Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Remediation Action Plan
Proposed Commercial Development

8-10 Lee Street
Haymarket NSW

Prepared for
Atlassian Pty Ltd

Project 86767.03
September 2020

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

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Executive Summary

This Remediation Action Plan (RAP) was prepared by Douglas Partners Pty Ltd (DP) for the proposed commercial development (the Site) located at 8-10 Lee Street, Haymarket. The RAP was commissioned by Avenor Pty Ltd on behalf of Atlassian Pty Ltd and was undertaken in accordance with DP's proposal SYD190190.P.003.Rev4 dated 4 February 2020.

It is understood that the proposed development will involve a 38-storey mixed-use tower over a two-level basement. It is understood that the proposed development at the Site is to be divided into a 'Developer Works Zone' and a 'State Works - Link Zone'. The Developer Works are proposed to include excavation for a two-level basement on the western side of Central Station [i.e., to an elevation of RL5.0 m, relative to the Australian Height Datum (AHD)] followed by construction of a multi-storey commercial tower, whereas the State Works to the west of the tower include a two-level basement to a similar elevation, with a north-south connection to proposed future, adjoining basements.

The primary objectives of the RAP are to establish the following:

- Data gap investigations in inaccessible area of the Site and following demolition of building and other underground site structures;
- Requirements to carry out suitable site validation and waste classification of soils; and
- Unexpected Finds Protocol (UFP) to be implemented during basement excavation such that any finds of suspected contamination are appropriately investigated and managed.

The RAP also addresses the following measures to be implemented during the remediation work:

- Appropriate remedial options to render the Site suitable, from a site contamination perspective, for the proposed commercial development;
- The validation assessment criteria to be adopted for the remediation of the Site;
- Appropriate environmental safeguards required to complete the remediation work in an environmentally acceptable manner; and
- Appropriate occupational, health and safety procedures required to complete the remediation work in a manner that would not pose a risk to the health of site workers or users.

It is considered that the Site can be made suitable for the proposed commercial development subject to achieving the above objectives.

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Glossary of Terms

ACL	Added Contaminant Limits
ACM	asbestos cement materials
ADWG	NHMRC/NRMMC *National Water Quality Management Strategy Australian Drinking Water Guidelines 6* (2011)
AEC	area of environmental concern
AHD	Australian height datum
ANZECC	Australian and New Zealand Environmental & Conservation Council
As	arsenic
ASS	acid sulphate soil
BaP	benzo(a)pyrene (a polycyclic aromatic hydrocarbon compound)
BaP TEQ	benzo(a)pyrene toxic equivalent
bgl	below ground level
BTEX	benzene, toluene, ethyl benzene, total xylenes (monocyclic aromatic hydrocarbons)
BTEXN	Benzene, Toluene, Ethyl Benzene, Xylenes, Naphthalene
Cd	cadmium
CEMP	construction environmental management plan
COC	chain of custody
CLM Act	Contaminated Land Management Act
Cr	chromium (total)
Cr(III)	chromium with oxidation state III (stable in normal environments)
Cr(VI)	chromium with oxidation state VI (typically not stable in normal environments)
CRC Care	Co-operative Research Centre for Contamination Assessment and Remediation of the Environment
CT	contaminant threshold (screening criteria for waste classification assessment)
Cu	copper
Cx	equivalent carbon atoms in TRH/TPH groups
DCE	Dichlororethene
DDT	Dichlorodiphenyltrichloroethane
DP	Douglas Partners Pty Ltd
D.P.	deposited plan
DNAPL	Dense Non-Aqueous Phase Liquid
DSI	Detailed Site (Contamination) Investigation
DQI	data quality indicators
DQO	data quality objectives
EIL	NEPM (2013) Ecological Investigation levels
EPA	NSW Environmental Protection Authority

ESL	NEPM (2013) Ecological Screening levels
F1	TPH Fraction C6-C10
F2	TPH Fraction >C10-C16
F3	TPH Fraction >C16-C34
F4	TPH Fraction >C34-C40
GW	groundwater
GIL	groundwater investigation level
ha	hectares
HDPE	high-density polyethylene
HIL	NEPM (2013) Health Investigation levels
Hg	mercury
HSL	NEPM (2013) Health Screening levels
km	kilometre
L	litre
LNAPL	light non-aqueous phase liquid
m	metre
mm	millimetre
m^2	square metre
MNA	monitored natural attenuation
mg/kg	milligrams per kilogram (or parts per million)
mg/L	milligrams per litre (or parts per million)
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
Ni	nickel
NSW	New South Wales
ND or (nd)	not detected above the practical quantitation limit
NHMRC	National Health and Medical Research Council
NRMMC	National Resource Management Ministerial Council
OCP	organochlorine pesticides
OEH	Office of Environment and Heritage
OPP	organophosphate pesticides
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PCB	polychlorinated biphenyls
PCE	Tetrachloroethene
pH	unit measure of acidity / alkalinity

PID	photo-ionisation detector
POEO Act	Protection of the Environment Operations Act
PSH	phase separated hydrocarbons
PQL	practical quantitation limit
PVC	Polyvinyl chloride
QA	quality assurance
QC	quality control
RAP	remediation action plan
RL	reduced level
RPD	relative percentage difference
SAC	site assessment criteria
SAQP	sampling, analysis and quality plan
SCC	specific contaminant concentration (total concentration for waste classification assessment)
SSI	Supplementary Site (Contamination) Investigation
TCLP	toxicity characteristic leaching procedure
TRH	total recoverable hydrocarbons (including TPH)
TPH	total petroleum hydrocarbons
TOPIC	total photoionisable compounds
µg/L	microgram per litre (or parts per billion)
UCL	upper confidence limit of data set
VOC	volatile organic compound
WHS	work health and safety
Zn	zinc
µS/cm	MicroSiemens per centimetre a measure of conductivity and salinity
%	percent
<	less than
≤	equal to or less than
>	greater than
≥	equal to or greater than

Remediation Action Plan
Proposed Commercial Development
8-10 Lee Street, Haymarket NSW

1. Introduction

1.1 General

Douglas Partners Pty Ltd (DP) has been commissioned by Atlassian (the Applicant) to prepare this Remediation Action Plan in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSD-10405 for a commercial and hotel development above the Former Inwards Parcel Shed (Parcels Shed) at 8-10 Lee Street, Haymarket.

Specifically, this report addresses the following SEARs:

SEARs	Report Reference
18. Contamination and Remediation: '*demonstrate compliance with the requirements of SEPP 55 and if remediation works are required include a Remedial Action Plan'*	Sections 6-15 of the RAP.
18. Contamination and Remediation: *'…A Preliminary Site Investigation Study if needed, and/or further information as required by SEPP55 including an Acid Sulphate Soils Management Plan*.	Section 4, Section 5.1 and Table 2 of Section 3.2
Plans and Documents *'soil and contamination report, and remedial action plan'*	To include this RAP as part of the Environmental Impact Statement (EIS)

In addition to the above table, the SEARS require an environmental risk analysis be included in the Environmental Impact Statement (EIS) to identify potential environmental impacts associated with the Project. The environmental risk analysis associated with soil and groundwater contamination is attached in Appendix C.

Please note that the environmental risk analysis outlined in Appendix C does not constitute a Tier 2 contamination land risk assessment, the document attached in Appendix C forms part of the SEARS requirement.

The Site location and boundaries (green and red lines) are shown on Drawing 1 in Appendix A. The RAP was commissioned by Avenor Pty Ltd on behalf of Atlassian Pty Ltd and was undertaken in accordance with Douglas Partners' proposal SYD190190.P.003.Rev4 dated 4 February 2020.

The RAP describes the works which are necessary to manage and remediate contamination identified at the Site. The strategy detailed herein comprises the removal of predominately polycyclic aromatic hydrocarbon (PAH) exceedances / hotspots in soil which appears to have impacted the groundwater.

The RAP includes an unexpected finds protocol and contingency measures to manage other issues which may arise during remedial excavations.

The scope of remediation is based on the results of previous contamination investigations and is specific to the proposed development (see Section 1.3). The assessment process, including approval of this RAP, is subject to a Site Audit by an EPA accredited Site Auditor, Mr Rod Harwood of Harwood Environmental Consultants Pty Ltd, under part 4 of the *Contaminated Land Management (CLM) Act* 1997).

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

1.2 Description of the Site

The Site is known as 8-10 Lee Street, Haymarket. It is an irregular-shaped allotment (refer Figure 1 below). The allotment has a small street frontage to Lee Street, however, this frontage is limited to the width of the access handle.

The Site comprises multiple parcels of land which exist at various stratums. All the lots are in the freehold ownership of Transport for NSW (TNSW), with different leasing arrangements:

- Lot 116 in DP 1078271: YHA is currently the long-term leaseholder of the Site;
- Lot 117 in DP 1078271: This is currently in the ownership of TfNSW and the applicant is seeking the transfer of the leasehold on this land to provide for an optimised basement and servicing outcome for the Site;
- Lot 118 in DP 1078271: This is currently in the ownership of TfNSW and the applicant is seeking the transfer of the leasehold for part of the air-rights above part of this allotment to allow for an optimised building envelope for the Project. The proposal also uses a part of Lot 118 in DP 1078271 within Ambulance Avenue for Day 1 bike access, secondary pedestrian access and fire service vehicle access; and
- Lot 13 in DP 1062447: This is currently in the ownership of TfNSW, however, TOGA (who hold the lease for the Adina Hotel) have a long-term lease of this space in the lower ground area.

The Site has an area of approximately 3,764 m^2 which includes 227 m^2 of air rights that apply from RL40.

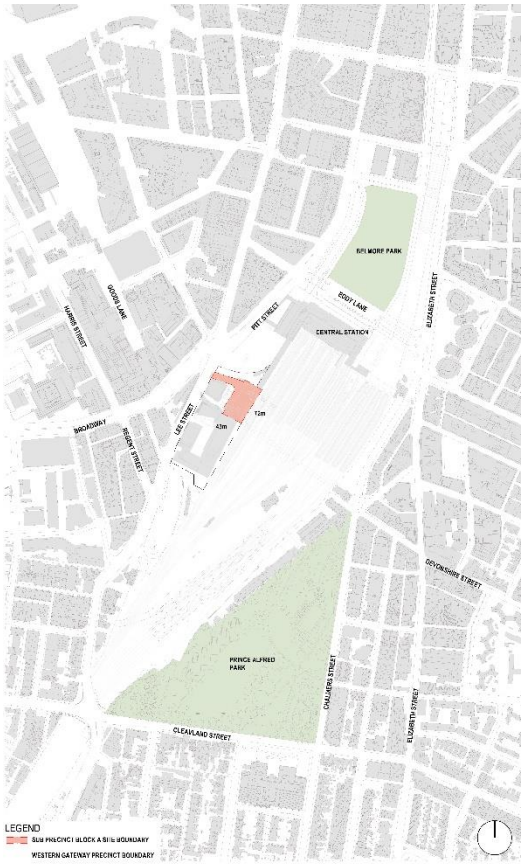


Figure 1: Site Location and Dimensions

1.3 Site and Surrounding Context

The Site is directly adjacent to the Western Wing Extension of Central Station, and forms part of the 'Western Gateway Sub-precinct' of the Central Railway Station lands. It is situated between the existing 'CountryLink' and 'Intercity' railway platforms to the east and the Adina Hotel (former Parcel Post Office) to the west.

Existing vehicle access to the Site is via Lee Street, however, the Lee Street frontage of the Site is only the width of the access handle.

Current improvements on the Site include the Parcels Shed, which operated in association with the former Parcels Post Office (now the Adina Hotel). The Site is currently used as the Sydney Railway Square Youth Hostel (YHA). The Site also includes the western entryway to the Devonshire Tunnel, which runs east-west through Central Station under the existing railway lines.

As part of the SEARS requirements, SHoP BVN and Urbis Pty Ltd has requested DP to incorporate the following information:

The Site is situated in a well-connected location in Sydney, directly adjacent to Central Station Railway which provides rail connections across metropolitan Sydney, as well as regional and interstate

connections and a direct rail link to Sydney Airport. The Site is also within close proximity to several educational institutions and is a city fringe location which provides access to key support services.

Central Railway Station is currently undergoing rapid transformation to allow for integration of rail, metro and light rail transport infrastructure. This will elevate the role of Central Station not only for transport but also enhance opportunities for urban renewal and revitalisation of the surrounding precinct. This is one of the key drivers for the identification of the Central Station State Significant Precinct (Central SSP) and the Western Gateway Sub-precinct, to accommodate a new innovation and technology precinct.

The proximity of the Western Gateway Sub-precinct to the city, while still being located outside the core Sydney CBD, provides opportunity for it to evolve to attract technology and innovation companies. It has access to all required services while being sufficiently separate to the CBD to establish a distinct technology industry ecosystem. Its CBD fringe location will likely provide affordable commercial rents which will support 'Startups' and entrepreneurs, which are a key component of an innovation precinct.

1.4 Summary of Site Identification

A summary of Site details isprovided in Table 1, below.

Table 1: Summary of General Site Information

Site Address	8-10 Lee Street, Haymarket
Legal Description	Lot 116 in DP1078271 Lot 117 in DP1078271 Part of Lot 13 in DP1062447
Geographic Co-ordinates	NE: Latitude: -33.88358, Longitude: 151.20496 NW: Latitude: -33.88333, Longitude: 151.20415 SE: Latitude: -33.884174, Longitude: 151.204638 SW: Latitude: -33.884016, Longitude: 151.204308
Area	Overall site (inclusive of both the 'State Works' and 'Developer Works' zones): 3400 m^2 Proposed Basement (within the 'Developer Works' zone): 1800 m^2
Zoning	Zone B8 Metropolitan Centre
Local Government Area	City of Sydney
Site Surroundings	North - Ambulance Avenue East - Central Station West - Adina Apartment Hotel South - Multi-storey government office building

The overall site is an irregular, 'L' shape. The site boundary and different zones within the site are shown on Drawing 1, Appendix B. For the purpose of this RAP, the site covers both the State Work and Developers Work zones.

1.5 Project Description

As part of the SEARS requirements, SHoP BVN and Urbis Pty Ltd has requested DP to incorporate the following information. In DP's opinion, the non-italicised paragraphs below are relevant for the purposes of this RAP.

The proposed state significant development application will facilitate the development of a new mixed use development comprising 'tourist and visitor accommodation' (in the form of a 'backpackers') and commercial office space within the tower form. Retail, lobby and food and drink premises at the Lower Ground level and Upper Ground level.

Atlassian Central at 8-10 Lee Street will be the new gateway development at Central Station which will anchor the new 'Technology Precinct' proposed by the NSW Government. The new building will be purpose-built to accommodate the Atlassian Headquarters, a new TfNSW Pedestrian Link Zone, and the new Railway Square YHA backpacker's accommodation, in addition to commercial floorspace to support technology 'start-ups'.

The new development is to be built over the existing heritage Parcels Shed located on the western boundary of Central Station with the Adina hotel to the west. The works includes a 38-storey mixed-use tower with basement loading dock facilities accessed off Lee Street, 2 storey lobby utilising the Parcels Shed building, lower ground and upper ground retail, YHA hostel and commercial tower with staff amenities to the mid-level and roof top areas and a pedestrian Link Zone works for TfNSW.

The building design has been conceived to support the delivery of a site plan designed to connect with future developments to both the south and east, and integrate with a cohesive public realm for the broader Sydney community in accordance with NSW government strategic planning.

The tower design is a 'demonstration project' for Atlassian, representing their commitment to environmental sustainability and contemporary workplace settings through tower form and construction systems along with a set of emblematic outdoor workplaces stacked in the tower form.

The existing Parcels Shed will be adaptively re-used in accordance with current best practice heritage process and will form the upper level of a 2-storey entry volume that connects visually with the 2 level Link Zone. Over the roof of the Parcels Shed, a new privately owned but publicly assessible landscaped area will be created as the first part of a new upper level public realm that may extend to connect to a future Central Station concourse or future Over Station Development.

The proposed mixed-use tower directly adjoins a live rail environment to the east and public domain to the north, west and south. These works will consider these rail environments and have been designed to ensure that all TfNSW external development standards are achieved. This ensures there is no impact to the operation or safety of these TfNSW assets.

Interfaces from the overall site and especially the State works Link Zone have been designed in consultation with the adjoining stakeholders. These stakeholders include TfNSW to the north and south, Toga and the Adina Hotel operator to the west and the Dexus Fraser's site to the south. Connections via the Link Zone, through the basements and off the proposed new Link Zone dive ramp, will be designed to enable existing and future developments to function in both the 'Day 1 scenario' and 'end state', when all developers have completed their works.

The overall project aspiration is to create a world class tech precinct with effective pedestrian links through the Atlassian site to the Central Station western forecourt to Central Walk west and adjoining stakeholder's sites.

It is understood that the proposed development at the Site is to be divided into a 'Developer Works zone' and a 'State Works - Link Zone'. The Developer Works are proposed to include excavation for a two-level basement on the western side of Central Station [i.e. to an elevation of RL5.0 m, relative to the Australian Height Datum (AHD)] followed by construction of a multi-storey commercial tower, whereas the State Works to the west of the tower include a two-level basement to a similar elevation, with a north-south connection to proposed future, adjoining basements.

A copy of the basement cross sections (provided by the client) of the proposed development is provided in Appendix A.

2. Objectives

The objectives of this RAP are as follows:

- Establish an appropriate remedial strategy to render the site suitable, from a site contamination perspective, for the proposed development;
- Establish the remediation acceptance criteria to be adopted for the remediation of the site and the validation requirements to confirm the successful implementation of the remediation strategy;
- Establish appropriate environmental safeguards required to complete the remediation works in an environmentally acceptable manner; and
- Establish appropriate Work Health and Safety (WHS) procedures required to complete the remediation works in an appropriate manner that would not pose a risk to the health of site workers or users.

3. Site Information

3.1 Site Description

At the time of field investigation, the site is divided into three main components. Detailed descriptions of the three components together with photographs are included in DP (2019b) report[1]. The components applied to this RAP comprise:

[1] Douglas Partners Pty Ltd, *Detailed Site (Contamination) Investigation, 8-10 Lee Street, Haymarket, August 2019* (86767.01) (DP 2019b).

1. **Developers Works - Railway Square YHA Youth Hostel (RLs between 20.1 m AHD and 21.2 m AHD)**

   A two-storey hostel, redeveloped from the former Inwards Parcel building in 2004 (see section 4.1). The site contains four plywood rail carriages along the eastern boundary which are used for accommodation.

   BH1, BH2, BH4, BH101, BH102, BH103, BH104 and BH105 are included in the Railway Square YHA Youth Hostel component of the site.

2. **Developer Works - GateGourmet Rail Pty Ltd (or lower level of The Sydney Railway Square YHA) with RL 15.5 m AHD)**

   GateGourmet Rail is located on Ambulance Lane, a narrow street between the Western Forecourt retaining wall and Railway Colonnade Drive. It is used as a catering warehouse and is situated below the Sydney Railway Square YHA (The YHA). It is also connected to tunnels which consist of electrical switchboards, plant rooms, a chemical storage room and waste collection rooms.

   BH3, BH5, BH7, BH106, BH113, BH114, BH115 are included in the GateGourmet component of the site.

3. **State Works - Link Zone with RLs between 15.3 m AHD and 18.7 m AHD**

   The 'Link Zone' predominately comprises the Upper Carriage Lane and a commercial storage area on the lower ground level.

   The Upper Carriage Lane is an asphalt-surfaced access ramp that connects Lee Street to the YHA and the adjacent Adina hotel. The ramp is also a carpark for the adjacent Adina hotel. On the top of the ramp is the carpark for the YHA.

   The ramp and YHA youth hostel carpark are on bitumen-paved surface, and the YHAcarpark is located on a suspended level with a commercial storage situated below. The commercial storage area is partitioned with metal wire mesh enclosures on concrete paved floor.

   BH6, BH8, BH9, BH107A, BH107B, BH108, BH109A, BH109B, BH110, BH111, BH112A, BH112B, BH116 and BH117 are included in the State Works or Link Zone part of the site.

3.2 Environmental Setting

A summary of the environmental setting is outlined below.

Table 2: Environmental Setting

Regional Topography	Sloping downwards towards the northwest.
Site Topography	RL 21.2 m to RL 15.5 m; sloping downwards towards the northwest.
Soil Landscape[2]	Blacktown residual soils, characterised by shallow to moderately deep red and brown podzolic soils on crests, slopes and well drained areas and deep yellow podzolic soils and soloths on lower slopes and in areas of poor drainage.
Geology[3]	Ashfield Shale overlying Hawkesbury Sandstone.
Acid Sulfate Soils[4]	The site is in an area of low probability of Acid Sulfate Soils (ASS) occurrence.
Surface Water	No surface water was observed to be present on site; surface water is expected to drain in the same direction as the regional topography.
Groundwater	Inferred groundwater flow direction is north-northwesterly direction towards Darling Harbour which is located approximately 1.1 km northwest of the site.

4. Site History

4.1 Historical Information

Historical information of the site and nearby sites were sourced from: Rappoport[5] (2014) report and reviewed to identify possible uses of the site and surrounding properties.

The following summarises the key findings of the historical resources review.

The Site and Surrounding Area

The land title information provided suggested that the site was initially granted for use as a cemetery between 1878 and 1937. From 1964 to the current date, the site was owned by State Rail. Further research via WP (2019)[6] report and the National Library of Australia indicated that the site was used as part of the former Sydney Benevolent Asylum (The Asylum) between c. 1820 and 1996. The Asylum served as a refuge place for the poor, abandoned, destitute and sick. The Asylum and associated outbuildings were demolished from 1901 to provide room for the Central railway station.

[2] Sydney 1:100 000 Soils Landscape Sheet.
[3] Sydney 1:100,000 Geological Series Sheet.
[4] NSW Acid Sulfate Soils Risk mapping data from NSW Department of Environment and Climate Change.

5 Rappoport Pty Ltd, Statement of Heritage Impact on Lee Street Substation, Central Station, Sydney, May 2014 (Project Number 2043 – D7) (Rappoport 2014);

6 Weir Phillips Heritage and Planning Pty Ltd, Letter Report on Heritage Impact Statement: Standard Exemption s57(2) – Former Inwards Parcels Shed – No. 8-10 Lee Street, Sydney, April 2019 (WP 2019).

The Devonshire Street Cemetery (or the Old Sydney Burial Ground) was constructed in 1820 and located to the east of the subject site. The subject site had been granted for use as a cemetery in the late 1870s and mid-1900s. Information from the National Library of Australia indicated that the cemetery was later moved to allow for the development of Central railway station and the remains of deceased persons were removed and relocated elsewhere.

A locality map showing the location of the former Asylum and the Devonshire Street Cemetery is depicted below.

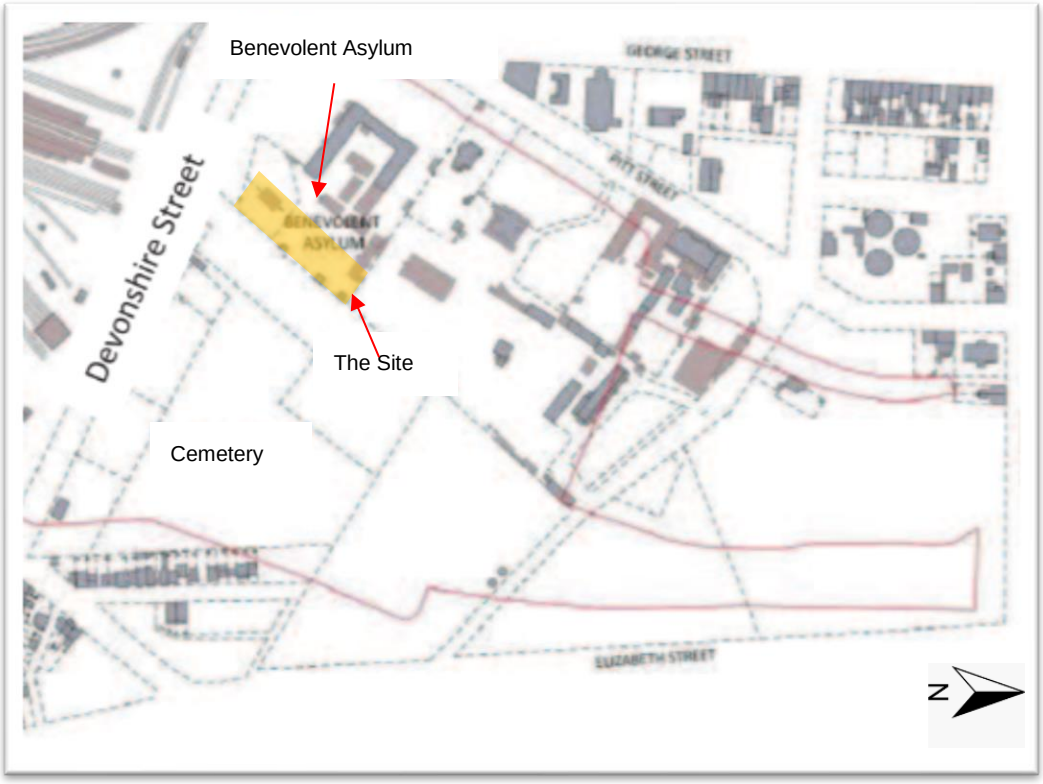


Figure 1: A Locality Map Dated c. 1887, Showing Location of the Site, the Asylum and the Old Cemetery Sourced from Rappoport (2014)

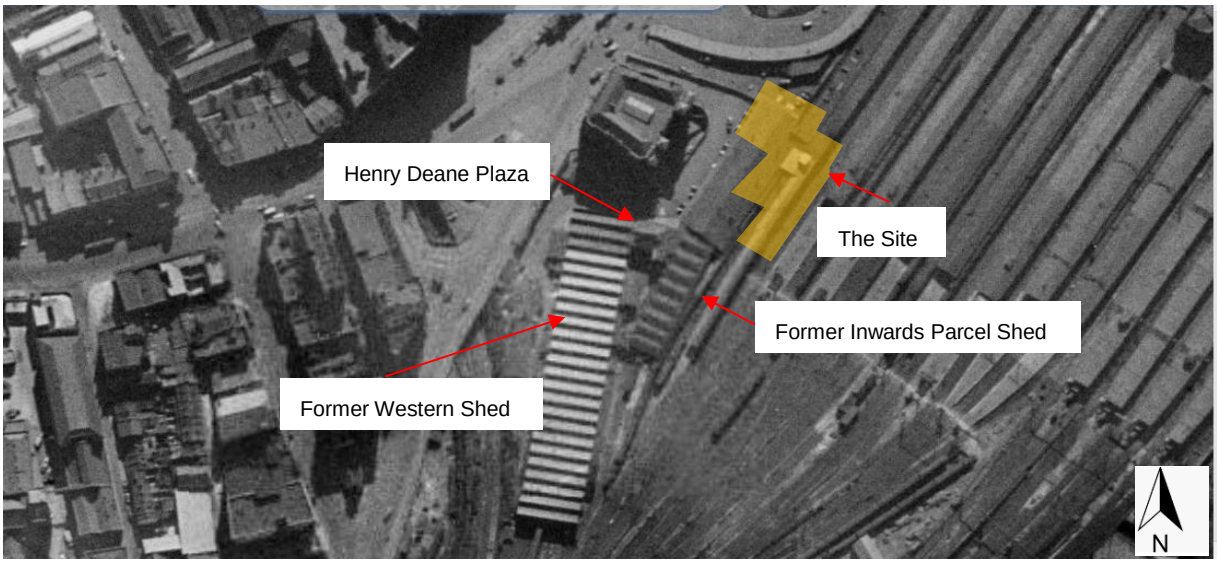


Figure 2: Aerial View of the Site, 1943, Showing the Site, Former Inwards Parcel Shed and Western Shed, Sourced from SIX Maps

The historical aerial photography indicated land use of the site and the adjoining properties was commercial / industrial from 1943 to the current date. The site owner and Rappoport (2014) indicated that the site was used as a parcel shed for the storage of Post Office's parcels transported by train. The shed was redeveloped into a two-storey backpacker hostel. It is presumed the redevelopment occurred c. 1998 during the development of the adjacent Henry Deane Plaza to the south-west of the site.

The major function of the western yard (to the south-west of the site depicted on Figure 2) constructed c. 1904, revolved around shunting which became obsolete by the late 20th Century. The shed was also used for the cleaning of carriages and storage of coal and water for steam locomotives.

The former inwards parcel shed and the site (former parcel shed) shown on Figure 2 were used for the storage / loading of parcels for transfer to or from the nearby Parcels Post Office. Demand for delivery of parcels by rail declined and the inwards parcel shed, and the western shed were demolished in 1998 to allow for the redevelopment of the construction of the Henry Deane Plaza.

5. Previous Reports

Relevant sections of the following reports, in chronological sequence, were reviewed and summarised in the subsequent sub-sections:

- Aargus Pty Ltd, *Preliminary Site Investigation, 8-10 Lee Street, Haymarket, November 2017* (Project ES7106) (Aargus 2017);
- Douglas Partners Pty Ltd, *Hazardous Building Materials (HBM) Register, 8-10 Lee Street, Haymarket, July 2020* (86767.02) (DP 2019a);
- Douglas Partners Pty Ltd, *Detailed Site (Contamination) Investigation, 8-10 Lee Street, Haymarket, August 2019* (86767.01) (DP 2019b); and

- Douglas Partners Pty Ltd, *Supplementary Site (Contamination) Investigation, 8-10 Lee Street, Haymarket, June 2020* (86767.03) (DP 2020).

5.1 Aargus (2017)

Aargus reported that the site was occupied by a two-storey, YHA hostel building with four refurbished plywood rail carriages along the eastern boundary. The rail carriages are used for accommodation by the hostel. The building was covered with concrete with some minor cracks and staining observed. A timber alfresco area located in the southern corner of the hostel building now covers a previous swimming pool which was backfilled.

A lower level catering warehouse occupies the footprint of the YHA building and adjoining carpark. A bitumen driveway and car park with major cracks and oil staining observed. The Devonshire Street Tunnel extend out from the boundaries of the YHA building.

The land title information indicated the site was initially granted for use as a cemetery between 1878 and 1937. From 1964 to the current date, the site was owned by State Rail. The aerial photography review indicated land use of the site and the adjoining properties appeared to have been industrial / commercial from 1943 to present.

The following areas of potential environmental concern include:

- The potential importation of uncontrolled fill to backfill the former swimming pool and/or other areas of the site;
- Current and previous site uses including: parcel storage shed, potential use of pesticides, chemical and paint storage and metal degradation; and
- Bitumen car park areas: oil leaks and spills may have occurred and asbestos based building materials.

Aagus concluded that overall, the contaminants that may be present in some of the areas were likely to be low in terms of risk to the human and environmental receptors. Aargus also stated that: '*…the site will be suitable subject to the completion of a detailed site investigation and followed by remediation and validation (if required)…'.* Aargus also recommended that '*…a hazardous building material (HBM) survey be undertaken followed by a clearance assessment…'.*

5.2 DP (2019a)

The survey was undertaken by DP in June 2019, in conjunction with the detailed site (contamination) investigation referenced as DP (2019b) investigation, to assess the location, extent and condition of asbestos-containing materials (ACM) and other hazardous building material (HBM) in accessible areas of the 'Developer Workers' zone. The 2019 survey consisted of a visual inspection supplemented by a limited program of sample collection and laboratory analysis.

A summary of HBM either identified or assumed in the 'Developer Workers' zone (i.e., GateGourmet or YHA Youth Hostel) during the DP (2019a) survey is outlined in the table below.

Table 3: Summary of Results

Building / Area	Non-Friable Asbestos	Friable Asbestos	SMF	Lead Paint	Lead Dust	PCB
GateGourmet Rail	✓	×	✓	✓	✓	×
YHA Youth Hostel	×	×	✓	✓	✓	×

SMF = synthetic mineral fibre, PCB = polychlorinated biphenyls, ✓ = identified and/or assumed present, × = not identified or not assumed present.

Access was restricted to certain areas of the site including the commercial storage area on the lower ground level of the 'Link Zone' (State Works) at the time of DP (2019a) survey.

The (DP 2019a) report indicated that: '*inaccessible areas should be assumed to contain HBM unless assessment of these areas by a Competent Person confirms otherwise*'.

The report also stated that: '*HBM should be managed in accordance with the requirements of the NSW Work Health and Safety (WHS) Act 2011 (WHS Act), NSW WHS Regulation 2017 (WHS Regulation) and relevant Codes of Practice, Australian Standards and Guidelines*'.

The DP (2019a) report recommended: '*HBM should be removed prior to any significant disturbance including from maintenance, refurbishment and demolition work'*.

5.3 DP (2019b)

The results of the detailed site (contamination) investigation (DSI) are summarised below. The soil, waste class and groundwater results of DP (2019b) investigation, together with the results of DP (2020) investigation are summarised in Tables F1-F3 attached in Appendix B.

DP (2019b) reported that analytical results for soil samples were within the SAC for the proposed commercial land use, except for one benzo(a)pyrene TEQ [B(a)P TEQ] exceedance in sample BH3/0.2-0.3. The reported B(a)P TEQ concentration of 42 mg/kg had marginally exceeded the health-investigation level (HIL) of 40 mg/kg. The recorded exceedance was, however, noted to be statistically insignificant when considering the entire sampling data set.

It was noted in the DP (2019b) report that the immediate, underlying sample, BH3/0.7-0.8, contained a much lower concentration of B(a)P TEQ of 6.3 mg/kg, which was well within the HIL, indicating that the vertical extent of B(a)P TEQ contamination was likely to be limited to the overlying, near-surface fill material.

