



Mirvac Projects Pty Ltd
Locomotive Workshop Stages 1A and 1B
Long Term Environmental Management Plan
South Eveleigh Precinct

Part Lot 4000 DP 1194309
2 Locomotive Street, Eveleigh, NSW, 2015

2 June 2020

51142/130048 Rev 0

JBS&G Australia Pty Ltd

Mirvac Projects Pty Ltd

Locomotive Workshop Stages 1A and 1B
Long Term Environmental Management Plan
South Eveleigh Precinct

Part Lot 4000 DP 1194309
2 Locomotive Street, Eveleigh, NSW, 2015

2 June 2020

51142/130048 Rev 0
JBS&G Australia Pty Ltd

Table of Contents

Abbreviations.....	3
Executive Summary.....	4
1. Introduction.....	5
1.1 Introduction and Objective	5
1.2 Background.....	6
2. Summary of Site Conditions	7
2.1 Site Details.....	7
2.2 Site Condition and Physical Barrier to Retained Fill Materials.....	7
2.3 Maintenance of the Barrier System	8
3. Summary of Identified Contamination Issues	9
3.1 Soil.....	9
3.1.1 Heavy Metals, PAHs and TRHs	9
3.1.2 Asbestos.....	9
3.2 Soil Vapour	10
3.3 Groundwater	10
4. Application, Enforcement and Regulatory Requirements.....	11
4.1 Application of LTEMP	11
4.2 Enforcement of LTEMP.....	11
4.3 Regulatory Requirements.....	11
5. LTEMP Implementation	13
5.1 Responsibilities.....	13
5.1.1 Site Manager	13
5.2 Formal Notations.....	14
5.3 Period of Implementation	14
5.4 Environmental Management Procedures	14
5.5 Responsibilities of Council – as the consent authority.....	14
6. Limitations	15

List of Figures

- Figure 1 Site Location
- Figure 2 Site Layout
- Figure 3 Historical Soil Sample Locations
- Figure 4 Historical Soil Vapour Sample Locations

Appendices

- Appendix A Summary Tables
- Appendix B Survey Plans
- Appendix C Design Plans
- Appendix D Procedures

Abbreviations

Term	Definition
ACM	Asbestos Containing Material
AF/FA	Asbestos Fines/Fibrous Asbestos
ATP	Australian Technology Park
AHD	Australia Height Datum
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
COPC	Contaminants of Potential Concern
Council	The Council of the City of Sydney
DP	Deposited Plan
LTEMP	Long Term Environmental Management Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
ha	Hectare
JBS&G	JBS&G Australia Pty Ltd
MCPL	Mirvac Construction Pty Ltd
Mirvac	Mirvac Projects Pty Ltd
PAH	Polycyclic Aromatic Hydrocarbons
RAP	Remedial Action Plan
SAS	Site Audit Statement
TPH	Total Petroleum Hydrocarbon
TRH	Total Recoverable Hydrocarbon
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by Mirvac Projects Pty Ltd (Mircvac, the client) for the provision of environmental services associated with the remediation/validation of part of Stages 1A and 1B of the Locomotive Workshops situated within the South Eveleigh Precinct (SEP), formerly known as the Australian Technology Park (ATP), located at 2 Locomotive Street, Eveleigh, NSW (the site). The site is legally identified as part Lot 4000 in Deposited Plan (DP) 1194309 and occupies an area of approximately 5,355 m².

This LTEMP applies to Mirvac owned land/facilities and will be the continuing responsibility of Mirvac as the site owner to implement this plan moving forward following issue of the occupation certificate (OC) by the consent authority (Department of Planning, Industry and Environment) or the appointed certifier. Land external to the site within residual areas of Lot 4000 DP 1194309 and the broader SEP will be subject to separate validation reports and management plans, where required.

The objective of this LTEMP is to ensure the ongoing suitability of the site for the proposed mixed uses (retail and commercial) via maintenance of cap/cover measures that form a physical barrier to the underlying contaminated soil present at depth beneath the site. It is anticipated that this LTEMP will operate for the life of the development to protect the health and safety of personnel who visit and/or work on the site, and to protect the environment – both on site and off site.

The LTEMP has been prepared in accordance with the requirements outlined in the *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd edition)*¹, as referenced in the remedial action plan (RAP, JBS&G 2016a²) prepared for the ATP. The plan has been designed to ensure activities which could potentially or directly result in exposure of future land users to the contaminated soils beneath the physical barrier are precluded or limited/controlled.

The plan includes:

- a) Description of the nature and location of contamination remaining at depth on site;
- b) Objectives of the LTEMP;
- c) Procedures for residual contamination management;
- d) Responsibilities for the LTEMP implementation; and
- e) Implementation schedule for each action in the LTEMP.

It is anticipated that this LTEMP will form an attachment to the final site audit statement (SAS) prepared in satisfaction of Development Consent (DPE 2019³) conditions. The site shall be maintained for the duration of the development and operation in accordance with the requirements of the LTEMP.

Please note this LTEMP replaces the Locomotive Workshop Stage 1A LTEMP previously prepared by JBS&G (2020⁴) resulting in a single combined document covering the portion of the building identified herein.

¹ *Contaminated Sites – Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. Environmental Protection Authority, published in October 2017 (EPA 2017)

² *Mircvac Projects Pty Ltd Australian Technology Park Remedial Action Plan – 2 Locomotive Street, Eveleigh, NSW*. JBS&G Australia Pty Ltd dated 15 June 2016 reference 51142/104280 Revision 0 (JBS&G 2016a)

³ *Development Consent Application No. SSD 8517*. NSW Govt. Department of Planning and Environment. 22 February 2019 (DPE 2019)

⁴ *Mircvac Projects Pty Ltd – Locomotive Workshop Stage 1A (Part Bays 1-4A) Long Term Environmental Management Plan, South Eveleigh Precinct. Part Lot 4000 DP 1194309. 2 Locomotive Street, Eveleigh, NSW, 2015*. JBS&G Australia Pty Ltd dated 17 April 2020 reference 51142/128876 Rev 2 (JBS&G 2020)

1. Introduction

1.1 Introduction and Objective

JBS&G Australia Pty Ltd (JBS&G) was engaged by Mirvac Projects Pty Ltd (Mircvac, the client) for the provision of environmental services associated with the remediation/validation of part of Stages 1A and 1B of the Locomotive Workshops situated within the South Eveleigh Precinct (SEP), formerly known as the Australian Technology Park (ATP), located at 2 Locomotive Street, Eveleigh, NSW (the site).

Stage 1 encompasses the entirety of Bays 1-4A, situated in the eastern portion of the Locomotive Workshop, of which Stages 1A and 1B comprise predominantly the northern portion of Bays 1-4A and southern portion of Bays 3 and 4A. The site location and layout are shown on **Figures 1 and 2** respectively. The site is legally identified as part Lot 4000 in Deposited Plan (DP) 1194309 and occupies an area of approximately 5,355 m².

This LTEMP applies to Mirvac owned land/facilities and will be the continuing responsibility of Mirvac as the site owner to implement this plan moving forward following issue of the occupation certificate (OC) by the consenting authority (Department of Planning, Industry and Environment) or the appointed certifier. Land external to the site within residual areas of Lot 4000 DP 1194309 and the broader SEP will be subject to separate validation reports and management plans, where required.

The site redevelopment involves augmentations to the existing heritage building on the ground floor to incorporate public walkways, future retail space, stairwells and back of house space including a loading dock and waste storage area in Bays 1-2 North. Undergraduate and postgraduate education facilities are proposed on level one of Bays 3-4A North (mezzanine).

The objective of this LTEMP is to ensure the ongoing suitability of the site for the proposed mixed uses (commercial/industrial) via maintenance of cap/cover measures that form a physical barrier to the underlying contaminated soil present at depth beneath the site. It is anticipated that this LTEMP will operate for the life of the development to protect the health and safety of personnel who visit and/or work on the site, and to protect the environment – both on site and off site.

This LTEMP has been prepared in accordance with the requirements outlined in the *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd edition)*, as referenced in the remedial action plan (RAP, JBS&G 2016a⁵) prepared for the ATP. The plan has been designed to ensure activities which could potentially or directly result in exposure of future land users to the contaminated soils beneath the physical barrier are precluded or limited/controlled.

The plan includes:

- f) description of the nature and location of contamination remaining at depth on site;
- g) the objectives of the LTEMP;
- h) procedures for residual contamination management;
- i) responsibilities for the LTEMP implementation; and
- j) an implementation schedule for each action in the LTEMP.

It is anticipated that this LTEMP will form an attachment to the final site audit statement (SAS) prepared in satisfaction of Development Consent (DPE 2019⁶) conditions. The site shall be

⁵ Mirvac Projects Pty Ltd Australian Technology Park Remedial Action Plan – 2 Locomotive Street, Eveleigh, NSW. JBS&G Australia Pty Ltd dated 15 June 2016 reference 51142/104280 Revision 0 (JBS&G 2016a)

⁶ Development Consent Application No. SSD 8517. NSW Govt. Department of Planning and Environment. 22 February 2019 (DPE 2019)

maintained for the duration of the development and operation in accordance to the requirements of the LTEMP.

Please note this LTEMP replaces the Locomotive Workshop Stage 1A LTEMP previously prepared by JBS&G (2020⁷) resulting in a single combined document covering the portion of the building identified herein.

1.2 Background

The SEP was occupied by a large complex of rail workshops and yards throughout the late nineteenth and most of the twentieth century. The northern portion of the SEP, adjacent to the railway lines was occupied by the Eveleigh Locomotive Workshops. The primary potentially contaminating activities within the workshops included a paint shop, potash shed, wheel press, welder shop, copper shop, Oliver shop, tin smiths and pattern shop among others. The Locomotive Workshop was partitioned to accommodate a blacksmiths, fitter shop, machine shop, fabrication shop.

Previous contamination investigations (JBS&G 2019⁸) have identified the presence of fill underlying the site reported to be impacted to varying degrees with semi to non-volatile petroleum hydrocarbons as total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAHs) and heavy metals associated with fill materials historically used across the site or resultant from historical site activities. In addition, isolated asbestos in soil impacts have been reported. A summary of historical analytical data is presented in **Appendix A**.

Previous site development activities have resulted in either hardstand pavements (concrete hardstand) serving as a physical barrier (cap) to underlying fill material.

The implemented physical barrier is to ensure that during the operational life of the site there are:

- No complete exposure pathways (inhalation/ingestion of dust, dermal contact with soil) between the contaminated fill material and future site users and/or visitors; and
- No unacceptable potential risks associated with contaminant migration via surface water movement, dust generation etc.

The lateral extent of the site is defined as the extent of capping arrangements comprising hardstand pavements spanning the entire site ground surface as defined by survey in **Appendix B**. The floor design plans are presented in **Appendix C**.

⁷ Mirvac Projects Pty Ltd – Locomotive Workshop Stage 1A (Part Bays 1-4A) Long Term Environmental Management Plan, South Eveleigh Precinct. Part Lot 4000 DP 1194309. 2 Locomotive Street, Eveleigh, NSW, 2015. JBS&G Australia Pty Ltd dated 17 April 2020 reference 51142/128876 Rev 2 (JBS&G 2020)

⁸ Mirvac Projects Pty Ltd. Locomotive Workshop – Bays 1 to 16 In situ Waste Classification, Australian Technology Park, Eveleigh. NSW. JBS&G Australia Pty Ltd, dated 11 April 2019; Reference: 51142/121487 Rev 1 (JBS&G 2019)

2. Summary of Site Conditions

2.1 Site Details

This site makes up part of the heritage Locomotive Workshop building, the northern portion of Bays 1 to 4A and southern portion of Bays 3 and 4A (**Figure 2**). The site is located approximately 5 km south of the Sydney CBD, 8 km north of Sydney airport and within 200 m of Redfern Railway Station. The site is legally identified as Part Lot 4000 in DP 1194309, occupies an area of approximately 0.54 ha and is located within the City of Sydney LGA.

The site is bound to the north by a railway easement, east by Innovation Plaza, south by Locomotive Street and to west by the remainder of the Locomotive Workshop building (Bays 5 to 15) followed by State Rail Operation Facilities (Large Erecting Shed).

The location of the site is shown in **Figure 1**, the current site layout is shown in **Figure 2**. Site details are summarised in **Table 2.1**.

