CONTACT P	E DAY	Non S 4 0 7		coc: of: RECE	COC SEQUENCE 2 2 2 IVED BY:	3 4 5 3 4 5 WWW	6 7 6 7 7. RE	DISPATCH TO	ASH LE 1ATSU	AB INGER NE NO.): - 7 ST UOOD NSW RECEIVED BY: DATE/TIME:
Sportal East actory		SAMPLE DETAILS						, , , , , , , , , , , , , , , , , , ,	ANALYSIS RE	QUIRED			COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	CONTAINER TYPE & PRESERVATIVE		TOTAL NO. CONTAINERS	Combo 8	COMED SA	BRX				1 }	Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200 No: 217533
1	HA1/0.0-0.2	15-5-19	5	1x 250mL	1						<u>.</u>	Tim	e Received: 16 5 19 e Received: 9:22
2	HAI/0.2-0.4	- +	-	1	-				_				eived by: (N) np: Cool/Ambient pling (celfdepack)
3	HAI /0.7-0.9						. <u> </u>					Sec	urity; macufroken/None
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TOTAL

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

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Special Laboratory in	nstructions:														
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Notes: Low reporting	limits required for groundwater as s	pecified by SMEC Australia	Pty Ltd. /		TOTAL		Coples: WH	TE: send	d to lab, YELLD	W: to be placed in p	oject file, P	INK: to be re	tained in Co0	C book	
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