The B(a)P TEQ exceedance in soil identified during the DP (2019b) investigation may have resulted from uncontrolled fill activity in the past. B(a)P occurs naturally in coal, crude oil and gasoline and is produced (along with other PAHs) when coal, oil, gas, wood, etc. are burned. Historical information in DP (2019b) report indicated that the western shed in the adjacent site was used for the storage of coal for steam locomotives and ash (a by-product of coal) in fill was observed in boreholes: BH1, BH2 and BH4 during the DP (2010b) investigation.

Concentration of contaminants in all analysed fill/soil samples were within the contaminant thresholds (CT1s) for General Solid Waste (GSW) identified during DP (2019b) investigation, except for concentration of B(a)P in soil sample, BH3/0.2-0.3. DP (2019b) report indicated that the concentration of B(a)P in soil sample, BH3/0.2-0.3, was above the Restricted Solid Waste (RSW) threshold and was provisionally classified as Hazardous Waste (HW) during the DP (2019b) investigation. The B(a)P leachability result in sample BH3/0.2-0.3 indicated in the DP (2019b) report were below the laboratory's practical quantitation limit.

Concentration of contaminants in all tested, natural soil samples were within the published background ranges for Australian soils except for the concentrations of B(a)P and PAH in soil sample, BH6/0.2-0.3. The concentration of B(a)P and PAH in soil sample, BH6/0.2-0.3 were above the GSW thresholds (i.e., both CT1 and SCC1). The natural material in BH6/0.2-0.3 was provisionally classified as Restricted Solid Waste (RSW) during DP (2019b) investigation.

A review of soil samples and associated chromatograms during the DP (2019b) investigation indicated that trace ash/coal was observed in samples BH3/0.2-0.3 and BH6/0.2-0.3. The NSW EPA has issued a general immobilisation approval for ash / coal-contaminated materials, which allows waste classification for such material based on their leachability concentration (TCLP) value alone. It was, therefore, possible that this approval could be applied to both materials but would require further assessment to confirm.

Concentration of contaminants of concern were within the groundwater investigation levels (GILs) identified during DP (2019b) investigation, apart from copper and zinc levels in samples: BH8, BH5 and BD1/20190730 (replicate sample of BH5). The elevated levels of coper and zinc were considered in the DP (2019b) report: '*…to be within the normal range of background concentration in heavily urbanised areas of Sydney, and therefore, no further assessment of metals in BH5 and BH8 was considered necessary…'.*

DP (2019b) report recommended that the site could be made suitable for the proposed development subject to the following requirements:

- *Conducting additional soil sampling and testing using in situ or ex situ sampling methods to characterise the data gap areas of the site (e.g., the Link Zone) and to confirm the waste classification for surplus soils requiring off-site disposal;*
- *Carrying out intrusive soil investigation within the footprint of the existing building following demolition. Care should be taken during demolition to prevent cross-contamination of subsurface soils with hazardous building materials such as asbestos. The correct handling and removal procedures for hazardous building materials are* described in the concurrent hazardous material building report (referenced as 86767.01.R.001.Rev0) [i.e., DP 2019a]; *and*
- *Preparing an unexpected finds procedure as part of the civil and construction site management plan, such that unexpected finds of contamination (e.g. asbestos, odorous soils or seepage water) are managed appropriately.*

5.4 DP (2020)

Following DP (2019b) recommendation of additional soil sampling to address site data gaps, a Supplementary Site (Contamination) Investigation (SSI) was carried out between April and June 2020. The key findings of the SSI are summarised below.

The soil, waste class and groundwater results of DP (2020) investigation, together with the results of DP (2019b) investigation are summarised in Tables F1-F3 attached in Appendix B.

Soil samples were analysed for the contaminants of concern identified in the DP (2019b) conceptual site model (CSM) including: heavy metals, TRH, PAH, BTEX, OCP, OPP, PCB, phenols and asbestos.

DP (2020) analytical results of soil samples were within the adopted SAC for commercial land use with the following exceptions:

- TRH F3 (>C16-C34) in samples BH106/0.3-0.4 (3600 mg/kg) which marginally exceeded the ML of 3500 mg/kg; and
- B(a)P TEQ in samples BH106/0.3-0.4 (160 mg/kg at hotspot level), BH114/0.15-0.2 (81 mg/kg), BH114/0.2-0.3 (43 mg/kg) and BH117/0.2-0.25 (71 mg/kg) which exceeded the HIL of 40 mg/kg.

DP (2020) indicated that PAH contamination in fill / soil appeared to be prevalent in the north-western portion of the site with B(a)P TEQ concentrations above the HIL detected in boreholes: BH114, BH106 and BH117, and elevated concentrations of PAH (below the HIL) detected in boreholes BH113 and BH115.

DP (2020) also indicated that *'BH106 and BH114 are located within the approximate outline of the proposed basement and will likely be removed from site under an appropriate waste classification for the final development*'. BH117 is located approximately 7 m west of the proposed basement outline, within the 'State Works' zone, and may remain on site. Additional waste classification to classify the PAH contamination around BH117 is recommended should excavation be required in this area.

The likely source of B(a)P TEQ and TRH F3 (>C16-C34) contamination in fill / soil, identified during the DP (2020) investigation, was the coal inclusion in fill. This was further supported by the chromatograms as well as finding of coal in fill during the earlier DP (2019b) investigation.

Concentrations of contaminants for the analysed fill / soil samples were within the contaminant thresholds (CT1) and SCC1 (specific contaminant concentration) / TCLP1 (leachable concentration) for General Solid Waste (GSW) identified during the DP (2020) investigation, except for B(a)P and total PAH in some samples outlined below.

The following samples exceeded the CT1 and SCC1 / TCLP1 for GSW and were classified as **Restricted Solid Waste** (RSW) during the DP (2020) investigation:

- BH113/0.15-0.25 (12 mg/kg); and
- Total PAH in BH106/0.2-0.3 (320 mg/kg), BH114/0.2-0.3 (470 mg/kg), BH115/0.23-0.3 (440 mg/kg) and BH117/0.2-0.25 (770 mg/kg).

The following samples exceeded the CT2 and SCC2 / TCLP2 for RSW and were classified as **Hazardous Waste**:

- B(a)P in the blind duplicate for BH104/1.4-1.5 (14 mg/kg), BH106/0.2-0.3 (28 mg/kg), BH106/0.3-0.4 (120 mg/kg), BH114/0.15-0.2 (67 mg/kg), BH114/0.2-0.3 (31 mg/kg), BH115/0.25-0.3 (27 mg/kg) and BH117/0.2-0.25 (39 mg/kg); and
- Total PAH in BH106/0.3-0.4 (1400 mg/kg) and BH114/0.15-0.2 (860 mg/kg).

Soil samples classified as RSW and Hazardous Waste were noted to be contaminated with ash and/or coal during the DP (2020) investigation. Given the low leachability of B(a)P and PAH in the samples analysed during DP (2020) investigation, it was considered the immobilisation approval could be applied to the samples containing concentrations of B(a)P and PAH which exceeded the GSW and RSW criteria. Therefore, the material in proximity of boreholes: BH104, BH106, BH113, BH114 and BH115 where coal and / or ash were observed could be potentially classifiable as GSW under the *Immobilisation of Contaminants in Waste 1999/05* subject to further *ex situ* waste classifications during basement excavation.

Concentration of metals for the analysed seven natural soil samples were within the published concentrations in NSW EPA *The Excavated Natural Material Order 2014.* Concentrations of B(a)P and total PAH were above the limit of reporting (LOR) but within the published concentrations in NSW EPA *The Excavated Natural Material Order 2014* except for BH108/0.23-0.25 which recorded a B(a)P concentration of 2.7 mg/kg and was given a preliminary waste classification of RSW. It was noted that this sample was taken 0.03 m below a concrete slab, directly beneath a very thin layer of fill material. It was, therefore, considered likely that the elevated concentration of B(a)P is limited to the near-surface material.

Analytical results for groundwater were within the adopted GIL with the following exceptions:

- Copper in BH103 (3 µg/L), its replicate sample BD1/20200424 (26 µg/L) and BH104 (2 µg/L) which exceeded the GIL of 1.4 µg/L; and
- Zinc in BH107A (140 µg/L), BH107B (64 µg/L), BH112B (21 µg/L) and its replicate sample BD1/160520 (20 µg/L) which exceeded the hardness modified GILs of 36.69 µg/L, 34.94 µg/L and 16.64 respectively.

Detectable levels (below the GILs) of PAH and TRH in groundwater were also noted during DP (2020) investigation.

The elevated levels of copper and zinc in groundwater are common in heavily urbanised areas such as Haymarket. The source of copper and zinc is uncertain but could be linked to the copper and zinc concentrations in the fill layer on site, or to the services network at the site or in proximity to the site, as elevated levels of copper and zinc were identified in both the upgradient and downgradient groundwater wells. However, considering that elevated levels of copper and zinc were not evident in the fill, the copper and zinc levels identified in the groundwater wells at the site are likely to represent regional background levels rather than site-specific levels.

Based on the results of the SSI, it was considered that the site can be made suitable for the proposed commercial development subject to the following recommendations:

- *Delineation of the PAH contamination in the northeast portion of the site, particularly within the 'State Works' zone around BH106, BH114 and BH117 to the extent practical;*
- *Further investigation of groundwater on site, particularly to assess the presence of TRH and PAH in groundwater across the site prior to and during dewatering. It is likely that a groundwater management plan will be required as part of the application for a dewatering license;*
- *Intrusive investigation of the footprints of the existing buildings following demolition. Care should be undertaken during demolition to prevent cross-contaminating the subsurface soils with hazardous building material such as asbestos. The correct handling and removal procedures for hazardous building materials are detailed in the hazardous material building report;*
- *Prepare a remedial action plan including an unexpected finds procedure as part of the civil and construction site management plan, such that existing contamination and unexpected finds of contamination (e.g., asbestos, odorous soils or seepage water) are managed appropriately; and*
- *Conduct additional soil sampling and testing, either using in situ or ex situ sampling methods, to provide a final waste classification for surplus soils requiring off-site disposal.*

In addition, it was noted in the DP (2020) report that there is the potential presence of asbestos-cement service pits and underground pipes/conduits within or in proximity of the proposed development area. Uncontrolled disturbance of such items (i.e., during bulk excavation) could potentially cross-contaminate surrounding soil / fill, resulting in unnecessary waste (e.g., asbestos-contaminated fill / soil) and additional disposal costs for the project.

DP had undertaken an HBM survey and a non-intrusive assessment for asbestos-cement service pits and underground pipes / conduits within the footprint of the proposed development in conjunction with DP (2020) investigation. The survey also included the previously inaccessible area such as the lower ground level of the 'Link Zone'. The results of this survey will be reported as a separate document in due course.

6. Conceptual Site Model

A Conceptual Site Model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contaminants of potential concern (COPC) either in the present or the future i.e., it enables an assessment of the potential source - pathway - receptor linkages (complete pathways). The CSM is modified following DP (2020) investigation, summarised in the table below.

Table 4: Summary of CSM

Source / COPC	Transport Pathway	Receptor	Remediation / Management Options
S1 - Uncontrolled fill and building rubble associated with demolition of former buildings COPC include: metals, TRH, BTEX, PAH, PCB, OCP, OPP, phenols, SMF*, VOC and asbestos. **S2** - Current and historical site uses such as parcel shed and railway COPC include: metals, TRH, BTEX, PAH, OCP, OPP, PCB, phenols, SMF*, VOC, asbestos and cyanide. **S3** - Degradation of building material from existing buildings and underground tunnel structures. COPC include: metals, PCB, SMF and asbestos.	**P1** - Ingestion and dermal contact **P2** - Inhalation of dust and / or vapours	**R1** - Maintenance and construction workers **R2** - Current and future users	**R1 -** Adoption of appropriate Administrative Controls and Work Health & Safety procedures. **R2 -** Removal of fill with TRH and PAH exceedances / hotspot; during basement excavation; or remove exposure pathway (e.g., capping of PAH contamination in BH117 if to be retained on site. **R3** - **R5 -** Removal of source in groundwater i.e., TRH and PAH contamination in fill / soil during basement excavation; reduce the risk of off-site migration of contaminants in groundwater.
	P2 - Inhalation of dust and / or vapours	**R3** - Adjacent users (residential and commercial)	
	P3 - Leaching of contaminants and vertical mitigation into groundwater	**R4** – Groundwater **R5** - Darling Harbour	
	P4 - Surface water run-off **P5** - Lateral migration of groundwater.		

Note: * SMF analysed as part of the HBM survey documented in DP (2019a) report.

7. Remediation Extent and Options

7.1 Area of Known Extent of Remediation

The table below outlines the area of known extent of remediation requiring delineation, remediation, management and/or consideration. Table 5A should be reviewed in conjunction with Drawing 3 in Appendix A.

Table 5A: Area of Known Extent of Remediation

Contamination Issue	Borehole / Depth	Contaminant Level vs Site Assessment Criteria	Comment
TRH and / or PAH Contaminated soil	BH3/0.2-0.3	B(a)P TEQ = 42 mg/kg vs 40 mg/kg (HIL D[7])	To be excavated and removed as part of the basement excavation within the 'Developer Works' area.
	BH106/0.3-0.4	TRH > C16-C34 = 3,6000 mg/kg vs 3,500 mg/kg (ML – Commercial[8]); and B(a)P TEQ = 160 mg/kg vs 40 mg/kg (HIL D[6])	
	BH114/0.15-0.2	B(a)P TEQ = 81 mg/kg vs 40 mg/kg (HIL D[6])	
	BH114/0.2-0.3	B(a)P TEQ = 43 mg/kg vs 40 mg/kg (HIL D[6])	
	BH117/0.2-0.25	B(a)P TEQ = 71 mg/kg vs 40 mg/kg (HIL D[6])	To be excavated and removed as part of the proposed development within the 'Link Zone' (State Works); or To be retained on site and capped under the existing concrete pavement subject to the implementation of an environmental management plan.

[7] Health investigation levels – Commercial and Industrial in NEPC (2013)
[8] Management Limits – Commercial and Industrial in NEPC (2013)

7.2 Data Gaps

The table below outlines the data gaps requiring characterisation. Table 5B should be reviewed in conjunction with Drawing 4 in Appendix A.

Table 5B: Data Gaps

Contamination Issue	Borehole / Depth	COPC	Comment
TRH and / or PAH Contaminated soil	5 m and 10 m step-out boreholes centred from BH3/the base of fill layer	TRH and / or PAH	The step-out boreholes drilled during the (DP 2020) investigation were limited to the surrounding walls and other internal features such as cool rooms near BH3.
	5 m and 10 m step-out boreholes centred from BH6/the base of fill layer		Additional step-out boreholes including 5 m and 10 m step-out boreholes should be carried out following demolition of site building and other structures or prior to basement/bulk excavation.
Inaccessible areas such as the cool rooms in GateGourment Rail at the time of DP (2019) and (2020) investigations.	Three (3) additional boreholes drilled to 0.5 m into natural soil to be undertaken across the footprint of the existing cool rooms following vacancy of the area after the site is handed over to the builder.	COPC listed in Table 4	Three (3) additional boreholes drilled to 0.5 m into natural soil to be undertaken across the footprint of the existing cool rooms following vacancy of the area (or after the site is handed over to the builder).
Potential finds of contaminants during basement excavation	Seven (7) additional test pits excavated across the footprint of the basement area following demolition of site building and other structures (e.g. concrete slabs and footings) or prior to basement/bulk excavation.	COPC listed in Table 4	To assess the potential for cross-contamination of hazardous building material with surficial fill following demolition and the expected subsurface conditions following demolition or prior to basement/bulk excavation.

It should be noted that the RAP will be revised based on the findings of the data gap investigations outlined in the above table and detailed in Sections 8.1-8.3.

7.3 Remediation Goals

The remediation goals are as follows:

- Break or appropriately manage the source-pathway-receptor linkages identified in the CSM;
- Render the site suitable, from a contamination standpoint, for the proposed development;
- Minimise and appropriately manage / monitor any off-site migration of contamination from the site; and
- Provide documentation on remediation planning (PSI, DSI, SSI and RAP), implementation and validation (VR) for auditor review.

7.4 Typical Remedial Options Available

Possible remedial options to achieve the remedial goals are identified as follows:

- No action;
- Treatment (on- or off-site);
- Off-site disposal to an approved / licensed site / waste facility; and
- Physical barrier systems.

The following table presents a review of remediation options.

Table 6: Evaluation of Remedial Options

Remedial Options	Assessment of Options
No Action Required	The "No Action" option involves no remedial response to the contamination identified on the subject site. The investigations conducted on the site indicated that remediation action is required and where site contamination is identified, a no action approach would be rejected for the following reasons: • The risks to human health and/or the environment from the identified soil contamination would be unacceptable under the proposed development; and • It does not provide any means to improve the current condition of the site.
On-Site Treatment of Contaminated Soil	Some of the on-site soil treatment options include: • Bio-remediation: Addition of oxygen and nutrient compounds to accelerate the natural process of organic compound decay within the environment. Not suitable for all contaminants. • Soil Washing: Soil is stripped of contaminants via a leaching process and the concentrated contaminated liquid product retained for disposal or treatment. • Air Sparging and Extraction: Air is forced through the contaminated soil to volatilise organic contaminants. The air is then extracted and captured for treatment leaving reduced contaminant concentrations; and

Remedial Options	Assessment of Options
	• Thermal Desorption: Contaminated soils are heated within an incinerator to volatilise or combust the contaminants. Contaminants are trapped within an air filtration system. Concentrations and / or volume of impacted soils would be conducive to on-site treatment in general. An exception may be small scale bio-remediation (land farming) of hydrocarbon impacted soils.
Off-Site Disposal of Contaminated Soil	Off-site disposal of contaminated material is considered a suitable option for managing human health and environmental impacts from the contaminated materials. Off-site disposal comprises the excavation of soil, classification of spoil, and disposal to a facility which can legally receive it. It is noted that soil classified as hazardous waste identified during *ex situ* classification will require treatment. Given that the proposed development involves a deep basement excavation, off-site disposal of contaminated soils (if identified) will be the primary remediation approach adopted.
Containment of Contaminated Soil	This would include the placement of an impermeable barrier such as concrete, warning barrier, non-contaminated soil material over existing ground surface to isolate contaminated material. The advantage of this option includes the reduction of transport contaminants via wind and water mechanisms. The disadvantage of this option includes the implementation of an environmental management plan which is required to be documented in the council planning certificate and / or title deeds which would in turn impact future land development and value. Given that the proposed development will involve basement excavation, capping and containment will not generally be feasible for this project apart from the 'Link Zone' (State Works).

8. Preferred Remediation Strategy

The most suitable option for remediation of TRH and PAH-contaminated soils is delineation and excavation of contaminated material followed by off-site disposal to an appropriate waste facility. This option is considered most appropriate for the following reasons:

- TRH and PAH-contaminated soils near BH3 and BH6 are either within or in proximity of the basement footprint. Excavation of soils near BH3 and BH6 is expected as part of the proposed basement and would not constitute additional work; and
- On-site treatment of PAHs associated with ash and coal are relatively intractable and are, therefore, considered to be unreliable and expensive, particularly for relatively small quantities of contaminated soils.

Delineation of TRH and B(a)P in soil aims to refine the classification of contaminated waste vs. non-contaminated waste.

A summary of the remediation procedures including data gap assessment and *in situ* waste classification assessments is provided below. It was noted by the Site Auditor that 'these data gaps (i.e., Sections 8.1 and 8.3) will be closed out before the RAP is finalised'.

8.1 Data Gap Assessment prior to Demolition

The following data gap assessment is proposed prior to demolition works:

- Drill three boreholes evenly distributed across the footprint of the cool rooms following vacancy of the 'GateGourmet' area (or after the site is handed over to the builder);
- Sample each of the boreholes at 0.2 m below the pavement and then at every 0.5 m interval to a maximum of 0.5 m into natural soil or prior refusal;
- Test selected samples (including field replicates, trip blanks, trip spikes and rinsates) for COPC listed in Table 4; and
- Prepare a letter report or update DP (2020) report to address the data gap analysis.

The above scope should be considered as part of the sampling & analysis quality plan (SAQP) for the proposed data gap assessment. The locations of the data gap investigation boreholes to be undertaken prior to demolition are depicted on Drawing 4 in Appendix A.

8.2 Asbestos Clearance following Demolition

The following asbestos clearance can be considered following demolition works:

- Removal of asbestos from the buildings, underground service pits and ground surface (if present) by the Asbestos Demolition Contractor as part of the demolition programme;
- Removal of visible asbestos from the ground surface (if present) by the Asbestos Demolition Contractor following demolition of the buildings and removal of hardstand; and

- Conduct an asbestos clearance inspection by the Occupation Hygienist of the surficial soils following removal of the hard stand for any signs of contamination, potential contamination sources, or local variations in soil conditions.

8.3 Data Gap Assessment prior to Basement Excavation

The following data gap assessment is proposed prior to basement excavation:

- Locate BH3 and BH6 by using a differential GPS on site following demolition of site building and other structures (e.g., concrete pavement and footing);
- Conduct 5 m and 10 m step-out test pits or boreholes centred from BH3 and BH6 using an excavator or hand tools;
- Excavate to 0.5 m into natural soil or prior refusal;
- Sample each of the test pits / boreholes at surface then at every 0.5 m interval to a maximum of 0.5 m into natural soil or prior refusal;
- Test selected samples (including field replicates, trip blanks and rinsates) for PAH and / or TRH; and
- Update the RAP to address the full extent of PAH and / or TRH-contaminated areas.

The above scope should be considered as part of the Sampling & Analysis Quality Plan (SAQP) for the proposed data gap assessment. The locations of the data gap investigation boreholes prior to basement excavation are depicted on Drawing 4 in Appendix A.

It should be noted that the RAP will be revised based on the findings of the data gap investigations outlined in Table 5B and Sections 8.1-8.3.

8.4 Remediation of Contaminated Soils

The specific remediation works for the PAH and / or TRH-contaminated soils are outlined below:

- Check PPE and WHS requirements prior to commencement of remediation;
- Prior to the commencement of excavation, the remediation area(s) should be clearly marked with spray paint and pegs;
- Clear underground services and other underground structures or obstructions in the area prior to excavation;
- Stockpile the contaminated material separately on builder's plastic (or similar);
- Confirm the final waste classification of the contaminated material. It was noted in DP (2019b) and DP (2020) reports that the coal / ash-contaminated materials near BH3 and BH6 could be potentially classifiable as GSW under the *Immobilisation of Contaminants in Waste 1999/05* subject to further *ex situ* waste classifications;
- Submit the final waste classification letter report of the contaminated material to an NSW EPA licensed landfill to receive the waste;

- Load the contaminated material directly onto the trucks for transport to landfill. Disposal dockets should be incorporated in the final validation report;
- Obtain validation samples from the walls and base of the excavation as outlined in Section 12.1. The results of the validation testing should be assessed against the Validation Assessment Criteria (VAC) adopted for the remediation work;

  In the event of unsuccessful validation, further excavate the areas that failed and re-validate as outlined above; and
- Prepare a validation report documenting the above remediation work.

The locations of the identified contaminated soils are shown on Drawing 3 in Appendix A.

8.5 *In Situ* Waste Classification of Remaining Fill

Confirmatory *in situ* waste classification of the remaining fill within the basement footprint following demolition and remediation works is described as follow:

- Excavate seven (7) test pits across the basement footprint to 0.5 m into natural soil or prior refusal;
- Sample each of the test pits at surface then at every 0.5 m interval to a maximum of 0.5 m into natural soil or prior refusal;
- Test selected samples (including field replicates) for COPC listed in Table 4; and
- Prepare an *in situ* waste classification letter report.

8.6 Roles and Responsibilities

A summary table of roles and responsibilities during the remediation work is outlined below.

Table 7: Roles and Responsibilities

Role	Responsibility
Principal and Principals Representative	The Principal is responsible for the environmental performance of the proposed remediation work, including implementation of acceptable environmental controls during site work. The Principal will retain the overall responsibility for ensuring this RAP is appropriately implemented. The Principal is to nominate a representative (the Principal's Representative - PR), who is responsible for overseeing the implementation of this RAP. The Principal will also be responsible for acquiring all necessary approvals for the remediation works proposed, including approval from the consent authority.
Principal Contractor and Site Manager	The Principal Contractor (referred to herein as the Contractor) is foreseen to be the party responsible for the day-to-day implementation of this RAP and shall fulfil the responsibilities of the Principal Contractor as defined by SafeWork NSW.

Role	Responsibility
	It is noted that the Contractor may appoint appropriately qualified sub-contractors or sub-consultants to assist in fulfilling the requirements of the procedures. The Principal Contractor will nominate a Site Manager who will be responsible for day to day site management and first response to any unexpected finds encountered during works.
Asbestos Contractor (if required)	The Asbestos Contractor will be responsible for undertaking asbestos related work and will include an employee who is a licenced removalist with a Class A or B licence (issued by SafeWork NSW) who will be the works supervisor. The Asbestos Contractor and Principal Contractor can be the same entity.
Project Surveyor	The project surveyor will be a Registered Surveyor and will be responsible for undertaking the surveying work detailed herein at the instruction of the Principal Contractor.
Environmental Consultant	The Environmental Consultant will be responsible for: • Overseeing the remediation work; • Undertaking the required assessments for disposal of liquid and solid wastes; • Providing any monitoring activities which may be required which do not directly relate to final site validation (e.g. for odours and air quality); • Providing advice on issues under the POEO Act; • Undertake all validation assessment work, including inspections, sampling and reporting; • Notifying their client with the results of any assessments and any observed non-conformances in a timely manner; and • Provide advice and recommendations arising from inspections/ observations. The Environmental Consultant and Occupational Hygienist can be the same entity.
Occupational Hygienist	The Occupational Hygienist will be suitably qualified / licenced as required in accordance with the WHS Regulations. The Occupational Hygienist will be responsible for: • Preparing any WHS plans and advice requested by the Contractor; • Undertaking airborne asbestos monitoring, if and when required; • Undertaking clearance inspections; • Notifying their client with the results of any assessments and any observed non-conformances in a timely manner; and • Providing advice and recommendations arising from monitoring and/or inspections.

Role	Responsibility
	The Occupational Hygienist and the Environmental Consultant can be the same entity.

8.7 Material Tracking and Disposal Records

The Contractor will track the movement of all materials excavated from the site, all imported soil and off-site disposal of soil. This will include tracking of:

- Stockpile locations, with corresponding source of materials;
- Off-site disposal records for soils (trucking record and landfill dockets);
- Sources, volumes, dates and location of any imported materials; and
- Reported volume(s) of any soils imported to or exported from the site based on weighbridge records or other similar data provided by the supplier or waste receiver.

8.8 Minimising Cross Contamination

Prevention of cross contamination of soils during remediation work is vital to the successful remediation of the site. The following measures must be conducted by the Principal Contractor and / or Site Manager to manage the potential for cross contamination:

- Undertake all work in accordance with the RAP, including provisions for soil tracking and management of contaminated soils;
- Segregate soils with different contaminant profiles during handling works. This includes separation during excavation and loading into trucks and / or placement in clearly identified, separate, stockpiles, as directed by the Environmental Consultant;
- Bunding of stockpiles will need to be appropriately undertaken using hay bales / sandbags and if required conditioned with water, covered and / or lined with anchored impermeable plastic sheeting to prevent dust generation; and
- Use of suitable trucks for transport of soils within the site. Other trucks must be able to prevent spillage or leakage of soils during transport.

8.9 Natural Material

Contaminated natural material in and near BH6 was identified during previous investigations directly beneath the fill. As such, impacted natural soils will require remediation in the same way as the overlying fill outlined in Section 8.4.

9. Validation Assessment Criteria

The remediation works will be validated as meeting an acceptable standard for the proposed land use. The validation will be undertaken by visual inspection, field screening and analysis of samples.

This section provides Validation Assessment Criteria (VAC), which will be used to judge the success or otherwise of the remediation, and are based on a variety of considerations, including field observations and laboratory results.

This section also provides soil assessment criteria, which will be used in characterising soils as required to determine the VAC have been met and for off-site disposal.

9.1 Validation Assessment Criteria

9.1.1 VAC for Soils

The VAC corresponds to the SAC, as detailed in Section 9.2.

9.2 Soil Assessment Criteria

The Site Assessment Criteria (SAC) applied in the current assessment is informed by the CSM (Section 5) which identified human receptors as the primary potential receptor to potential contamination on the site. Analytical results were assessed (as a Tier 1 assessment) against the SAC comprising the investigation and screening levels of Schedule B1, NEPC (2013).

The following guidelines were adopted for evaluation of the soil analysis results:

- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (as amended 2013); and
- CRC CARE (2011) Health Screening Levels for petroleum hydrocarbons in soil and groundwater, Technical report series No. 10.

The investigation and screening levels are applicable to generic land use settings and include consideration of, where relevant, the soil type and the depth of contamination. The investigation and screening levels are not intended to be used as clean up levels. Rather, they establish concentrations above which further appropriate investigation (e.g., Tier 2 assessment) should be undertaken. They are intentionally conservative and are based on a reasonable worst-case scenario.

The SAC comprises Health-based Investigation Levels (HIL), Health Screening Levels (HSL), Management Limits (ML) and Groundwater Investigation Levels (GIL). Given the sites current land use and proposed development with a basement excavation covering the developers work area, it is considered unlikely that soil contamination poses a risk to ecological receptors. Therefore, Environmental Investigation Levels (EIL) and Environmental Screening Levels (ESL) have not been considered in the current assessment.

Given the site's current and proposed commercial use, the adopted SAC are applied for commercial / industrial land use. It is noted that if the final development includes different land uses on portions of the site (such as a public open space) then a different and more conservative set of criteria would apply to those portions of the site.

9.3 Health Investigation and Screening Levels

The Health Investigation Levels (HIL) and Health Screening Levels (HSL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HIL are applicable to assessing health risk arising via all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface.

HSL are applicable to selected petroleum compounds and fractions to assess the risk to human health via the inhalation pathway. HSL have been developed for different land uses, soil types and depths to contamination.

The generic HIL and HSL are appropriate for the assessment of contamination at the site. Given the proposed commercial land use the adopted HIL and HSL are:

- **HIL-D**: Commercial; and
- **HSL-D for vapour intrusion and direct contact**: Commercial.

The HSL adopted are predicted on the inputs summarised in Table 8, below.

Table 8: Inputs to the Derivation of HSL

Variable	Input	Rationale
Potential exposure pathway	Soil vapour intrusion (inhalation)/Direct contact*	With the potential for vapour intrusion into the new building, and direct contact with soils during construction and in public areas, both pathways are considered viable.
Soil Type	Sand	In the absence of laboratory particle analysis sand HSL have been adopted as an initial conservative screen; based on the variable fill and sandy soils present.
Depth to contamination	0 m to <1 m; associated with contaminated fill; and 2 m to < 4 m & 4 m+; associated with deeper fill	0 to <1 m for shallow fill soil; 2 to <4 m for fill soils; and 4 m+ for deep fill and natural soils.

* Developed by CRC CARE (2011)

Adopted soil HIL and HSL are shown on the following Tables 9 and 10.

Table 9: Adopted HIL and HSL (mg / kg)

Contaminants		HIL - D	HSL-D Direct Contact	HSL-D[4] Vapour Intrusion
Metals	Arsenic	3,000	-	-
	Cadmium	900	-	-
	Chromium (VI)	3,600	-	-
	Copper	240,000	-	-
	Lead	1,500	-	-
	Mercury (inorganic)	730	-	-
	Nickel	6,000	-	-
	Zinc	400,000	-	-
PAH	Benzo(a)pyrene TEQ[1]	40	-	-
	Naphthalene	-	11,000	NL
	Total PAH	4,000	-	-
TRH	C6 – C10 (less BTEX) [F1]	-	26,000	260
	>C10-C16 (less Naphthalene) [F2]	-	20,000	NL
	>C16-C34 [F3]	-	27,000	-
	>C34-C40 [F4]	-	38,000	-
BTEX	Benzene	-	430	3
	Toluene	-	99,000	NL
	Ethylbenzene	-	27,000	NL
	Xylenes	-	81,000	230
Phenol	Phenol	240,000	-	-
OCP	Aldrin + Dieldrin	45	-	-
	Chlordane	530	-	-
	DDT+DDE+DDD	3,600	-	-
	Endosulfan	2,000	-	-
	Endrin	100	-	-
	Heptachlor	50	-	-
	HCB	80	-	-
	Methoxychlor	2,500	-	-
OPP	Chlorpyrifos	2,000	-	-
PCB [2]		7	-	-

Notes to Table 9:

1. sum of carcinogenic PAH
2. non-dioxin-like PCBs only
3. NL – not limiting
4. HSL-D for vapour intrusion, 0 m to <1 m, the most conservative values, has been adopted as an initial HSL for 2 to <4 m & 4 m+

Table 10: Adopted HSL for Intrusive Maintenance Worker (mg / kg unless otherwise indicated)

Contaminants		HSL-Intrusive Maintenance Worker, (Direct Contact)	HSL-Intrusive Maintenance Worker, (Vapour Intrusion)
TRH	C6 – C10 (less BTEX) [F1]	82,000	NL
	>C10-C16 (less Naphthalene) [F2]	62,000	NL
	>C16-C34 [F3]	85,000	-
	>C34-C40 [F4]	120,000	-
BTEX	Benzene	1,100	77
	Toluene	120,000	NL
	Ethylbenzene	85,000	NL
	Xylenes	130,000	NL

Note: NL – Not limiting

9.4 Management Limits - Petroleum Hydrocarbons

In addition to appropriate consideration and application of the HSL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards; and
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services.