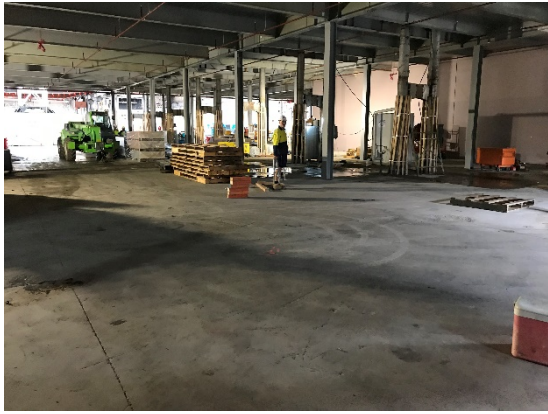
Table 2.1: Site Identification

Current Lot/DP	Part Lot 4000 DP 1194309
Current Address	2 Locomotive Street, Eveleigh, NSW, 2015
Local Government Authority	City of Sydney Council
Site Area	Approximately 0.54 ha
Lot 4000 DP 1194309 Site Area	Approximately 2.7 ha
Site Owner	Mirvac Projects Pty Ltd
Site Developer	Mirvac Construction Pty Ltd
Site Zoning	SEPP Major Development 2005 under the City of Sydney Local Environment Plan 2012
Geographical Coordinates (MGA 56)	Refer to Figure 2
Former Land Use	Locomotive Building and Workshop
Redeveloped Land Use	Mixed Land Uses (retail and commercial including Educational facilities)

2.2 Site Condition and Physical Barrier to Retained Fill Materials

Locomotive Workshop part Bays 1 to 4A are completely covered with a concrete hardstand pavement serving as a permanent physical barrier over the retained fill and underlain with fill materials of varying thicknesses (**Photographs 1 and 2**). Due to the heritage nature of the building limited development works have occurred to facilitate the repurposing uses. Previous intrusive investigations have primarily consisted of manually and mechanically advanced boreholes concrete cored through the hardstand and reinstated with concrete following sampling (**Photographs 3 and 4**).

The concrete hardstand was documented by site photographs, design plans and survey information to identify the lateral extent of the physical barrier across the site. Survey documentation of capping arrangements and thickness are provided in **Appendix B**.



Photograph 1: Concrete hardstand/physical barrier across Bays 1 – 4A



Photograph 2: Concrete hardstand/physical barrier across along the central spine of Bays 1 – 4A



Photograph 3: Illustrative concrete thickness and underlying soil.



Photograph 4: Intrusive boreholes/concrete hardstand reinstated following sampling works.

2.3 Maintenance of the Barrier System

The existing physical barrier system (as outlined in **Section 2.2**) must be maintained across the entire site (**Appendix B**) in order to minimise the potential for uncontrolled exposure of future site users, occupiers, visitors and contractors to contaminated soil. Provided the barrier system is maintained in accordance with this LTEMP, there are no unacceptable health or contaminant migration risks associated with the chemical contaminants as there are no complete pathways between humans and the contaminated soil.

In the event that the barrier system is disturbed at any time as a result of planned or unplanned activities, the procedures documented in this LTEMP are required to be implemented to repair the barrier such that there continues to be an effective barrier between the contaminated soil and future site occupants/users during day to day use of the site.

In addition, the physical barrier is also noted to manage potential environmental risks associated with contamination (including contaminant migration, ecological exposure within and beyond the site, etc.).

No active additional monitoring or management of subsurface soil contaminant conditions is required during everyday operation of the site. Procedures as provided in **Appendix D** will only be needed in the event of either planned or unplanned breaches of the physical barrier occur to ensure the barrier is reinstated appropriately.

3. Summary of Identified Contamination Issues

Limited sampling was undertaken throughout the SEP prior to commencement of redevelopment to the heritage nature of the Locomotive Workshop. A Soil Characterisation Assessment (JBS&G 2018⁹) and in situ waste classification (JBS&G 2019) were undertaken in July 2018 and January 2019 throughout the Locomotive Workshop. The investigation included a total of 14 sample locations being advanced within the Stages 1A and 1B Site boundary (BH02, BH04, BH06 and BH07, TP405, TP406, TP407, TP414, TP416, TP423, TP 424, TP 425, TP426 and TP 427 – **Figure 3**). Two samples (BH206 and BH207) were also collected in April 2017 in conjunction with a geotechnical investigation and these are also included in the presented site characterisation data set.

Fill and natural materials from within the Stages 1A and 1B Site comprised:

- Surface covers were noted at the time to comprise:
 - Bare ground/Sand;
 - Asphalt pavement ranging from depths of 0.05 m to 0.08 m below ground surface (bgs);
 - Roadbase surface was present to depths of 0.05 m bgs; and
 - Concrete pavements to depths of 0.62 m bgs (BH207) overlying;
- Heterogeneous brown to dark brown silty gravelly sand fill with anthropogenic inclusions including ash, slag, bricks, concrete, metal, plastic and glass fragments with no discernible pattern across the site, overlying;
- Natural soils first encountered at depths ranging from 0.4 to 3.75 m bgs that comprised light brown to off-white sand;
- Natural brown to light brown/orange silty clay were encountered at depths ranging from 0.5 m to 3.95 m bgs; and
- Natural red brown with white mottled clay encountered at depths ranging from 0.42 to 3.6m bgs.

Upon completion of remediation/redevelopment works, a description of the physical barrier and retained impacted materials is provided in **Section 2.2**. The following is a summary of contamination issues at the site beneath the physical barrier/marker layer.

3.1 Soil

Soil Analytical Data is presented in **Appendix A**.

3.1.1 Heavy Metals, PAHs and TRHs

Contaminants remaining within fill material at the site beneath the physical barrier include total recoverable hydrocarbons (TRH)/total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH) and heavy metals (principally chromium, copper, lead, nickel, zinc and to a lesser extent arsenic). Exposure to these contaminants can be via absorption through the skin, ingestion, and inhalation via dust and/or vapours (for volatile compounds – **Section 3.2**) where such pathways are complete.

3.1.2 Asbestos

Known areas of asbestos impacted fill material were removed from within the site footprint during the remediation works. However, given the heterogeneity of fill materials, historical industrial land

⁹ Mirvac Projects Pty Ltd. *Locomotive Workshop – Bays 1 & 2 Soil Characterisation Assessment, Australian Technology Park, Eveleigh. NSW*. JBS&G Australia Pty Ltd, dated: 15 August 2018; Reference: 51142/116937 Rev 1 (JBS&G 2018);

use activities, and extensive observations of rubble and other building-material related inclusions on historical borehole logs, there is the potential for residual asbestos impacts to occur within the retained fill material underlying the site. As such, an unexpected finds protocol/procedure is required to manage any such unexpected finds as may occur into the future should works below the physical barrier be required.

Non-friable asbestos material is any asbestos-containing material that is not considered to be friable asbestos, including material containing asbestos fibres reinforced with a bonding compound (Safe Work Australia 2018¹⁰). The materials defined in the NEPC (2013¹¹) as bonded asbestos are non-friable asbestos.

Friable asbestos material is any material that is in fibrous or powder form or that can be crumbled, pulverized or reduced to a powder by hand pressure when dry and contains asbestos (Safe Work Australia 2016). The materials defined in the NEPM (2013) as fibrous asbestos (FA) and asbestos fines (AF) are friable asbestos.

Mechanical disturbance of asbestos containing material (ACM) fragments and disturbance of soils may result in the release of fibres and therefore, such activities should be managed to prevent any fibres becoming airborne. The health effects of asbestos are detailed in enHealth (2005) *Management of Asbestos in the Non-Occupational Environment*.

The primary issue associated with the asbestos is managing the risk of inhalation of respirable fibres where site activities encounter such material.

3.2 Soil Vapour

Elevated concentrations of volatiles such as chlorinated alkenes (trichloroethene, TCE) and trace amounts of benzene, toluene, ethylbenzene and xylene (BTEX) were identified within the site as shown in **Appendix A: Table E**. Sample Locations are shown on **Figure 4**. With the current physical barrier maintained, these contaminants do not pose a risk to site users. Notwithstanding, if the physical barrier is broken for maintenance or installation of services (or the like) then there is a risk of exposure for workers to volatile compounds that will require management.

To further demonstrate the implemented remedial strategy has resulted in appropriate attenuation of soil vapour migration risks, limited further ambient air monitoring is to be undertaken at the site in accordance with **Appendix D: EMP06** to substantiate the current data set and support the conclusions that following site development activities, there is no risk to current and future site users from soil vapour intrusion.

3.3 Groundwater

Based on available groundwater quality information, groundwater in the vicinity of the site was considered to not be significantly contaminated and did not present an unacceptable risk to future site users or down-gradient ecosystems. Minor elevated concentrations of contaminants as identified are representative of urban background environments, therefore no further remediation or management is required.

¹⁰ *How to Safely Remove Asbestos: Code of Practice*. Safe Work Australia 2018 (Safe Work Australia 2018)

¹¹ National Environment Protection (Assessment of Site Contamination) Measure 1999, Amended 11 April 2013. National Environment Protection Council (NEPM 2013)

4. Application, Enforcement and Regulatory Requirements

4.1 Application of LTEMP

This LTEMP will apply indefinitely during future site operation or until such time as a SAS can be prepared by an NSW EPA Accredited Site Auditor or the NSW EPA stating that the LTEMP is not required for the site.

The requirements of this LTEMP are intended to apply to any activities within the site which could involve disturbance or exposure of contaminants in soil beneath the physical barrier, or partial removal of the physical barrier including, but not limited to:

- Demolition and removal of any pavements or buildings;
- Underground utility installation, maintenance or removal; or
- Excavations (e.g., dug, cut, piled or bored).

Specifically, it is anticipated that ground disturbance activities that may result in requirements under this LTEMP comprise the installation of additional and/or replacement underground services/infrastructure that require removal of part or all of the physical barrier.

4.2 Enforcement of LTEMP

This LTEMP will be enforced as a condition of consent via attachment to the SAS issued to address a Development Consent condition (DPE 2019).

4.3 Regulatory Requirements

Future activities on site are required to be completed in accordance with several pieces of environmental and occupational health and safety legislation and associated regulations. The primary Acts, Regulations and Guidelines are listed below with a brief summary of their applicability. Please note, however, that this list is not intended to be a comprehensive listing of acts and regulations. The site owner and contractors are required to satisfy themselves that all applicable permits, licences and legislation have been obtained and their conditions satisfied.

Work Health and Safety Act, 2011

The overarching Act for NSW setting law relating to employee health and safety and employer responsibilities.

Work Health and Safety Regulation 2017 (as amended in 2019)

Sets Regulations and details the duties for employers to achieve required employee health and safety performance.

Contaminated Land Management Act 1997 (CLM Act)

The *Contaminated Lands Management Act 1997* (CLM Act) controls the assessment of contamination and requirement of remediation of soils and groundwater. The act also contains guidance for the determination of whether a site presents a significant risk of harm and allows for accreditation of Site Auditors.

Waste Avoidance and Resource Recovery Act 2001 (WARR Act)

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) replaced the Waste Minimisation and Management Act 1995 and controls waste generation and waste reduction.

State Environmental Planning Policy (SEPP) 55 'Remediation of Land'

SEPP 55 relates to the decision making process in undertaking remediation of land and making planning decisions in regard to contaminated and potentially contaminated land.

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

National guidelines for the assessment of land contamination endorsed by NSW EPA. These guidelines include recommended soil and groundwater assessment criteria for a variety of land uses.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key piece of environment protection legislation administered by the EPA.

5. LTEMP Implementation

This LTEMP has been designed to ensure, via the implementation of a number of ongoing management measures pertaining to the areas of sub-surface contamination, that:

- The risk to the future users of the site from residual sub-surface contamination continues to be acceptable; and
- Contingency actions are available to be implemented where potential risk to human users or ecological receptors occurs.

It should be noted at this point that the LTEMP is in no way intended to replace or supersede existing Environmental Management Plans, Health and Safety Plans and/or Building Materials Management Plans prepared by Mirvac as the site owner and/or future tenants for management of the site and associated improvements. Instead the LTEMP should be considered as a supplement to these documents and particularly targeted to deal with issues unique to residual contamination retained beneath the site and management of the potential for re-contamination of the site.

5.1 Responsibilities

This LTEMP will come into force at the completion of remedial activities and issue of a SAS.

Mirvac as the site owner, or its nominated representative, will be responsible for the ongoing implementation of this LTEMP. A formal list of procedures is provided in this LTEMP (**Appendix D**). Specific responsibilities for the implementation of each procedure are detailed in the appropriate procedure.

The following detail is provided below on the key environmental responsibilities for specific personnel.