Management Limits (ML) to avoid or minimise these potential effects have been adopted in NEPC (2013) as interim Tier 1 guidance. Management Limits have been derived in NEPC (2013) for the same four petroleum fractions as the HSL (F1 to F4). The adopted ML, from Table 1B (7), Schedule B1 of NEPC (2013) are shown in the following Table 6. The following site-specific data and assumptions have been used to determine the Management Limits:

- The ML will apply to any depth within the soil profile;
- The ML for commercial land use applies; and
- A “coarse” soil texture has been adopted as a conservative parameter, based on the variable soil types encountered.

Table 11: Adopted ML (mg / kg)

Analyte		Management Limit
TRH	$C_6 – C_{10}$ (F1) #	700
	$>C_{10}$-C_{16} (F2) #	1,000
	$>C_{16}$-C_{34} (F3)	3,500
	$>C_{34}$-C_{40} (F4)	10,000

Separate management limits for BTEX and naphthalene are not available hence these have not been subtracted from the relevant fractions to obtain F1 and F2

Management limits are applied after consideration of relevant HSL.

9.5 Asbestos

Bonded asbestos containing material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites; and
- Historical fill containing unsorted demolition materials.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and / or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

Based on the CSM a detailed asbestos assessment was not considered to be warranted at this stage. However, due to the history of widespread use of ACM products across Australia, ACM can be encountered unexpectedly and sporadically at a site. Therefore, the presence or absence of asbestos at a limit of reporting of 0.1 g / kg (AS 4964[9]) has been adopted for this investigation/assessment as an initial screen.

If asbestos is identified in soil and off-disposal of asbestos-contaminated is not an option, then a detailed asbestos assessment against the criteria outlined in NEPC (2013) may be appropriate. This includes sampling and analysis of 10 L and 500 mL samples from sample locations. The HSL for

[9] Australian Standard AS 4964-2004 *Method for the qualitative identification of asbestos in bulk samples*

commercial / industrial land use have been adopted for the proposed remediation and are shown in Table 12 below. In areas where a detailed asbestos investigation in accordance with NEPC (2013) has not been undertaken, any detection of asbestos will be considered to require remediation or further investigation.

Table 12: Health Screening Levels for Asbestos Contamination in Soil

Health Screening Level (where detailed asbestos conducted)	
Form of Asbestos	**HSL (w/w)**
Bonded ACM	0.05%
AF/FA (Friable Asbestos)	0.001%
All forms	No visible asbestos for surface soil

9.6 Classification for Off-Site Disposal

The following guidance applies to off-site disposal of soils:

- NSW EPA *Waste Classification Guidelines* 2014 (EPA, 2014); or
- A General or Specific Exemption under the *Protection of the Environment Operations (Waste) Regulation* 2014.

For contaminated filling or natural soils, waste classification for disposal to a licenced waste facility is required. Three main categories of waste apply (from lower to higher contaminant levels): General Solid Waste, Restricted Solid Waste and Hazardous Waste. Other waste categories also exist and can apply in conjunction with these three main categories, including Special Waste (including asbestos contaminated wastes), Putrescible General Solid Waste and Acid Sulphate Soil.

General Solid Waste comprises wastes with contaminant levels within the threshold levels CT1 and / or SCC1 and TCLP1 (as applicable). Restricted Solid Waste comprises wastes with contaminant levels within the CT2 and / or SCC2 and TCLP2 (as applicable) threshold levels. Hazardous Waste comprises wastes with contaminant levels above the SCC2 and TCLP2 (as applicable) threshold levels.

Liquids are classified as Liquid Waste, with no further assessment required to obtain a formal classification in accordance with EPA (2014). Depending on the source of the liquid, however, further testing can be required by the receiving facility to ensure they are legally able to receive it and have the capability to process it.

9.7 Contaminants with No Assessment Criteria

Where screening guidance is provided in NEPC (2013) for a specific analyte, the practical quantitation limit (PQL) will be used as the initial screening criteria.

If concentrations are recorded above the PQL, reference criteria will be sourced from other national and international guidance as relevant and used to determine the significance of the detected analyte.

Details of the reference criteria will be provided where used.

10. Sample Collection and Analysis Requirements

10.1 Soil Sampling Frequencies

The sampling frequency will depend on the volume or area to be assessed and the previous results. The following sampling frequencies will be used. These frequencies may be reduced for large volumes or areas.

10.1.1 Visual Inspections and Signs of Environmental Concern

All areas to be assessed and validated will first be subject to a visual inspection.

If any signs of environmental concern (e.g., odours, staining) are observed in the area/material being tested, targeted sampling will be conducted as required to assess the contamination potentially associated with the observed sign of concern. This may require additional samples to those required by the testing frequencies given below.

10.1.2 Validation of excavation

Small to medium excavations (base <500 m^2):

- Base of excavation: 1 sample per 25-50 m^2 or part thereof. Where high local variation is expected, a minimum of 3 samples will be collected; and
- Sides of excavation: 1 sample per 10 m length or part thereof. Additional samples will be collected at depths of concern where there is more than one depth of concern, with a minimum of 1 sample per 1.5 m depth.

Large excavations (base ≥500 m^2):

- Base of excavation: sampling on a grid at a density in accordance with the EPA *Contaminated Sites: Sampling Design Guidelines* (1995) or a minimum of 10 samples. In sub-areas with any specific signs of concern, a higher sampling density may be required; and
- Sides of excavation: 1 sample per 20 m length or part thereof. Additional samples will be collected at depths of concern where there is more than one depth of concern.

10.1.3 Stockpiles

Samples will be collected from stockpiles at various depths to characterise the full depth of the stockpile.

Validation / assessment of stockpiled soils (note actual frequency will be determined based on volume, contamination risk and homogeneity of the material):

- Stockpiles ≤250 m^3: 1 sample per 25 m^3 or a minimum of 3 samples;
- Stockpiles 250 - 1,000 m^3: 1 sample per 50-100 m^3, or a minimum of 10 samples; and

- Stockpiles >1,000 m^3: 1 sample per 100-250 m^3.

A sampling regime will be determined by the Environmental Consultant/Validation Consultant in the event that a stockpile has a volume significantly greater than 1,000 m^3.

Where contaminated soils are stored or treated on bare soils, the footprint of the stockpile requires validation following removal of the contaminated soils.

10.2 Field Methods

10.2.1 Soils

The following general sampling methodology is to be implemented for all sampling:

- Preparing record of samples, including sample date, location, description, signs of concern, and any field results;
- Sampling from surface or from the utilised plant using disposable sampling equipment or stainless-steel hand tools;
- Decontaminating all re-useable sampling equipment prior to collecting each sample using a 3% solution of phosphate free detergent and distilled water;
- Transferring samples into a sealable plastic bag, and then placement in a second plastic bag (i.e. double bagging) (for asbestos analysis);
- Transferring samples into laboratory-prepared glass jars with Teflon-lined lid, and capping immediately (for chemical analytes);
- Labelling sample containers with individual and unique identification, including project number and sample number;
- Placing the plastic bags for asbestos into a sealed container for transport to the laboratory;
- Placing the glass jars for chemical analysis into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain-of-custody documentation to ensure that sample tracking and custody can be cross-checked at any point in the transfer of samples from the field to hand-over to the laboratory.

10.2.2 Water

The following general sampling methodology is to be implemented for all sampling:

- Preparing record of samples, including sample date, location, description, signs of concern, and any field results;
- Decontaminating all re-useable sampling equipment prior to collecting each sample using a 3% solution of phosphate free detergent (Decon 90) and distilled water;
- Immediate placement of sample in laboratory prepared sample containers and capping;
- Labelling sample containers with individual and unique identification, including project number and sample number;

- Placing the samples into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain-of-custody documentation to ensure that sample tracking and custody can be cross checked at any point in the transfer of samples from the field to hand-over to the laboratory.

10.3 Laboratory Analysis

Laboratory analysis of samples will be undertaken by laboratories with NATA accreditation for the analyte being tested and with appropriate QA / QC assessment to meet the requirements of Section 10.4.

It is anticipated that at least two laboratories will be employed to undertake the testing, a primary laboratory and secondary laboratory, which will analyse inter-laboratory replicate samples.

Samples will be analysed for the contaminants of concern identified for the sampling purpose. These contaminants will be identified based on available laboratory results from previous testing, field observations and the objective of the analysis.

10.4 Quality Control and Quality Assurance

QA / QC procedures will be adopted to ensure the repeatability and reliability of the results.

Field QA / QC testing will include the following:

- 5% sample inter-laboratory analysis, analysed for the same suite as primary sample;
- 5% sample intra-laboratory analysis, analysed for the same suite as primary sample;
- Rinsate samples (where re-useable sampling equipment is used), analysed for the suite of analytes analysed by the majority of the primary samples;
- Trip spike samples (one per batch of samples tested for BTEX where volatile contaminants are of concern); and
- Trip blank samples (one per batch of samples tested for TRH and BTEX where volatile contaminants are of concern).

The laboratory will undertake analysis in accordance with its accreditation, including in-house QA / QC procedures. These may include:

- Reagent blanks;
- Spike recovery analysis;
- Laboratory duplicate analysis;
- Analysis of control standards;
- Calibration standards and blanks; and
- Statistical analysis of QC data including control standards and recovery plots.

The quality control analytical results will be assessed using the following criteria:

- Sampling location rationale met the sampling objective;
- Standard operating procedures are followed;
- Appropriate QA / QC samples are collected/prepared and analysed;
- Samples are stored under secure, temperature-controlled conditions;
- Chain of custody documentation is employed for the handling, transport and delivery of samples to the selected laboratory;
- Conformance with specified holding times;
- Accuracy of spiked samples within the laboratory's acceptable range (typically 70-130% for inorganic contaminants and greater for some organic contaminants);
- Field and laboratory duplicates and replicate samples will have a precision average of +/- 30% relative percentage difference (RPD) for inorganic analytes and +/- 50% RPD for organic analytes; and
- Rinsate samples will show that the sampling equipment is free of introduced contaminants, i.e., the analytes show that the rinsate is within the normal range for deionised water.

11. Waste Classification Requirements

11.1 Waste Classification and Off-Site Disposal

All off-site disposal of soils will be undertaken in accordance with the regulation and guidelines outlined in Section 9.6.

Soil samples should be analysed for contaminants of potential concern as per Table 4.

In general, if required, one sample will be taken per 25 m^3 - 250 m^3 depending on the total volume and homogeneity of the material with a minimum of three samples per stockpile. The following sampling rate is to be adopted:

- ≤ 50 m^3: Minimum of three samples;
- 50 m^3 - 250 m^3: One sample per 50 m^3, minimum of three samples; and
- > 250 m^3: One sample per 250 m^3, minimum of three samples.

No soils will leave the site without a formal waste classification.

All transport of waste and disposal of materials must be conducted in accordance with the requirements of the POEO Act. All licences and approvals required for disposal of the material will be obtained prior to removal of the materials from the site.

Removal of waste materials from the site shall only be carried out by a licensed contractor holding appropriate licence, consent and / or approvals to dispose of the waste materials according to the

assigned waste classification and the corresponding requirements outlined in the NSW EPA *Waste Classification Guidelines 2014*, and with the appropriate approvals obtained from the EPA, if required.

Details of all soils removed from the site (including Virgin Excavated Natural Material - VENM) shall be documented by the Contractor with copies of: weighbridge slips, trip tickets and consignment disposal confirmation (where appropriate) provided to the Environmental Consultant. A site log shall be maintained by the Contractor to track disposed loads against on-site origin.

Transport of spoil shall be via a clearly delineated, pre-defined haul route. The proposed waste transport route will be notified to the Council and truck dispatch shall be logged and recorded by the Contractor for each load leaving the Site.

11.2 QA / QC Analysis for Waste Classification

QA / QC testing for waste classification purposes include the following:

- Intra-laboratory duplicate samples for the full analytical suite of the primary sample at a rate of 5% of the primary sampling or a minimum of one sample per sampling day / source material; and
- One rinsate sample per sampling day (heavy metals, PAH and TRH/BTEX), if non-disposable sampling equipment is used.

11.3 Stockpiling of Contaminated Material

It is anticipated that stockpiles will be temporarily placed on the site during remediation works prior to any of the materials being loaded onto trucks for disposal. Any stockpiles placed on the site must be managed to minimise the risk of dust generation, erosion and leaching. The measures required to achieve this will depend on the stockpile material and the amount of time the stockpile remains on site. Measures should include:

- Restriction of the height of stockpiles (less than the height of the fence) to reduce dust generation;
- Implementation of control measures for sediment and erosion; and
- Temporary stockpiles should be kept moist by using water spray (where required).

11.4 Imported Materials

Materials imported to the site to backfill the site (where required) must be virgin excavated natural material (VENM), excavated natural material (ENM) or other certified materials (complying with a relevant Resource Recovery Order (RRO) as issued by the NSW EPA) such as topsoil (preferably not recycled or blended product), mulch (preferably not recycled or blended product) or quarry won products (such as gravel) from a reputable supplier.

The source site must provide reports showing compliance of the materials with any of the above. These reports must be provided to the environmental consultant for review and approval prior to importation of the material. If the reports do not meet the satisfaction of the Environmental Consultant, the source site may be rejected, or that additional analysis may be requested.

Upon receipt of the material a minimum of three check samples (per source site) of the imported material must be collected and analysed for: heavy metals, TRH, PAH, BTEX, OCP, OPP, PCB, phenols and asbestos (as a minimum).

In addition to VENM or RRO definitions, the analytical results must also meet the RAC provided in Section 11.

It is highly recommended that no recycled or blended product is used given the risk of asbestos containing materials in such products. Should such products be proposed for use, apart from being required to comply with an RRO, the Environmental Consultant will conduct a more rigorous validation process including:

- A visit to the source site;
- Thorough review of the reports provided confirming compliance with an RRO;
- Inspection of the imported product;
- Verification sampling of the imported product at a rate of at least 1 sample per 25 m^3; and
- Analysis of the verification samples for the contaminants of concern (determine by the source and the information provided in the RRO compliance documentation). Asbestos will be analysed as a minimum for all incoming products.

QA / QC testing for imported materials must be undertaken in accordance with Section 11.2.

12. Validation Plan

12.1 Data Quality Objectives and Indicators

The validation assessment will be conducted in accordance with Data Quality Objectives (DQOs) and Quality Assurance / Quality Control (QA / QC) procedures to ensure the repeatability and reliability of the results.

The validation assessment will be planned in accordance with the following DQOs:

- State the Problem;
- Identify the Decision;
- Identify Inputs to the Decision;
- Define the Boundary of the Assessment;
- Develop a Decision Rule;
- Specify Acceptable Limits on Decision Errors; and

- Optimise the Design for Obtaining Data.

A checklist of Data Quality Indicators (DQI) in accordance with Appendix V of the NSW EPA *Contaminated Sites Guidelines for the NSW Site Auditor Scheme* (3rd edition) (2017) will be completed as part of the validation assessment. The DQIs are:

- Documentation completeness;
- Data completeness;
- Data comparability and representativeness; and
- Data precision and accuracy.

Based on a fulfilment of the DQOs and DQIs an assessment of the overall data quality will be presented in the validation report.

13. Validation Report

A Validation Report will be prepared by an Environmental Consultant in accordance with the relevant NSW EPA endorsed guidelines. The validation report should include: the remedial methods used (if required), assess the results of the post-remediation testing against the VAC (if required) and that all relevant licence conditions and approvals have been met.

The report will also document the waste classification and tracking of soils removed from the site and imported to the site.

The following documentary evidence will need to be reviewed by an Environmental Consultant as part of the validation process and where relevant noted or included in the validation report.

- **Licenses:** any licences and approvals required for the remediation works;
- **Transportation record:** this will comprise a record of all truckloads of soil entering or leaving the site, including truck identification (e.g., registration number), date, time, load characteristics (i.e., classification, on-site source, destination);
- **Disposal dockets:** for any soil materials disposed off-site, the contractor will supply records of: transportation records, spoil source, spoil disposal location, receipt provided by the receiving waste facility (where available), a record of receipt from the receiving site will be supplied (i.e., the receiving sites transportation records, including EPL for the disposal site and written confirmation that they can take the waste consignment);
- **Imported materials records:** records for any soil imported onto the site, including source site, classification reports, inspection records of soil upon receipt at site and transportation records;
- **Unexpected finds and contingency plans:** records relating to any unexpected finds and contingency plans implemented;
- **Incident reports:** any WHS Environmental Incidents which occur during the works will be documented and the PR and appropriate regulatory authority will be informed in accordance with regulatory requirements;

- **Laboratory certificates:** laboratory certificates and chain-of-custody documentation will be provided; and
- **Instructions:** letters / memos required to provide instruction or information to the Principal and Contractor.

13.1 Principal

The Principal will prepare / obtain the following documents:

- Any Licences and Approvals required for the Works which are not the responsibility of the Contractor to provide.

13.2 Principal Contractor

The Principal Contractor will prepare / obtain the following documents:

- Any **Licences and Approvals** required for the Works which are the responsibility of the Contractor to provide;
- **Excavation and Stockpiling Records:** these will record the source of any stockpiled material, the date of excavation and any issues of concern;
- **Transportation Record:** this will comprise a record of any truckloads of soil entering or leaving the site, including truck identification (e.g., registration number), date, time, load characteristics (i.e., classification, on-site source, destination);
- **Tip dockets:** these comprise dockets of receipt provided by the receiving waste facility;
- **Survey drawings** showing the extent of remedial excavations; and
- **Incident Reports:** any WHS or Environmental Incidents which occur during the works will be documented and the PR and appropriate regulatory authority will be informed in accordance with regulatory requirements.

Licences and approvals include the following (but not limited to):

- Notify the Council (consent authority) 30 days prior to commencement of remediation works. The client should check with the Council regarding this; and
- Removal of waste materials from the site shall only be carried out by a licensed contractor holding appropriate licence.

13.3 Environmental Consultant

The Environmental Consultant will prepare/ obtain the following documents:

- Waste classification reports, including records of sampling and analysis;
- Validation reports associated with imported materials; and
- Validation report, including records of inspections, sampling and analysis.

13.4 Occupational Hygienist

The Occupational Hygienist will prepare/obtain the following documents if asbestos contamination is encountered during excavation:

- Airborne asbestos monitoring records;
- Interim visual clearances of asbestos removal;
- A written final clearance certificate (to be incorporated as part of the final validation report) stating that:
  - The assessor or competent person found no visible asbestos residue from asbestos removal work on the surface of the works area, or on the surface near the area where the work was carried out, and
  - If air monitoring was carried out by the assessor or competent person as part of the clearance inspection - the airborne asbestos fibre level was less than 0.01 asbestos fibres/mL.

14. Unexpected Finds Protocol

The unexpected finds protocol includes the following items:

- Potential asbestos contamination in fill / soil during excavation;
- Potential contaminants (general) in fill / soil during excavation; and
- Disposal of potentially hazardous waste.

Should monitoring and remediation of groundwater be required then a revised RAP assessing various options will be required to address groundwater contamination.

All site personnel will be inducted into their responsibilities under the Unexpected Finds Protocol (UFP). The UFP should be incorporated in the Construction Environment Management Plan (CEMP) as prepared by the appointed main contractor.

All site personnel are required to report to the Site Manager if the following signs of unexpected environmental concern are encountered:

- Presence of unexpected fibre cement;
- Petroleum, or other chemical odours;
- Unnatural staining;
- Buried drums or tanks; and / or
- Chemical spills.

Should signs of concern be observed, the Contractor will, as soon as practical:

- Place barricades around the affected area (the potential area of environmental concern - PAEC) and cease work in that area;

- Notify authorities needed to obtain emergency response for any health or environmental concerns (e.g., fire brigade);
- Notify the client of the occurrence;
- Notify any of the authorities that the Contractor is legally required to notify (e.g. EPA, Council);
- Notify the Environmental Consultant;
- The client will notify any of the authorities which the Principal is legally required to notify (e.g. EPA, Council); and
- Following the immediate response in the UFP, one of the following contingency plans may be implemented.

14.1 General

The general procedures in the event of an unexpected find are outlined below:

1. Cease work at that location and contact the client;
2. Place barricades around the affected area (the potential area of environmental concern - PAEC);
3. Notify authorities needed to obtain emergency response for any health or environmental concerns, if required;
4. Notify any of the authorities that the contractor is legally required to notify (e.g. EPA, Council);
5. Notify the Environmental Consultant;
6. The Environmental Consultant will inspect the find and if deemed necessary, design and implement an investigation to assess the risk of hazard:
    - If no hazard is identified, the Environmental Consultant will advise the client who will instruct the contractor to remove the barricades and continue works in that area;
    - If a potential hazard is identified, the Environmental Consultant will outline a procedure to remediate and / or manage the find, which may form an addendum to the RAP; and
    - The contractor will undertake the remediation / management works which will be validated by the Environmental Consultant generally in accordance with the RAP, or any other procedural document produced in response to the find.

14.2 Asbestos

The following protocol has been established in the event of an unexpected asbestos find:

1. Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off using barrier tape and warning signs. Warning signs shall be specific to asbestos hazards and shall comply with the Australian Standard 1319-1994 - Safety Signs for the occupational environment;

2. An occupational hygienist or Environmental Consultant with appropriate competency to NEPC (2013) is to be notified to inspect the area and confirm the presence of asbestos (and type of asbestos) and determine extent of investigation and/or remediation works to be undertaken. A report detailing this information will be compiled by the occupational hygienist or Environmental Consultant and provided to the site manager;
3. Should asbestos impacted soils require off-site disposal, the impacted soil will be stockpiled for waste classification purposes (including sampling and chemical analysis) and will be disposed of, as a minimum, as asbestos waste at an appropriately licensed solid waste landfill site. In dry and windy conditions, the stockpile will be lightly wetted and covered with plastic sheet whilst awaiting disposal;
4. All work associated with asbestos in soil will be undertaken by a contractor holding a class AS1 Licence and all workers working in the asbestos impacted zone must meet the following minimum PPE requirement (unless otherwise advised by the hygienist);
    - Steel-capped lace-less boots;
    - Hard hat meeting AS1801-1981 and AS/NZS 1801:1997/Amdt 1:1999 requirements;
    - High visibility clothing;
    - Half-face P2 rated respirator or similar;
    - Disposable full-length body coveralls with elasticated hood and cuffs (Tyvek suit or equivalent); and
    - Gloves.
5. Monitoring for airborne asbestos fibres is to be carried out during the soil excavation, if deemed necessary by the Occupational Hygienist. Asbestos air monitoring will be undertaken in accordance with *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition* [NOHSC: 3003 (2005)] and sampling density and locations will be determined by the Occupational Hygienist. All filters will be submitted to a NATA accredited laboratory for analysis. Air samples will be collected from the breathing zone of a person, over a minimum of four hours duration;
6. At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by the occupational hygienist that the area is safe to be accessed and worked. Clearance will include soil samples and asbestos analysis;
7. Details of the incident are to be recorded in the site record system; and
8. The area may be reopened for further excavation or construction work.

14.3 Hazardous Waste

This plan caters for the storage, treatment and disposal of excavated spoil which fails to meet the criteria for direct disposal to a landfill (i.e., Hazardous Waste). Any suspected Hazardous Waste materials should have the classification confirmed by the Environmental Consultant, including additional sampling and analysis as appropriate, prior to implementing this contingency plan.

Hazardous Waste will be handled as follows:

- Materials of the same spoil category/ contamination issue will be carefully excavated and placed as separate stockpiles at demarcated and contained locations. The categorisation would be done based on on-site observations and the contaminant exceedances detected;
- Stockpiles of excavated materials will be appropriately bunded with hay bales / sandbags and covered with anchored geotextile or impermeable plastic sheeting, or alternatively placed in an appropriate container e.g., waste skip, with appropriate cover. Materials considered to have the potential to produce contaminated leachate will be stockpiled in an area with an appropriate leachate collection system;
- Sampling and analysis of segregated stockpiles will be conducted to determine the concentrations of the target parameters in the excavated materials (e.g., leachability of the contaminants of concern, treatability studies);
- Should the sampling and testing confirm the Hazardous Waste category, an off-site treatment / disposal facility will be considered;
- If the material is to be disposed of at a specific landfill site, appropriate applications will be made to the EPA. It is foreseen that treatment and management of Hazardous Wastes prior to off-site disposal would be conducted by a specialised contractor. Agreement as to the appropriateness of the treatment and disposal method for materials must be obtained from the EPA, and disposal consent must be sought from the Hazardous Waste Regulation Unit of the EPA prior to the removal of such wastes from the Site; and
- An appropriately licensed Hazardous Waste remediation contractor will be appointed to manage the waste and remove from site in accordance with the methodology agreed with the EPA.

15. Site Management Plan

15.1 General

The Contractors will undertake the work with due regard to the minimisation of environmental effects and to meet regulatory and statutory requirements.

The Contractors should have in place an over-arching construction environmental management plan that incorporates this RAP so that work on the Site complies with, but not limited to, the following:

- *Protection of the Environment Operations Act* 1997;
- *Contaminated Land Management Act* 1997;
- *Work Health and Safety Act* 2016; and
- *Work Health and Safety Regulation* 2017.

The following general measures outlined below should be implemented during the remediation phase. All personnel should be made familiar with the following section prior to the commencement of site works as required.

15.2 Vibration Control

The use of any plant and/or machinery should not cause unacceptable vibrations to nearby properties and should meet Council requirements.

15.3 Dust Control

Dust emissions should be confined within the Site boundary. The following dust control procedures will be employed to comply with this requirement as necessary:

- Erection of dust screens around the perimeter of the Site;
- Securely covering all loads entering or exiting the Site;
- Use of water sprays across the Site to suppress dust;
- Covering of all stockpiles of contaminated soil remaining onsite more than 48 hours;
- Dust monitoring as may be required by the Council DA consent; and
- Keeping excavation and stockpile surfaces moist.

15.4 Odour Control

No odours should be detected at any boundary of the Site during remediation works by an authorised Council Officer relying solely on sense of smell. The following procedures should be employed to comply with this requirement as required:

- Use of appropriate covering techniques such as plastic sheeting, polythene or geotextile membranes to cover excavation faces or stockpiles;
- Fine spray of water and / or hydrocarbon mitigating agent on the impacted areas / materials;
- The use of water spray, as and when appropriate, to eliminate wind-blown dust;
- Use of sprays or sprinklers on stockpiles or loads to lightly condition the material;
- Restriction of stockpile heights to 5 m above surrounding site level. If required, restrict uncovered stockpiles to appropriate sizes to minimise odour generation;
- Ceasing works during periods of inclement weather such as high winds or heavy rain;
- Regular checking of the fugitive dust and odour issues to ensure compliance. Undertake immediate remediation measures to rectify any cases of excessive dust or odour (e.g., use of misting sprays or odour masking agent); and
- Adequate maintenance of equipment and machinery to minimise exhaust emissions.

15.5 Disposal of Waters

Any water requiring disposal will be assessed and managed as follows:

- Assessment of water quality by the Environmental Consultant. This will include a review of potential for the water to be impacted by various contaminants, possible disposal options, and determination of a suitable sampling and analysis program. Analysis may include total suspended solids (TSS) and / or turbidity, pH, filterable iron, other metals, PAH, TRH, BTEXN, phenols and VOC. The Environmental Consultant will provide written advice of the results to the PR and Contractor, including comments on potential disposal options.
- Determination of the appropriate disposal method by the PR based on the above results. Treatment may be required prior to disposal. In general, disposal options for liquids include:
    - On-site absorption. This option is generally suitable for water with contaminants levels at background quality for the Site, and comprises discharge of water onto the ground surface in an area where it will be absorbed into the underlying soils and groundwater. TSS would not be an issue of concern for this method of disposal;
    - Disposal to stormwater. This option is suitable for uncontaminated waters, with low turbidity. All water to be disposed to stormwater needs to meet the requirements of the owner of the stormwater system, which is City of Sydney Council;
    - Disposal to sewer under a Trade Waste Agreement. This method of disposal would require a Trade Waste Agreement with Sydney Water;
    - Disposal as a liquid waste to a licensed liquid waste contractor in accordance with the POEO Act, 1997. This method is likely to be costly, however, it allows for off-site treatment and is therefore suitable for wastes with high levels of contaminants; and
    - On-site treatment followed by disposal by one of the above methods. If direct disposal by one of the above methods is considered unsuitable due to the water quality or cost, on-site treatment could be conducted prior to disposal. On-site treatment may include for example removal of suspended solids and pH adjustment which are standard requirements for construction sites water prior to disposal to stormwater or sewer.
- Disposal of the water in accordance with the POEO Act. Record of the disposal will be kept by the Contractor and provided to the PR and Environmental Consultant.

If treatment of contaminants is required by City of Sydney Council (stormwater discharge) or Sydney Water (sewer discharge), a remediation contractor can be engaged to devise a concept and/or detailed design of the treatment system. This would generally involve the following (or similar):

- Settlement tanks, to remove suspended solids from the dewatered excavation;
- Oil-water separator vessels, to recover floating product and separate sinking product (if any);
- Sand filtration, to remove fine sediment from the water stream,
- Aeration, to remove BOD; and
- Granular activated carbon (GAC) filtration and resultant filtration to adsorb contaminants.

Routine validation sampling is required to assess the effectiveness of the treatment process. The validation sampling and testing should be carried out by a qualified environmental consultant.

15.6 Stormwater Management and Control

As necessary, the remediation contractor shall take appropriate measures to ensure that potentially contaminated water does not leave the Site. Stormwater management for the duration of the remediation works shall be utilised and monitored to minimise stormwater flow into adjacent waterways.

The remediation contractor should refer to the *Managing Urban Stormwater: Soils and construction - Volume 1 (4th edition)* guidelines or commonly known as the 'Blue Book' as part of the stormwater management plan.

15.7 Occupational Health and Safety

The Contractors shall develop a site emergency response plan (ERP) and occupational health and safety plan (OHSP). This will ensure the safety of the personnel working on site, given any likely incident/accident which may occur. The OHSP and ERP should include emergency phone numbers and details of local emergency facilities.

Appropriate fencing and signage should be installed around and within the Site to prevent unauthorised access to the Site, restricted access remediation areas and / or deep excavations.

All site personnel should be required to wear the following personnel protective equipment (PPE):

- Steel-capped boots;
- High visibility clothing; and
- Hard hat meeting AS1801-1981 requirements.

The following additional PPE will be worn, as required:

- Hearing protection meeting AS1270-1988 requirements when working around machinery or plant equipment if noise levels exceed exposure standards;
- Safety glasses or safety goggles with side shields meeting AS1337-1992 requirements (as necessary, particularly during any demolition);
- Disposable coveralls (if necessary) to prevent contact with splashed contaminated soil, materials or water;
- Nitrile work gloves meeting AS2161-1978 requirements or heavy-duty gauntlet gloves; and
- Any additional protection identified by the Environmental Consultant.

Where the site personnel are required to work in areas of potential contact with asbestos, the following special PPE (in addition to the standard PPE) should be worn during works involving the handling and / or removal of soils impacted by asbestos:

- Disposable coveralls (rated type 5, cat 3 or equivalent);
- Half-face P1/P2 respirator or equivalent;
- Gloves; and
- Safety footwear which should be laceless.

Excavation, handling, stockpiling, transport etc. of materials containing asbestos should be undertaken by a licensed contractor in accordance with relevant regulatory requirements.

15.8 Hours of Operation

All remediation work should be conducted within the hours specified by the City of Ryde.

15.9 Contingency Plans to Respond to Site Incidents

The key to effective management of incidents is the timely action taken before any situation reaches a reportable or critical level. Therefore, surveillance activities are extremely important, and should be conducted for the measures prescribed herein and any other measures as seen appropriate by the Principal's representative. During work activities on the Site, the following inspection or preventative actions must be performed by the main Contractor and carefully documented:

- Regular inspection of works;
- Completion of routine environmental checklists and follow-up of non-compliance situations;
- Maintenance of supervision on-site; and
- An induction process for site personnel involved in the remediation works that includes relevant information on environmental requirements; and ensure that all site personnel are familiar with the Site emergency procedures.

The Contractor's site foreman should be responsible for initiating an immediate emergency response using the resources available on the Site. Where external assistance is required, the relevant emergency services should be contacted. A list containing contact details for key personnel who may be involved in an environmental emergency response should be completed and be made available to site workers.

15.10 Identify Regulatory Compliance

The work should be undertaken with all due regard to the minimisation of environmental effects and to meet all statutory requirements, including, inter alia, provisions specified in:

- *Protection of the Environment Operations Act* 1997;
- *Contaminated Land Management Act* 1997;
- *Dangerous Goods Act* 2008;
- *Work Health and Safety Act* 2016;
- *Work Health and Safety Regulation* 2017; and
- DUAP NSW EPA (1998) *State Environmental Planning Policy No. 55* (SEPP 55).

15.11 Community Engagement

The Contractor must affix a sign to the main entrance of the Site displaying contact details of the Contractor, Environmental Consultant and Principal Contractor. Each party must keep a log of any communications received by the public. A summary of any communications received will be included in the validation report.

15.12 Contact Details

The following table provides a list of personnel and contact details relevant to the remediation. The list should be filled in as relevant personnel are appointed to the remediation project.

Table 12: Contact Details

Role	Personnel / Contact	Contact Details (phone)
Principal	Atlassian Pt Ltd	(02) 9262 1443
Principal's Representative	Avenor Pty Ltd	(02) 9152 8668
Site Manager	TBA	TBA
Environmental Consultant	Douglas Partners Pty Ltd	(02) 9809 0666
Site Auditor	Harwood Environmental Consultants Pty Ltd	0438 200 055
Regulator	NSW EPA (pollution line)	131 555 or (02) 9995 5555
Regulator	NSW EPA (general enquiries)	131 555 or (02) 9995 5555
Consent Authority	City of Sydney Council	(02) 9265 9333
Utility Provider	Sydney Water	13 20 92
Utility Provider	Ausgrid	13 13 88
Utility Provider	Jemena	131 909

Notes to table: Table to be completed when the contact details are known.

16. Conclusions

It is considered that the Site can be rendered suitable for the proposed development subject to the following:

- Completion and findings of the data gap analysis;
- Completion of suitable site validation according to the requirements of the RAP;
- Appropriate management of off-site disposal of contaminated and non-contaminated fill / soil in accordance with the RAP; and

- Proper implementation of unexpected finds protocols during basement excavation and other civil works on the Site.

Significant contamination identified during the data gap analysis and/or addressing unexpected finds may warrant an amendment or addendum to this RAP such that appropriate actions are managed and documented.

17. Glossary of Key Terms

Term	Definition
Adina Hotel	2 Lee Street, Haymarket The Former Parcels Post Office The Adina Apartment Hotel Sydney Central
Atlassian Central	The Atlassian tower building (building only)
Atlassian Central development	The whole Atlassian development within the Atlassian Site including the tower and public domain works.
Atlassian Site	8 - 10 Lee Street, Haymarket
Central Sydney	Land identified as Central Sydney under the Sydney LEP 2012 and includes Sydney's Central Business District (CBD)
Central SSP	Central Station State Significant Precinct
Central Walk West	The future western pedestrian entry to the new 19 metre-wide underground concourse customers to suburban rail and Sydney Metro platforms.
Devonshire Tunnel	The pedestrian and cycle tunnel running between Chalmers Street and Lee Street
"Dexus / Frasers Site"	14 - 30 Lee Street, Haymarket. Adjoining land immediately to the south currently comprising three 8-storey commercial buildings
Habitat Level 1	Flexibly ventilated workspace areas
Link Zone	The publicly accessible land within the Site.
Sub-precinct	Western Gateway Sub-precinct
The Project	Commercial and hotel development above the Former Inwards Parcel Shed at 8 - 10 Lee Street, Haymarket

18. Limitations

Douglas Partners (DP) has prepared this report for the Site at 8-10 Lee Street, Haymarket in accordance with DP's proposal SYD190190.P.003 dated 4 February 2020 and acceptance received from Avenor Pty Ltd on behalf of Atlassian Pty Ltd. The work was carried out under agreed terms of engagement between DP and Atlassian Pty Ltd. This report is provided for the exclusive use of Atlassian Pty Ltd only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon the conditions encountered during the investigations undertaken as referenced in this RAP. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the Site between and beyond the sampling and/or testing locations. The advice may also be limited by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the (geotechnical/environmental/groundwater) components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

Notes About this Report

and Drawings

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

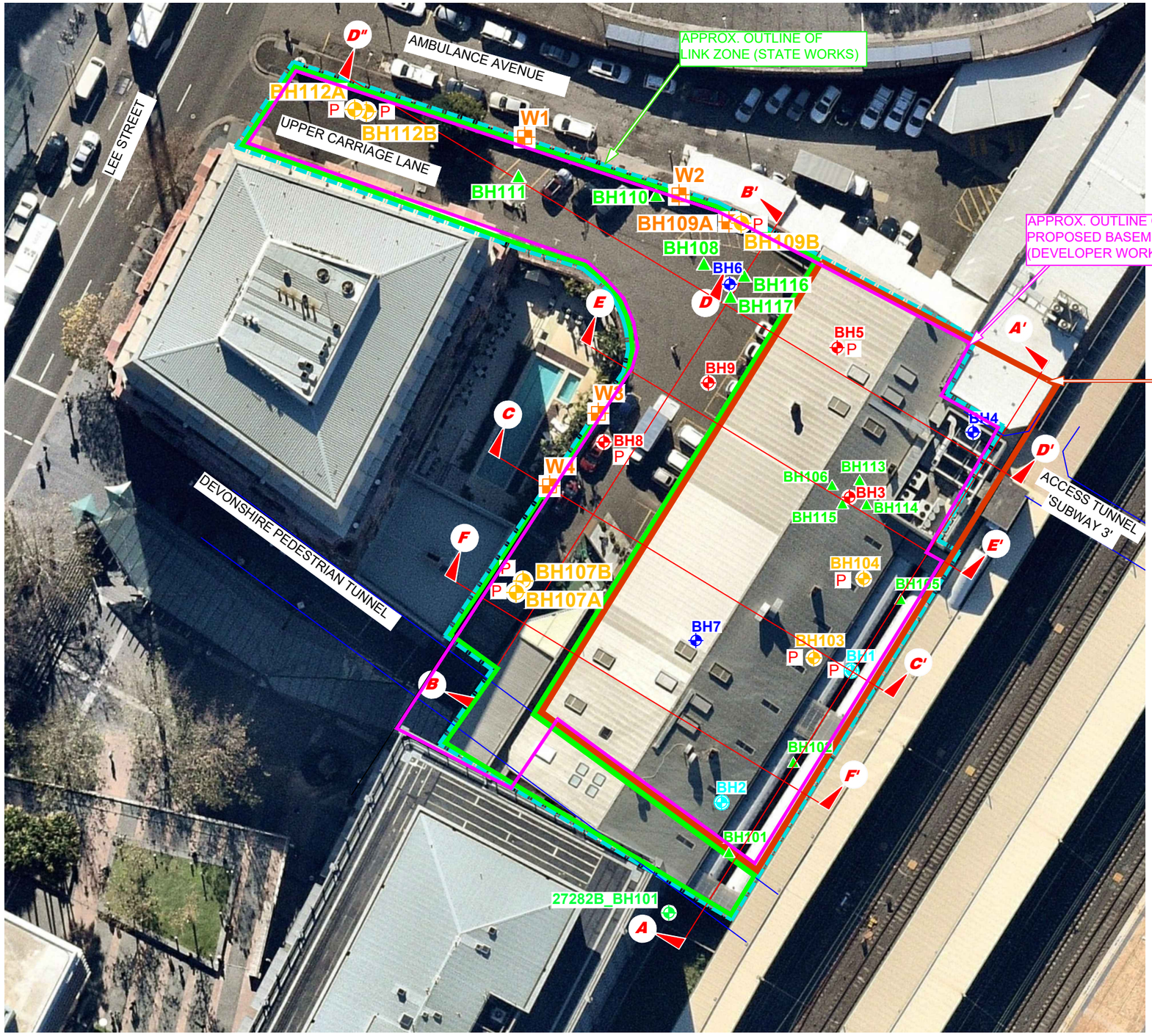
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

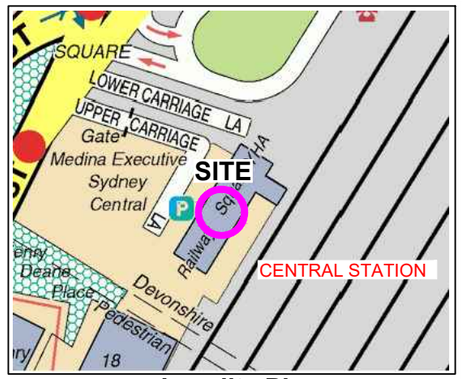
Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.





Locality Plan

NOTE:
1: Base image from Nearmap.com (Dated 1 July 2019)
2: Test locations are approximate only and are shown with reference to existing features.
3. Approximate Development Outlines are as provided by Avenor Pty Ltd on 12 August 2019.

0 5 10 15 20 30 40 50m

1:500 @ A3

LEGEND

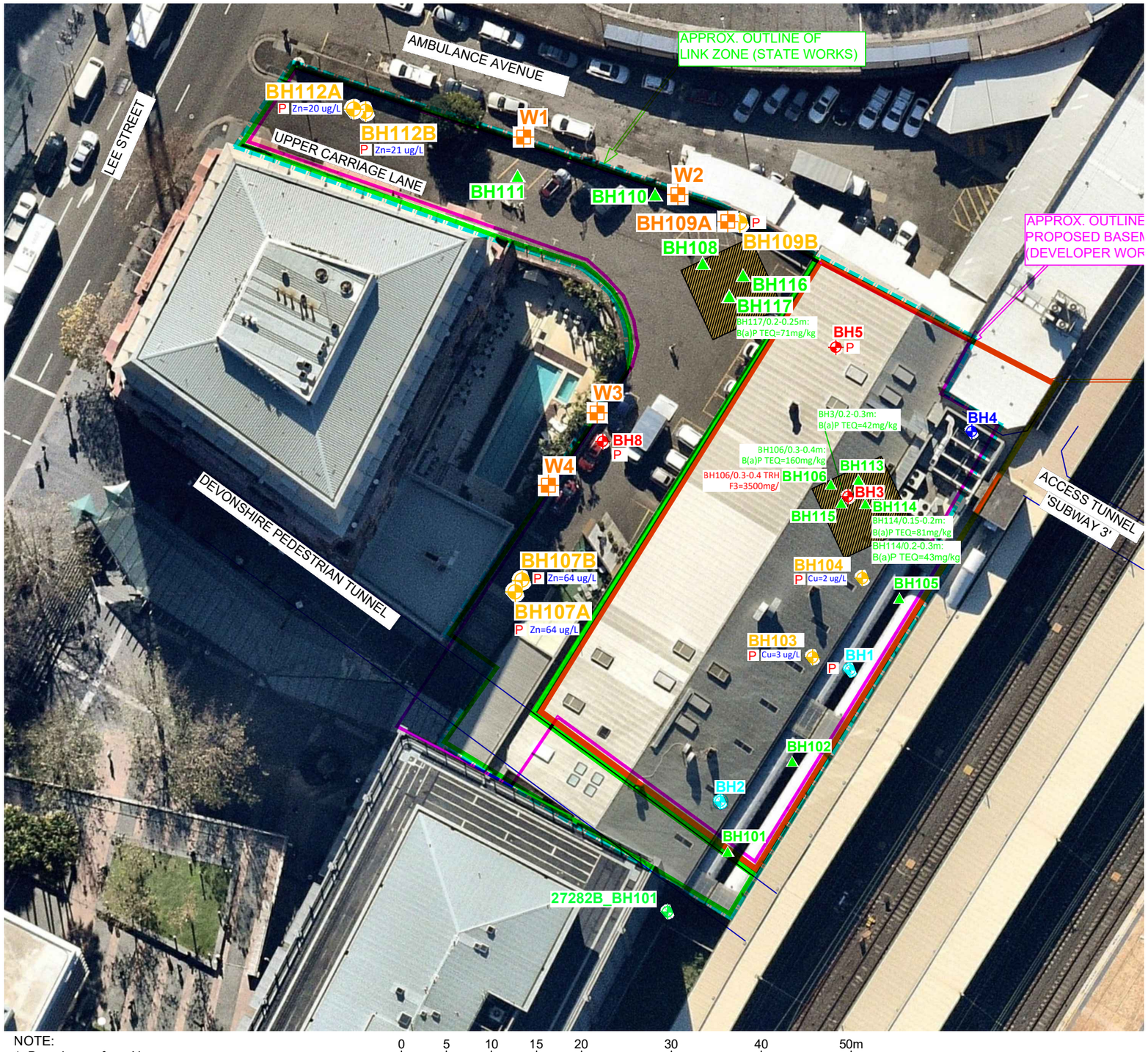
- Previous geotechnical borehole (DP Project 27282B, dated 1999)
- Environmental borehole - Lower Ground Floor (DP Report 86767.01.R.001.DftB, dated 29 August 2019)
- Geotechnical & environmental borehole - Lower Ground Floor (DP Report 86767.00.R.001.Rev0, dated 26 August 2019)
- Geotechnical & environmental borehole - Upper Ground Floor (DP Report 86767.00.R.001.Rev0, dated 26 August 2019)
- Environmental borehole
- Geotechnical & environmental borehole
- Geotechnical borehole
- P Standpipe piezometer
- Approximate site boundary
- A — A' Geotechnical Cross Section A-A'

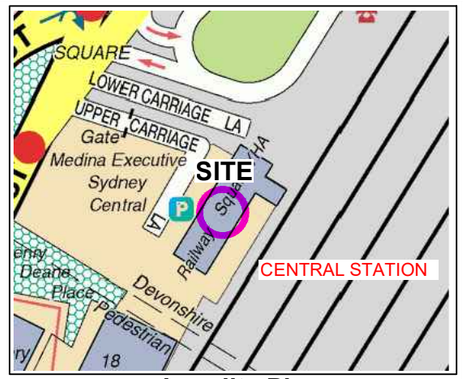
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Vertical First Pty Ltd		TITLE: **Test Location Plan** Proposed Commercial Development 8-10 Lee Street, HAYMARKET
OFFICE: Sydney	DRAWN BY: HDS/BZ	
SCALE: 1:500 @ A3	DATE: 24.07.2020	

N

PROJECT No:	86767.00
DRAWING No:	1
REVISION:	0





Locality Plan

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3. Approximate Development Outlines are as provided by Avenor Pty Ltd on 12 August 2019.

0 5 10 15 20 30 40 50m

1:500 @ A3

LEGEND

- Previous geotechnical borehole (DP Project 27282B, dated 1999)
- Environmental borehole - Lower Ground Floor (DP Report 86767.01.R.001.DftB, dated 29 August 2019)
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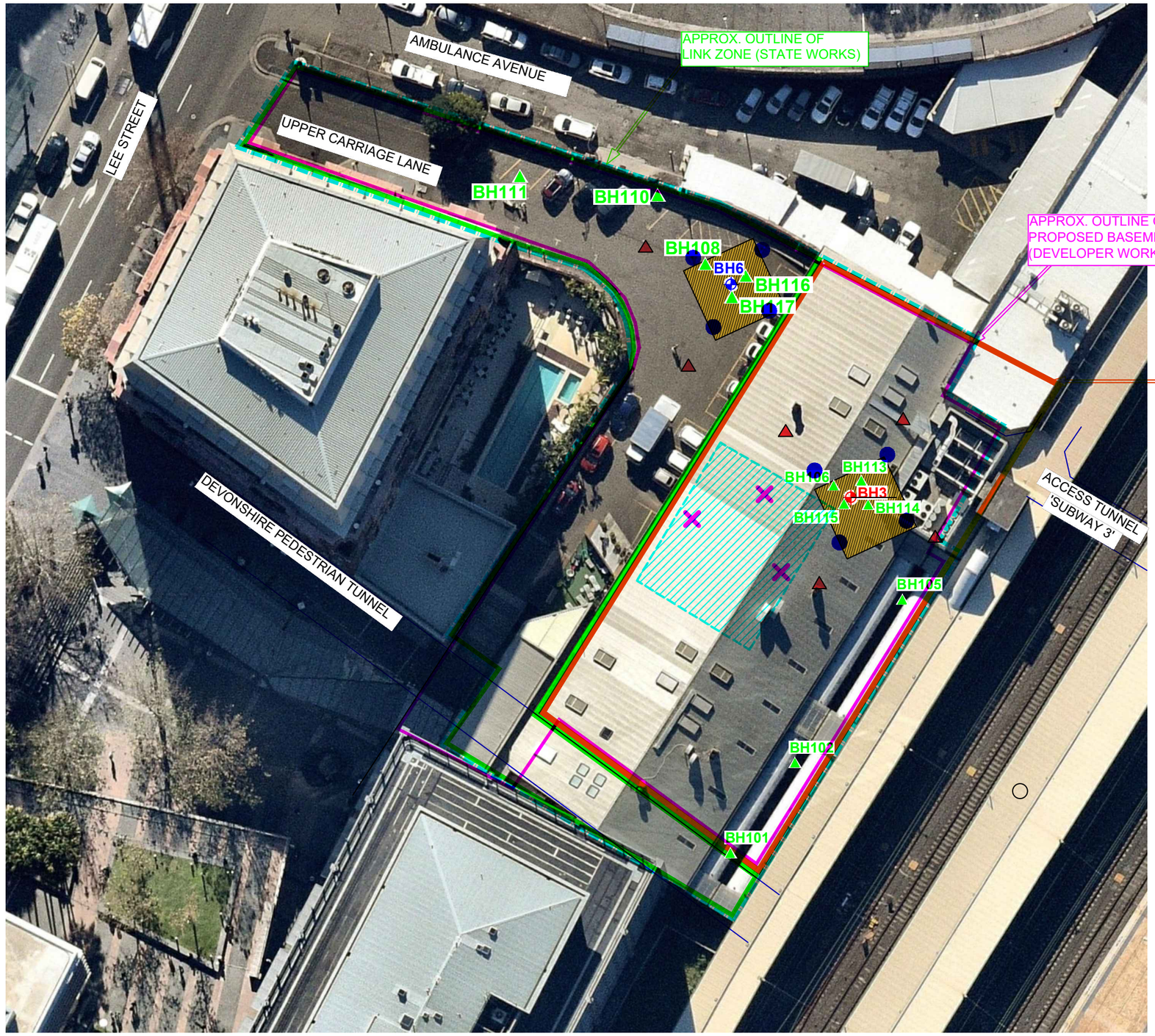
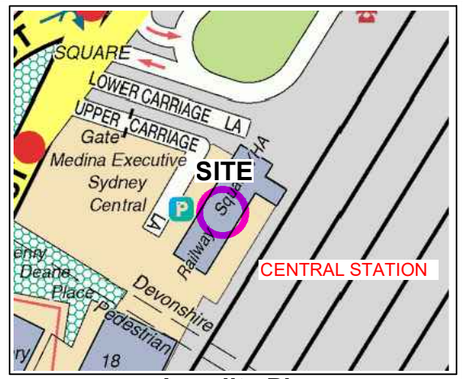
- Geotechnical & environmental borehole - Upper Ground Floor (DP Report 86767.00.R.001.Rev0, dated 26 August 2019)
- Environmental borehole
- Geotechnical & environmental borehole
- Geotechnical borehole
- P Standpipe piezometer
- Conceptual area of remediation (subject to additional data gap assessment)
- Approximate site boundary

HIL exceedance marked in green text
GIL exceedance marked in blue text
ML exceedance marked in blue text

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Vertical First Pty Ltd		TITLE: **SAC Exceedances**	PROJECT No: 86767.06
OFFICE: Sydney	DRAWN BY: BZ	**Proposed Commercial Development**	DRAWING No: 3
SCALE: 1:500 @ A3	DATE: 20.08.2020	**8-10 Lee Street, HAYMARKET**	REVISION: 0





Locality Plan

NOTE:
1: Base image from Nearmap.com (Dated 1 July 2019)
2: Test locations are approximate only and are shown with reference to existing features.
3. Approximate Development Outlines are as provided by Avenor Pty Ltd on 12 August 2019.

0 5 10 15 20 30 40 50m

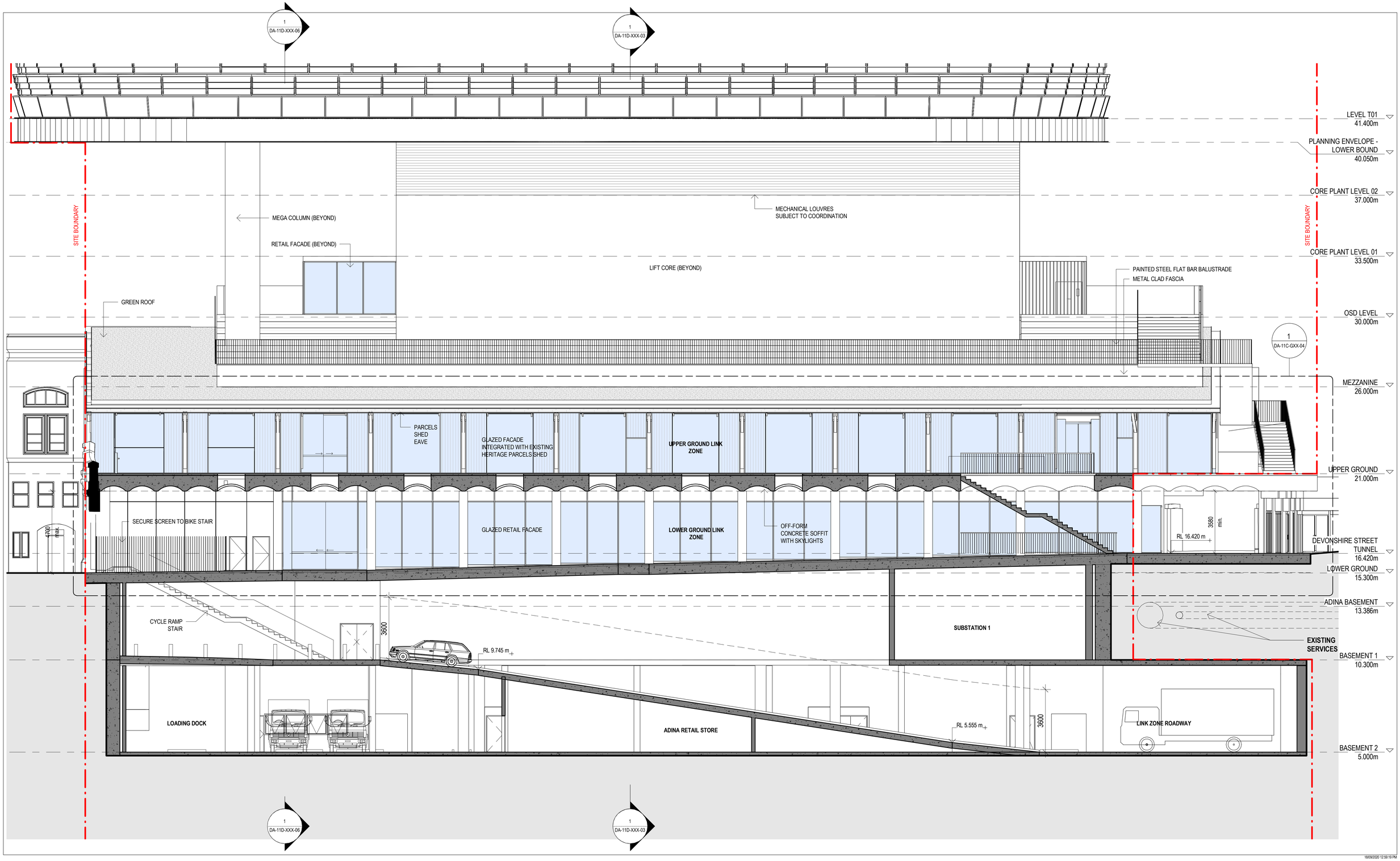
1:500 @ A3

LEGEND

- Environmental borehole - Lower Ground Floor (DP Report 86767.01.R.001.DftB, dated 29 August 2019)
- Geotechnical & environmental borehole - Lower Ground Floor (DP Report 86767.00.R.001.Rev0, dated 26 August 2019)
- Environmental borehole
- 5m step out test pits from BH3 or BH6
- 10m step out test pits from BH3 or BH6
- Data gap investigation locations near the cool rooms
- Conceptual area of remediation (subject to additional data gap assessment)
- Approximate site boundary

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Vertical First Pty Ltd		TITLE: **Test Location Plan**	PROJECT No: 86767.00
OFFICE: Sydney	DRAWN BY: BZ	**Proposed Commercial Development**	DRAWING No: 4
SCALE: 1:500 @ A3	DATE: 11.08.2020	**8-10 Lee Street, HAYMARKET**	REVISION: 0



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shop BVN

NSW ARCHITECTS REGISTRATION BOARD /
NOMINATED ARCHITECTS

6501 ABBIE GALVIN
9358 NIKOTSCHKA TITCHKOSKY
7115 JULIAN ASHTON
7553 MATTHEW BLAIR
7151 PHILLIP ROSSINGTON
4937 JAMES GROSE

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

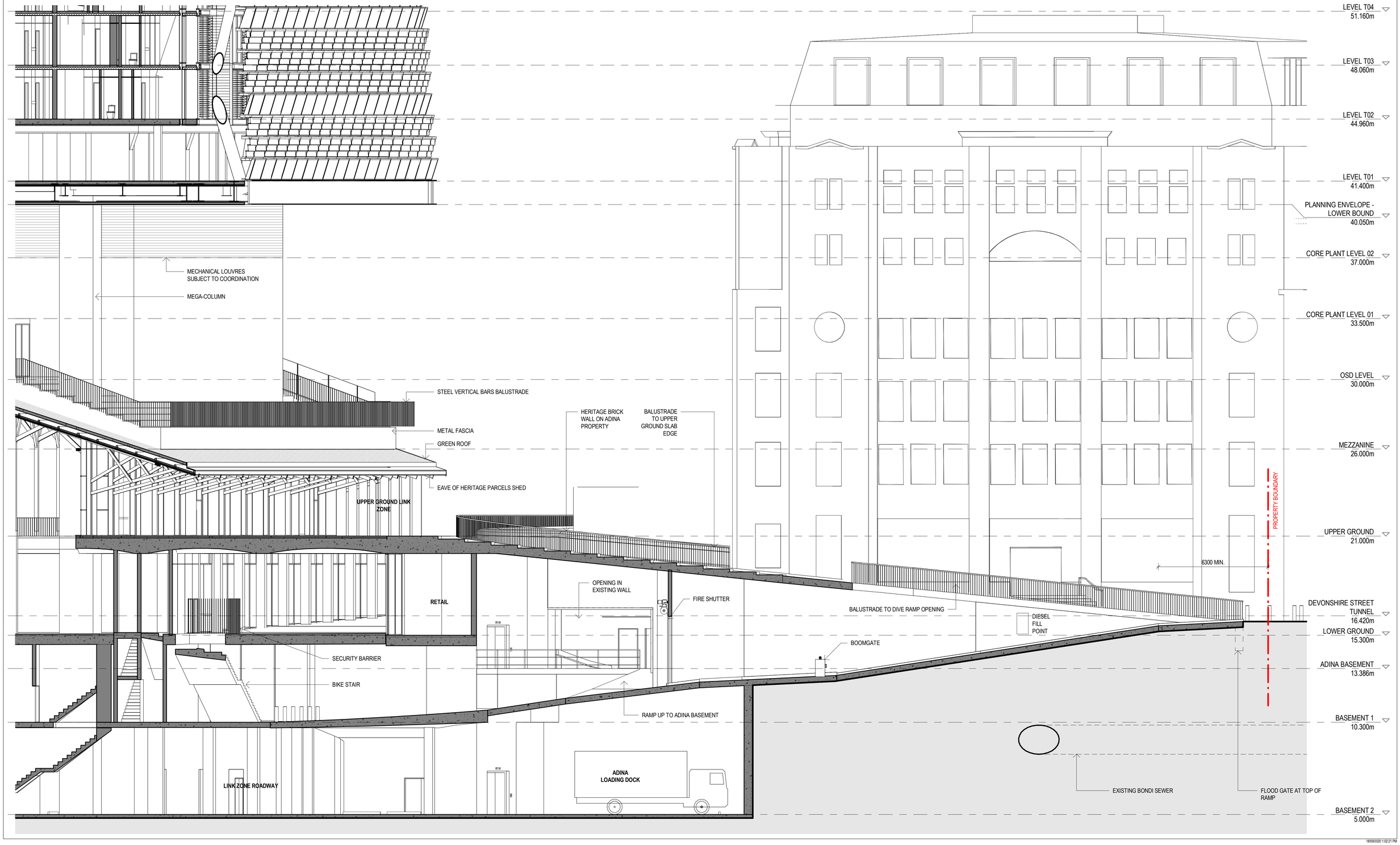
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	28.08.20	WIP SSDA FOR CLIENT REVIEW
2	16.09.20	DRAFT SSDA

ARCHITECT	BVN TEL +61 2 8297 7200
ARCHITECT	SHoP Architects TEL +1 212 889 9005
CLIMATE CONSULTANT	Transsolar TEL +49 711 679 76 0
LANDSCAPE ARCHITECT	ASPECT Studios TEL +61 2 9699 7182
STRUCTURAL & FACADE ENGINEER	Eckersley O'Callaghan TEL +1 415 813 3810
MEP ENGINEER & VT CONSULTANT	LCI TEL +61 2 9157 0570
ACOUSTIC CONSULTANT	STANTEC TEL +61 2 8484 7000
STRUCTURAL & CIVIL ENGINEER	TTW TEL +612 9439 7288
TOWN PLANNER	Urbis TEL +61 2 8233 9900
BCA/DDA CONSULTANT	Blackett Maguire + Goldsmith TEL +61 2 9211 7777
FIRE ENGINEER	Norman Disney & Young TEL +61 2 9928 6800
LIGHTING CONSULTANT	ISP Design TEL +1 305 278 1565
CLIENT	ATLASSIAN
PROJECT MANAGER	Avenor TEL +61 2 9152 8668

KEY PLAN

PROJECT	ATLASSIAN CENTRAL No.8-10 LEE STREET, HAYMARKET
PROJECT NUMBER	1906024
TRUE NORTH / PROJECT NORTH	
GRAPHIC SCALE	0 2000 5000
SCALE	1 : 100@A1
STATUS	SSDA
DRAWING	BASEMENT/PODIUM NORTH-SOUTH SECTION 1
DOCUMENT NUMBER	DA-11D-XXX-01
ISSUE	2



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DOCUMENT NUMBER
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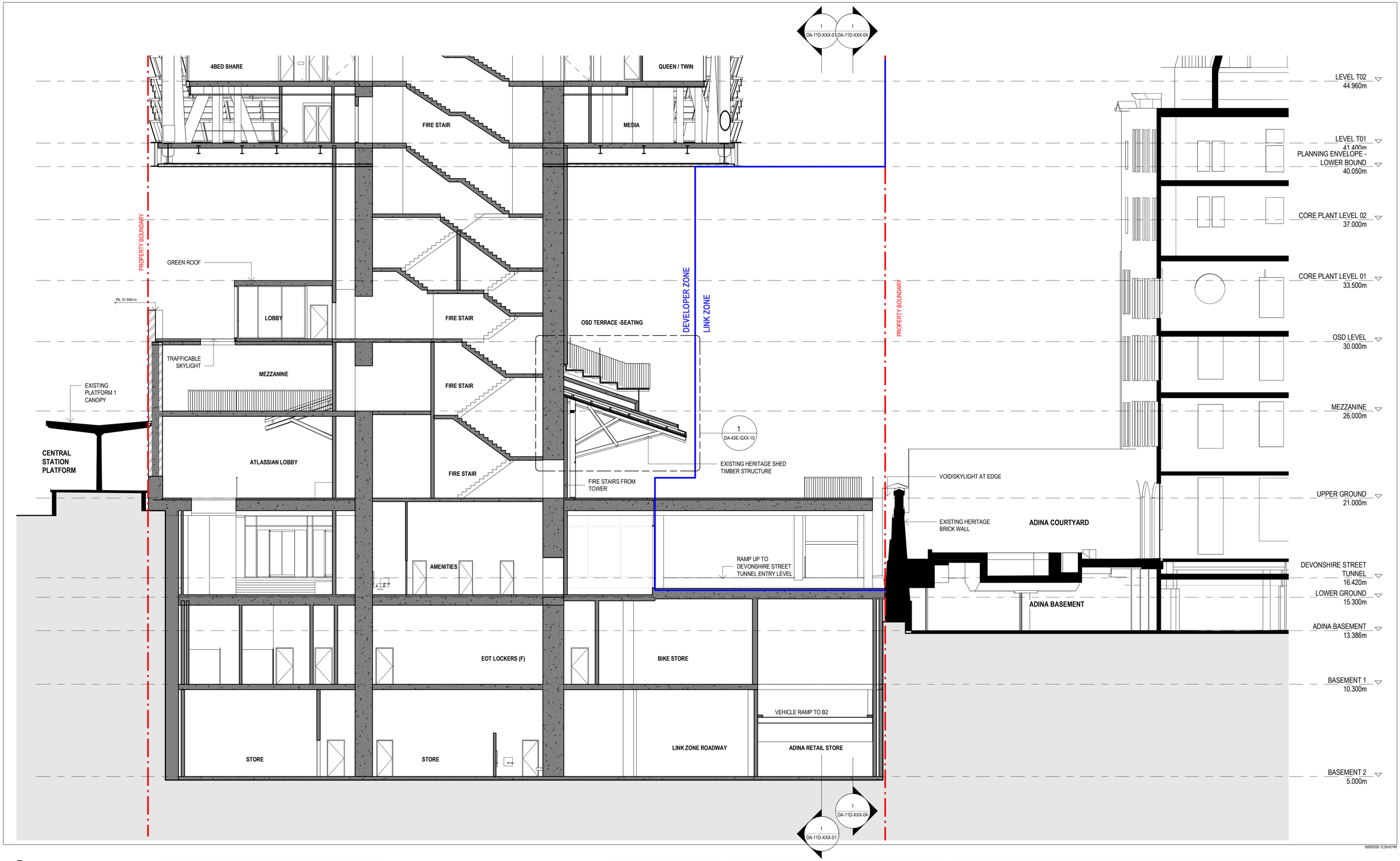

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No.8-10 LEE STREET, HAYMARKET