5.1.1 Site Manager

The site owner (Mircav), or nominated representative will be/shall be responsible for the following in accordance with the specific procedures outlined in **Appendix D**:

- Management of all operations, employees and subcontractors at the site that may result in ground disturbance activities;
- Ensuring compliance with all environmental requirements outlined in this LTEMP and statutory requirements;
- Ensure that the physical barrier material, is not breached without implementation of appropriate management procedures;
- Liaison with the regulatory authorities in relation to environmental matters;
- Co-ordination of environmental monitoring, data assessment and reporting as per Management Procedure 6 (**EMP06**); included in **Appendix D**
- Preparation of appropriate forms, registers, reporting formats, etc. as appropriate to document implementation of the LTEMP in a form able to be audited as per Environmental Management Procedure 12 (**EMP12**) included in **Appendix D**;
- Where necessary, review of environmental reports and inspections and initiating any actions to rectify conditions;
- Participation in environmental incident investigations;
- Participation in environmental meetings and programs;
- Oversee the implementation of environmental management measures at the site; and

- Ensuring that persons or sub-contractors, who are planning or likely to undertake intrusive works at the site, are made aware of their environmental responsibilities in relation to the site management requirements as described in **Section 2.3**.

5.2 Formal Notations

Future planning certificates as may be prepared by City of Sydney Council under s.149 of the *Environmental Planning and Assessment Act 1979* for subject lot(s) will document the presence of the SAS and associated LTEMP.

5.3 Period of Implementation

The LTEMP is to be implemented for an indefinite period of time during operation of the site under the current consent or until a review has been undertaken by either a NSW EPA Accredited Site Auditor and a SAS issued, or a written approval has been provided by the Department of Planning, Industry and Environment (or the Council of the City of Sydney) (as the consent authority), or a written approval has been provided by NSW EPA, that removes the need for ongoing implementation of the LTEMP.

5.4 Environmental Management Procedures

A number of procedures have been provided to guide the implementation of this LTEMP. These procedures are provided in **Appendix D**.

5.5 Responsibilities of Council – as the consent authority

As specified in Section 3.4.6 of the *Guidelines for the NSW Site Auditor Scheme (2017)*, the responsibilities of the Department of Planning and Environment (or the Council of the City of Sydney), in the role of consent authority, shall be limited to:

- a) Public notification of the existence of the LTEMP on appropriate property records (refer to **Section 5.2** in this instance);
- b) Enforcement of the LTEMP as a condition in any future development consent for additions or alterations to the development that may involve a breach of the cap; and
- c) Confirmation in writing to the Site Auditor that the Department of Planning and Environment (or the Council of the City of Sydney) will comply with Items (a) and (b) to allow the auditor to prepare a SAS for this site.

6. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own inquiries.

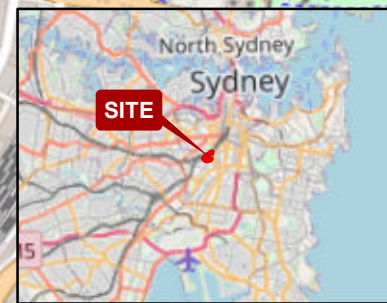
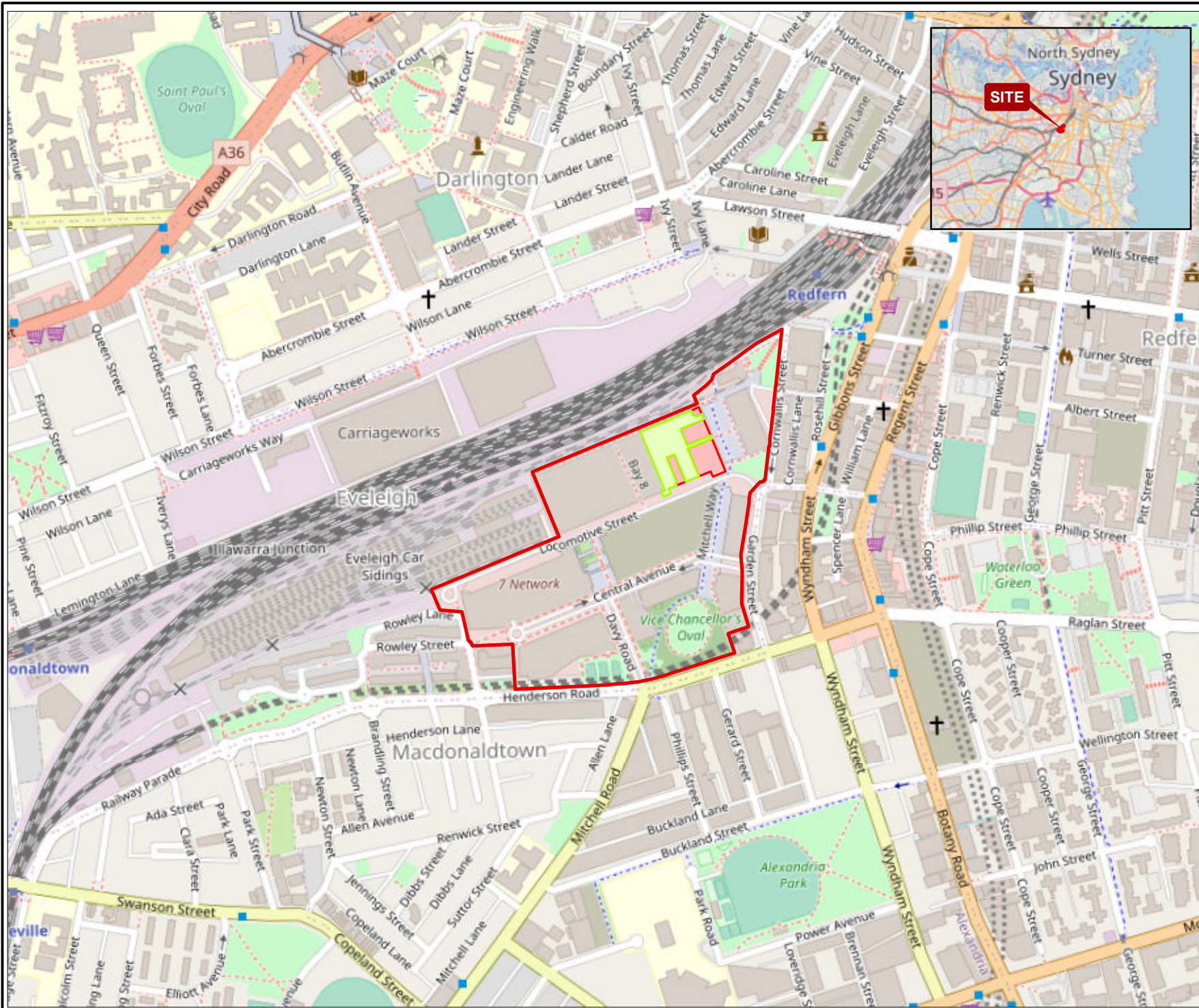
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures



Legend:

- Approximate Boundary – Broader South Eveleigh Precinct
- Locomotive Workshop - Validation Area**
- Stage 1A & Stage 1B Validation Area "The Site"
- Excluded from Validation Area (Does not meet minimum capping arrangements)



Job No: 51142

Client: Mirvac

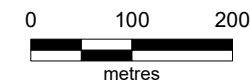
Version: R51 Rev 0

Date: 29/05/2020

Drawn By: RF

Checked By: TF

Scale 1:7,500



Coor. Sys. GDA 1994 MGA Zone 56

**South Eveleigh Precinct
Eveleigh, NSW**

SITE LOCATION

FIGURE 1

	Eastings	Northings
1	333219.681	6248138.147
2	333214.940	6248082.414
3	333231.400	6248042.864
4	333212.217	6248034.884
5	333195.759	6248074.431
6	333184.297	6248069.661
7	333198.853	6248034.684
8	333196.643	6248033.764
9	333198.541	6248029.195
10	333187.567	6248024.615
11	333190.724	6248017.028
12	333222.461	6248131.466
13	333179.994	6248012.562
14	333176.829	6248020.164
15	333181.631	6248022.156
16	333228.077	6248129.645
17	333235.076	6248132.558
18	333238.172	6248125.100
19	333204.187	6248110.956
20	333213.977	6248087.433
21	333247.968	6248101.580
22	333249.911	6248096.967
23	333146.058	6248107.508

LOCOMOTIVE WORKSHOP

LOCOMOTIVE STREET

Legend:

- Approximate Boundary – Broader South Eveleigh Precinct
- Cadastral Boundaries
- Locomotive Workshop - Bay Number
- Locomotive Workshop - Validation Area
- Stage 1A & Stage 1B Validation Area "The Site"
- Excluded from Validation Area (Does not meet minimum capping arrangements)



Job No: 51142

Client: Mirvac

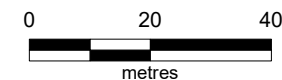
Version: R51 Rev 0

Date: 29-May-2020

Drawn By: RF / JA

Checked By: TF

Scale 1:1,250



Coor. Sys. GDA 1994 MGA Zone 56

South Eveleigh Precinct,
Eveleigh NSW

SITE LAYOUT

FIGURE 2



Legend:

- Approximate Boundary – Broader South Eveleigh Precinct
- Cadastral Boundaries
- Locomotive Workshop - Bay Number
- Locomotive Workshop - Validation Area**
 - Stage 1A & Stage 1B Validation Area "The Site"
- Sample Locations (Douglas & Partners 2017)
- Sample Location (JBS&G 2018b)
- In-situ Waste Classification (JBS&G 2019a)
- Delineation Sample Locations (JBS&G 2019a)



Job No: 51142

Client: Mirvac

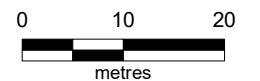
Version: R51 Rev 0

Date: 29-May-2020

Drawn By: RF

Checked By: TF

Scale 1:750

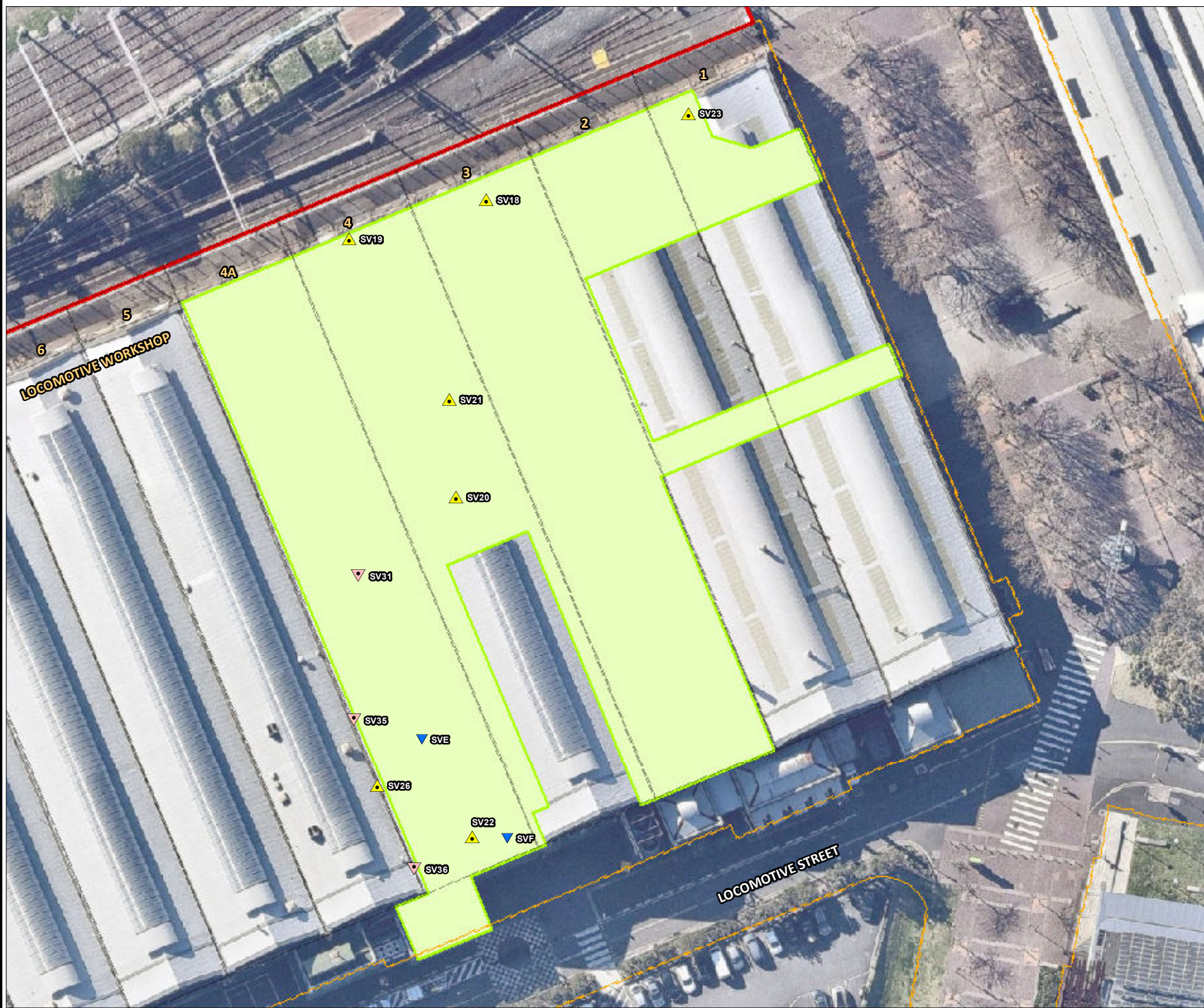


Coor. Sys. GDA 1994 MGA Zone 56

**South Eveleigh Precinct,
Eveleigh NSW**

**HISTORIC
SAMPLE LOCATIONS**

FIGURE 3



Legend:

- Approximate Boundary – Broader South Eveleigh Precinct
- Cadastral Boundaries
- Locomotive Workshop - Bay Number
- Locomotive Workshop - Validation Area**
- Stage 1A & Stage 1B Validation Area "The Site"
- Soil Vapour ES 2015a
- Sub-Slab Vapour Location - May 5-6 2016
- Sub-Slab Vapour Location - May 20 2016



Job No: 51142

Client: Mirvac

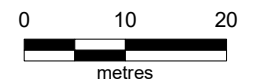
Version: R51 Rev 0

Date: 29-May-2020

Drawn By: RF

Checked By: TF

Scale 1:750



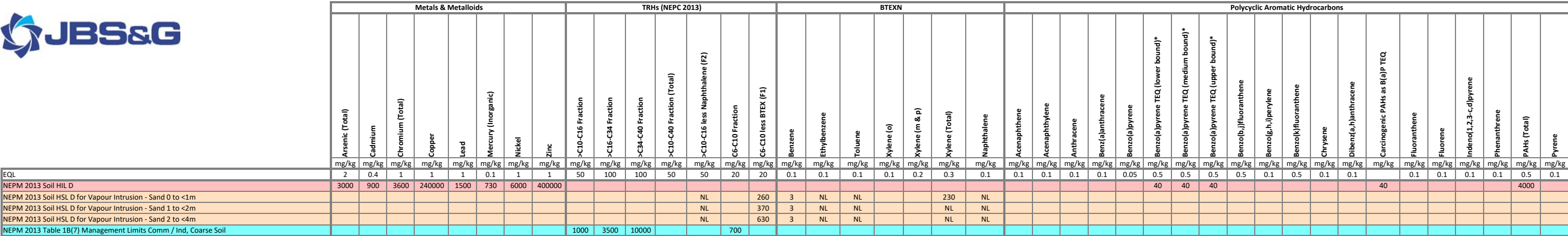
Coor. Sys. GDA 1994 MGA Zone 56

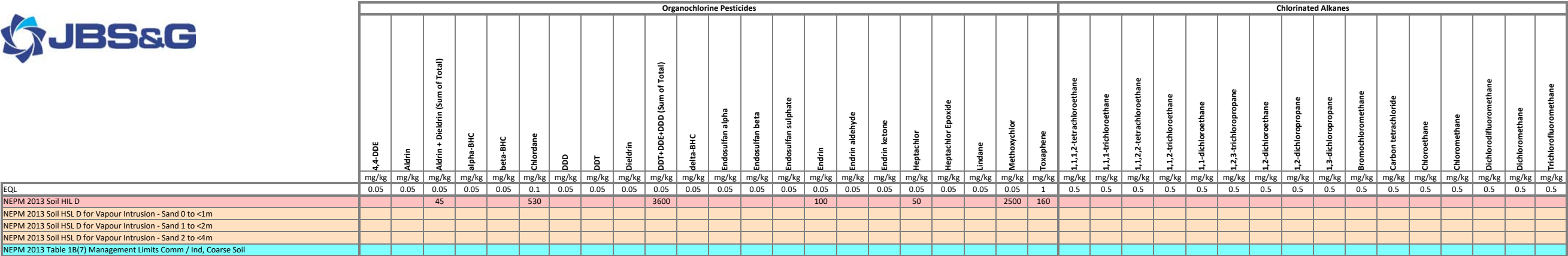
**South Eveleigh Precinct,
Eveleigh NSW**

**SOIL VAPOUR
SAMPLE LOCATIONS**

FIGURE 4

Appendix A Summary Tables

Page 1 of 9

Page 2 of 9

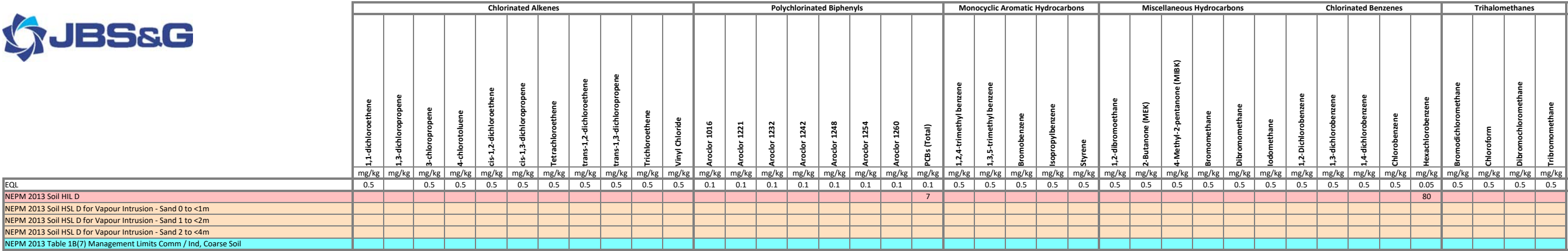
Page 3 of 9

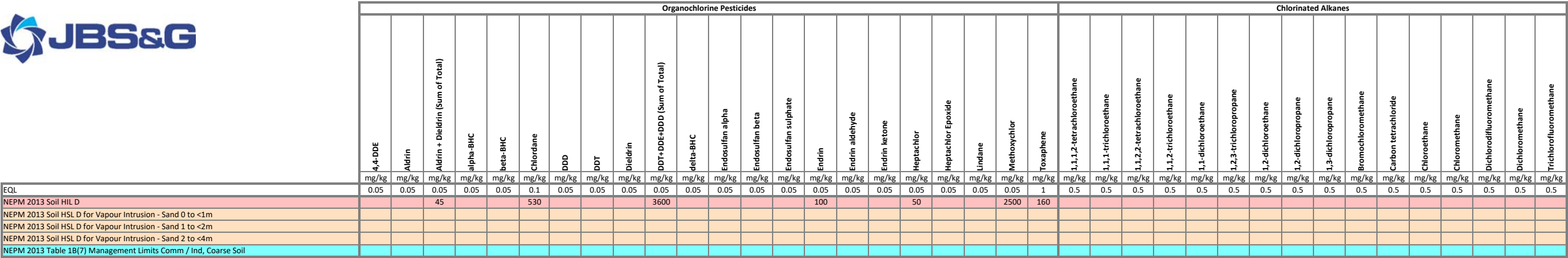
Table A - Soil Analytical Data
Project Number: 51142
Project Name: Locomotive Workshop LTEMP

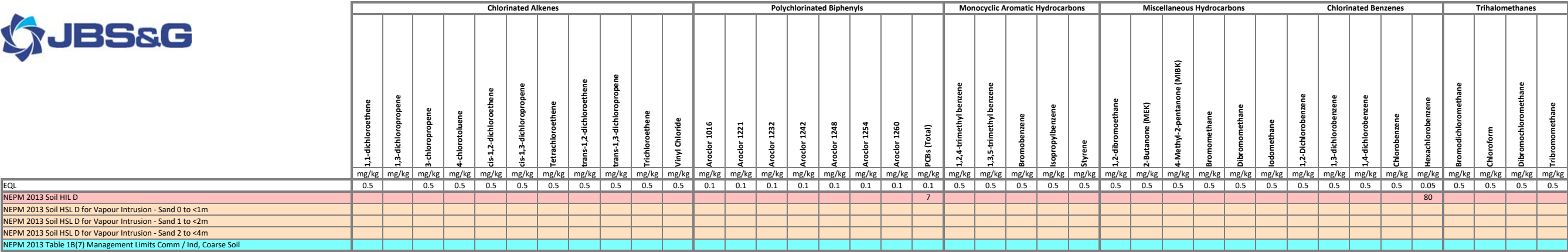
15/05/2020



	Metals & Metalloids								TRHs (NEPC 2013)						BTEXN						Polycyclic Aromatic Hydrocarbons																						
	Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs as B(a)P TEQ	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	
EQL	2	0.4	1	1	1	0.1	1	1	50	100	100	50	50	20	20	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1
NEPM 2013 Soil HIL D	3000	900	3600	240000	1500	730	6000	400000																				40	40	40							40				4000		
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m													NL		260	3	NL	NL			230	NL																					
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 1 to <2m													NL		370	3	NL	NL			NL	NL																					
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 2 to <4m													NL		630	3	NL	NL			NL	NL																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil									1000	3500	10000			700																													

Sample ID	Date	Lab Report	Location																																																																																																																																												
TP400 2.5-2.6	24/01/2019	637874	TP400	4.2	<0.4	17	82	130	<0.1	<5	99	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6																																																																																																
TP400 3-3.1	24/01/2019	637874	TP400	<2	<0.4	<5	<5	<5	<0.1	<5	10	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																															
TP401 0.3	24/01/2019	637874	TP401	4.7	<0.4	8.9	300	160	0.2	6.1	220	<50	<260	<100	<260	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	1.8	1.2	1.6	1.9	2.1	0.7	0.7	<0.5	1.2	<0.5	1.854	3.6	<0.5	1.1	2.8	18	4																																																																																														
TP401 0.5-0.6	24/01/2019	637874	TP401	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																															
TP402 0.3	24/01/2019	637874	TP402	8.6	<0.4	20	77	160	<0.1	9	62	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP402 0.4-0.5	24/01/2019	637874	TP402	6.8	<0.4	16	170	720	0.1	9.6	150	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP402 0.5-0.6	24/01/2019	637874	TP402	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP402-B 0.3-0.4	20/03/2019	646797	TP402-B	100	<0.4	28	17,000	1100	0.1	66	230	<50	<810	<350	<1160	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP403 0.4-0.5	24/01/2019	637874	TP403	5.4	0.6	27	310	23	<0.1	15	21	<50	<110	<100	<110	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP404 0.3	24/01/2019	637874	TP404	<2	<0.4	31	120	15	<0.1	130	83	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP404 0.5-0.6	24/01/2019	637874	TP404	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP408 0.3	24/01/2019	637874	TP408	18	<0.4	15	870	520	0.2	22	230	<50	<200	<100	<200	<50	<20	<20	<0.1	<0.1	0.3	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	1.5	1.8	2.1	2.4	0.9	0.5	0.9	1.5	<0.5	2.095	3.4	<0.5	<0.5	2.4	15.6	3.3																																																																																																
TP408 0.5-0.6	24/01/2019	637874	TP408	9.3	<0.4	22	8.5	26	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP409 0.7-0.8	25/01/2019	637874	TP409	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP409 1-1.1	25/01/2019	637874	TP409	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP410 0.25-0.3	25/01/2019	637874	TP410	6.8	0.6	24	1000	430	1.6	38	730	<50	<700	<110	<810	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.3	4.9	4.1	6	6	2.1	1.5	3.1	4.5	0.6	5.97	16	<0.5	2	23	83.1	16																																																																																																
QA20190125-01	25/01/2019	637874	TP410	8.8	0.6	23	1600	460	1.4	41	600	51	2400	470	2921	51	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	5.3	5	7.7	7.7	7.7	3.2	1.9	4.6	4	1	7.669	10	<0.5	3	4.8	55.2	11																																																																																															
QC20190125-01	25/01/2019	210371	TP410	28	2	75	9700	1000	1.6	110	2300	110	2300	640	3100	110	<25	<25	<0.2	<1	<0.5	<1	<2	<1	<1	<1	<0.4	0.7	0.1	2.5	9	6.5	9.6	9.6	9.6	-	3	-	7.2	0.8	8.562	16	0.3	2.6	9	85	16																																																																																																
TP410 1.4-1.5	25/01/2019	637874	TP410	5.9	<0.4	10	240	65	<0.1	<5	81	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP411 0.6-0.7	25/01/2019	637874	TP411	17	<0.4	9.3	3200	690	0.2	7.9	220	<50	<410	<140	<550	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	2.6	1.8	2.5	2.8	3	1.1	0.7	1.5	1.7	<0.5	2.764	5.8	<0.5	1.7	4.2	28.1	5.8																																																																																															
TP411 2.0-2.1	25/01/2019	637874	TP411	4.9	<0.4	10	8.2	23	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP411 3.5-3.6	25/01/2019	637874	TP411	19	<0.4	14	26	17	<0.1	<5	6	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																																																														
TP412 0.5-0.6	25/01/2019	637874	TP412	9.2	<0.4	8.6	1100	610	0.2	7	87	<50	<790	<110	<900	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	5.1	3.4	5.4	5.4	5.4	2.2	1.3	2.8	3.4	0.7	5.417	12	1.1	2.6	11	61.2	12																																																																																															
TP412 0.9-1.0	25/01/2019	637874	TP412	2.4	<0.4	7.8	5.4	5.6	<0.1	<5	<5	<50	<100	<100	<100	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.21	<0.5																																																																																																				