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DRAWING
BASEMENT/PODIUM
EAST-WEST SECTION 1

DOCUMENT NUMBER
DA-11D-XXX-03

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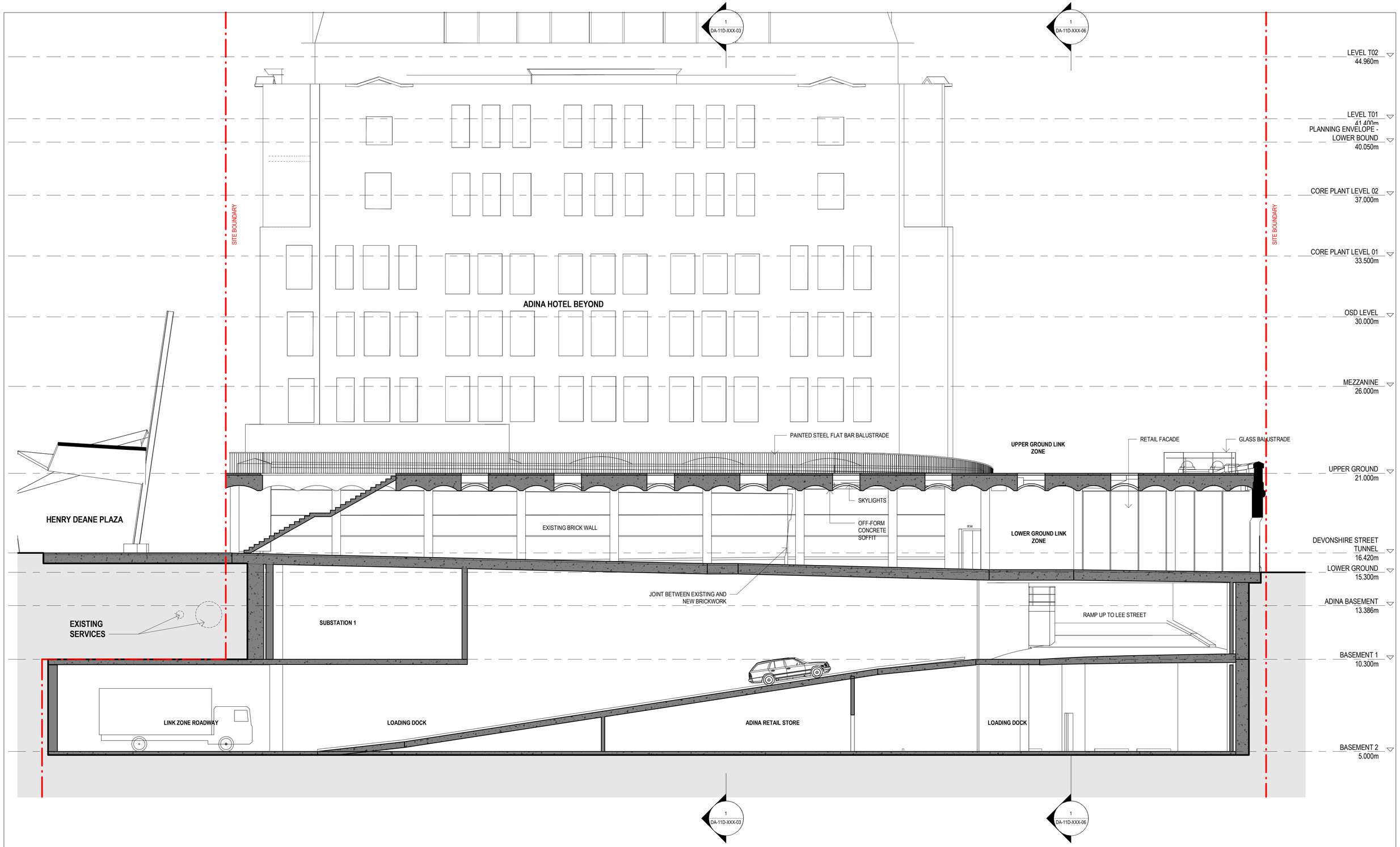

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PROJECT NUMBER
1906024

TRUE NORTH
PROJECT NORTH

GRAPHIC SCALE
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SCALE
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STATUS
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DRAWING
BASEMENT/PODIUM NORTH-SOUTH SECTION 2

DOCUMENT NUMBER	ISSUE
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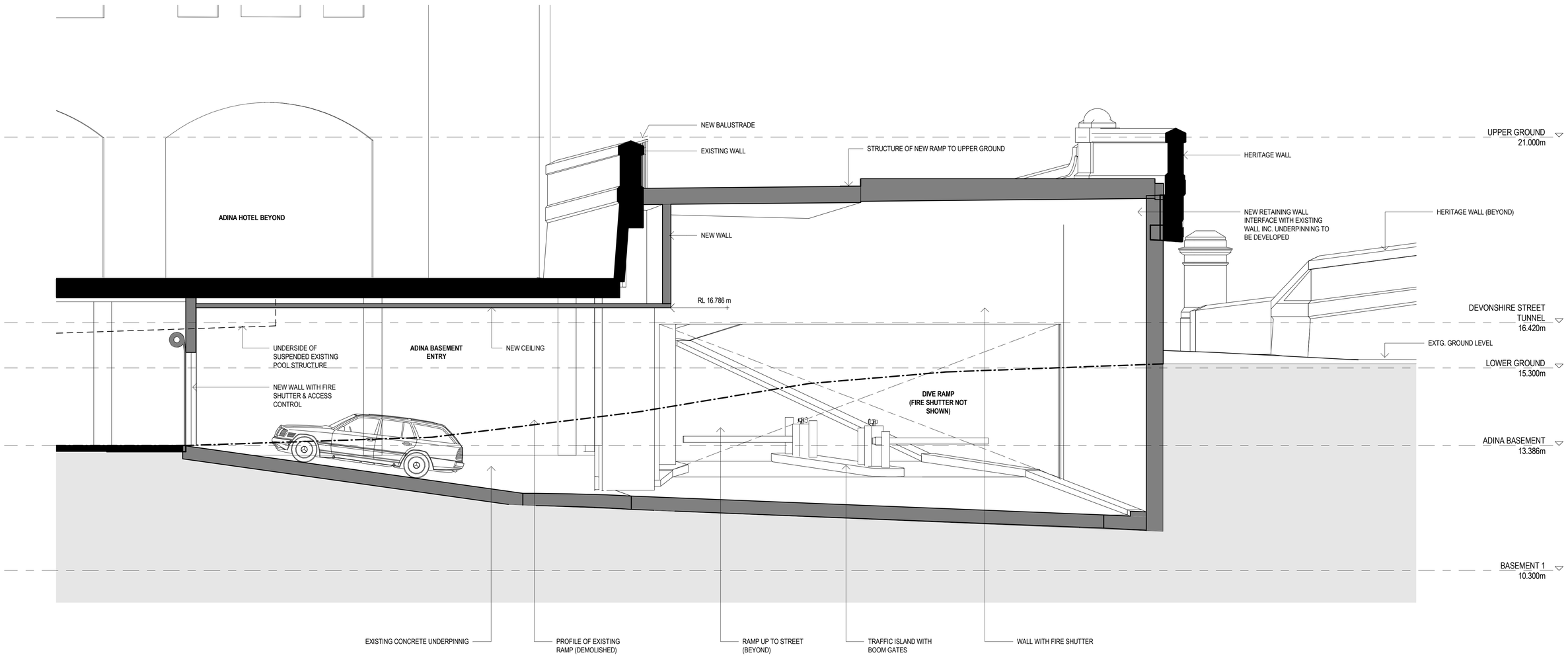

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PROJECT NUMBER
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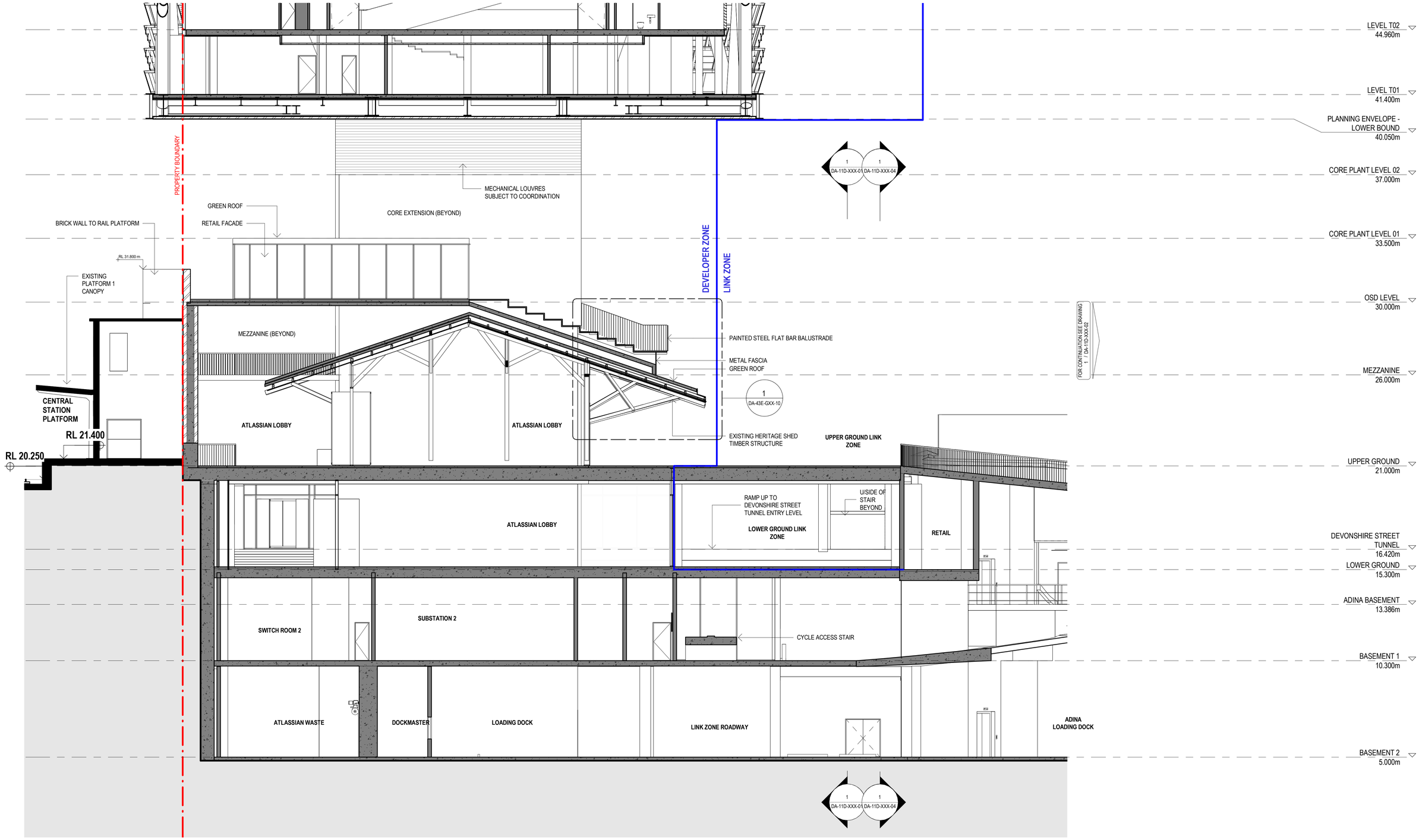

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CLIENT	ATLASSIAN
PROJECT MANAGER	Avenor TEL +61 2 9152 8668

KEY PLAN

PROJECT
ATLASSIAN CENTRAL
No.8-10 LEE STREET, HAYMARKET

PROJECT NUMBER
1906024

GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@A1

STATUS
SSDA

DRAWING
BASEMENT / PODIUM
EAST-WEST SECTION 2

DOCUMENT NUMBER
DA-11D-XXX-06

ISSUE
2

Appendix B

Borehole Logs

Summary of Analytical Results

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333983.4
NORTHING: 6249262.5
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86767.01
DATE: 10 - 12/7/2019
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
20.1	0.03	BALLAST (BLUE METAL) PLASTIC							
20.07	0.075	CONCRETE							
20.0	0.38	BRICK PAVEMENT							
		CONCRETE							
		1.3m: interface with lower concrete slab							
18.3	1.8	FILL/Sandy CLAY: low plasticity, grey mottled red-brown, fine grained sand, trace ironstone bands, slag and ash, w<PL, apparently in a very soft condition		E	1.8 1.9		PID<1		
				E	2.2 2.4		PID<1		
				E	2.8 3.0		PID<1		
		3.0m: with ash and slag, trace glass, brick and ceramic tile fragments							
16.9	3.2	FILL/SAND: fine to medium grained sand, dark brown to black, moist, apparently in a very loose condition		E	3.3 3.5		PID<1		
				E	3.8		PID<1		
16.1	4.0	SAND SP: fine to medium grained sand, orange brown, moist, very loose, alluvial soil			4.0				
		4.3m: grading to pale yellow-grey		E	4.3 4.5		PID<1		
14.1	6.0	Silty CLAY CI-CH: medium to high plasticity, orange, red and pale grey, with fine to medium grained sand, with relict rock texture, w<PL, residual soil			6.0				
13.56	6.54	SANDSTONE: medium grained, orange-red, medium strength with very low strength bands, highly weathered, fractured, Hawkesbury Sandstone		C	6.6		PL(A) = 0.97		
					7.6				
12.4	7.7	SANDSTONE: medium grained, brown and pale yellow, medium to high strength, moderately weathered, slightly fractured, Hawkesbury Sandstone			7.74		PL(A) = 0.15		
11.87	8.23	SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured, cross bedding 5°-10°, Hawkesbury Sandstone		C	8.4		PL(A) = 0.52		
					9.2				
				C					
10.1	10.0				9.95		PL(A) = 1.3		

RIG: Proline **DRILLER:** Tightsite **LOGGED:** WFY/NB **CASING:** HW to 6.44m

TYPE OF BORING: Diacore to 1.3m; Hand auger 1.3m to 5.0m; HQ coring to 20m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 20-7.2m backfilled with sand, 7.2-6.3m bentonite, 6.3-4.3m screened PVC with sand backfill, 4.3-4.2m blank PVC with sand backfill, 4.2-0.2m blank PVC with bentonite backfill, 0.2-0m sand, gatic cover at surface

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333983.4
NORTHING: 6249262.5
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86767.01
DATE: 10 - 12/7/2019
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
10		SANDSTONE: medium grained, pale grey, high strength, fresh, unbroken, cross-bedding 5°-10°, Hawkesbury Sandstone		C					
					10.72				
9	11				10.95		PL(A) = 0.89		11
				C					
8	12				11.95		PL(A) = 1.6		12
					12.33				
		12.4-12.49m: with thin black carbonaceous laminations							
7	13				12.95		PL(A) = 1.2		13
				C					
					13.91		PL(A) = 1.5		
6	14				13.93				14
				C					
5	15				14.95		PL(A) = 1.2		15
					15.47				
4	16				15.95		PL(A) = 1.6		16
				C					
3	17				16.95		PL(A) = 1.9		17
					17.09				
		17.35-14.42m: with black carbonaceous laminations							
2	18			C	17.95		PL(A) = 1.9		18
					18.71				
1	19				18.95		PL(A) = 1.9		19
				C					
	20.0				19.95		PL(A) = 0.9		

Bore discontinued at 20.0m

RIG: Proline **DRILLER:** Tightsite **LOGGED:** WFY/NB **CASING:** HW to 6.44m

TYPE OF BORING: Diacore to 1.3m; Hand auger 1.3m to 5.0m; HQ coring to 20m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 20-7.2m backfilled with sand, 7.2-6.3m bentonite, 6.3-4.3m screened PVC with sand backfill, 4.3-4.2m blank PVC with sand backfill, 4.2-0.2m blank PVC with bentonite backfill, 0.2-0m sand, gatic cover at surface

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333983.4
NORTHING: 6249262.5
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86767.01
DATE: 10 - 12/7/2019
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
0	20.0								
-1	21								
-2	22								
-3	23								
-4	24								
-5	25								
-6	26								
-7	27								
-8	28								
-9	29								

RIG: Proline **DRILLER:** Tightsite **LOGGED:** WFY/NB **CASING:** HW to 6.44m

TYPE OF BORING: Diacore to 1.3m; Hand auger 1.3m to 5.0m; HQ coring to 20m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 20-7.2m backfilled with sand, 7.2-6.3m bentonite, 6.3-4.3m screened PVC with sand backfill, 4.3-4.2m blank PVC with sand backfill, 4.2-0.2m blank PVC with bentonite backfill, 0.2-0m sand, gatic cover at surface

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333968
NORTHING: 6249250
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86767.01
DATE: 10 - 11/7/2019
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
21	0.28	CONCRETE SLAB 0.08m: interface with lower concrete slab		A/E*	0.28 0.38		PID<1		
		FILL/SAND: fine to medium grained sand, brown, moist, apparently moderately compacted		A/E	0.5 0.6		PID<1		
20	1			A/E	1.0 1.1		PID<1		
		1.5m: trace ash and slag		A/E S	1.5 1.6		PID<1 0,0,2 N = 2		
19	2	2.1m: with clay, trace shale gravel, moderately compacted		A/E	1.95 2.0 2.1		PID<1		
	2.5	Fill/Clayey SAND: fine to coarse grained sand, brown, 15% plastic fines, trace gravel 2-5mm, moist, apparently moderately compacted		A/E	2.5 2.6		PID<1		
18	3			A/E S	3.0 3.1		PID<1 0,0,0 N = 0		
					3.45				
17	4	4.0 Fill/Silty CLAY: medium plasticity, brown-grey, trace sand, w<PL		A/E S	4.5 4.6		PID<1 2,2,2 N = 4		
	5	Below 4.8m: with angular shale and ironstone gravel to 20mm			4.95				
16	5.2	Fill/Silty SAND: fine grained sand, grey and dark grey, trace gravel 2-5mm, moist, apparently variably compacted							
	6			A/E S	6.0 6.1		PID<1 1,1,1 N = 2	▼ 10-07-19	
15	6.2	Fill/SAND: fine grained sand, grey, with silt, wet, apparently variably compacted			6.45				
14	7			A/E S	7.5 7.6		PID<1 0,0,1 N = 1		
	8	8.0 Silty CLAY CI-CH: medium to high plasticity, orange brown, with fine to medium grained sand and ironstone gravel, w<PL, soft, possibly alluvial soil			7.95				
13									
	9	9.0 Sandy CLAY CL: low plasticity, pale grey, fine to medium grained sand, w<PL, hard, residual soil		S	9.35 9.45		25/100 refusal		
12	9.47	SANDSTONE: refer following page		C	9.57				
	10.0				9.95		PL(D) = 1.4		

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 8.9m

TYPE OF BORING: Diacore to 0.28m; solid flight auger 0.28-7.5m; Wash bore 7.5-9.47m; NMLC coring 9.47-23.27m

WATER OBSERVATIONS: Saturated sand (fill) encountered at 6.2m

REMARKS: *BD1 at 0.28m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

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PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333968
NORTHING: 6249250
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86767.01
DATE: 10 - 11/7/2019
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: medium grained, pale grey and brown, medium strength with some very low strength bands, moderately weathered, slightly fractured, Hawkesbury Sandstone		C	10.92		PL(D) = 1.5		
	11.12	SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured, cross bedding 5°-10°, Hawkesbury Sandstone			11.17				
		Below 12m: unbroken			11.93		PL(D) = 1.1		
				C	12.95		PL(D) = 1.3		
					13.95		PL(D) = 1.6		
					14.23				
					14.96		PL(D) = 1.4		
				C	15.95		PL(D) = 1.4		
					16.95		PL(D) = 1.3		
					17.23				
					17.96		PL(D) = 0.96		
				C	18.96		PL(D) = 1.3		
		19.52m: carbonaceous laminations, dipping 25°			19.95		PL(D) = 2.2		

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 8.9m

TYPE OF BORING: Diacore to 0.28m; solid flight auger 0.28-7.5m; Wash bore 7.5-9.47m; NMLC coring 9.47-23.27m

WATER OBSERVATIONS: Saturated sand (fill) encountered at 6.2m

REMARKS: *BD1 at 0.28m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333968
NORTHING: 6249250
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86767.01
DATE: 10 - 11/7/2019
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
1		SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured, cross bedding 5°-10°, Hawkesbury Sandstone *(continued)*		C	20.24				
0	21				20.96		PL(D) = 1.3		21
				C					
-1	22				21.9		PL(D) = 1.7		22
	23				22.95		PL(D) = 1.7		23
-2	23.27	Bore discontinued at 23.27m			23.27				
	24								24
-3									
	25								25
-4									
	26								26
-5									
	27								27
-6									
	28								28
-7									
	29								29
-8									

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 8.9m

TYPE OF BORING: Diacore to 0.28m; solid flight auger 0.28-7.5m; Wash bore 7.5-9.47m; NMLC coring 9.47-23.27m

WATER OBSERVATIONS: Saturated sand (fill) encountered at 6.2m

REMARKS: *BD1 at 0.28m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333982
NORTHING: 6249281
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86767.01
DATE: 12 - 13/7/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.15	CONCRETE SLAB							
	0.2	Fill/SAND: fine to medium grained sand, yellow-grey, moist, apparently poorly to moderately compacted		E	0.2 0.3		PID<1		
	0.7	Fill/Silty CLAY: medium plasticity, grey and red-brown, with medium grained sand and angular basalt gravel to 70mm, w<PL		E	0.7 0.8		PID<1		
	0.9	Fill/SAND: fine to medium grained sand, yellow, moist, apparently moderately compacted							
		Silty CLAY CH: high plasticity, grey mottled red, trace ironstone gravel 2-3mm, w<PL, very stiff, residual soil							
	1.8				1.8				
	1.92	SANDSTONE: medium grained, brown and grey, medium strength, highly and moderately weathered, fractured, Hawkesbury Sandstone		C	2.37		PL(A) = 1		
	3.03				3.03				
		SANDSTONE: medium grained, yellow-grey, high strength, moderately weathered, slightly fractured, Hawkesbury Sandstone			3.4		PL(A) = 0.92		
	3.56	SANDSTONE: medium grained, pale grey, high strength, slightly weathered then fresh, unbroken, Hawkesbury Sandstone		C					
					4.56				
					4.95		PL(A) = 1.6		
				C	5.95		PL(A) = 1.4		
					6.95		PL(A) = 1.3		
					7.22				
		7.35 - 7.41m: carbonaceous laminations							
					7.95		PL(A) = 1.1		
				C					
					8.95		PL(A) = 1.7		
		9.96-10.12m: fine grained sandstone, dark grey			9.95		PL(A) = 2		

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 2.0m

TYPE OF BORING: Diacore 0-0.15m; Hand auger 0.15-0.9m; Solid flight auger 0.9-1.8m; NMLC coring 1.8-15.0m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333982
NORTHING: 6249281
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86767.01
DATE: 12 - 13/7/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: medium grained, pale grey, high strength, slightly weathered then fresh, unbroken, Hawkesbury Sandstone *(continued)*		C	10.3				
		10.6-10.7m: carbonaceous laminations			10.95		PL(A) = 1.5		
				C	11.95		PL(A) = 1.2		
					12.95		PL(A) = 1.4		
					13.31				
				C	13.95		PL(A) = 0.92		
	15.0	Bore discontinued at 15.0m			14.95		PL(A) = 0.74		
					15.0				

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 2.0m

TYPE OF BORING: Diacore 0-0.15m; Hand auger 0.15-0.9m; Solid flight auger 0.9-1.8m; NMLC coring 1.8-15.0m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333994
NORTHING: 6249287
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86767.01
DATE: 12 - 13/7/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
15	0.15	CONCRETE SLAB							
	0.16	Fill/SAND: fine to medium grained sand, moist, apparently loose, moderately compacted							
	0.3	CONCRETE SLAB							
	0.4	Fill/Sandy CLAY: fine to medium grained sand, with approx. 15% black ash, w<PL, generally in a stiff condition							
		Fill/Silty CLAY: medium plasticity, brown, pale grey and red, with fine to medium grained sand and angular ironstone gravel up to 5-10mm, w<PL, generally in a firm condition							
		0.8-0.9m: with angular to sub-rounded ironstone gravel, up to 50mm							
14	1.0	FILL/Sandy CLAY: low to medium plasticity, fine to medium grained sand, brown, with 15-30mm angular to sub-angular ironstone gravel, w~PL, generally in a soft condition		E	1.4		PID<1		
				E	1.5				
	1.7	Silty CLAY CH: high plasticity, grey mottled red and yellow, w~PL, firm to stiff, residual soil		E	2.0		PID<1		
				E	2.1				
	2.3								
13	2.35	SANDSTONE: medium strength, grey, Hawkesbury Sandstone							
		Bore discontinued at 2.35m							
		Refusal on sandstone							
12									
11									

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** NB/AS **CASING:** NA

TYPE OF BORING: Diacore 0-0.16m; hand auger 0.16-1m; Pushtube and solid flight auger 1.0-2.35m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333980
NORTHING: 6249298
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86767.01
DATE: 13/7/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.3	CONCRETE SLAB							
15	0.4	FILL/Gravelly SAND: medium grained sand, grey, fine to medium 5-15mm sub-rounded to sub-angular gravel, dry		E	0.35		PID<1		
				E	0.5		PID<1		
		Sandy CLAY CI: medium plasticity, grey mottled red, with fine gravel, w~PL, residual soil			0.6				
	1.0			E	0.9		PID<1		
1		SILTY CLAY CI: medium plasticity, grey mottled red and yellow, trace fine sand, w~PL, residual soil		E	1.0		PID<1		1
	1.2				1.1				
	1.3				1.2				
14	1.36	SANDSTONE: highly weathered, ironstained, Hawkesbury Sandstone			1.3				
		SANDSTONE: medium grained, pale grey and orange, medium strength with bands of very low strength, highly weathered, fractured, Hawkesbury Sandstone		C					
2					2.1		PL(A) = 0.2		2
13					2.56				
					2.7		PL(A) = 0.16		
3	3.03	SANDSTONE: medium grained, pale grey, medium and high strength, moderately weathered, slightly fractured, Hawkesbury Sandstone		C	3.31		PL(A) = 0.72		3
12	3.6	SANDSTONE: medium grained, pale grey, high strength, slightly weathered then fresh, unbroken, Hawkesbury Sandstone							
4					4.05				4
11									
5					4.95		PL(A) = 1.2		5
10				C					
6					5.95		PL(A) = 1		6
9		6.60-6.65m: carbonaceous laminations							
7					6.95		PL(A) = 1.2		7
					7.16				
8					7.95		PL(A) = 2.1		8
7				C					
9					9.0		PL(A) = 1.8		9
6									
					10.0		PL(A) = 1.2		

RIG: Hand tools, Miniprobe and XC **DRILLER:** Terratest **LOGGED:** AS/NB/KR **CASING:** HW to 1.1m

TYPE OF BORING: Diacore 0-0.3m; Push tube 0.3-1.2m; Solid flight auger to 1.3m; NMLC coring to 15.27m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 15.17-2.2m screened PVC with sand backfill, 2.2-1.8m blank PVC with sand backfill, 2.2-0m blank PVC, 1.8-0.8m bentonite backfill, 0.8-0m backfilled, gatic cover at surface. Refusal to TC-bit auger at 1.2m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333980
NORTHING: 6249298
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86767.01
DATE: 13/7/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: medium grained, pale grey, high strength, slightly weathered then fresh, unbroken, Hawkesbury Sandstone *(continued)*		C	10.2				
	11				11.02		PL(A) = 1.9		11
				C					
	12				12.0		PL(A) = 1.2		12
		12.3-12.57m: fine grained sandstone, cross-bedded at base							
	13				13.0		PL(A) = 1.5		13
					13.24				
	14			C	14.0		PL(A) = 1.1		14
	15				15.0		PL(A) = 1.4		15
	15.27	Bore discontinued at 15.27m			15.27				
	16								16
	17								17
	18								18
	19								19

RIG: Hand tools, Miniprobe and XC **DRILLER:** Terratest **LOGGED:** AS/NB/KR **CASING:** HW to 1.1m

TYPE OF BORING: Diacore 0-0.3m; Push tube 0.3-1.2m; Solid flight auger to 1.3m; NMLC coring to 15.27m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 15.17-2.2m screened PVC with sand backfill, 2.2-1.8m blank PVC with sand backfill, 2.2-0m blank PVC, 1.8-0.8m bentonite backfill, 0.8-0m backfilled, gatic cover at surface. Refusal to TC-bit auger at 1.2m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333966
NORTHING: 6249299
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86767.01
DATE: 14/7/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
15	0.06	CONCRETE SLAB: platy aggregate to 6mm, with voids							
	0.09	ASPHALT							
	0.23	CONCRETE SLAB: fine to medium igneous aggregate to 25mm, 8mm diameter steel reinforcement bar at 0.15m, voids below 0.21m		E	0.2 0.3		PID<1		
		Silty CLAY CH: high plasticity, orange-grey, with fine ironstone gravel, w<PL, residual soil		A	0.5 0.6		PID<1		
14	1.0	SANDSTONE: medium strength, grey, Hawkesbury Sandstone							
	1.27	Bore discontinued at 1.27m Refusal on sandstone							
13									
12									
11									

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: Hand tools **DRILLER:** NB **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diacore 0-0.2m; hand auger 0.2-1.27m

WATER OBSERVATIONS: No groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333965
NORTHING: 6249265
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86767.01
DATE: 12 - 13/7/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
15	0.2	CONCRETE SLAB, 8mm diameter reinforcement steel							
		CONCRETE SLAB, angular igneous aggregate		E	0.2 0.3		PID<1		
	0.38	Fill/Silty SAND: fine to medium grained sand, brown, 15% non plastic fines, moist, trace of crushed brick above 0.5m							
	0.6	Fill/SAND: fine to medium grained sand, pale grey, trace silt, moist, generally in a dense condition							
1				E	1.0 1.1		PID<1		1
14				E*	1.4 1.5		PID<1		
	1.6	Silty CLAY CH: high plasticity, grey, mottled red and yellow, trace fine to medium sandstone gravel, w~PL, very stiff, residual soil		E	1.6 1.7		PID<1		
	1.85	1.80-1.85m: crushed ironstone gravel							
2		Silty CLAY CI: medium plasticity, red mottled grey, with sand and fine to medium sandstone and ironstone gravel, w~PL, hard, residual soil		E	2.0 2.1		PID<1		2
	2.2	SANDSTONE: medium strength, grey, Hawkesbury Sandstone							
13	2.4	Bore discontinued at 2.4m Refusal on sandstone							
3									3
12									
4									4
11									

RIG: Hand tools and Miniprobe **DRILLER:** NB/Terratest **LOGGED:** NB/AS **CASING:** NA

TYPE OF BORING: Hand auger 0.2-1.0m; 1.0-2.4m pushtube

WATER OBSERVATIONS: No groundwater observed

REMARKS: *BD1 and BT120190713

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333955
NORTHING: 6249283
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 86767.01
DATE: 14/7/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.28	CONCRETE SLAB: angular to subangular aggregate to 15mm, negligible voids, 10mm diameter steel reinforcement at 0.09m and 0.10m, plastic at lower interface		A/E	0.2 0.3		PID<1		
	0.6	Fill/Clayey SAND: fine to coarse grained sand, brown and yellow, 15% plastic fines, with fine gravel, apparently moderately compacted, moist							
		SAND SW: fine to medium grained sand, yellow, with clay, trace gravel, moist, alluvial soil							
	1.9				1.9				
	2.12	SANDSTONE: medium grained, orange-red and grey, low to medium strength, with some very low strength bands, highly weathered, fractured, Hawkesbury Sandstone		C	2.47		PL(A) = 1.5		
	3.07				3.07				
	3.55	SANDSTONE: medium grained, orange and red, medium strength with some very low strength bands, highly weathered, fractured, Hawkesbury Sandstone		C	3.66		PL(A) = 0.15		
	4.13	SANDSTONE: medium grained, yellow-grey, medium then high strength, moderately weathered, slightly fractured, Hawkesbury Sandstone			4.57 4.66		PL(A) = 0.66		
	4.85	SANDSTONE: medium grained, grey, high strength, fresh, unbroken, Hawkesbury Sandstone		C	5.95		PL(A) = 1.2		
					6.95		PL(A) = 1.3		
					7.2				
					7.89		PL(A) = 1.9		
				C	8.95		PL(A) = 1.2		
					9.95		PL(A) = 1.4		

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 1.9m

TYPE OF BORING: Diacore to 0.28m; Hand auger to 1.0m; NMLC coring to 15m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 15.0-2.9m screened PVC with sand backfill, 2.9-2.4m blank PVC with sand backfill, 2.4-0m blank PVC, 2.4-0m bentonite backfill, gatic cover at surface.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333955
NORTHING: 6249283
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 86767.01
DATE: 14/7/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: medium grained, grey, high strength, fresh, unbroken, Hawkesbury Sandstone *(continued)*		C	10.22				
		10.2-10.9m: dark grey, fine grained sandstone							
	11				10.95		PL(A) = 2.5		
				C					
	12				11.95		PL(A) = 1.5		
		12.4-12.55m: carbonaceous laminations							
	13				12.95		PL(A) = 1.1		
					13.25				
	14			C	13.95		PL(A) = 1.3		
	15 15.0	Bore discontinued at 15.0m			14.99 15.0		PL(A) = 1.3		
	16								
	17								
	18								
	19								

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 1.9m

TYPE OF BORING: Diacore to 0.28m; Hand auger to 1.0m; NMLC coring to 15m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS: Groundwater well installed: 15.0-2.9m screened PVC with sand backfill, 2.9-2.4m blank PVC with sand backfill, 2.4-0m blank PVC, 2.4-0m bentonite backfill, gatic cover at surface.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333966
NORTHING: 6249295
DIP/AZIMUTH: 90°/--

BORE No: BH9
PROJECT No: 86767.01
DATE: 11 - 12/7/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CONCRETE SLAB							
15	0.33	CLAY CL: low to medium plasticity, pale grey and yellow, with fine to medium grained sand, trace fine ironstone gravel, w>PL, residual soil		E/A	0.35 0.45		PID<1		
	0.65	Silty CLAY CL-CI: low to medium plasticity, pale grey and red, with fine grained sand, trace fine ironstone gravel, w<PL, residual soil		E/A	0.65 0.75		PID<1		
1		0.85-1.4m: w~PL		E/A	0.9 1.0		PID<1		1
14		1.4m: fine ironstone gravel, w<PL		E/A	1.4 1.5		PID<1		
	1.65	SANDSTONE: fine grained, orange-grey, very low to medium strength with extremely low strength bands, highly to moderately weathered, fractured, Hawkesbury Sandstone		C	1.65				
2									2
13					2.43				
				C	2.62		PL(A) = 0.88		
3									3
12					3.38				
					3.55		PL(A) = 0.28		
	3.72	SANDSTONE: medium grained, grey, medium to high strength, slightly weathered then fresh, slightly fractured, Hawkesbury Sandstone							
4				C					4
11									
					4.94		PL(A) = 0.94		
5					4.95				5
10									
		Below 5.91m: unbroken			5.95		PL(A) = 1.6		
6									6
9					6.43				
				C	6.95		PL(A) = 1.3		
7									7
8					7.95		PL(A) = 0.76		
					8.0				
8									8
7				C					
					8.95		PL(A) = 1.9		
9									9
6					9.44				
		9.50-9.56m: with carbonaceous laminations		C					
					9.95		PL(A) = 0.97		

RIG: XC **DRILLER:** Terratest **LOGGED:** KR **CASING:** HW to 2.5m

TYPE OF BORING: Diacore to 0.32m; hand auger to 1.0m; Solid flight auger (TC Bit) to 1.6m; NMLC coring to 14.6m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Atlassian Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333966
NORTHING: 6249295
DIP/AZIMUTH: 90°/--

BORE No: BH9
PROJECT No: 86767.01
DATE: 11 - 12/7/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: medium grained, grey, medium to high strength, slightly weathered then fresh, slightly fractured, Hawkesbury Sandstone *(continued)*		C	10.5				
		11.17-11.30m: with carbonaceous laminations		C	10.95		PL(A) = 1.3		
					11.73				
				C	11.95		PL(A) = 1.5		
					12.95		PL(A) = 3.1		
					13.33				
				C	13.95		PL(A) = 1.3		
	14.6	Bore discontinued at 14.6m			14.55		PL(A) = 1		
					14.6				

RIG: XC **DRILLER:** Terratest **LOGGED:** KR **CASING:** HW to 2.5m

TYPE OF BORING: Diacore to 0.32m; hand auger to 1.0m; Solid flight auger (TC Bit) to 1.6m; NMLC coring to 14.6m

WATER OBSERVATIONS: No groundwater observed during auger drilling

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333968
NORTHING: 6249242
DIP/AZIMUTH: 90°/--

BORE No: BH101
PROJECT No: 86767.03
DATE: 8/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
20	0.1	FILL/BALLAST			0.1				
		FILL/Silty CLAY: medium plasticity, pale brown and grey, with fine angular sandstone gravel, trace brick and organic fragments, w~PL, generally in a loose condition		A	0.2		PID=2.9 ppm		
	0.4	FILL/SAND and GRAVEL: fine to medium sand, pale grey, fine to coarse angular sandstone cobbles, gravel and bricks, moist, generally in a dense condition		A	0.5 0.6		PID=1.8 ppm		
19	1			A	0.9 1.0		PID=1.2 ppm		1
				A	1.4 1.5		PID=3.3 ppm		
	1.8	Bore discontinued at 1.8m - Target depth reached							
18	2								2
17	3								3
16	4								4

RIG: Hand Tools **DRILLER:** Tightsite **LOGGED:** NB **CASING:** Uncased
TYPE OF BORING: Hand auger and crowbar to 1.8m
WATER OBSERVATIONS: No free groundwater observed
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333976
NORTHING: 6249251
DIP/AZIMUTH: 90°/--

BORE No: BH102
PROJECT No: 86767.03
DATE: 8/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
20	0.1	FILL/BALLAST			0.1				
		FILL/Silty GRAVEL: fine to medium, dark grey, trace sand and clay, moist, generally in a loose condition		A	0.2		PID=1.1 ppm		
	0.3	FILL/SAND: fine to medium, pale yellow brown and grey, with silt, trace clay lenses, moist, generally in a loose condition		A	0.5 0.6		PID=1.6 ppm		
19	1			A	1.0 1.1		PID=2 ppm		1
				A	1.5 1.6		PID=1.1 ppm		
18	2			A	2.0 2.1		PID=1.7 ppm		2
				A	2.4 2.5		PID=2.4 ppm		
	2.6	FILL/SAND: fine to medium, pale grey, trace silt, moist, generally in a loose condition							
	2.9	FILL/Silty CLAY: medium plasticity, orange, pale yellow and black, trace sand and gravel, with ash, w>PL, generally in a stiff condition		A	3.1 3.2		PID=1.4 ppm		3
17	3			A	3.5 3.6		PID=4.1 ppm		
		Below 3.5m: grading to dark grey and black, with fine to medium sand and angular gravel							
16	4			A	4.0 4.1		PID=3 ppm		4
	4.0	FILL/Sandy GRAVEL: fine to medium gravel, dark grey and black, fine to coarse sand, trace ash, moist, generally in a medium dense condition							
	4.5	FILL/Silty CLAY: high plasticity, orange, pale yellow and pale grey, trace ash, w<PL, generally in a firm condition		A	4.5 4.6		PID=2.2 ppm		
	4.7	Sandy CLAY CH: high plasticity, pale grey, w<PL, appears firm, residual		A	4.7 4.8		PID=1.7 ppm		
	5.0	Bore discontinued at 5.0m Target depth reached		A	4.9 5.0		PID=1.1 ppm		

RIG: Hand Tools **DRILLER:** NB **LOGGED:** NB **CASING:** Uncased

TYPE OF BORING: Hand Auger to 5m

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333978
NORTHING: 6249263
DIP/AZIMUTH: 90°/--

BORE No: BH103
PROJECT No: 86767.00
DATE: 15 - 16/4/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
21	0.25	FILL/ CONCRETE							Gatic Cover and cap
		FILL/ SAND: fine to medium, pale brown, trace silt, moist, generally in a very loose condition		A	0.25 0.4		PID=3		
	1			A	1.0 1.1				
20				A	1.5 1.6		PID=1.3		
	1.7	FILL/ Silty CLAY: low plasticity, pale grey-orange and dark grey, with angular sandstone, shale, ironstone gravel, w>PL, generally in a stiff to very stiff condition		A	2.0 2.1				
19	2								
	2.5	FILL/ Silty CLAY: low to medium plasticity, red brown, w<PL, generally in a firm condition		A	2.5 2.6		PID=2.4		
				A	2.9 3.0				
18	3			S	3.45		2,2,2 N = 4		
									Backfill and Blank PVC pipe
17	4								
				S	4.5		1,0,0 N = 0		
	4.9	FILL/ Silty SAND: fine to coarse, dark grey and brown, trace fine gravel, moist, generally in a very loose condition		A	4.95 5.0 5.1		PID=0		
16	5								
				S	6.0		3,5,7 N = 12		
15	6								
	6.3	SAND SP: fine to medium, pale grey, moist, medium dense, alluvial			6.45				
	7.0	Sandy CLAY CI-CH: medium to high plasticity, dark red-orange, w>PL, very stiff, residual		A	7.5		2,6,14 N = 20		
14	7								
					7.95				Bentonite Seal
13	8								
	8.5	SANDSTONE: fine grained, dark brown, pale grey and orange-grey, highly weathered with extremely weathered bands, low strength with very low strength bands, fractured, Mittagong Formation		C	8.5				
	9								Sand filter Slotted PVC pipe
12	9.15	SANDSTONE: refer following page		C	9.18				End Cap
	10.0								

RIG: XC 100 **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 8.5m

TYPE OF BORING: Diatube to 0.25m, Hand tools to 2.6m, SFA (TC-bit) to 8.5m, NMLC to 10.8m

WATER OBSERVATIONS: No free groundwater observed during drilling

REMARKS: Standpipe installed: 0-8.5m Blank PVC pipe, 8.5-9.3m Slotted PVC pipe, End cap at 9.3m, Backfill 0-7.5m, Bentonite 7.5-8.5m, Sand filter 8.5-9.3m, Bentonite 9.3-10.8m, Gatic cover at surface. Hole pre-drilled 8 April 2020 to 2.6m depth

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333978
NORTHING: 6249263
DIP/AZIMUTH: 90°/--

BORE No: BH103
PROJECT No: 86767.00
DATE: 15 - 16/4/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
11		SANDSTONE: fine to medium grained, pale yellow, moderately then slightly weathered, medium strength, slightly fractured, Hawkesbury Sandstone		C	9.96		PL(A) = 0.65		Bentonite plug
	10.8				10.75		PL(A) = 0.49		
10		Bore discontinued at 10.8m Target depth reached			10.8				
9									
8									
7									
6									
5									
4									
3									
2									

RIG: XC 100 **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 8.5m

TYPE OF BORING: Diatube to 0.25m, Hand tools to 2.6m, SFA (TC-bit) to 8.5m, NMLC to 10.8m

WATER OBSERVATIONS: No free groundwater observed during drilling

REMARKS: Standpipe installed: 0-8.5m Blank PVC pipe, 8.5-9.3m Slotted PVC pipe, End cap at 9.3m, Backfill 0-7.5m, Bentonite 7.5-8.5m, Sand filter 8.5-9.3m, Bentonite 9.3-10.8m, Gatic cover at surface. Hole pre-drilled 8 April 2020 to 2.6m depth

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333983
NORTHING: 6249272
DIP/AZIMUTH: 90°/--

BORE No: BH104
PROJECT No: 86767.00
DATE: 14 - 15/4/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
21	0.25	FILL/ CONCRETE							Gatic Cover and cap
		FILL/ SAND: fine to medium, pale brown, trace silt, moist, generally in a very loose condition		A	0.25 0.4		PID=0.8		
	0.8			A	0.8 0.9		PID=1.2		
20	1.0	FILL/ Silty CLAY: medium plasticity, pale orange, trace fine sand, w>PL, generally in a stiff condition		A	1.0 1.1		PID=5.7		
		FILL/ Silty CLAY: low plasticity, pale grey-orange and dark grey, with angular sandstone, shale and ironstone gravel, w>PL, generally in a soft to firm condition		A*	1.4 1.5		PID=0		
				S			2,2,2 N = 4		
19	2.0	FILL/ Silty CLAY: medium plasticity, red-brown mottled orange, trace fine sand and gravel, w<PL, generally in a soft to firm condition			1.95				
				A	2.8 2.9		PID=0		
18				S	3.0		1,2,2 N = 4		Backfill and Blank PVC pipe
					3.45				
17				S	4.5		2,1,2 N = 3		
		Below 4.8m: trace ash and medium sand							
16	5.0	SAND SP: dark yellow-orange, 10% non plastic fines, moist, medium dense, alluvial			4.95				
15				S	6.0		3,5,8 N = 13		
					6.45				
14	7.63	SANDSTONE: fine grained, dark brown, pale grey and orange-grey, highly then moderately weathered with extremely weathered bands, high and medium strength with very low strength bands, fractured, Mittagong Formation			7.63				
13				C	8.24		PL(A) = 0.84		
					8.65				
12	8.95			C					
	9.42	SANDSTONE: refer following page							

RIG: XC 100 **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 7.63m

TYPE OF BORING: Diatube to 0.25m, Hand tools to 1.1m, SFA (TC-bit) to 7.63m, NMLC to 20m

WATER OBSERVATIONS: No free groundwater observed during drilling

REMARKS: Standpipe installed: 0-14.0m Blank PVC pipe, 14.0-20m Slotted PVC pipe, End cap at 20m, Backfill 0.1-6.5m, Bentonite 6.5-13.5m, Sand filter 13.5-20m, Gatic cover at surface. Hole pre-drilled 8 April 2020 to 1.1m depth. *BD2/140420 replicate: 1.4-1.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 21.2 AHD
EASTING: 333983
NORTHING: 6249272
DIP/AZIMUTH: 90°/--

BORE No: BH104
PROJECT No: 86767.00
DATE: 14 - 15/4/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
11		SANDSTONE: fine to medium grained, pale grey with grey bands, fresh, medium and high strength, slightly fractured then unbroken, Hawkesbury Sandstone			9.96		PL(A) = 0.77		Bentonite Seal
					10.1				
				C					
11					10.96		PL(A) = 0.95		11
10					11.65				
				C					
12					11.96		PL(A) = 0.94		12
9									
				C					
13					12.96		PL(A) = 1.2		13
8					13.2				
				C					
14					13.96		PL(A) = 0.66		14
7		Between 14.52m-14.58m: band of dark grey siltstone			14.69				
					14.96		PL(A) = 1.5		
15				C					15
6									
					15.96		PL(A) = 1.2		
16					16.23				16
5									
									Sand filter
				C	16.96		PL(A) = 1.3		
17									17 Slotted PVC pipe
4					17.61				
					17.96		PL(A) = 1.3		
18				C					18
3									
					18.96		PL(A) = 2.6		
19					19.23				19
2				C					
		Bore discontinued at 20.0m							
	20.0	Target depth reached			19.9		PL(A) = 1		End cap

RIG: XC 100 **DRILLER:** Terratest **LOGGED:** NB **CASING:** HQ to 7.63m

TYPE OF BORING: Diatube to 0.25m, Hand tools to 1.1m, SFA (TC-bit) to 7.63m, NMLC to 20m

WATER OBSERVATIONS: No free groundwater observed during drilling

REMARKS: Standpipe installed: 0-14.0m Blank PVC pipe, 14.0-20m Slotted PVC pipe, End cap at 20m, Backfill 0.1-6.5m, Bentonite 6.5-13.5m, Sand filter 13.5-20m, Gatic cover at surface. Hole pre-drilled 8 April 2020 to 1.1m depth. *BD2/140420 replicate: 1.4-1.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333988
NORTHING: 6249270
DIP/AZIMUTH: 90°/--

BORE No: BH105
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
20	0.05	FILL/BALLAST		A	0.05		PID=2.5 ppm		
	0.1	FILL/Silty CLAY: medium plasticity, dark grey, with angular gravel and organic matter and fragments of plastic, w~PL, generally in a firm condition			0.1				
	0.37	BRICK PAVEMENT							
		CONCRETE: grey, orange and yellow-brown, with inclusions of sub-angular to sub-rounded, high strength sandstone							
19	1								1
18	2								2
17	3								3
16	4								4

RIG: Proline **DRILLER:** Tightsite **LOGGED:** NB **CASING:** HW to 3.1m
TYPE OF BORING: Diatube to 3.1m, NMLC to 6.5m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: * Field replicate BD1/070420 taken from 0.05-0.1m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 20.1 AHD
EASTING: 333988
NORTHING: 6249270
DIP/AZIMUTH: 90°/--

BORE No: BH105
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
15		CONCRETE: grey, orange and yellow-brown, with inclusions of sub-angular to sub-rounded, high strength sandstone *(continued)*							
14	6								6
	6.3	SANDSTONE: fine to medium grained, pale yellow, highly weathered, medium to high strength, Mittagong Formation							
	6.5	Bore discontinued at 6.5m - Target depth reached							
13	7								7
12	8								8
11	9								9

RIG: Proline **DRILLER:** Tightsite **LOGGED:** NB **CASING:** HW to 3.1m
TYPE OF BORING: Diatube to 3.1m, NMLC to 6.5m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: * Field replicate BD1/070420 taken from 0.05-0.1m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333980
NORTHING: 6249282
DIP/AZIMUTH: 90°/--

BORE No: BH106
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
	0.16	CONCRETE: grey, 2-10mm igneous aggregate							
	0.2	FILL/SAND: fine to coarse, pale brown, trace seashells, moist		E	0.16		PID=2 ppm		
	0.3			E	0.2				
	0.4	FILL/CLAY: medium plasticity, brown, red and grey, with fine to coarse sand, trace fine to medium gravel, fine to medium igneous rail ballast, seashells and coal, w~PL		E	0.3		PID=1 ppm		
15				E	0.4		PID=1 ppm		
		FILL/SAND: fine to coarse, dark brown, with igneous rail ballast, trace coal, dry, hydrocarbon odour			0.5				
	0.8	FILL/CLAY: medium plasticity, pale grey, red and brown, trace fine to medium gravel, w~PL							
	1	Below 0.5m: apparently in a stiff condition		E	0.9		PID=1 ppm		1
		At 0.6m: tile fragment			1.0				
		CLAY CI-CH: medium to high plasticity, pale grey mottled red, trace fine to medium ironstone gravel, w<PL to w~PL, apparently very stiff, residual			1.15				
	1.25	Below 1.1m: w<PL		E	1.25		PID<1 ppm		
14		Bore discontinued at 1.25m - Target depth reached							
	2								2
13									
	3								3
12									
	4								4
11									

RIG: Hand Tools **DRILLER:** AS/AMS **LOGGED:** AS **CASING:** Uncased
TYPE OF BORING: Diatube to 0.16m, Hand auger to 1.25m
WATER OBSERVATIONS: No free groundwater observed
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333945
NORTHING: 6249270
DIP/AZIMUTH: 90°/--

BORE No: BH107A
PROJECT No: 86767.00
DATE: 17/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
15	0.14	CONCRETE: grey, angular to subangular aggregate to 15mm, negligible voids, 9 mm steel reinforcement at 0.08 m depth							Gatic Cover and cap
		FILL/ Sandy CLAY: low to medium plasticity, dark red and brown, fine to medium, with angular igneous and sandstone gravel, trace silt, w<PL, generally in a stiff condition							Backfill and Blank PVC pipe
14	1	Below 1.0m: grading to medium plasticity, dark grey, trace sandstone gravel, w~PL							
	1.6	FILL/ Silty CLAY: medium to high plasticity, pale grey-yellow, with fine to medium sand, w~PL, generally in a stiff condition						05-06-20	
13	2								Bentonite Seal
	2.2	Sandy CLAY CL: low to medium plasticity, pale yellow, fine to medium, w~PL, apparently stiff to very stiff, residual							
12	2.81	Below 2.6m: yellow-brown							Sand filter
	3	SANDSTONE: fine to medium grained, pale grey and red-brown, high strength with very low then low strength bands, highly weathered, fractured, Mittagong Formation							Slotted PVC pipe
11	3.9	Bore discontinued at 3.9m - Target depth reached							End Cap
10	4								
	5								
9	6								
8	7								
7	8								
6	9								

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** NA

TYPE OF BORING: SFA (TC-bit) to 3.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Standpipe installed: 0-3.4m Blank PVC pipe, 3.4-3.9m Slotted PVC pipe, End cap at 3.9m, Sand backfill 0-1.5m, Bentonite 1.5-3.2m, Sand filter 3.2-3.9m, Gatic cover at surface.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333966
NORTHING: 6249307
DIP/AZIMUTH: 90°/--

BORE No: BH108
PROJECT No: 86767.03
DATE: 17/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
15	0.21	CONCRETE: grey, 2-10mm igneous aggregate							
	0.23	FILL/Sandy CLAY: low plasticity, dark brown, fine to medium sand, w~PL		E	0.23 0.25		PID=2 ppm		
		CLAY CI: medium plasticity, pale grey mottled pale brown and red, w~PL, residual							
		Below 0.6m: trace fine to medium ironstone gravel		E	0.6 0.8		PID=2 ppm		
14	1.05	SANDSTONE: fine to medium grained, pale grey, highly weathered, very low strength, with clay and ironstone bands, Hawkesbury Sandstone		E	1.05		PID=2 ppm		
	1.2	Bore discontinued at 1.2m - Target depth reached. Auger refusal			1.2				
13									
12									
11									

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** AS **CASING:** Uncased
TYPE OF BORING: Pushtube to 1.2m
WATER OBSERVATIONS: No free groundwater observed
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333945
NORTHING: 6249272
DIP/AZIMUTH: 90°/--

BORE No: BH107B
PROJECT No: 86767.00
DATE: 16/5/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
15	0.14	CONCRETE: grey, angular to subangular aggregate to 15mm, negligible voids, 9 mm steel reinforcement at 0.08 m depth		A	0.15 0.2		PID=4		Gatic Cover and cap
		FILL/ Sandy CLAY: low to medium plasticity, dark red and brown, fine to medium, with angular igneous and sandstone gravel, trace silt, w<PL, generally in a stiff condition		A/E*	0.4 0.5		PID=5		
1		Below 1.0m: grading to medium plasticity, dark grey, trace sandstone gravel, w~PL		A/E	0.9 1.0		PID=2		Backfill and Blank PVC pipe
14	1.6			A/E	1.4 1.5		PID=2		
		FILL/ Silty CLAY: medium to high plasticity, pale grey-yellow, with fine to medium sand, w~PL, generally in a stiff condition		A/E	1.9 2.0		PID=2	05-06-20	
2	2.2			A/E	2.4 2.5		PID=1		
13		Sandy CLAY CL-CI: low to medium plasticity, pale yellow, fine to medium, w~PL, apparently stiff to very stiff, residual		A/E	2.65 2.8		PID=2		
		Below 2.6m: yellow-brown							
	2.81	SANDSTONE: fine to medium grained, pale grey and red-brown, high strength with very low then low strength bands, highly weathered, fractured, Mittagong Formation		C	2.81 2.94		PL(A) = 1.1		
12					3.57 3.62		PL(A) = 0.1		Bentonite Seal
	3.92 4.03	SANDSTONE: fine to medium grained, pale grey and red-brown, medium then high strength, moderately weathered, fractured, Hawkesbury Sandstone		C	4.25		PL(A) = 0.9		
11	4.94	SANDSTONE: fine to medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, cross-bedding 5°-10°, Hawkesbury Sandstone		C	5.0 5.12		PL(A) = 1.5		Sand filter
10				C	6.0		PL(A) = 1.1		
					6.59				
9				C	7.0		PL(A) = 1.3		
		Between 7.66m-8.10m: band of fine grained sandstone							
8					8.0 8.12		PL(A) = 1.6		Slotted PVC pipe
7				C	9.0		PL(A) = 1.1		
6					10.0		PL(A) = 1.3		

RIG: XC **DRILLER:** Terratest **LOGGED:** KR **CASING:** HWT to 2.8m

TYPE OF BORING: Diatube (200 mm) to 0.14m, SFA (TC-bit) to 2.81m, NMLC coring to 15.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20200516 taken at 0.4-0.5m. Standpipe installed: 0-5.5m Blank PVC pipe, 5.5-11.0m Slotted PVC pipe, End cap at 11.0m, Sand backfill 0-2.3m, Bentonite 2.3-5.0m, Sand filter 5.0-11.0m, Bentonite 11.0-12.0m, Backfill 12.0-15.0m, Gatic cover at surface.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333945
NORTHING: 6249272
DIP/AZIMUTH: 90°/--

BORE No: BH107B
PROJECT No: 86767.00
DATE: 16/5/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
5		SANDSTONE: fine to medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, cross-bedding 5°-10°, Hawkesbury Sandstone *(continued)*		C					
	11				11.02 11.07		PL(A) = 1.1		11 End Cap Bentonite Seal
4	12				12.0		PL(A) = 1.1		12
3		Between 12.60m-13.78m: band of fine grained sandstone		C					
	13				13.03		PL(A) = 1		13 Sand Back Fill
2	14				14.0 14.08		PL(A) = 1.2		14
1				C					
	15 15.0	Bore discontinued at 15.0m - Target depth reached			15.0				15
0	16								16
-1	17								17
-2	18								18
-3	19								19
-4									

RIG: XC **DRILLER:** Terratest **LOGGED:** KR **CASING:** HWT to 2.8m

TYPE OF BORING: Diatube (200 mm) to 0.14m, SFA (TC-bit) to 2.81m, NMLC coring to 15.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20200516 taken at 0.4-0.5m. Standpipe installed: 0-5.5m Blank PVC pipe, 5.5-11.0m Slotted PVC pipe, End cap at 11.0m, Sand backfill 0-2.3m, Bentonite 2.3-5.0m, Sand filter 5.0-11.0m, Bentonite 11.0-12.0m, Backfill 12.0-15.0m, Gatic cover at surface.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.3 AHD
EASTING: 333968
NORTHING: 6249312
DIP/AZIMUTH: 90°/--

BORE No: BH109A
PROJECT No: 86767.00
DATE: 19/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
15	0.2	CONCRETE: grey, angular to subangular aggregate to 15mm, negligible voids, no reinforcement steel observed							
	0.3	FILL/ GRAVEL: coarse, black, angular igneous gravel bonded by bitumen, dry, generally in a dense condition							
		Silty CLAY CI: medium plasticity, pale orange, w<PL, apparently stiff to very stiff, residual (possibly extremely weathered Ashfield Shale)							
14	1.05								
	1.15	SANDSTONE: fine to medium grained, pale grey and dark orange, highly weathered, medium strength, Hawkesbury Sandstone							
		Bore discontinued at 1.15m - Refusal to TC-bit auger							
13	2								
12	3								
11	4								
10	5								
9	6								
8	7								
7	8								
6	9								

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** NA

TYPE OF BORING: SFA (TC-bit) to 1.15m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.3 AHD
EASTING: 333970
NORTHING: 6249311
DIP/AZIMUTH: 90°/--

BORE No: BH109B
PROJECT No: 86767.00
DATE: 17/5/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
15	0.2	CONCRETE: grey, angular to subangular aggregate to 15mm, negligible voids, no reinforcement steel observed							Gatic Cover and cap
	0.3	FILL/ GRAVEL: coarse, black, angular igneous gravel bonded by bitumen, dry, generally in a dense condition		A/E	0.4 0.5		PID<1		Backfill and Blank PVC pipe
		Silty CLAY CI: medium plasticity, pale orange, w<PL, apparently stiff to very stiff, residual (possibly extremely weathered Mittagong Formation)		A/E	0.9 1.05		PID<1		
14	1.05	SANDSTONE: fine to medium grained, pale grey and dark orange, highly weathered, medium strength, fractured, Hawkesbury Sandstone		C	1.16 1.65		PL(A) = 1.8		
13	2			C	2.11		PL(A) = 0.7	09-06-20	
12	2.93	SANDSTONE: fine to coarse grained, pale grey and pale yellow, moderately weathered then slightly weathered, medium strength, slightly fractured, cross-bedding 5°-10°, Hawkesbury Sandstone		C	3.1 3.11		PL(A) = 0.5		Bentonite Seal
11	4			C	3.92		PL(A) = 0.7		
10	4.9	SANDSTONE: fine to coarse grained, pale grey, fresh, medium then high strength, slightly fractured then unbroken, cross-bedding 5°-10°, Hawkesbury Sandstone		C	4.65 4.93 5.04		PL(A) = 0.9 PL(A) = 1		Sand filter
9	6			C	6.0		PL(A) = 0.7		
8	7			C	7.0		PL(A) = 1.2		
				C	7.4 7.75				
7	8			C	8.0		PL(A) = 1.8		Slotted PVC pipe
6	9			C	9.0 9.25		PL(A) = 1.9		
	10.0						PL(A) = 1.4		

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 1.05m

TYPE OF BORING: Diatube (200mm) to 0.2m, SFA (TC-bit) to 1.05m, NMLC coring to 15m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Standpipe installed: 0-6.0m Blank PVC pipe, 6.0-11.6m Slotted PVC pipe, End cap at 11.6m, Sand backfill 0-1.05m, Bentonite 1.05-5.2m, Sand filter 5.2-11.6m, Bentonite 11.6-13.0m, Backfill 13.0-15.0m, Gatic cover at surface. Surface level taken from survey

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.3 AHD
EASTING: 333970
NORTHING: 6249311
DIP/AZIMUTH: 90°/--

BORE No: BH109B
PROJECT No: 86767.00
DATE: 17/5/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: fine to coarse grained, pale grey, fresh, medium then high strength, slightly fractured then unbroken, cross-bedding 5°-10°, Hawkesbury Sandstone *(continued)*		C	10.73				
11				C	11.0		PL(A) = 1.8		End Cap
12					12.0		PL(A) = 1.2		Bentonite Seal
					12.38				
13				C	13.0		PL(A) = 1.4		
					13.88				
14				C	14.0		PL(A) = 1.3		Sand Back Fill
15	15.0	Bore discontinued at 15.0m - Target depth reached			15.0				
16									
17									
18									
19									

RIG: XC **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 1.05m

TYPE OF BORING: Diatube (200mm) to 0.2m, SFA (TC-bit) to 1.05m, NMLC coring to 15m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Standpipe installed: 0-6.0m Blank PVC pipe, 6.0-11.6m Slotted PVC pipe, End cap at 11.6m, Sand backfill 0-1.05m, Bentonite 1.05-5.2m, Sand filter 5.2-11.6m, Bentonite 11.6-13.0m, Backfill 13.0-15.0m, Gatic cover at surface. Surface level taken from survey

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.3 AHD
EASTING: 333960
NORTHING: 6249314
DIP/AZIMUTH: 90°/--

BORE No: BH110
PROJECT No: 86767.00
DATE: 20/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
15	0.2	CONCRETE: grey, angular to subangular aggregate to 15mm, negligible voids, no reinforcement			0.2				
	0.3	FILL/ SAND: fine to coarse, pale orange, moist, generally in a medium dense condition		A	0.3		PID<1		
	0.6	FILL/ Silty CLAY: medium to high plasticity, pale grey mottled orange, with fine to coarse sand and brick, concrete and asphalt fragments, w<PL, generally in a stiff condition		A	0.5		PID<1		
		Bore discontinued at 0.6m - Termination on brick and concrete fragments			0.6				
14	1								1
13	2								2
12	3								3
11	4								4

RIG: Hand tools **DRILLER:** Nick Ruha/NB **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diatube (100mm) to 0.2m, then hand auger

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 18.7 AHD
EASTING: 333945
NORTHING: 6249317
DIP/AZIMUTH: 90°/--

BORE No: BH111
PROJECT No: 86767.00
DATE: 19/5/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
18	0.05	ASPHALTIC CONCRETE							
	0.15	FILL/ ROADBASE: fine to coarse, dark grey, angular igneous gravel, fine to coarse sand, dry, generally in a dense condition							
		FILL/ SAND: fine to coarse, pale grey and brown, moist, generally in a loose to medium dense condition		U/E	0.4 0.5		PID<1		
	0.5	FILL/ Silty CLAY: low to medium plasticity, dark grey and brown, w<PL, generally in a stiff condition							
		Below 0.6m, grading to sandy clay, pale orange and dark orange, fine to medium sand							
	1			U/E	1.1		PID<1		1
	1.2	FILL/ SAND: fine to medium, dark brown and grey, trace silt, moist, generally in a medium dense to dense condition		U/E	1.2 1.3 1.4		PID<1		
17	2								
	2.0	SAND SP: fine to medium, pale grey, moist, apparently loose, alluvial		U/E	2.0 2.1		PID<1		2
		Below 2.4m: grading to pale orange							
16	3			U/E*	3.0 3.1		PID<1		3
	3.2	Silty CLAY CI: medium plasticity, pale orange mottled dark red, with ironstone gravel, w<PL, apparently stiff to very stiff, residual (possibly extremely weathered Mittagong Formation)							
15	4			U/E	4.0 4.1		PID<1		4
		Below 4.4m: grading to pale grey							
14									

RIG: Geoprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Push tube to 5.4m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: *BD1/190520NB taken at 3-3.1m. Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 18.7 AHD
EASTING: 333945
NORTHING: 6249317
DIP/AZIMUTH: 90°/--

BORE No: BH111
PROJECT No: 86767.00
DATE: 19/5/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
		Silty CLAY CI: medium plasticity, pale orange mottled dark red, with ironstone gravel, w<PL, apparently stiff to very stiff, residual (possibly extremely weathered Mittagong Formation) *(continued)*							
	5.4	Bore discontinued at 5.4m - Target depth reached							

RIG: Geoprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Push tube to 5.4m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: *BD1/190520NB taken at 3-3.1m. Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 16.7 AHD
EASTING: 333926
NORTHING: 6249325
DIP/AZIMUTH: 90°/--

BORE No: BH112A
PROJECT No: 86767.00
DATE: 19/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
16	0.05	ASPHALTIC CONCRETE							Gatic Cover and cap
	0.25	FILL/ ROADBASE: fine to coarse, dark grey, angular igneous gravel, fine to coarse sand, dry, generally in a dense condition							
		FILL/ SAND: fine to medium, dark grey-brown, moist, generally in a loose condition							
15	1.4	SAND SP: fine to medium, pale orange, moist, apparently medium dense, alluvial							Backfill and Blank PVC pipe
	1.8	Sandy CLAY CI: medium plasticity, pale grey and pale orange, fine sand, w<PL, apparently stiff, alluvial							
14	2.0	Silty CLAY CI-CH: medium to high plasticity, pale grey mottled dark red-orange and yellow, with ironstone gravel, w<PL, very stiff, residual (possibly extremely weathered Mittagong Formation)							Bentonite Seal
13	3.2	Sandy CLAY CL: low plasticity, dark red and pale grey, fine sand, w<PL, hard, residual (extremely weathered Mittagong Formation)						05-06-20	
	3.4	SANDSTONE: fine grained, dark brown and pale grey orange, highly weathered, medium strength, Mittagong Formation							Sand filter Slotted PVC pipe
12	4.5	Bore discontinued at 4.5m - Target depth reached							End Cap

RIG: Geoprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** NA

TYPE OF BORING: SFA (TC-bit) to 4.5m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Standpipe installed: 0-4.0m Blank PVC pipe, 4.0-4.5m Slotted PVC pipe, End cap at 4.5m, Sand backfill 0-2.0m, Bentonite 2.0-3.6m, Sand filter 3.6-4.5m, Gatic cover at surface. Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 16.8 AHD
EASTING: 333928
NORTHING: 6249324
DIP/AZIMUTH: 90°/--