Page 5 of 9

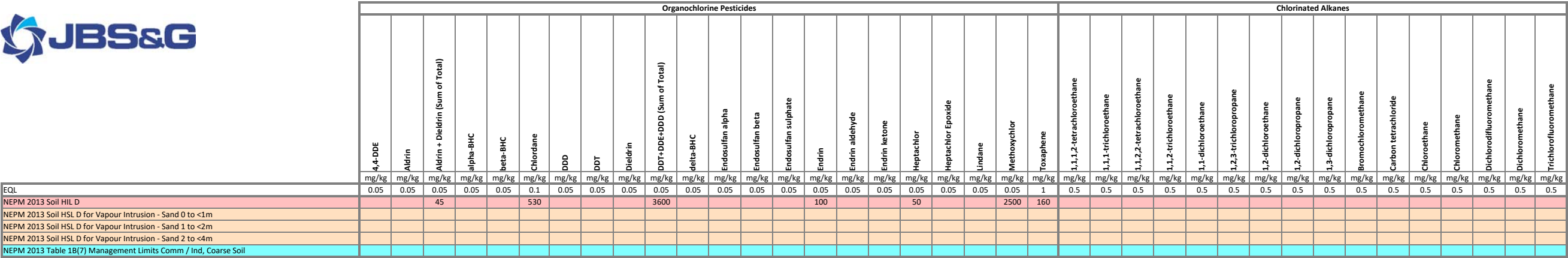
Page 6 of 9

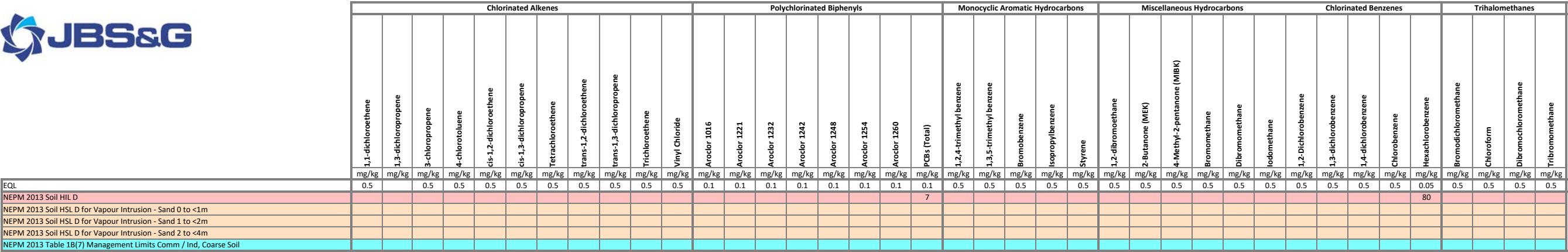


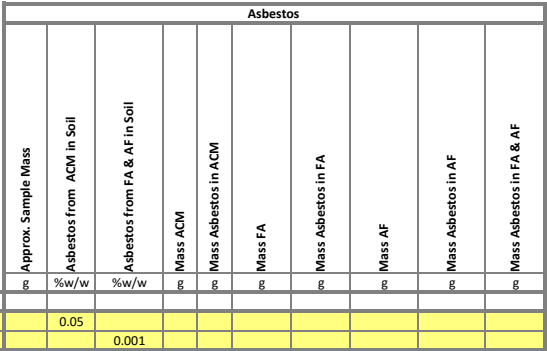
	Metals & Metalloids								TRHs (NEPC 2013)						BTEXN						Polycyclic Aromatic Hydrocarbons																							
	Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	>C10- C16 Fraction	>C16- C34 Fraction	>C34- C40 Fraction	>C10- C40 Fraction (Total)	>C10- C16 less Naphthalene (F2)	C6- C10 Fraction	C6- C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(b,j)fluoranthene	Benzo(k,g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs as B(a)P TEQ	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene		
	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	
EQL	2	0.4	1	1	1	0.1	1	1	50	100	100	50	50	20	20	0.1	0.1	0.1	0.1	0.2		0.3	0.1	0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5	0.5	0.5	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	
NEPM 2013 Soil HILD	3000	900	3600	240000	1500	730	6000	400000																					40	40	40						40					4000		
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m													NL		260	3	NL	NL				230	NL																					
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 1 to <2m													NL		370	3	NL	NL				NL	NL																					
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 2 to <4m													NL		630	3	NL	NL				NL	NL																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil									1000	3500	10000			700																														

Sample ID	Date	Lab Report	Location	-	-	-	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-----------	------	------------	----------	---	---	---	---	----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Statistical Summary				128	128	128	128	140	128	128	128	127	127	127	114	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	1
---------------------	--	--	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	---

[illegible]

[illegible]



* Excluded from data set as material is no longer present at the site and does not represent current site conditions

Page 1 of 1



	Metals & Metalloids				TPHs (NEPC 1999)			TRHs (NEPC 2013)			BTEXN	Polycyclic Aromatic Hydrocarbons																Ionic Balance						
	Arsenic (Total)	Chromium (Total)	Lead	Nickel	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Ben(a)anthracene	Benzo(a)pyrene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Diben(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	PAHs (Total)	Pyrene	Total Positive PAHs	pH (TCLP - HCl addition)	pH (TCLP - initial)	pH (TCLP - off)	pH (Leachate fluid)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ph Units	ph Units	ph Units	ph Units
EQL	0.01	0.01	0.01	0.01	0.05	0.1	0.1	0.5	0.05	0.1	0.1	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.1	0.1	0.1	0.1	

Sample ID	Date	Lab Report	Location																																					
Within Stage 1A and 1B Boundary																																								
BH02_0.02-0.15	25/07/2018	611467	BH02	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.3	5.5	5.1		
BH02_0.3-0.4	25/07/2018	611467	BH02	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	9	5.3	5.1	
QC25072018	25/07/2018	611467	BH02	-	-	-	0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	7.7	5.3	5.1	
BH04_0.15-0.25	25/07/2018	611467	BH04	-	-	-	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	5.9	5.8	5.1	
BH04_0.25-0.35	25/07/2018	611467	BH04	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8	5.9	5.1	
BH06_0.4-0.5	25/07/2018	611467	BH06	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	6.5	6.2	5.1	
TP405 0.4-0.5	24/01/2019	639929	TP405	-	-	-	-	-	0.71	1.1	0.2	2.01	0.93	1.1	<0.1	2.03	0.031	0.009	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	0.003	0.049	<0.001	-	1.9	9.7	7	5.1	
TP406 0.4	24/01/2019	639929	TP406	-	-	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	9.2	6	5.1	
TP414 0.3-0.4	7/02/2019	641074	TP414	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	8.2	5.1	5	
QA20190130-02	24/01/2019	639929	TP416	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	6.3	5.2	5.1	
TP416 0.3-0.4	24/01/2019	639929	TP416	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	7.9	5.1	5.1	
QA20190130-04	24/01/2019	639929	TP425	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.007	<0.001	-	1.8	7.3	5.7	5.1		
TP425 0.1-0.2	24/01/2019	639929	TP425	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.003	0.01	<0.001	-	1.9	9.3	5.5	5.1	
QC20190130-04	30/01/2019	210631-A	TP425	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.002	<0.001	0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.006	-	<0.001	0.012	-	-	-	-		
External to Stage 1A and 1B Boundary																																								
TP402-B 0.3-0.4	20/03/2019	648519	TP402-B	-	-	-	1	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	8.4	5.4	5	
TP417-A 0.3-0.4	20/03/2019	648519	TP417-A	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.2	5.2	5
TP419-A 0.3-0.4	20/03/2019	648519	TP419-A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.4	5	5
TP419-C 0.3-0.4	20/03/2019	648519	TP419-C	-	-	-	0.06	<0.01	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.6	5.4	5
TP440-A 0.6-0.9	20/03/2019	648519	TP440-A	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	8.7	4.9	5
TP440-B 0.3-0.4	20/03/2019	648519	TP440-B	-	-	-	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	8.6	6.4	5
QA3	20/03/2019	648519	TP440-B	-	-	-	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8.5	6.4	5	
TP440-C 0.2-0.3	20/03/2019	648519	TP440-C	-	-	-	0.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.3	5.2	5
BH01_0.07-0.15	25/07/2018	611467	BH01	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	5.8	5.2	5.1
BH01_0.15-0.25	25/07/2018	611467	BH01	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	5.9	5.2	5.1
BH05_0.15-0.25	25/07/2018	611467	BH05	-	-	-	0.02	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	6.3	5.1	5.1
BH10_0.06-0.1	25/07/2018	611467	BH10	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	8.6	6.3	5.1
BH10_0.2-0.3	25/07/2018	611467	BH10	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	6.9	5.3	5.1
BH11_0.2-0.4	25/07/2018	611467	BH11	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	7.1	6.6	5.1
BH12_0.3-0.4	25/07/2018	611467	BH12	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	7.3	5.6	5.1
TP402 0.4-0.5	24/01/2019	639929	TP402	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	9.2	5.4	5.1
TP404 0.3	24/01/2019	639929	TP404	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	9.4	5.7	5.1
TP408 0.3	24/01/2019	639929	TP408	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	9.6	5.9	5.1
QA20190125-01	24/01/2019	639929	TP410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	7.5	5.7	5.1
TP410 0.25-0.3	24/01/2019	639929	TP410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8.8	5.6	5.1	
QC20190125-01	25/01/2019	210371-A	TP410	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	-	<0.001	0.001	-	-	-	-		
TP411 0.6-0.7	24/01/2019	639929	TP411	-	-	-	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	8	5.5	5.1
TP412 0.5-0.6	24/01/2019	639929	TP412	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	9.7	5.5	5.1
TP418 0.3-0.5	24/01/2019	639929	TP418	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	9.4	6.6	5.1
TP419 0.26-0.3	24/01/2019	639929	TP419	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	6.8	6	5.1
TP420 0.4-0.5	24/01/2019	639929	TP420	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	10	6.4	5.1
TP428 0.3-0.4	24/01/2019	639929	TP428	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	10	5.2	5.1
TP429 0.2-0.25	24/01/2019	639929	TP429	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	7.2	5.4	5.1
TP434 0.4-0.6	7/02/2019	641074	TP434	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	8.2	6.6	5
TP440 0.3-0.5	7/02/2019	641074	TP440	<0.01	<0.01	24	0.12	-	-	-	-	-	-	-	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	-	-	-	1.8	8.3	5.6	5

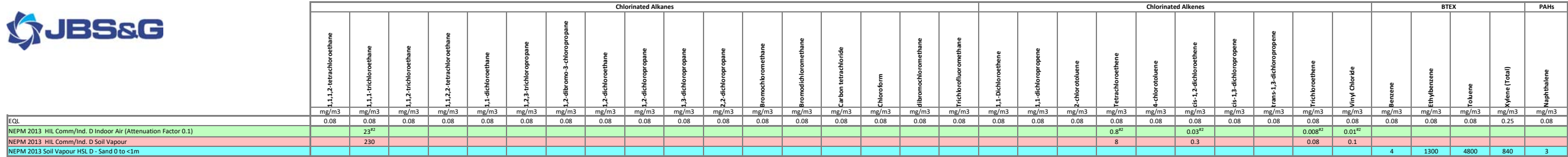
[illegible]