BORE No: BH112B
PROJECT No: 86767.00
DATE: 18/5/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
16	0.05	ASPHALTIC CONCRETE							Gatic Cover and cap
	0.25	CONCRETE			0.3				
	0.3	ASPHALTIC CONCRETE		A/E			PID<1		
	0.6	FILL/ SANDSTONE: possible sandstone block		A/E	0.6 0.7		PID<1		
15	1	FILL/ SAND: fine to medium, dark grey-brown, moist, generally in a loose condition							Backfill and Blank PVC pipe
	1.4	SAND SP: fine to medium, pale orange, moist, apparently medium dense, alluvial		A/E	1.4 1.5		PID<1		
	1.8			A/E	1.6 1.7		PID<1		
14	2	Sandy CLAY CI: medium plasticity, pale grey and pale orange, fine sand, w<PL, apparently stiff, alluvial			2.0				
	2.0	Silty CLAY CI-CH: medium to high plasticity, pale grey mottled dark red-orange and yellow, with ironstone gravel, w<PL, very stiff, residual (possible extremely weathered Ashfield Shale)		S			6,9,11 N = 20		
	2.45				2.45				
13	3				3.0				
	3.2	Sandy CLAY CL: low plasticity, dark red and pale grey, fine sand, w<PL, hard, residual (extremely weathered Mittagong Formation)		S			2,8,20/140 refusal		
	3.4				3.4 3.44				
	3.68	SANDSTONE: fine grained, dark brown and pale grey-orange, highly weathered then moderately weathered, medium and high strength, fractured, Mittagong Formation					PL(A) = 0.4		
12	4				4.0		PL(A) = 1.5		Bentonite Seal
	5.14			C					
11	5	SANDSTONE: fine to coarse grained, pale orange, highly weathered then moderately weathered, medium strength, fractured to slightly fractured, cross-bedding 10°-20°, Hawkesbury Sandstone			5.35		PL(A) = 0.5	05-06-20	
	6				6.1				
	6.34						PL(A) = 0.3		
10	6.46	SANDSTONE: fine to coarse grained, pale grey, trace dark grey siltstone bands, slightly weathered then fresh, high strength, slightly fractured, cross-bedding 0°-10°, Hawkesbury Sandstone							
	7				7.15		PL(A) = 0.5		
9	7.9			C					
	8	Between 8.02m-9.83m, cross-bedding 10°-20°			8.09		PL(A) = 1.1		
8									Sand filter
	9				9.09 9.1		PL(A) = 2.1		Slotted PVC pipe
7				C					

RIG: Geoprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 3.4m

TYPE OF BORING: Diatube (200mm) to 0.6m, Hand Auger to 2m, SFA (TC-bit) to 3.4m, HQ coring to 15m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Rapid drilling between 4.1-4.9m & 7.5-8.0m. 20% water loss at 9m. Standpipe installed: 0-6.0m Blank PVC pipe, 6.0-12.0m Slotted PVC pipe, End cap 12.0m, Sand backfill 0-2.5m, Bentonite 2.5-5.5m, Sand filter 5.5-12.5m, Bentonite 12.5-13.0m, Backfill 13-15m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 16.8 AHD
EASTING: 333928
NORTHING: 6249324
DIP/AZIMUTH: 90°/--

BORE No: BH112B
PROJECT No: 86767.00
DATE: 18/5/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SANDSTONE: as above			10.12		PL(A) = 1.2		
11				C	11.04		PL(A) = 1.5		11
12					12.1		PL(A) = 1.3		12 End Cap; Sand Back Fill; Bentonite Seal
13				C	13.0		PL(A) = 1.3		13
14					14.0		PL(A) = 1.5		14 Sand Back Fill
15	15.0	Bore discontinued at 15.0m - Target depth reached			15.0				15
16									16
17									17
18									18
19									19

RIG: Geoprobe **DRILLER:** Terratest **LOGGED:** NB **CASING:** HWT to 3.4m

TYPE OF BORING: Diatube (200mm) to 0.6m, Hand Auger to 2m, SFA (TC-bit) to 3.4m, HQ coring to 15m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Rapid drilling between 4.1-4.9m & 7.5-8.0m. 20% water loss at 9m. Standpipe installed: 0-6.0m Blank PVC pipe, 6.0-12.0m Slotted PVC pipe, End cap 12.0m, Sand backfill 0-2.5m, Bentonite 2.5-5.5m, Sand filter 5.5-12.5m, Bentonite 12.5-13.0m, Backfill 13-15m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333983
NORTHING: 6249283
DIP/AZIMUTH: 90°/--

BORE No: BH113
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
	0.15	CONCRETE: grey, 2-10mm igneous aggregate							
		FILL/SAND: fine to coarse, pale brown and brown, trace fine to medium igneous rail ballast, trace coal, moist		E*	0.15 0.25		PID=9 ppm		
15	0.4	FILL/CLAY: medium plasticity, red and pale grey, trace medium gravel, w~PL		E	0.4 0.5		PID=1 ppm		
	0.8	CLAY CI: medium plasticity, pale grey mottled red, trace fine to medium ironstone gravel, w<PL to w~PL, apparently very stiff, residual		E	0.9 1.0		PID=2 ppm		
	1			E	1.2		PID=8 ppm		1
	1.3	Bore discontinued at 1.3m - Target depth reached			1.3				
14	2								2
13	3								3
12	4								4
11									

RIG: Hand Tools **DRILLER:** AS/AMS **LOGGED:** AS **CASING:** Uncased

TYPE OF BORING: Diatube to 0.15m, Hand auger to 1.3m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Field replicate BD2/20200407 taken from 0.15-0.25m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333984
NORTHING: 6249280
DIP/AZIMUTH: 90°/--

BORE No: BH114
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
	0.15	CONCRETE: grey, 2-10mm igneous aggregate			0.15				
	0.2	FILL/SAND: fine to coarse, pale brown and brown, trace fine gravel and coal, moist		E	0.2		PID=10 ppm		
	0.3	FILL/CLAY: medium plasticity, brown, pale grey and red, with fine to coarse sand, trace fine gravel, igneous rail ballast, plastic and coal, w~PL, hydrocarbon odour		E	0.3				
		Bore discontinued at 0.3m - Refusal on ballast							

RIG: Hand Tools **DRILLER:** AS/AMS **LOGGED:** AS **CASING:** Uncased
TYPE OF BORING: Diatube to 0.15m, Hand auger to 0.3m
WATER OBSERVATIONS: No free groundwater observed
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333981
NORTHING: 6249280
DIP/AZIMUTH: 90°/--

BORE No: BH115
PROJECT No: 86767.03
DATE: 7/4/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
		CONCRETE: grey, 2-10mm igneous aggregate							
	0.17			E	0.17		PID<1 ppm		
	0.23	FILL/SAND: fine to coarse, pale brown, moist		E*	0.23		PID=5 ppm		
		FILL/CLAY: medium plasticity, red and pale grey, with fine to coarse sand and fine gravel, trace fine to coarse igneous rail ballast and coal, w~PL			0.3				
15		Below 0.5m: low plasticity, with fine to coarse ironstone gravel		E	0.5		PID=1 ppm		
					0.6				
	0.85	CLAY CI-CH: medium to high plasticity, pale grey mottled red, trace fine gravel, w<PL to w~PL, apparently very stiff, residual		E	0.9		PID=4 ppm		
	1				1.0				1
		Below 1.2m: pale grey, w<PL		E	1.2		PID=1 ppm		
	1.3	Bore discontinued at 1.3m - Target depth reached			1.3				
14	2								2
13	3								3
12	4								4
11									

RIG: Hand Tools **DRILLER:** AS/AMS **LOGGED:** AS **CASING:** Uncased

TYPE OF BORING: Diatube to 0.17m, Hand auger to 1.3m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Field replicate BD1/20200407 taken from 0.23-0.3m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333970
NORTHING: 6249305
DIP/AZIMUTH: 90°/--

BORE No: BH116
PROJECT No: 86767.03
DATE: 17/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
		CONCRETE: grey, 2-10mm igneous aggregate							
	0.22	CLAY CI: medium plasticity, pale grey mottled pale brown and red, w<PL to w~PL, residual		E	0.22		PID=2 ppm		
15					0.35				
				E*	0.5		PID=2 ppm		
		Below 0.7m: trace fine to medium ironstone gravel			0.7				
	1	Below 1.0m: with medium ironstone gravel		E	1.0		PID=2 ppm		1
	1.2	Bore discontinued at 1.2m - Target depth reached			1.2				
14									
	2								2
13									
	3								3
12									
	4								4
11									

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** AS **CASING:** Uncased

TYPE OF BORING: Pushtube to 1.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Field replicate BD1/20200517 taken from 0.5-0.7m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.5 AHD
EASTING: 333968
NORTHING: 6249303
DIP/AZIMUTH: 90°/--

BORE No: BH117
PROJECT No: 86767.03
DATE: 17/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
		CONCRETE: grey, 2-10mm igneous aggregate							
	0.2				0.2				
	0.25	FILL/Sandy CLAY: low plasticity, dark brown, fine to medium sand, with medium igneous rail ballast, w~PL, hydrocarbon odour		E	0.25		PID=3 ppm		
15		CLAY CI: medium plasticity, pale grey mottled pale brown and red, w~PL, residual							
					0.6				
				E*			PID=2 ppm		
					0.8				
	1	Below 0.9m: pale grey mottled pale brown, w<PL							1
					1.0				
				E			PID=2 ppm		
	1.2	Below 1.15m: with medium sand			1.2				
		Bore discontinued at 1.2m - Target depth reached							
14									
	2								2
13									
	3								3
12									
	4								4
11									

RIG: Miniprobe **DRILLER:** Terratest **LOGGED:** AS **CASING:** Uncased

TYPE OF BORING: Pushtube to 1.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Field replicate BD2/20200517 taken from 0.6-0.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.6 AHD
EASTING: 333946
NORTHING: 6249321
DIP/AZIMUTH: 90°/--

BORE No: W1
PROJECT No: 86767.00
DATE: 20/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE		C	0.0				
	0.25	FILL/ ROADBASE: fine to coarse, dark grey, angular igneous gravel, fine to coarse sand, dry, generally in a dense condition		C	0.25 0.3		PL(A) = 1.6		
15		CONCRETE: grey, with medium to coarse sub-rounded fragments of high strength sandstone, trace voids to 0.65m, abudant voids between 0.65m and 0.85m		C	0.6				
	1								1
	1.2	Silty CLAY CI: medium plasticity, pale grey mottled dark red, w<PL, apparently stiff to very stiff, relict rock texture between 1.73-1.91m, residual (possibly extremely weathered Ashfield Shale)		C	1.15				
14	1.57			C	1.57				
	2	Below 2.0m, with irregular iron-cemented pockets and bands			1.9 2.0		pp <200		2
	2.24	SANDSTONE: fine grained, orange-brown, iron-cemented, highly weathered, high strength, fractured, Mittagong formation		C	2.4		PL(A) = 1.5		
	2.46	Bore discontinued at 2.46m - Target depth reached			2.46				
13	3								3
12	4								4
11									

RIG: Hand Drill **DRILLER:** Nick Ruha **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diatube (50mm) to 2.46m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 15.4 AHD
EASTING: 333963
NORTHING: 6249315
DIP/AZIMUTH: 90°/--

BORE No: W2
PROJECT No: 86767.00
DATE: 20/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE			0.0				
	0.15	FILL/ ROADBASE: fine to coarse, dark grey, angular igneous gravel, fine to coarse sand, dry, generally in a dense condition		C					
15		CONCRETE: grey, with medium to coarse sub-rounded fragments of high strength sandstone, trace voids			0.35				
				C	0.55		PL(A) = 1.6		
					0.8				
1	1.03			C					1
	1.12	Silty CLAY CI: medium plasticity, pale grey mottled dark red, w<PL, apparently stiff to very stiff, residual (possibly extremely weathered Ashfield Shale)			1.15		PL(A) = 1.5		
14	1.33	SANDSTONE: fine grained, orange-brown and pale grey, iron-cemented and with thin clay bands, highly weathered, high strength, fractured, Mittagong formation			1.33				
		Bore discontinued at 1.33m - Target depth reached							
2									2
13									
3									3
12									
4									4
11									

RIG: Hand Drill **DRILLER:** Nick Ruha **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diatube (50mm) to 1.33m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from survey drawing provided

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 13.4 AHD
EASTING: 333954
NORTHING: 6249290
DIP/AZIMUTH: 70°/135°

BORE No: W3
PROJECT No: 86767.00
DATE: 20/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
13	0.0	SANDSTONE: fine grained, orange-brown and pale grey, iron-cemented and with thin clay bands, highly weathered, medium to high strength, fragmented, Mittagong formation		C	0.0				
	0.46			C	0.46				
12	1.2	Bore discontinued at 1.2m - Target depth reached			1.2				
11									
10									
9									

RIG: Hand Drill **DRILLER:** Nick Ruha **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diatube (50mm) to 1.2m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from architectural drawing provided, Synman Justin Bialek Architects Pty Ltd, Lower Ground Floor plan, Drawing WD05 (Rev E) dated 21 May 1998. Borehole azimuth relative to Grid North

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Vertical First Pty Ltd
PROJECT: Proposed Commercial Development
LOCATION: 8-10 Lee Street, Haymarket

SURFACE LEVEL: 13.4 AHD
EASTING: 333948
NORTHING: 6249282
DIP/AZIMUTH: 60°/135°

BORE No: W4
PROJECT No: 86767.00
DATE: 20/5/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
13	0.0	CONCRETE: grey, with fine to coarse sub-rounded and sub-angular fragments of high strength sandstone, trace voids		C	0.0 – 0.22		PL(A) = 1.5		
				C	0.4				
	0.86	SANDSTONE: fine grained, orange-brown, highly weathered, medium to high strength, fractured, Mittagong formation		C	0.9				
12	1.57			C	1.5 – 1.7		PL(A) = 0.29		
	2.12				2.0				
	2.19	SANDSTONE: fine to coarse grained, pale orange, highly weathered, medium to high strength, fractured, Hawkesbury sandstone		C	2.2		PL(A) = 0.99		
11	2.4	Bore discontinued at 2.4m - Target depth reached			2.4				
10									

RIG: Hand Drill **DRILLER:** Nick Ruha **LOGGED:** NB **CASING:** NA

TYPE OF BORING: Diatube (50mm) to 2.4m

WATER OBSERVATIONS: No free groundwater observed whilst drilling

REMARKS: Surface level taken from architectural drawing provided, Synman Justin Bialek Architects Pty Ltd, Lower Ground Floor plan, Drawing WD05 (Rev E) dated 21 May 1998. Borehole azimuth relative to Grid North

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)
- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)
- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with ‘Mix of Soil and Cobbles/Boulders’ with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;
- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
  Soil tends to stick together.
  Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
  Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- ‘Moist, dry of plastic limit’ or ‘w <PL’ (i.e. hard and friable or powdery).
- ‘Moist, near plastic limit’ or ‘w ≈ PL (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- ‘Moist, wet of plastic limit’ or ‘w >PL’ (i.e. soils usually weakened and free water forms on the hands when handling).
- ‘Wet’ or ‘w ≈LL’ (i.e. near the liquid limit).
- ‘Wet’ or ‘w >LL’ (i.e. wet of the liquid limit).

Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured , usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

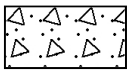
Symbols & Abbreviations

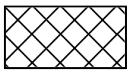
Graphic Symbols for Soil and Rock

General

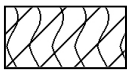

Asphalt

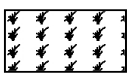

Road base

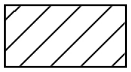

Concrete

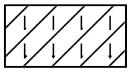

Filling

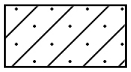
Soils


Topsoil

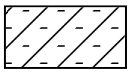

Peat

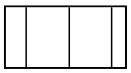

Clay

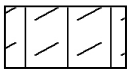

Silty clay

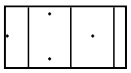

Sandy clay

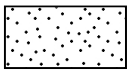

Gravelly clay

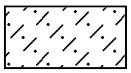

Shaly clay

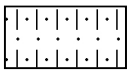

Silt


Clayey silt


Sandy silt

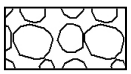

Sand

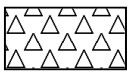

Clayey sand


Silty sand


Gravel

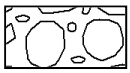

Sandy gravel


Cobbles, boulders

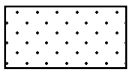

Talus

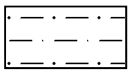
Sedimentary Rocks

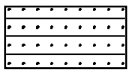

Boulder conglomerate

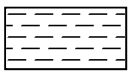

Conglomerate


Conglomeratic sandstone

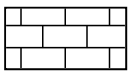

Sandstone


Siltstone

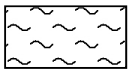

Laminite

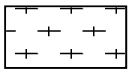

Mudstone, claystone, shale

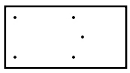

Coal


Limestone

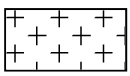
Metamorphic Rocks

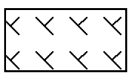

Slate, phyllite, schist

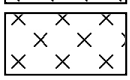

Gneiss

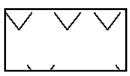

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

Douglas Partners
Geotechnics / Environment / Groundwater

Table F1: Summary of Soil Results – Metals, TRH, BTEX, PAH

			Metals								TRH						BTEX				PAH			
			Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 (C6-C10) - BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [a]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
		PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
DP (2020)																								
BH101	0.1 - 0.2 m	08/04/2020	4	<0.4	10	89	150	0.3	6	96	<25	<50	<25	<50	210	<100	<0.2	<0.5	<1	<3	<1	0.73	1.2	8.6
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH101/0.1-0.2 - [TRIPLICATE]	0.1 - 0.2 m	08/04/2020	<4	<0.4	8	56	160	0.3	6	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH101	0.9 - 1.0 m	08/04/2020	5	0.4	9	93	250	0.3	9	210	<25	<50	<25	<50	870	280	<0.2	<0.5	<1	<3	<1	2.5	3.5	20
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH102	1.5 - 1.6 m	07/04/2020	<4	<0.4	4	62	68	0.1	4	100	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1	<0.5	1.2
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH102	3.1 - 3.2 m	07/04/2020	5	1	10	180	160	0.4	6	160	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1	<0.5	1.8
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH102	4.0 - 4.1 m	07/04/2020	5	<0.4	16	86	170	1.3	23	540	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.05	<0.5	1
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH102	4.9 - 5.0 m	07/04/2020	<4	<0.4	8	7	20	0.4	4	26	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.08	<0.5	0.3
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH103	1.0 - 1.1 m	08/04/2020	<4	<0.4	2	5	57	<0.1	1	14	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.08	<0.5	0.3
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH103	2.0 - 2.1 m	08/04/2020	9	<0.4	8	37	28	<0.1	6	39	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH103	2.9 - 3 m	16/04/2020	12	<0.4	8	31	19	<0.1	2	16	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	430 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH103	5.1 - 5.2 m	16/04/2020	<4	<0.4	5	13	43	0.4	2	17	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.2	<0.5	2.2
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	NL NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH103	6.3 - 6.45 m	16/04/2020	<4	<0.4	<1	1	<0.1	<0.1	<1	<1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	NL NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH104	1.0 - 1.1 m	08/04/2020	5	<0.4	7	33	45	<0.1	11	61	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.05	<0.5	0.52
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH104	1.4 - 1.5 m	14/04/2020	<4	<0.4	6	28	14	<0.1	7	42	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.53	0.7	6.1
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	370 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD2/140420	1.4 - 1.5 m	14/04/2020	8.3	<0.4	11	32	23	<0.1	9.9	56	<20	<50	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<0.5	3
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	360 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH104	2.8 - 2.9 m	14/04/2020	11	<0.4	7	27	17	<0.1	3	21	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.09	<0.5	0.56
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	430 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH105	0.05 - 0.1 m	08/04/2020	8	0.6	13	93	280	1	14	240	<25	<50	<25	<50	330	<100	<0.2	<0.5	<1	<3	<1	2	2.9	17
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD1/070420	0.23 - 0.3 m	08/04/2020	9	0.7	14	99	300	0.8	11	260	<25	<50	<25	<50	170	<100	<0.2	<0.5	<1	<3	<1	1.8	2.5	17
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD1/070420b	0.23 - 0.3 m	08/04/2020	10	0.8	20	110	460	1.3	17	400	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	360 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH106	0.2 - 0.3 m	07/04/2020	25	<0.4	14	74	100	0.2	4	780	<25	87	<25	87	1600	380	<0.2	<0.5	<1	<3	<1	28	40	320
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH106	0.3 - 0.4 m	07/04/2020	6	<0.4	43	43	610	0.7	10	74	<25	240	<25	230	3600	790	<0.2	<0.5	<1	<3	2	120	160	1400
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH106/0.3- 04 - [TRIPLICATE]	0.3 - 0.4 m	07/04/2020	7	<0.4	24	23	350	0.7	8	110	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH106	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<1	0.1	<0.5	0.88
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH107B	0.4 - 0.5 m	16/05/2020	<4	<0.4	8	25	54	0.2	4	49	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.3	2	14
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD1/20200516	0.4 - 0.5 m	16/05/2020	<4	<0.4	12	46	52	0.2	7	81	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.8	2.7	18
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH107B	1.4 - 1.5 m	16/05/2020	<4	<0.4	7	11	11	<0.1	6	15	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.3	<0.5	2.8
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	370 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH108	0.23 - 0.25 m	17/05/2020	5	<0.4	14	11	15	<0.1	<1	4	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	2.7	3.8	23
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	360 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH109B	0.4 - 0.5 m	17/05/2020	<4	<0.4	9	9	19	<0.1	<1	2	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.4	<0.5	4.9
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH110	0.5 - 0.5 m	5/21/2020	43	<0.4	10	9	30	<0.1	3	19	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.1	2.1	13
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH111	0.4 - 0.5 m	5/19/2020	<4	<0.4	5	6	10	<0.1	3	12	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.2	<0.5	<0.5
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH111	1.3 - 1.4 m	5/19/2020	<4	<0.4	16	60	330	1	16	180	<25	<50	<25	<50	220	<100	<0.2	<0.5	<1	<3	<1	5.7	8.4	8.4
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH112B	0.6 - 0.7 m	18/05/2020	<4	<0.4	11	15	21	0.3	3	12	<25	<50	<25	<50	650	310	<0.2	<0.5	<1	<3	1	5.1	7.5	85
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH112B	1.2 - 1.4 m	13/05/2020	<4	<0.4	3	16	5	<0.1	3	11	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	2.5	3.5	36
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	370 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH113	0.15 - 0.25 m	07/04/2020	26	<0.4	6	40	44	<0.1	4	310	<25	<50	<25	<50	790	220	<0.2	<0.5	<1	<3	<1	12	17	150
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD2/070420	0.05 - 0.1 m	07/04/2020	10	<0.4	9	43	69	0.1	4	500	<25	<50	<25	<50	760	180	<0.2	<0.5	<1	<3	<1	14	20	180
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH113	0.4 - 0.5 m	07/04/2020	6	<0.4	18	59	23	<0.1	<1	8	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.2	1.7	15
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH113	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.3	<0.5	3.8
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH114	0.15 - 0.2 m	07/04/2020	14	<0.4	11	59	93	<0.1	14	510	<25	220	<25	220	1900	330	<0.2	<0.5	<1	<3	1	67	81	860
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH114	0.2 - 0.3 m	07/04/2020	52	<0.4	21	120	260	0.1	5	1800	<25	120	<25	120	1400	310	<0.2	<0.5	<1	<3	<1	31	43	470
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH115	0.23 - 0.3 m	07/04/2020	6	<0.4	12	14	24	<0.1	1	21	<25	110	<25	110	1300	280	<0.2	<0.5	<1	<3	<1	27	38	440
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH115/0.23-0.3 - [TRIPLICATE]	0.23 - 0.3 m	07/04/2020	100	<0.4	14	85	38	<0.1	3	110	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH115	0.5 - 0.6 m	07/04/2020	11	<0.4	21	16	20	<0.1	2	11	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.8	2.5	22
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH115	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.05	<0.5	0.4
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH116	0.5 - 0.7 m	17/05/2020	<4	<0.4	6	5	12	<0.1	<1	1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD1/20200517	0.5 - 0.7 m	17/05/2020	3.6	<0.4	8.2	9.9	16	<0.1	<5	<5	<20	<50	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<0.5	<0.5
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH117	0.2 - 0.25 m	17/05/2020	8	<0.4	20	15	16	<0.1	2	7	<25	140	<25	120	1700	340	<0.2	<0.5	<1	<3	16	49	71	770
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA

DP (2019b)

BH1	3 - 3.5 m	10/07/2019	<4	<0.4	2	8	90	0.9	3	140	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	210 NA	NL NA	NC NA	40 NA	4000 NA
BH1	3.8 - 4 m	10/07/2019	<4	<0.4	<1	<1	1	<0.1	<1	23	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	210 NA	NL NA	NC NA	40 NA	4000 NA
BH2	1.5 - 1.6 m	10/07/2019	<4	<0.4	5	3	24	<0.1	1	4	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.1	<0.5	1.6
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	210 NA	NL NA	NC NA	40 NA	4000 NA
BH2	4.5 - 4.6 m	10/07/2019	12	<0.4	8	29	24	<0.1	2	29	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.2	<0.5	1.6
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	210 NA	NL NA	NC NA	40 NA	4000 NA
BH3	0.2 - 0.3 m	12/07/2019	6	<0.4	10	11	48	0.1	2	55	<25	75	<25	75	1200	220	<0.2	<0.5	<1	<1	1.2	29	42	370
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH3	0.7 - 0.8 m	12/07/2019	9	<0.4	9	9	45	<0.1	2	35	<25	<50	<25	<50	200	<100	<0.2	<0.5	<1	<1	<1	4.5	6.3	53
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	210 NA	NL NA	NC NA	40 NA	4000 NA
BH3/0.7-0.8 - [TRIPLICATE]	0.7 - 0.8 m	12/07/2019	10	<0.4	10	10	16	<0.1	2	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH4	0.3 - 0.4 m	12/07/2019	8	<0.4	4	9	33	<0.1	1	29	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.1	<0.5	0.57
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH4	1.0 - 1.1 m	12/07/2019	10	<0.4	9	12	49	0.1	1	8	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.06	<0.5	0.06
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH5	0.35 - 0.4 m	13/07/2019	<4	<0.4	5	76	8	0.1	4	35	<25	<50	<25	<50	1200	320	<0.2	<0.5	<1	<1	<1	10	14	100
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH6	0.2 - 0.3 m	14/07/2019	7	<0.4	17	17	30	0.2	2	15	<25	360	<25	280	1400	200	<0.2	<0.5	<1	<1	87	23	34	640
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH7	1.0 - 1.1 m	12/07/2019	<4	<0.4	2	2	4	<0.1	1	30	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	0.1
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH7	1.4 - 1.5 m	13/07/2019	<4	<0.4	3	2	2	<0.1	1	11	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BD/120719	1.4 - 1.5 m	12/07/2019	<4	<0.4	8	13	21	<0.1	5	21	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1.6	2.3	16
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BT1/2090713	1.4 - 1.5 m	12/07/2019	<2	<0.4	5.5	<5	5.1	<0.1	<5	30	<20	<50	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<0.5	<0.5
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH7	2.0 - 2.1 m	13/07/2019	<4	<0.4	8	7	7	<0.1	3	16	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH8	0.2 - 0.3 m	14/07/2019	4	<0.4	9	55	33	0.1	12	33	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1.2	1.7	11
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH9	0.35 - 0.45 m	12/07/2019	<4	<0.4	8	3	8	<0.1	2	6	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.2	<0.5	2.6
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA
BH9	0.65 - 0.75 m	12/07/2019	18	<0.4	23	9	15	0.2	1	7	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
			3500 NA	900 NA	3600 NA	240000 NA	1500 NA	730 NA	6000 NA	400000 NA	NC NA	NC NA	260 NA	NL NA	NC NA	NC NA	3 NA	NL NA	NL NA	230 NA	NL NA	NC NA	40 NA	4000 NA

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report Blue = DC exceed

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL D, HSL D, DC HSL D
ML	NEPC, Schedule B1 - ML C/Ind
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Douglas Partners
Geotechnics / Environment / Groundwater

Table F1: Summary of Soil Results – Phenol, OCP, OPP, PCB, Asbestos

			Phenol	OCP													OPP	PCB	Asbestos		
			Phenol	DDT+DDE+DDD	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Chlorpyrifos	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos (50 g)
		PQL	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-
DP (2020)																			
BH101	0.1 - 0.2 m	08/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH101/0.1-0.2 - [TRIPLICATE]	0.1 - 0.2 m	08/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH101	0.9 - 1.0 m	08/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH102	1.5 - 1.6 m	07/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH102	3.1 - 3.2 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH102	4.0 - 4.1 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH102	4.9 - 5.0 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH103	1.0 - 1.1 m	08/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH103	2.0 - 2.1 m	08/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH103	2.9 - 3 m	16/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH103	5.1 - 5.2 m	16/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH103	6.3 - 6.45 m	16/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH104	1.0 - 1.1 m	08/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH104	1.4 - 1.5 m	14/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BD2/140420	1.4 - 1.5 m	14/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH104	2.8 - 2.9 m	14/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH105	0.05 - 0.1 m	08/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BD1/070420	0.05 - 0.1 m	08/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BD1/070420b	0.05 - 0.1 m	08/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH106	0.2 - 0.3 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH106	0.3 - 0.4 m	07/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH106/0.3-.04 - [TRIPLICATE]	0.3 - 0.4 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH106	0.9 - 1.0 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH107B	0.4 - 0.5 m	16/05/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BD1/20200516	0.4 - 0.5 m	16/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH107B	1.4 - 1.5 m	16/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH108	0.23 - 0.25 m	17/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH109B	0.4 - 0.5 m	17/05/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NT	NT	NT
BH110	0.5 - 0.5 m	5/21/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NT	NT	NT
BH111	0.4 - 0.5 m	5/19/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NT	NT	NT
BH111	1.3 - 1.4 m	5/19/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH112B	0.6 - 0.7 m	18/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH112B	1.2 - 1.4 m	13/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH113	0.15 - 0.25 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BD2/070420	0.15 - 0.25 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH113	0.4 - 0.5 m	07/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH113	0.9 - 1.0 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH114	0.15 - 0.2 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH114	0.2 - 0.3 m	07/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH115	0.23 - 0.3 m	07/04/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH115/0.23-0.3 - [TRIPLICATE]	0.23 - 0.3 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH115	0.5 - 0.6 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH115	0.9 - 1.0 m	07/04/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH116	0.5 - 0.7 m	17/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BD1/20200517	0.5 - 0.7 m	17/05/2020	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH117	0.2 - 0.25 m	17/05/2020	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD

DP (2019b)

BH1	3 - 3.5 m	10/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH1	3.8 - 4 m	10/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH2	1.5 - 1.6 m	10/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH2	4.5 - 4.6 m	10/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH3	0.2 - 0.3 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH3	0.7 - 0.8 m	12/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.5 7 NA	NAD	NAD	NAD
BH3/0.7-0.8 - [TRIPLICATE]	0.7 - 0.8 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH4	0.3 - 0.4 m	12/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH4	1.0 - 1.1 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH5	0.35 - 0.4 m	13/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.5 7 NA	NAD	NAD	NAD
BH6	0.2 - 0.3 m	14/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH7	1.0 - 1.1 m	12/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH7	1.4 - 1.5 m	13/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BD/120719	1.4 - 1.5 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BT1/2090713	1.4 - 1.5 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NT	NT	NT
BH7	2.0 - 2.1 m	13/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH8	0.2 - 0.3 m	14/07/2019	<5 660 NA	<0.1 3600 NA	<0.1 NC NA	<0.1 NC NA	<0.1 NC NA	<0.1 45 NA	<0.1 530 NA	<0.1 2000 NA	<0.1 100 NA	<0.1 50 NA	<0.1 80 NA	<0.1 2500 NA	<0.1 2000 NA	<0.1 7 NA	NAD	NAD	NAD
BH9	0.35 - 0.45 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD
BH9	0.65 - 0.75 m	12/07/2019	NT 660 NA	NT 3600 NA	NT NC NA	NT NC NA	NT NC NA	NT 45 NA	NT 530 NA	NT 2000 NA	NT 100 NA	NT 50 NA	NT 80 NA	NT 2500 NA	NT 2000 NA	NT 7 NA	NAD	NAD	NAD

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL D, HSL D, DC HSL D
ML	NEPC, Schedule B1 - ML C/Ind
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Douglas Partners
Geotechnics / Environment / Groundwater