															
Well ID	Date	Time (seconds)	Physcial Parameters					Barometric Pressure	Flow Rate and Run Times				Sample Volume	Observations	
			CH4 %	CO2 %	O2 %	LEL %	PID		Flow Rate (mL/min)	Pump On	Pump Off	Run Time		Comments	
Within Stage 1A and 1B Boundary															
SV18	23-May-17	20	0.0	0.0	20.1	0.0	-	1017.0	200	12:01	5:01	5 hours	60 L	Leak detection passed.	
		40	0.0	0.0	20.2	0.0	-								
		60	0.0	0.0	20.2	0.0	-								
SV19	23-May-17	20	0.0	0.6	19.5	0.0	0.2	1017.0	200	11:49	4:49	5 hours	60 L	Leak detection passed.	
		40	0.0	0.8	19.4	0.0	0.1								
		60	0.0	0.9	19.4	0.0	0.1								
SV20	23-May-17	20	0.0	0.7	18.4	0.0	0.2	1022.0	200	8:28	1:30	5 hours	60 L	Leak detection passed.	
		40	0.0	0.7	18.4	0.0	-								
		60	0.0	0.7	18.3	0.0	0.1								
SV21	23-May-17	20	0.0	0.4	15.1	0.9	0.5	1022.0	200	8:46	1:46	5 hours	60 L	Leak detection passed.	
		40	0.0	0.3	17.6	0.0	-								
		60	0.0	0.3	18.3	0.0	-								
		80	0.0	0.3	18.3	0.0	0.5								
SV22	23-May-17	20	0.0	0.2	18.7	0.0	1.8	1022.0	200	8:14	1:15	5 hours	60 L	Leak detection passed.	
		40	0.0	0.2	18.6	0.0	-								
		60	0.0	0.2	18.6	0.0	2.0								
SV23	22-May-17	20	0.0	0.5	20.1	0.0	0.1	1021.8	300	1:50	5:10	3 hours + 20 minutes	60 L	Leak detection passed.	
		40	0.0	0.5	20.1	0.0	-								
		60	0.0	0.5	20.1	0.0	0.1								
SV26	24-May-17	20	0.0	0.4	19.9	0.0	0.1	1014.7	200	10:49	3:51	5 hours	60 L	Leak detection passed.	
		40	0.0	0.5	19.8	0.0	-								
		60	0.0	0.5	19.8	0.0	0.0								
SV31	23-May-17	20	0.0	0.0	19.8	0.0	19.2	1017.0	200	12:13	5:14	5 hours	60 L	Leak detection passed.	
		40	0.0	0.0	19.9	0.0	-								
		60	0.0	0.0	19.9	0.0	18.5								
SV35	23-May-17	20	0.0	0.1	18.3	0.0	4.6	1017.0	200	12:20	5:22	5 hours	60 L	Leak detection passed.	
		40	0.0	0.2	18.6	0.0	-								
		60	0.0	0.2	18.6	0.0	4.4								
SV36	23-May-17	20	0.0	0.0	19.2	0.0	0.1	1022.0	200	8:02	1:03	5 hours	60 L	Leak detection passed.	
		40	0.0	0.0	19.1	0.0	-								
		60	0.0	0.0	19.1	0.0	0.0								
External to Stage 1A and 1B Boundary															
VP01	18-May-17	20	0.0	0.0	20.3	0.6	2.0	1026.9	200	9:10	4:25	See comments	60 L	Pump stalled at 138 mins, replaced punp with a new pump set to 300 mL/min for remaining 1 hr 50 mins. Leak detection passed.	
		40	0.1	0.0	20.1	3.2	-								
		60	0.1	0.0	20.0	1.9	1.8								
VP02	18-May-17	20	0.0	0.0	20.1	0.0	0.0	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		40	0.0	0.0	20.0	0.0	-								
		60	0.0	0.0	19.9	0.0	0.0								
VP02_1.7	16-Jun-17	20	0.0	3.2	12.5	0.0	3.3	1026.1	200	8:23	2:31	6 hours	72 L	Leak detection passed.	
		40	0.0	3.3	11.3	0.01	-								
		60	0.0	3.3	11.3	0.01	-								
		80	0.0	3.3	11.3	0.01	-								
		100	0.0	3.3	11.3	0.01	-								
		120	0.0	3.3	11.4	0.01	3.1								
VP03	18-May-17	20	0.3	0.0	20.0	7.0	5.8	1026.9	200	9:30	2:31	5 hours	60 L	Leak detection passed.	
		40	0.1	0.0	19.9	3.8	-								
		60	0.1	0.0	19.9	2.5	5.7								
VP03_1.5	16-Jun-17	20	0.0	1.7	8.2	0.0	1.4	1026.1	200	8:46	2:16	5.5 hours	66 L	Leak detection passed.	
		40	0.0	2.2	14.1	0.0	-								
		60	0.0	2.7	14.2	0.0	-								
		80	0.0	3.1	14.5	0.0	-								
		100	0.0	3.3	14.6	0.0	1.5								
VP03_2.7	16-Jun-17	20	0.0	8.0	14.5	0.0	2.9	1026.1	200	8:47	2:12	5.5 hours	66 L	Moisture noted in carbon tube	
		40	0.0	10.2	10.6	0.0	-								
		60	0.0	10.2	10.3	0.0	-								
		80	0.0	10.1	10.4	0.0	-								
		100	0.0	9.9	10.6	0.0	-								
		120	0.0	9.8	14.6	0.0	0.4								
VP04	18-May-17	20	0.0	0.0	20.0	0.6	2.3	1026.9	200	9:37	2:37	5 hours	60 L	Leak detection passed.	
		40	0.0	0.0	19.8	1.6	2.3								
		60	0.0	0.0	19.8	1.6	2.3								
VP05	18-May-17	20	0.1	0.0	20.0	2.5	0.6	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		40	0.0	0.0	19.8	1.9	-								
		60	0.0	0.0	19.8	1.3	0.7								
VP06	18-May-17	20	0.0	0.0	20.2	0.0	1.6	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		40	0.0	0.0	19.9	0.0	-								
		60	0.0	0.0	19.9	0.0	1.4								
VP06_1.5	16-Jun-17	20	0.0	1.9	15.6	0.0	0.0	1026.1	200	8:57	2:45	5.5 hours	72 L	Leak detection passed.	
		40	0.0	1.9	14.9	0.0	-								
		60	0.0	1.9	14.8	0.0	-								
		80	0.0	1.9	14.9	0.0	-								
VP06_2.5	16-Jun-17	100	0.0	1.9	14.9	0.0	0.0	-	-	-	-	-	-	No Sample, probe drew water after 80 seconds purging.	
		20	0.0	4.9	1.2	0.01	1.3								
		40	0.0	12.9	0.7	0.01	-								
VP07	18-May-17	60	0.0	12.7	1.1	0.01	1.2	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		20	0.0	0.0	20.0	0.0	1.2								
		40	0.0	0.1	19.9	0.3	-								
VP07_1.5	16-Jun-17	60	0.0	0.1	19.9	0.3	1.5	1026.1	200	9:02	2:20	5 hours	60 L	Leak detection passed.	
		20	0.0	3.6	12.1	0.0	0.6								
		40	0.0	3.6	11.8	0.0	-								
		60	0.0	3.6	11.8	0.0	-								
		80	0.0	3.6	11.8	0.0	-								
VP08	18-May-17	100	0.0	3.6	11.8	0.0	0.3	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		20	0.0	0.0	20.2	0.0	7.6								
		40	0.0	0.1	20.1	0.0	-								
VP08_1.5	16-Jun-17	60	0.0	0.1	20.1	0.0	7.3	1026.1	200	9:17	2:49	5.5 hours	66 L	Leak detection passed.	
		20	0.0	1.7	17.3	0.0	2.2								
		40	0.0	1.8	14.9	0.0	-								
		60	0.0	1.8	14.1	0.0	-								
		80	0.0	1.9	14.1	0.0	-								
VP08_2.5	16-Jun-17	100	0.0	1.9	14.1	0.0	2.2	-	-	-	-	-	-	No Sample, probe drew water during purging.	
		20	-	-	-	-	-								-
		40	0.0	0.0	20.2	0.0	0.9								
VP09	18-May-17	60	0.0	0.0	20.1	0.6	-	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		20	0.0	0.0	20.1	0.6	0.7								
		40	0.0	0.0	20.1	0.6	0.7								
VP09_1.5	16-Jun-17	20	0.0	5.0	13.0	0.0	1.6	1026.1	200	9:23	2:24	5 hours	60 L	Leak detection passed.	
		40	0.0	5.0	12.3	0.0	-								
		60	0.0	5.0	12.2	0.0	-								
		80	0.0	5.0	12.2	0.0	-								
		100	0.0	5.0	12.2	0.0	0.3								
VP09_3.0		16-Jun-17	-	-	-	-	-	-	-	-	-	-	-	No Sample, probe drew water during purging.	
VP10	18-May-17	20	0.0	0.0	20.3	0.0	2.4	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.	
		40	0.0	0.0	19.8	0.6	-								
		60	0.0	0.0	19.9	0.6	2.5								
VP10_1.5	16-Jun-17	20	0.0	4.6	15.6	0.0	0.0	1026.1	200	9:38	2:54	5 hours	60 L	Leak detection passed.	
		40	0.0	4.7	14.1	0.0	-								
		60	0.0	4.7	13.9	0.0	-								
		80	0.0	4.7	13.8	0.0	-								
		100	0.0	4.7	13.8	0.0	0.0								

														
Well ID	Date	Time (seconds)	Physcial Parameters					Barometric Pressure	Flow Rate and Run Times				Sample Volume	Observations
			CH4 %	CO2 %	O2 %	LEL %	PID		Flow Rate (mL/min)	Pump On	Pump Off	Run Time		Comments
VP10_3.0	16-Jun-17	20	0.0	5.3	14.8	0.0	0.8	1026.1	200	9:39	2:55	5 hours	60 L	Leak detection passed.
		40	0.0	5.3	13.7	0.0	-							
		60	0.0	5.3	13.6	0.0	-							
		80	0.0	5.3	13.6	0.0	-							
		100	0.0	5.3	13.6	0.0	-							
		120	0.0	5.3	13.6	0.0	0.7							
VP11	18-May-17	20	0.0	0.0	20.1	0.0	0.8	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.
		40	0.0	0.0	19.2	0.0	-							
		60	0.0	0.0	19.1	0.0	0.6							
VP12	18-May-17	20	0.0	0.0	18.8	0.0	0.3	1026.9	-	-	-	See comments	60 L	60 L Sample noted to be collected. Leak detection passed.
		40	0.0	0.0	18.5	0.0	-							
		60	0.0	0.0	18.4	0.0	0.4							
SV01	30-May-17	20	0.0	0.4	19.8	0.0	0.6	1020.1	200	10:25	3:32	5 hours	60 L	Leak detection passed.
		40	0.0	0.7	17.8	0.0	-							
		60	0.0	0.8	18.2	0.0	-							
		80	0.0	0.9	18.3	0.0	0.5							
SV02	30-May-17	20	0.0	0.0	18.6	0.0	0.3	1023.2	200	9:40	2:42	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	19.1	0.0	-							
		60	0.0	0.1	19.1	0.0	0.3							
SV03	30-May-17	20	0.0	2.0	18.2	0.0	0.3	1023.2	200	9:29	2:35	5 hours	60 L	Leak detection passed.
		40	0.0	2.1	17.7	0.0	-							
		60	0.0	2.1	17.6	0.0	0.3							
SV04	30-May-17	20	0.0	5.0	14.3	0.0	0.3	1023.2	200	9:47	2:54	5 hours	60 L	Leak detection passed.
		40	0.0	4.7	10.1	0.0	-							
		60	0.0	4.7	11.1	0.0	-							
		80	0.0	4.6	12.2	0.0	0.4							
SV05	30-May-17	20	0.0	0.2	16.8	0.0	0.9	1023.2	200	9:54	2:57	5 hours	60 L	Leak detection passed.
		40	0.0	0.5	18.8	0.0	-							
		60	0.0	0.5	19.1	0.0	0.9							
SV06	30-May-17	20	0.0	0.0	17.2	0.0	0.5	1020.1	200	10:16	3:18	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	19.3	0.0	-							
		60	0.0	0.0	20.2	0.0	-							
		80	0.0	0.0	20.3	0.0	0.4							
SV07	30-May-17	20	0.0	0.3	19.2	0.0	0.8	1023.2	200	9:30	2:37	5 hours	60 L	Leak detection passed.
		40	0.0	0.3	18.8	0.0	-							
		60	0.0	0.4	18.8	0.0	0.8							
SV08	30-May-17	20	0.0	0.0	18.1	0.0	0.7	1020.1	200	10:01	3:06	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	17.0	0.0	-							
		60	0.0	0.0	17.0	0.0	0.7							
SV09	30-May-17	20	0.0	0.4	17.2	0.0	0.5	1020.1	200	10:09	3:13	5 hours	60 L	Leak detection passed.
		40	0.0	0.6	16.1	0.0	-							
		60	0.0	0.7	16.7	0.0	-							
		80	0.0	0.7	17.0	0.0	0.5							
SV10	24-May-17	20	0.0	0.0	20.4	0.0	4.2	1014.7	200	7:36	12:37	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	20.3	0.0	-							
		60	0.0	0.0	20.3	0.0	4.2							
SV11	24-May-17	20	0.0	0.0	20.1	0.0	0.6	1014.7	200	7:26	12:28	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	20.1	0.0	-							
		60	0.0	0.0	20.1	0.0	0.5							
SV12	24-May-17	20	0.0	0.0	20.6	0.0	0.3	1014.7	200	7:47	12:50	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	20.7	0.0	-							
		60	0.0	0.0	20.7	0.0	0.2							
SV13	24-May-17	20	0.0	0.0	19.9	0.0	1.1	1014.7	200	6:41	11:41	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	19.8	0.0	-							
		60	0.0	0.0	19.8	0.0	1.0							
SV14	24-May-17	20	0.0	0.2	20.4	0.0	0.1	1014.7	200	6:53	11:53	5 hours	60 L	Leak detection passed.
		40	0.0	0.2	20.4	0.0	-							
		60	0.0	0.2	20.4	0.0	0.1							
SV15	24-May-17	20	0.0	2.8	16.9	0.0	0.1	1014.7	200	6:46	11:46	5 hours	60 L	Leak detection passed.
		40	0.0	3.0	16.4	0.0	-							
		60	0.0	3.0	16.4	0.0	-							
		80	0.0	3.0	16.4	0.0	0.1							
SV16	24-May-17	20	0.0	2.8	17.7	0.0	0.0	1014.7	200	6:22	11:23	5 hours	60 L	Leak detection passed.
		40	0.0	3.2	17.4	0.0	-							
		60	0.0	3.3	17.3	0.0	-							
		80	0.0	3.3	17.3	0.0	0.0							
SV17	23-May-17	20	0.0	0.6	18.9	0.0	0.0	1017.0	200	12:31	5:32	5 hours	60 L	Leak detection passed.
		40	0.0	0.6	19.2	0.0	-							
		60	0.0	0.6	19.2	0.0	0.0							
SV32	23-May-17	20	0.0	0.0	19.2	0.0	0.5	1017.0	200	12:40	5:40	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	19.2	0.0	-							
		60	0.0	0.0	19.2	0.0	0.5							
SV33	24-May-17	20	0.0	0.0	20.5	0.0	0.1	1014.7	200	8:26	2:07	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	20.5	0.0	-							
		60	0.0	0.0	20.5	0.0	0.1							
SV34	24-May-17	20	0.0	0.0	20.6	0.0	0.1	1014.7	200	8:35	2:11	5 hours	60 L	Leak detection passed.
		40	0.0	0.0	20.7	0.0	-							
		60	0.0	0.0	20.7	0.0	0.0							
SV24	22-May-17	20	0.0	0.6	19.1	0.0	0.6	1021.8	300	1:19	3:39	3 hours + 20 minutes	60 L	Leak detection passed.
		40	0.0	0.7	18.8	0.0	-							
		60	0.0	0.7	18.7	0.0	0.3							
SV25	22-May-17	20	0.0	0.0	20.1	0.0	0.6	1021.8	300	1:37	4:57	3 hours + 20 minutes	60 L	Leak detection passed.
		40	0.0	0.0	19.9	0.0	-							
		60	0.0	0.0	19.9	0.0	0.6							
SV27	22-May-17	20	0.0	1.6	18.7	0.0	0.1	1021.8	300	1:28	4:49	3 hours + 20 minutes	60 L	Leak detection passed.
		40	0.0	1.6	18.7	0.0	-							
		60	0.0	1.6	18.6	0.0	0.0							

Page 1 of 4

Page 2 of 4



Env Stds Comments

#1:Oregon Department of Environmental Quality Guidelines factor of 0.001 applied to commercial buildings, based on a detailed study of soil vapour / building vapour measurements.

#2:Factor of 0.1 conversion used from indoor air to soil vapour



				Monocyclic Aromatic Hydrocarbons										Misc. Hydrocarbons			Chlorinated Benzenes								Org. Alcohols	Misc. Ind. Chem.
				1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	styrene	tert-butyl benzene	1,2-dimethanethane	monofrom	dibromomethane	tribromomethane	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	chlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	isopropyl alcohol	hexachlorobutadiene		
				mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³		
EOL				0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.83	0.08	0.08	0.08	0.08	0.08	0.01	0.08	0.08	0.08	0.08	0.08	0.08	1.67	0.08	
NEPM 2013 HIL Comm/Ind. D Indoor Air (Attenuation Factor 0.1)																										
NEPM 2013 HIL Comm/Ind. D Soil Vapour																										
NEPM 2013 Soil Vapour HSL D - Sand 0 to <1m																										
Sample ID	Location	Date	Lab Report																							
VP04	Locomotion Street - Bay 10	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP04	Locomotion Street - Bay 10	18/05/2017	547283	1.184	0.2834	0.015	0.03834	0.02334	0.1434	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP05	Locomotion Street - Bay 8	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP05	Locomotion Street - Bay 8	18/05/2017	547283	0.9169	0.2167	0.01167	0.03001	0.02	0.1	<0.008335	<0.08335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP06	Locomotion Street - Bay 7/8	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP06	Locomotion Street - Bay 7/8	18/05/2017	547283	0.4334	0.1117	<0.008335	0.02	<0.008335	0.06168	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP06_1.5	Locomotion Street South - Bay 7/8	16/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP07	Locomotion Street - Bay 7	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP07	Locomotion Street - Bay 7	18/05/2017	547283	0.1284	0.02501	<0.008335	<0.008335	<0.008335	0.01334	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP07 1.5	Locomotion Street South - Bay 7	19/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP08	Locomotion Street - Bay 5	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP08	Locomotion Street - Bay 5	18/05/2017	547283	0.2667	0.06335	<0.008335	<0.008335	<0.008335	0.02667	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP08_1.5	Locomotion Street South - Bay 5	16/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP09	Locomotion Street - Bay 4	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP09	Locomotion Street - Bay 4	18/05/2017	547283	0.5168	0.1234	<0.008335	0.02167	<0.008335	0.06335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP09 1.5	Locomotion Street South - Bay 4	19/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP10	Locomotion Street - Bay 3	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP10	Locomotion Street - Bay 3	18/05/2017	547283	0.3667	0.06668	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP10_1.5	Locomotion Street South - Bay 3	16/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP10_3.0	Locomotion Street South - Bay 3	16/06/2017	550933	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	-	<0.008335		
VP11	Locomotion Street - Bay 2	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP11	Locomotion Street - Bay 2	18/05/2017	547283	0.4168	0.1017	<0.008335	<0.008335	<0.008335	0.05168	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		
VP12	Locomotion Street - Bay 1	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
QC01 - Duplicate of VP12	Locomotion Street - Bay 1	13/02/2017	534159	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.8334	<0.08334	<0.8334	<0.08334	<0.08334	<0.08334	<0.08334	-	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<0.08334	<1.667	<0.08334		
VP12	Locomotion Street - Bay 1	18/05/2017	547283	0.1834	0.03834	<0.008335	<0.008335	<0.008335	0.02167	<0.008335	<0.08335	<0.008335	<0.008335	-	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.008335	<0.1667	<0.008335		

Env Stds Comments
#1: Oregon Department of Environmental Quality Guidelines factor of 0.001 applied to commercial buildings, based on a detailed study of soil vapour / building vapour measurements.
#2: Factor of 0.1 conversion used from indoor air to soil vapour

Page 1 of 9

Page 2 of 9

Page 3 of 9

Page 4 of 9

Page 5 of 9

Table F: Groundwater Analytical Results
Project Number: 51142
Project Name: Locomotive Workshop Stage LTEMP

			Organochlorine Pesticides															Organophosphorus Pesticides														
			beta-BHC	DDD	DDT	alpha-Chlordane	DDT+DDE+DDD (Sum of Total)	Chlordane	delta-BHC	gamma-Chlordane	Endosulfen alpha	Endosulfen beta	Endosulfen sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Disulfoton	Ethion	Ethionophos	Fenitrothion	Ronnel			
ANZG (2018) Marine water 95% toxicant DOVs			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
NEPM 2013 GIL - Drinking Water				9			2										0.3			10		4	5	7	4	1	7					
NEPM 2013 GIL - Fresh Waters				0.006 ¹⁰⁰			0.01 ¹⁰⁰					0.01 ¹⁰⁰				0.01 ¹⁰⁰			0.01 ¹⁰⁰		0.01		0.15				0.2					
NEPM 2013 GIL - Marine Waters																																
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 2 to <4m																																
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 4 to <8m																																
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 8m+																																
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 2 to <4m																																
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 4 to <8m																																
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 8m+																																
NEPM 2013 GIL - Recreational				90			20									3		3000	100	100		40	50	70	40	10	70					
Sample ID	Date	Location																														
MW328	25/03/2015	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW402	12/12/2007	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW402	2/08/2012	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2				
MW402	5/02/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW402	17/07/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW402	30/01/2014	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW402	25/03/2015	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW403	12/12/2007	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW403	2/08/2012	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2				
MW403	5/02/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW403	17/07/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW403	30/01/2014	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW403	30/03/2015	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW405	12/12/2007	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW405	2/08/2012	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2				
MW405	5/02/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW405	17/07/2013	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW405	30/01/2014	Lot 8	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2				
MW405	25/03/2015	Lot 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW118	2/05/2003	Lot 9	-	-	<0.4	-	<0.4	-	-	-	-	-	-	-	-	-	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	<0.2	-	-				
MW14	3/04/2014	Lot 9	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	-				
MW14	24/03/2015	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW15	3/04/2014	Lot 9	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	-				
MW15	3/04/2014	Lot 9	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	-				
MW15	24/03/2015	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW16	27/05/1993	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW16	24/03/2015	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW25	27/05/1993	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW315	3/08/2012	Lot 9	<0.2	<0.2	<0.2	<0.2	<0.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-				
MW318	12/08/2005	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW318	20/09/2005	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW318	14/11/2007	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW318D	2/07/2007	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW318S	2/07/2007	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW322	31/05/2005	Lot 9	<0.2	<0.2	<0.2	<0.2	0	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	-	-	<0.2	-	<0.2	-				
MW322	12/08/2005	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW322	20/09/2005	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW322	2/07/2007	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW322	14/11/2007	Lot 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW50>																																

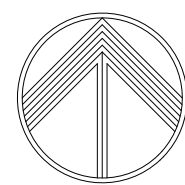
			Organochlorine Pesticides																Organophosphorus Pesticides										
			beta-BHC	DDD	DDT	alpha-Chlordane	DDT+DDE+DDD (sum of Total)	Chlordane	delta-BHC	gamma-Chlordane	Endosulfen alpha	Endosulfen beta	Endosulfen sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Ethionophos	Fenitrothion	Phenel
ANZG (2018) Marine water 95% toxicant DOVs			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
NEPM 2013 GIL - Drinking Water					9			2										0.3			10		4	5	7	4	1	7	
NEPM 2013 GIL - Fresh Waters					0.006 ^{#1}			0.03 ^{#11}						0.01 ^{#12}			0.01 ^{#13}				0.01 ^{#14}		0.01	0.15			0.2		
NEPM 2013 GIL - Marine Waters														0.004 ^{#15}							0.009 ^{#16}								
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 2 to <4m																													
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 4 to <8m																													
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 8m+																													
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 2 to <4m																													
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 4 to <8m																													
NEPM 2013 Groundwater HSL D for Vapour Intrusion - Sand 8m+																													
NEPM 2013 GIL - Recreational					90			20									3		3000	100	100		40	50	70	40	10	70	
Sample ID	Date	Location	<0.2	<0.2	<0.2	<0.2	0	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	-	-	-	<0.2	-	<0.2	-
MW318	31/05/2005	Off-site	<0.2	<0.2	<0.2	<0.2	0	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	-	-	-	<0.2	-	<0.2	-
MW319	31/05/2005	Off-site	<0.2	<0.2	<0.2	<0.2	0	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	-	-	-	<0.2	-	<0.2	-
MW319	12/08/2005	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW319	20/09/2005	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW401A	2/07/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW401A	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW401A	17/07/2013	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW403A	2/07/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW403A	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW402B	2/07/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW402B	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW402B	2/07/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW403C	2/07/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW42	27/05/1993	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW602	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW603	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW604	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW605	14/11/2007	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW66	27/05/1993	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWP208A-A	26/03/2008	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWP208A-B	26/03/2008	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWP208A-C	26/03/2008	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWP208A-D	26/03/2008	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWP208A-E	26/03/2008	Off-site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Env Stds Comments