Table F3: Summary of Laboratory Results – VOC

			VOC																																																	
			1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-Dichloroethene	1,1-dichloropropene	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2,4-trichlorobenzene	1,2,4-trimethyl benzene	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3,5-trimethyl benzene	1,3-dichlorobenzene	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	4-isopropyl toluene	Bromobenzene	bromochloromethane	bromodichloromethane	bromoform	Bromomethane	carbon tetrachloride	Monochlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Cyclohexane	dibromochloromethane	dibromomethane	Dichlorodifluoromethane	hexachlorobutadiene	isopropylbenzene (cumene)	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene (vinylbenzene)	tert-butyl benzene	tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	1,1,2-trichloroethylene	Trichlorofluoromethane	Vinyl Chloride
		PQL	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
DP (2020)																																																							
BH101	0.1 - 0.2 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH101/0.1-0.2 - [TRIPLICATE]	0.1 - 0.2 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH101	0.9 - 1.0 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH102	1.5 - 1.6 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH102	3.1 - 3.2 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH102	4.0 - 4.1 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH102	4.9 - 5.0 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH103	1.0 - 1.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH103	2.0 - 2.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH103	2.9 - 3 m	16/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH103	5.1 - 5.2 m	16/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH103	6.3 - 6.45 m	16/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH104	1.0 - 1.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH104	1.4 - 1.5 m	14/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD2/140420	1.4 - 1.5 m	14/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH104	2.8 - 2.9 m	14/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH105	0.05 - 0.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD1/070420	0.05 - 0.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD1/070420b	0.05 - 0.1 m	08/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH106	0.2 - 0.3 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH106	0.3 - 0.4 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH106/0.3-.04 - [TRIPLICATE]	0.3 - 0.4 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH106	0.9 - 1.0 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH107B	0.4 - 0.5 m	16/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD1/20200516	0.4 - 0.5 m	16/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH107B	1.4 - 1.5 m	16/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH108	0.23 - 0.25 m	17/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH109B	0.4 - 0.5 m	17/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH110	0.5 - 0.5 m	5/21/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH111	0.4 - 0.5 m	5/19/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH111	1.3 - 1.4 m	5/19/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH112B	0.6 - 0.7 m	18/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH112B	1.2 - 1.4 m	13/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH113	0.15 - 0.25 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD2/070420	0.15 - 0.25 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH113	0.4 - 0.5 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH113	0.9 - 1.0 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH114	0.15 - 0.2 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH114	0.2 - 0.3 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH115	0.23 - 0.3 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH115/0.23-0.3 - [TRIPLICATE]	0.23 - 0.3 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH115	0.5 - 0.6 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH115	0.9 - 1.0 m	07/04/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH116	0.5 - 0.7 m	17/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD1/20200517	0.5 - 0.7 m	17/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH117	0.2 - 0.25 m	17/05/2020	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
DP (2019b)																																																							
BH1	3 - 3.5 m	10/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH1	3.8 - 4 m	10/07/2019	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA
BH2	1.5 - 1.6 m	10/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH2	4.5 - 4.6 m	10/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH3	0.2 - 0.3 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH3	0.7 - 0.8 m	12/07/2019	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA
BH3/0.7-0.8 - [TRIPLICATE]	0.7 - 0.8 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH4	0.3 - 0.4 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH4	1.0 - 1.1 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH5	0.35 - 0.4 m	13/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH6	0.2 - 0.3 m	14/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH7	1.0 - 1.1 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH7	1.4 - 1.5 m	13/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BD/120719	1.4 - 1.5 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BT1/2090713	1.4 - 1.5 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH7	2.0 - 2.1 m	13/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH8	0.2 - 0.3 m	14/07/2019	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA	<1 NC NA
BH9	0.35 - 0.45 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA
BH9	0.65 - 0.75 m	12/07/2019	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA	NT NC NA

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL D, HSL D, DC HSL D
ML	NEPC, Schedule B1 - ML C/Ind
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Douglas Partners
Geotechnics · Environment · Groundwater

Table F2: Summary of Results of Groundwater Analysis (All results in µg/L)

Sample ID	Sample Date	Metals (dissolved)								PAH						TRH						BTEX					PCB			OCP																OPP												
		Arsenic	Cadmium	Chromium (III + VI)	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Anthracene	Fluoranthene	Benzo(a)pyrene	Phenanthrene	Total Positive PAH	TRH C6-C10 less BTEX	TRH >C10-C16 less Naphthalene	TRH C6-C9	TRH C6-C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toulene	Ethylbenzene	o-xylene	m+p-xylene	Aroclor 1242	Aroclor 1254	Other PCB	Aldrin	Dieldrin	gamma-Chlordane	alpha-Chlordane	pp-DDE	pp-DDT	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Mirex	Other OCP	Azinphos-methyl	Bromophos-ethyl	Chlorpyrifos	Diazinon	Dichlorovos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Methyl Parathion	Other OPP
DP (2020)																																																											
BH103	4/30/2020	<1	<0.1	<1	3	<1	<0.05	6	12	<0.2	<0.1	<0.1	<0.1	<0.1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BD1/20200424	4/30/2020	<1	<0.1	<1	26	<1	<0.05	8	21	<1	<1	<1	<1	<1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	4/30/2020	<1	<0.1	<1	2	<1	<0.05	7	15	<0.2	<0.1	<0.1	<0.1	<0.1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BH107A	5/26/2020	<1	<0.1	<1	<1	<1	<0.05	5	140	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<10	110	<10	<10	110	650	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BH107B	5/26/2020	<1	<0.1	<1	<1	<1	<0.05	6	64	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<10	210	<10	<10	210	500	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BH109B	5/26/2020	6	<0.1	<1	1	<1	<0.05	12	11	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<50	<10	<10	<50	<100	<100	<1	1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BH112A	5/26/2020	<1	<0.1	3	<1	<1	<0.05	<1	4	<0.2	0.3	0.7	<0.1	0.3	3.5	<10	110	<10	11	110	140	<100	<1	<1	1	1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BH112B	5/26/2020	<1	<0.1	<1	1	<1	<0.05	7	21	<0.2	<0.1	<0.1	<0.1	0.2	0.17	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BD1/160520	5/26/2020	<1	<0.1	<1	<1	<1	<0.05	7	20	<0.2	<0.1	<0.1	<0.1	0.2	0.18	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<0.01	<0.01	<PQL	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
DP (2019b)																																																											
BH5	7/30/2019	<1	<0.1	<1	6	<1	<0.05	9	30	<0.2	<0.1	<0.1	<0.1	<0.1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<2	<2	<2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
BD1/20190730	7/30/2019	<1	<0.1	<1	7	<1	<0.05	10	31	<1	<1	<1	<1	<1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	7/30/2019	<1	<0.1	<1	2	<1	<0.05	2	11	<0.2	<0.1	<0.1	<0.1	<0.1	<PQL	<10	<50	<10	<10	<50	<100	<100	<1	<1	<1	<1	<2	<2	<2	<2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<PQL	<0.02	<0.2	<0.009	<0.01	<0.2	<0.15	<0.2	<0.2	<0.05	<0.004	<0.2	<PQL
Assessment Criteria																																																											
Freshwater Default Guideline Values (DGV) - 95% level species protection [1]	24 as As (III); 13 as As(V)	0.5-1.3 [a]	6.7-18.1 as Cr (III) [a]; 1.0 as Cr(VI)	1.4	10.2-47.7 [a]	0.60	22.9-64.4 [a]	16.6-46.9 [a]	16	0.4*	1.4*	0.2	2.0	-	-	-	-	-	-	-	950	180*	80*	350	75 as Xylene (m); 200 as Xylene (p)	0.6	0.03	-	0.001*	0.01*	0.08		-	0.01	0.2		0.02	0.09	-	0.005	0.04*	-	0.02	-	0.01	0.01	-	0.15	-	0.2	0.05	0.004	-	-
Health Screening Level (HSL) - sand, groundwater 2 m-<4 m	-	-	-	-	-	-	-	-	-		-	-	-	-	-	6000	NL	-	NL	-	-	-	5000	NL	NL	NL		-	-	-	-	-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Screening Level (HSL) - clay, groundwater 2 m-<4 m / 4 m-<8 m	-	-	-	-	-	-	-	-	-		-	-	-	-	-	30000	NL	-	NL	-	-	-	NL	NL	NL	NL		-	-	-	-	-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

PQL	Practical Quantitation Limit
NL	Not Limiting
BOLD	Exceeds DGV

Table F2: Summary of Results of Groundwater Analysis (All results in µg/L)

Sample ID	Sample Date	Phenols	VOC																											Other
			Isopropylbenzene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	cis-1,3-Dichloropropene	Vinyl chloride	Tetrachloroethene	Trichloroethene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Chlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2-Dichloroethane	1,1,2,2-Tetrachloroethane	Carbon tetrachloride	Chloroform	Bromodichloromethane	Dibromochloromethane	Bromoform	1,2-Dichloropropane	1,3-Dichloropropane	Other VOC	Cyanide
DP (2020)																														
BH103	4/30/2020	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	4/30/2020	<50	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<PQL	<0.004
BD1/20200424	4/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH107A	5/26/2020	-	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<PQL	<0.004
BH107B	5/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH109B	5/26/2020	-	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<PQL	<0.004
BH112A	5/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112B	5/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD1/260520	5/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP (2019b)																														
BH5	7/30/2019	<50	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<PQL	-
BH8	7/30/2019	<50	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<PQL	-
BD1/20190730	7/30/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Assessment Criteria																														
Freshwater Default Guideline Values (DGV) - 95% level species protection [1]		320	30	-	-	-	-		-	-	-	10	170	160	260	60	-	270*	6500	1900*	400*	240*	770*	-	-	-	900*	1100*	-	7
Health Screening Level (HSL) - sand, groundwater 2 m-<4 m		-	-	-	-		-		-	-	-	-		-	-	-	-	-	-	-		-	-	-			-		-	-	-
Health Screening Level (HSL) - clay, groundwater 2 m-<4 m / 4 m-<8 m		-	-	-	-		-		-	-	-	-		-	-	-	-	-	-	-		-	-	-			-		-	-	-

Notes:

PQL	Practical Quantitation Limit
NL	Not Limiting
BOLD	Exceeds DGV
-	not defined/not analysed/not applicable

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Table F3: Summary of Waste Class Results – Metals, TRH, BTEX, PAH, Phenol, OCP, OPP, PCB, Asbestos, VOC

			Metals								TRH		BTEX					PAH																			
			Arsenic	TCLP Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	C10-C36 recoverable hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes (total)	Xylenes (o)	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Acenaphthene	TCLP Acenaphthene	Acenaphthylene	TCLP Acenaphthylene	Anthracene	TCLP Anthracene	Benzo(a)anthracene	TCLP Benzo(a)anthracene	Benzo(b,j+k)fluoranthene	TCLP Benzo(b,j+k)fluoranthene	Benzo(g,h,i)perylene	TCLP Benzo(g,h,i)perylene	Chrysene	TCLP Chrysene	Dibenzo(a,h)anthracene	TCLP Dibenzo(a,h)anthracene	Fluoranthene	TCLP Fluoranthene
		PQL	4	0.05	0.4	1	1	0.03	0.1	1	25	50	0.2	0.5	1	3	1	0.05	0.001	0.1	0.001	0.1	0.001	0.1	0.001	0.1	0.001	0.2	0.002	0.1	0.001	0.1	0.001	0.1	0.001	0.1	0.001
Sample ID	Depth	Sample Date	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L
																																					DP (2020)
BH101	0.1 - 0.2 m	08/04/2020	4	NT	<0.4	10	150	0.1	0.3	6	<25	230	<0.2	<0.5	<1	<3	<1	0.73	NT	<0.1	NT	0.1	NT	0.3	NT	0.6	NT	1	NT	0.7	NT	0.8	NT	0.2	NT	1.3	NT
BH101/0.1-0.2 - [TRIPLICATE]	0.1 - 0.2 m	08/04/2020	<4	NT	<0.4	8	160	NT	0.3	6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH101	0.9 - 1.0 m	08/04/2020	5	NT	0.4	9	250	0.34	0.3	9	<25	970	<0.2	<0.5	<1	<3	<1	2.5	<0.001	<0.1	<0.001	0.4	<0.001	0.1	<0.001	1.9	<0.001	3.6	<0.002	1.7	<0.001	1.2	<0.001	0.3	<0.001	2.8	<0.001
BH102	1.5 - 1.6 m	07/04/2020	<4	NT	<0.4	4	68	NT	0.1	4	<25	<50	<0.2	<0.5	<1	<3	<1	0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	0.2	NT	0.1	NT	0.1	NT	<0.1	NT	0.2	NT
BH102	3.1 - 3.2 m	07/04/2020	5	NT	1	10	160	0.04	0.4	6	<25	<50	<0.2	<0.5	<1	<3	<1	0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.3	NT	<0.1	NT	0.2	NT	<0.1	NT	0.3	NT
BH102	4.0 - 4.1 m	07/04/2020	5	NT	<0.4	16	170	<0.03	1.3	23	<25	<50	<0.2	<0.5	<1	<3	<1	0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.2	NT	<0.1	NT	0.1	NT	<0.1	NT	0.2	NT
BH102	4.9 - 5.0 m	07/04/2020	<4	NT	<0.4	8	20	NT	0.4	4	<25	<50	<0.2	<0.5	<1	<3	<1	0.08	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT
BH103	1.0 - 1.1 m	08/04/2020	<4	NT	<0.4	2	57	NT	<0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	0.08	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT
BH103	2.0 - 2.1 m	08/04/2020	9	NT	<0.4	8	28	NT	<0.1	6	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BH103	2.9 - 3 m	16/04/2020	12	NT	<0.4	8	19	0.2	<0.1	2	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BH103	5.1 - 5.2 m	16/04/2020	<4	NT	<0.4	5	43	NT	0.4	2	<25	<50	<0.2	<0.5	<1	<3	<1	0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.3	NT	0.1	NT	0.2	NT	<0.1	NT	0.4	NT
BH103	6.3 - 6.45 m	16/04/2020	<4	NT	<0.4	1	<1	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BH104	1.0 - 1.1 m	08/04/2020	5	NT	<0.4	7	45	NT	<0.1	11	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT
BH104	1.4 - 1.5 m	14/04/2020	<4	NT	<0.4	6	14	NT	<0.1	7	<25	<50	<0.2	<0.5	<1	<3	<1	0.53	NT	<0.1	NT	0.1	NT	0.2	NT	0.6	NT	0.9	NT	0.3	NT	0.6	NT	<0.1	NT	1.1	NT
BD2/140420	1.4 - 1.5 m	14/04/2020	10	NT	<0.4	9	69	NT	0.1	4	<25	860	<0.2	<0.5	<1	<3	<1	14	NT	0.5	NT	5.1	NT	6.7	NT	14	NT	19	NT	8.2	NT	13	NT	1.6	NT	31	NT
BH104	2.8 - 2.9 m	14/04/2020	11	NT	<0.4	7	17	NT	<0.1	3	<25	<50	<0.2	<0.5	<1	<3	<1	0.09	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT
BH105	0.05 - 0.1 m	08/04/2020	8	NT	0.6	13	280	0.1	1	14	<25	360	<0.2	<0.5	<1	<3	<1	2	<0.001	<0.1	<0.001	0.3	<0.001	0.5	<0.001	1.6	<0.001	3.2	<0.002	<0.1	<0.001	1.3	<0.001	0.2	<0.001	2.6	<0.001
BD1/070420	0.05 - 0.1 m	08/04/2020	9	NT	0.7	14	300	NT	0.8	11	<25	120	<0.2	<0.5	<1	<3	<1	1.8	NT	<0.1	NT	0.3	NT	0.5	NT	1.4	NT	2.7	NT	1.3	NT	1.1	NT	0.2	NT	2.6	NT
BD1/070420b	0.05 - 0.1 m	08/04/2020	10	NT	0.8	20	460	NT	1.3	17	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH106	0.2 - 0.3 m	07/04/2020	25	NT	<0.4	14	100	0.04	0.2	4	<25	1780	<0.2	<0.5	<1	<3	<1	28	<0.001	0.9	<0.001	8.5	0.002	9.5	<0.001	27	<0.001	39	<0.002	17	<0.001	24	<0.001	3.6	<0.001	53	<0.001
BH106	0.3 - 0.4 m	07/04/2020	6	NT	<0.4	43	610	0.74	0.7	10	<25	4090	<0.2	<0.5	<1	<3	<1	120	<0.001	2.1	0.006	13	0.003	50	0.002	160	<0.001	110	<0.002	41	<0.001	120	<0.001	9.1	<0.001	280	0.003
BH106/0.3- 04 - [TRIPLICATE]	0.3 - 0.4 m	07/04/2020	7	NT	<0.4	24	350	NT	0.7	8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH106	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.2	NT	<0.1	NT	0.1	NT	<0.1	NT	0.2	NT
BH107B	0.4 - 0.5 m	16/05/2020	<4	NT	<0.4	8	54	NT	0.2	4	<25	<50	<0.2	<0.5	<1	<3	<1	1.3	NT	<0.1	NT	0.3	NT	0.4	NT	1.4	NT	2	NT	0.8	NT	1.3	NT	0.2	NT	2.2	NT
BD1/20200516	0.4 - 0.5 m	16/05/2020	<4	NT	<0.4	12	52	NT	0.2	7	<25	<50	<0.2	<0.5	<1	<3	<1	1.8	<0.001	<0.1	<0.001	0.4	<0.001	0.5	<0.001	1.7	<0.001	2.7	<0.002	1.2	<0.001	1.7	<0.001	0.3	<0.001	2.6	<0.001
BH107B	1.4 - 1.5 m	16/05/2020	<4	NT	<0.4	7	11	NT	<0.1	6	<25	<50	<0.2	<0.5	<1	<3	<1	0.3	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.3	NT	0.4	NT	0.2	NT	0.3	NT	<0.1	NT	0.5	NT
BH108	0.23 - 0.25 m	17/05/2020	5	NT	<0.4	14	15	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	2.7	<0.001	<0.1	<0.001	0.2	<0.001	0.2	<0.001	2.7	<0.001	3.6	<0.002	1.5	<0.001	2.6	<0.001	0.3	<0.001	3.1	<0.001
BH109B	0.4 - 0.5 m	17/05/2020	<4	NT	<0.4	9	19	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	0.4	NT	<0.1	NT	0.1	NT	0.2	NT	0.4	NT	0.5	NT	0.2	NT	0.4	NT	<0.1	NT	0.8	NT
BH110	0.5 - 0.6 m	5/21/2020	43	NT	<0.4	10	30	NT	<0.1	3	<25	NT	<0.2	<0.5	<1	<3	<1	1.1	<0.001	<0.1	<0.001	<0.1	<0.001	<0.1	<0.001	1.5	<0.001	2	<0.002	0.6	<0.001	1.1	<0.001	0.6	<0.001	1.8	<0.001
BH111	0.4 - 0.5 m	5/19/2020	<4	NT	<0.4	5	10	NT	<0.1	3	<25	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	<0.1	NT	<0.1	NT	0.4	NT	0.2	NT	0.3	NT	0.1	NT	0.2	NT	<0.1	NT	0.3	NT
BH111	1.3 - 1.4 m	5/19/2020	<4	NT	<0.4	16	330	0.09	1	16	<25	NT	<0.2	<0.5	<1	<3	<1	5.7	<0.001	<0.1	<0.001	<0.1	<0.001	0.9	<0.001	5	<0.001	12	<0.002	2.7	<0.001	6.9	<0.001	0.7	<0.001	8	<0.001
BH112B	0.6 - 0.7 m	18/05/2020	<4	NT	<0.4	11	21	NT	0.3	3	<25	860	<0.2	<0.5	<1	<3	<1	5.1	<0.001	1.6	<0.001	0.9	<0.001	3.9	<0.001	6	<0.001	7.2	<0.002	2.9	<0.001	5.9	<0.001	0.7	<0.001	14	<0.001
BH112B	1.2 - 1.4 m	13/05/2020	<4	NT	<0.4	3	5	NT	<0.1	3	<25	<50	<0.2	<0.5	<1	<3	<1	2.5	<0.001	0.5	<0.001	0.4	<0.001	1.6	<0.001	2.8	<0.001	3.5	<0.002	1.3	<0.001	2.8	<0.001	0.3	<0.001	5.8	<0.001
BH113	0.15 - 0.25 m	07/04/2020	26	NT	<0.4	6	44	NT	<0.1	4	<25	880	<0.2	<0.5	<1	<3	<1	12	<0.001	0.4	<0.001	4.9	0.008	4.6	0.003	12	<0.001	17	<0.002	7.5	<0.001	11	<0.001	1.4	<0.001	26	0.005
BD2/140420	0.15 - 0.25 m	07/04/2020	8.3	<0.4	11	32	23	<0.1	9.9	56	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.1	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	0.6	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	0.9	0.001
BH113	0.4 - 0.5 m	07/04/2020	6	NT	<0.4	18	23	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	1.2	<0.001	<0.1	<0.001	<0.1	<0.001	0.6	<0.001	1.2	<0.001	2	<0.002	0.7	<0.001	1	<0.001	0.1	<0.001	2.7	NT
BH113	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.3	NT	<0.1	NT	<0.1	NT	0.4	NT	0.3	NT	0.4	NT	0.2	NT	0.3	NT	<0.1	NT	0.7	NT
BH114	0.15 - 0.2 m	07/04/2020	14	NT	<0.4	11	93	NT	<0.1	14	<25	2199	<0.2	<0.5	<1	<3	<1	67	<0.001	2.4	0.003	36	0.025	44	0.005	40	<0.001	52	<0.002	20	<0.001	34	<0.001	3.1	<0.001	190	0.006
BH114	0.2 - 0.3 m	07/04/2020	52	NT	<0.4	21	260	0.86	0.1	5	<25	1540	<0.2	<0.5	<1	<3	<1	31	<0.001	1.3	0.002	16	0.039	18	0.01	45	<0.001	32	<0.002	14	<0.001	34	<0.001	3	<0.001	94	0.009
BH115	0.23 - 0.3 m	07/04/2020	6	<0.05	<0.4	12	24	NT	<0.1	1	<25	1500	<0.2	<0.5	<1	<3	<1	27	<0.001	0.8	0.001	16	0.009	19	0.004	37	<0.001	30	<0.002	10	<0.001	32	<0.001	2.8	<0.001	85	0.006
BH115/0.23-0.3 - [TRIPLICATE]	0.23 - 0.3 m	07/04/2020	100	NT	<0.4	14	38	NT	<0.1	3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH115	0.5 - 0.6 m	07/04/2020	11	NT	<0.4	21	20	NT	<0.1	2	<25	<50	<0.2	<0.5	<1	<3	<1	1.8	<0.001	<0.1	<0.001	0.6	0.002	0.6	<0.001	1.8	<0.001	2.6	<0.002	1.1	<0.001	1.5	<0.001	0.2	<0.001	4	0.002
BH115	0.9 - 1.0 m	07/04/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT
BH116	0.5 - 0.7 m	17/05/2020	<4	NT	<0.4	6	12	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BD1/20200517	0.5 - 0.7 m	17/05/2020	3.6	NT	<0.4	8.2	16	NT	<0.1	<5	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.1	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5		<0.5	NT	<0.5	NT
BH117	0.2 - 0.25 m	17/05/2020	8	NT	<0.4	20	16	NT	<0.1	2	<25	2021	<0.2	<0.5	<1	<3	<1	49	<0.001	1.6	0.009	24	0.016	32	0.002	67	<0.001	70	<0.002	59	<0.001	63	<0.001	4.2	<0.001	130	0.003

																																						DP (2019b)	
BH1	3 - 3.5 m	10/07/2019	<4	NT	<0.4	2	90	NT	0.9	3	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BH1	3.8 - 4 m	10/07/2019	<4	NT	<0.4	<1	1	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
BH2	1.5 - 1.6 m	10/07/2019	<4	NT	<0.4	5	24	NT	<0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.2	NT	<0.1	NT	0.2	NT	<0.1	NT	0.3	NT		
BH2	4.5 - 4.6 m	10/07/2019	12	NT	<0.4	8	24	NT	<0.1	2	<25	<50	<0.2	<0.5	<1	<3	<1	0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	0.3	NT	0.2	NT	0.2	NT	<0.1	NT	0.2	NT		
BH3	0.2 - 0.3 m	12/07/2019	6	NT	<0.4	10	48	NT	0.1	2	<25	1320	<0.2	<0.5	<1	<3	<1	29	<0.001	1.6	NT	11	NT	11	NT	29	NT	38	NT	17	NT	28	NT	3.8	NT	66	NT		
BH3	0.7 - 0.8 m	12/07/2019	9	NT	<0.4	9	45	NT	<0.1	2	<25	140	<0.2	<0.5	<1	<3	<1	4.5	<0.001	<0.1	NT	1.2	NT	1.7	NT	4.2	NT	6	NT	2.6	NT	3.8	NT	0.5	NT	9	NT		
BH3/0.7-0.8 - [TRIPLICATE]	0.7 - 0.8 m	12/07/2019	10	NT	<0.4	10	16	NT	<0.1	2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT		
BH4	0.3 - 0.4 m	12/07/2019	8	NT	<0.4	4	33	NT	<0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT		
BH4	1.0 - 1.1 m	12/07/2019	10	NT	<0.4	9	49	NT	0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	0.06	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT		
BH5	0.35 - 0.4 m	13/07/2019	<4	NT	<0.4	5	8	NT	0.1	4	<25	1370	<0.2	<0.5	<1	<3	<1	10	<0.001	0.1	NT	1.4	NT	1.8	NT	9.2	NT	13	NT	6	NT	8.1	NT	1	NT	15	NT		
BH6	0.2 - 0.3 m	14/07/2019	7	NT	<0.4	17	30	NT	0.2	2	<25	1840	<0.2	<0.5	<1	<3	<1	23	<0.001	4.2	NT	36	NT	23	NT	28	NT	32	NT	14	NT	23	NT	2.8	NT	94	NT		
BH7	1.0 - 1.1 m	12/07/2019	<4	NT	<0.4	2	4	NT	<0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT		
BH7	1.4 - 1.5 m	13/07/2019	<4	NT	<0.4	3	2	NT	<0.1	1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT		
BD/120719	1.4 - 1.5 m	12/07/2019	<4	NT	<0.4	8	21	NT	<0.1	5	<25	<50	<0.2	<0.5	<1	<3	<1	1.6	<0.001	<0.1	NT	0.3	NT	0.3	NT	1.4	NT	2.4	NT	1	NT	1.3	NT	0.2	NT	2.7	NT		
BT1/2090713	1.4 - 1.5 m	12/07/2019	<2	NT	<0.4	5.5	5.1	NT	<0.1	<1	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.1	<0.5	<0.5	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT		
BH7	2.0 - 2.1 m	13/07/2019	<4	NT	<0.4	8	7	NT	<0.1	3	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT		
BH8	0.2 - 0.3 m	14/07/2019	4	NT	<0.4	9	33	NT	0.1	12	<25	<50	<0.2	<0.5	<1	<3	<1	1.2	<0.001	<0.1	NT	0.1	NT	0.2	NT	1	NT	2	NT	0.8	NT	0.8	NT	0.2	NT	1.7	NT		
BH9	0.35 - 0.45 m	12/07/2019	<4	NT	<0.4	8	8	NT	<0.1	2	<25	<50	<0.2	<0.5	<1	<3	<1	0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.3	NT	0.1	NT	0.2	NT	<0.1	NT	0.5	NT		
BH9	0.65 - 0.75 m	12/07/2019	18	NT	<0.4	23	15	NT	0.2	1	<25	<50	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.2	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT		
																																					Waste Classification Criteria [f]	
CT1			100	N/A	20	100	100	N/A	4	40	650	10000	10	288	600	1000	N/A	0.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SCC1			500	N/A	100	1900	1500	N/A	50	1050	650	10000	18	518	1080	1800	N/A	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TCLP1			N/A	5	N/A	N/A	N/A	5	N/A	N/A	650	10000	18	518	1080	1800	N/A	N/A	0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CT2			400	N/A	80	400	400	N/A	16	160	2600	40000	40	1152	2400	4000	N/A	3.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SCC2			2000	N/A	400	7600	6000	N/A	200	4200	2600	40000	72	2073	4320	7200	N/A	23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TCLP2			N/A	20	N/A	N/A	N/A	20	N/A	N/A	2600	40000	72	2073	4320	7200	N/A	N/A	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NEPC (1999) [e]			1-50.	N/A	1	5-1000	2-200	N/A	0.03	1-517	N/A	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ENM Order (2014) Maximum Average Concentration [1]			20	N/A	0.5	75	100	N/A	0.5	30	N/A	250	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ENM Order (2014) Absolute Maximum Concentration [1]			40	N/A	1	150	200	N/A	1	60	N/A	500	0.5	65	25	15	15	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

NT = Not tested NC = No criteria AD = Asbestos detected NAD = No asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	All criteria are in the same units as the reported results
g	
PQL	Practical quantitation limit
CT1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid
TCLP2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid

											Phenol	OCP		OPP	PCB	Asbestos			VOC														
Fluorene	TCLP Fluorene	Indeno(1,2,3-c,d)pyrene	TCLP Indeno(1,2,3-c,d)pyrene	Naphthalene	TCLP Naphthalene	Phenanthrene	TCLP Phenanthrene	Pyrene	Total PAHs	TCLP PAH	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Total Asbestos	carbon tetrachloride	Monochlorobenzene	Chloroform	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,1-Dichloroethene	Styrene (vinylbenzene)	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	tetrachloroethene	1,1,1-trichloroethane	1,1,2-trichloroethane	1,1,2-trichloroethylene	Vinyl Chloride
0.1	0.001	0.1	0.001	0.1	0.001	0.1	0.001	0.1	0.05	-	5	0.1	0.1	0.1	0.1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
<0.1	NT	0.5	NT	<0.1	NT	0.5	NT	1.5	8.6	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.1	<0.001	1.3	<0.001	<0.1	<0.001	1.4	<0.001	3	20	NIL (+)VE	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	0.1	NT	0.2	1.2	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.2	NT	<0.1	NT	0.2	NT	0.4	1.8	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	0.2	NT	0.2	1	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	0.3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.1	0.3	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	0.1	NT	0.4	2.2	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	0.2	0.52	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.3	NT	<0.1	NT	0.5	NT	1.1	6.1	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1.5	NT	6.4	NT	0.4	NT	27	NT	31	180	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	0.56	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.1	<0.001	1	<0.001	<0.1	<0.001	1.3	<0.001	2.9	17	NIL (+)VE	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.8	NT	<0.1	NT	1.2	NT	2.7	17	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2.8	<0.001	13	<0.001	0.8	<0.001	41	0.004	54	320	0.0061	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
15	0.003	27	<0.001	1.1	0.003	150	0.015	280	1400	0.037	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.2	0.88	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.1	NT	0.6	NT	<0.1	NT	1.2	NT	2.3	14	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.2	<0.001	0.9	<0.001	<0.1	<0.001	1.3	<0.001	2.8	18	NIL (+)VE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	0.2	NT	0.5	2.8	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	<0.001	1.2	<0.001	<0.1	<0.001	0.4	<0.001	4.3	23	NIL (+)VE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.2	NT	<0.1	NT	0.9	NT	0.8	4.9	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.2	0.001	0.5	<0.001	<0.1	<0.001	0.6	<0.001	2.2	13	0.001	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.3	1.9	NT	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.2	<0.001	2.4	<0.001	0.2	<0.001	4	<0.001	7.8	57	NIL (+)VE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2.4	<0.001	2.6	<0.001	2.1	0.01	16	0.01	14	85	0.02	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.8	<0.001	1	<0.001	0.5	<0.001	5.9	0.01	6.1	36	0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1	0.003	5.6	<0.001	<0.1	<0.001	21	0.022	26	150	0.044	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	0.9	3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.1	<0.001	0.6	<0.001	<0.1	<0.001	2.2	0.004	2.7	15	0.0053	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	0.5	NT	0.7	3.8	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
13	0.008	16	<0.001	8	0.007	160	0.033	170	860	0.091	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
6.6	0.01	11	<0.001	1.6	0.01	70	0.056	96	470	0.14	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
4.7	0.006	9.4	<0.001	0.8	0.001	75	0.027	88	440	0.058	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.2	<0.001	0.9	<0.001	<0.1	<0.001	2.6	0.006	4	22	0.011	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	0.1	0.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
8.3	0.007	22	<0.001	13	0.067	95	0.021	130	770	0.13	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<0.1	NT	<0.1	NT	<0.1	NT	0.2	NT	0.4	1.6	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.1	NT	<0.1	NT	<0.1	NT	0.3	1.6	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
3.6	NT	12	NT	1.2	NT	50	NT	73	370	0.014	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.4	NT	2	NT	0.1	NT	6.8	NT	9.8	53	0.0016	<5	<0.1	<0.1	<0.1	<0.5	NAD	NAD	NAD	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	0.2	0.57	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	0.06	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0.6	NT	4.3	NT	0.3	NT	10	NT	18	100	0.004	<5	<0.1	<0.1	<0.1	<0.5	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
13	NT	11	NT	60	NT	180	NT	91	640	0.18	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	0.1	NT	<0.1	0.1	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.8	NT	<0.1	NT	1.4	NT	2.8	16	NIL (+)VE	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.5	NT	<0.5	NT	<0.5	NT	<0.5	NT	<0.5	<0.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	0.6	NT	<0.1	NT	0.6	NT	1.7	11	NIL (+)VE	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<0.1	NT	0.1	NT	<0.1	NT	0.3	NT	0.6	2.6	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	<0.05	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	200	N/A	288	60	<50	4	<50	N/A	N/A	N/A	10	2000	120	86	150	10	14	60	200	26	14	600	24	10	4
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	200	N/A	518	108	<50	7.5	<50	N/A	N/A	N/A	18	3600	126	4.3	7.5	0.5	0.7	108	360	46.8	25.2	1080	43.2	18	7.2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	518	108	<50	7.5	<50	N/A	N/A	N/A	18	3600	126	4.3	7.5	0.5	0.7	108	360	46.8	25.2	1080	43.2	18	7.2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	800	N/A	1152	240	<50	16	<50	N/A	N/A	N/A	40	8000	480	344	600	40	56	240	800	104	56	2400	96	40	16
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	800	N/A	2073	432	<50	30	<50	N/A	N/A	N/A	72	14400	864	620	1080	72	100	432	1440	187.2	100.8	4320	172.8	72	28.8
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	800	N/A	2073	432	<50	30	<50	N/A	N/A	N/A	72	14400	864	620	1080	72	100	432	1440	187.2	100.8	4320	172.8	72	28.8
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Appendix C

Standard Approach to Environmental Risk Assessment

Appendix C: Standard Approach to Environmental Risk Assessment

The SEARs require an environmental risk analysis be included in the EIS to identify potential environmental impacts associated with the Project.

The following represents the standard way in which the environmental risk assessment can be undertaken in the RAP that can then inform the overall risk assessment which will be included in the overarching EIS document.

Risk comprises the likelihood of an event occurring and the consequences of that event. For the Project, the following descriptors were adopted for 'likelihood' and 'consequence'.

Table C1: Risk Descriptors and Risk Matrix

Contamination	Likelihood	Consequence	Risk Matrix
Soil	Almost Certain (A)	3	Medium
Groundwater	Unlikely (D)	3	Low

It should be noted that the above risk assessment is based on historical and current contamination data findings. The unexpected finds protocol in Section 14 of the RAP provides a procedure to be followed in the event of encountering an unexpected finds of contamination during the site preparation and construction work.