#1:H
#2:C,H
#3:B
#4:B,H
#5:B
#6:C
#7:Adopted from WHO Drinking Water Guideline 2011
#8:TV Calculated using hardness of 30mg/L CaCO3, refer to ANZECC & ARMCANZ (2000) for site specific hardness
#9:TV adopted from the ADWG (2011) Updated March 2015.
#10:Possible bioaccumulation & secondary poisoning, refer to ANZECC & ARMCANZ (2000) for further guidance.
#11:TV Calculated using hardness of 30mg/L CaCO3. May not protect key species from chronic toxicity. Refer to ANZECC & ARMCANZ (2000) for site specific hardness and further guidance.
#12:TV Calculated using hardness of 30mg/L CaCO3, possible bioaccumulation & secondary poisoning. Refer to ANZECC & ARMCANZ (2000) for site specific hardness and further guidance.
#13:Possible bioaccumulation & secondary poisoning, refer to ANZECC & ARMCANZ (2000) for further guidance.
#14:TV Calculated using hardness of 30mg/L CaCO3, TV May not protect key species from chronic toxicity. Refer to ANZECC & ARMCANZ (2000) for site specific hardness and further guidance.
#15:TV May not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.
#16:To obtain F1 subtract the sum of BTEX from C6-C10.
#17:To obtain F2 subtract naohthalene from >C10-C16.
#18:Multiple factor not applied

* Data presented in ES (2014a)

Appendix B Survey Plans



NORTH (APPROX)

LEGEND

- BOUNDARY
- GRIDS
- TENANCY BOUNDARIES
- 9.800 SURVEYED POINT
- 9.800 RL SURVEYED
- 26.970 AS-BUILT POINT SHOWING ACTUAL RL & HEIGHT DIFFERENCE TO DESIGN
- 0.010 INDICATES 10mm HIGH
- 0.010 INDICATES 10mm LOW

BOUNDARIES NOT DEFINED

- TBC TO BE CONFIRMED

NOTES:

- ALL MARKS PLACED ARE ACCURATE AND CORRECT AT DATE OF SURVEY.
- IF MARKS ARE PLACED PRIOR TO STRESSING, GEOSURV TAKE NO RESPONSIBILITY FOR THE ACCURACY OF THOSE MARKS PLACED ONCE STRESSING HAS BEEN CARRIED OUT.
- CONSTRUCTION WORKS MUST BE RELATED TO THE BENCHMARK ONLY AND NOT LEVELS OF STRUCTURES SHOWN ON THIS PLAN.
- IT IS THE SOLE RESPONSIBILITY OF THE BUILDER TO MAINTAIN THE INTEGRITY OF MARKS TO BE USED BY CONTRACTORS PRIOR TO USE.
- THIS SURVEY IS FOR SETOUT PURPOSES ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE
- PLAN HAS BEEN PRODUCED AS A PRIORITY AS PER BUILDERS REQUEST. FOR CLARITY OF THE OFFSET MARKS SHOWN PLEASE ENLARGE SECTION OF THE PLAN WHEN PRINTING. SEEK CLARIFICATION FROM GEOSURV IF UNSURE OF THE OFFSET OR THE DIRECTION OF THE OFFSET TO THE LOCATION OF THE MARK PLACED

PLANS USED:

TBC-AR-DWG-BB-B4-2105 [12] - DWG
TBC-AR-DWG-BB-B4-1016 [9] - DWG - TENANCY BOUNDARIES

REV.	DATE	AMENDMENTS	INT.
A	21/05/20	Issued to Client	TJ
PRE	21/05/20	Preliminary Issue	TJ

PREPARED BY:



GEOSURV PTY LTD
ABN 99 121 987 004
www.geosurv.com.au
PO Box R1670
ROYAL EXCHANGE NSW 1225
tel: 1300 554 675
fax: 1300 868 864
e-mail: info@geosurv.com.au

PREPARED FOR:

MIRVAC CONSTRUCTIONS
PTY LTD

PLAN OF:

LTEMP SURVEY
CONCRETE LOADING DOCK BAYS 1 - 6
GROUND LEVEL
APT B4 BUILDING
2 LOCOMOTIVE STREET
EVELEIGH, NSW

ORIGINAL SIZE: A1

SCALE:	1:100	CO-ORD:	SITE
DATUM:	SITE	ORIG DATUM:	ADOPTED
SURVEY BY:	TJ	DATE:	11/02/20
DRAWN BY:	JT	DATE:	21/05/20
CHECKED BY:	JT	DATE:	21/05/20
APPROVED BY:	JT	DATE:	21/05/20

DRAWING #: GS-SV-DWG-BB-B4-0065
REV: A

Appendix C Design Plans



notes

ALL EXISTING CONDITIONS TO BE CHECKED ON SITE.
ALL OMISSIONS OR DISCREPANCIES TO BE NOTIFIED TO THE ARCHITECT.

NOMINATED ARCHITECT: ANTHONY PALAMARA NSW ARN 7274
DO NOT SCALE THIS DRAWING. VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK. COPYRIGHT © 2019 BUCHAN. THIS DRAWING REMAINS THE PROPERTY OF THE BUCHAN GROUP AUSTRALIA PTY LTD. REPRODUCTION IN WHOLE OR IN PART WITHOUT PRIOR CONSENT IS FORBIDDEN.

DRAWING BEST PRINTED IN COLOUR

key plan

rev	date	description	by	chk
6	20.12.19	FOR CONSTRUCTION - PRIMARY STEEL ONLY	SB	SB
H	15.05.19	TOP ED SERVICES COORDINATION	MC	SB
I	20.05.19	FOR PRELIMINARY TENDER	SW	SB
J	29.05.19	ISSUED FOR INFORMATION	SB	SB
K	27.06.19	FOR INFORMATION	SW	SB
L	16.08.19	FOR CONSTRUCTION CERTIFICATE	MM	SW
M	09.10.19	FOR CONSTRUCTION CERTIFICATE - 04	SW	SW
1	28.10.19	FOR CONSTRUCTION	MM	SW
2	29.10.19	CONSTRUCTION CERTIFICATE	AA	SW
3	15.11.19	CONSTRUCTION CERTIFICATE	SW	SW
4	12.02.2020	FOR CONSTRUCTION	SW	SW

client

MIRVAC
Level 28, 200 George St, Sydney,
NSW 2000
Tel.+61 2 9080 8000

LOCOMOTIVE WORKSHOPS
2 Locomotive St, Eveleigh NSW 2015

retail & heritage interpretation architect

Level 1, 7 Kelly St, Ultimo NSW 2007
Tel. 02 9566 1611

principal architect

5/81 Alexander St,
Crows Nest NSW 2065
Tel. 02 9460 8002

drawing title

OVERALL GA PLAN -
GROUND

status

FOR CONSTRUCTION

project no.

217150

scale

As indicated @B1

date

12.02.2020

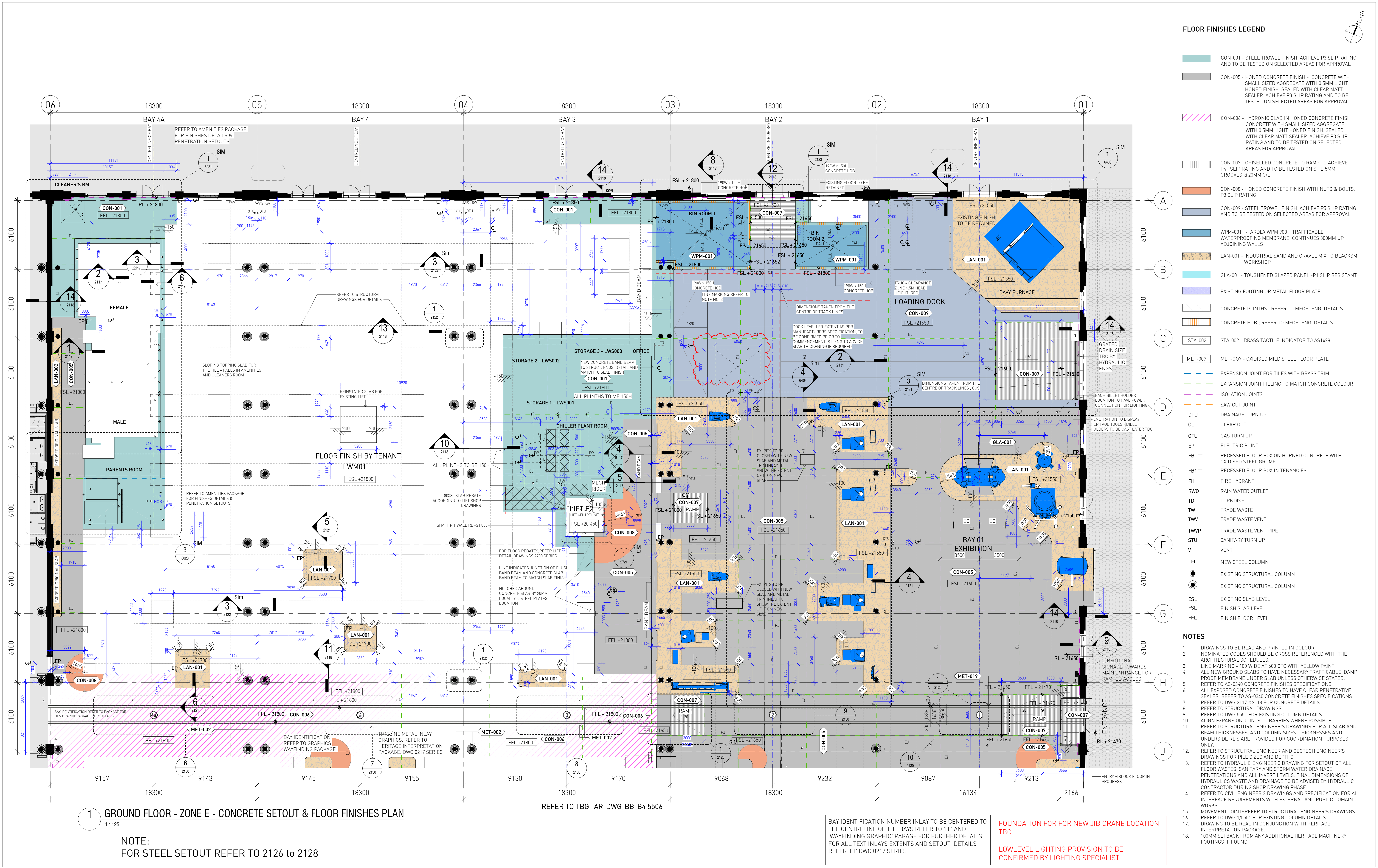
drawing no.

TBG-AR-DWG-BB-B4-1016

rev

4

1 : 250



- FLOOR FINISHES LEGEND**
- CON-001 - STEEL TROWEL FINISH. ACHIEVE P3 SLIP RATING AND TO BE TESTED ON SELECTED AREAS FOR APPROVAL
 - CON-005 - HONED CONCRETE FINISH - CONCRETE WITH SMALL SIZED AGGREGATE WITH 0.5MM LIGHT HONED FINISH. SEALED WITH CLEAR MATT SEALER. ACHIEVE P3 SLIP RATING AND TO BE TESTED ON SELECTED AREAS FOR APPROVAL
 - CON-006 - HYDRONIC SLAB IN HONED CONCRETE FINISH CONCRETE WITH SMALL SIZED AGGREGATE WITH 0.5MM LIGHT HONED FINISH. SEALED WITH CLEAR MATT SEALER. ACHIEVE P3 SLIP RATING AND TO BE TESTED ON SELECTED AREAS FOR APPROVAL
 - CON-007 - CHISSELLED CONCRETE TO RAMP TO ACHIEVE P4 SLIP RATING AND TO BE TESTED ON SITE 5MM GROOVES @ 20MM C/L
 - CON-008 - HONED CONCRETE FINISH WITH NUTS & BOLTS. P3 SLIP RATING
 - CON-009 - STEEL TROWEL FINISH. ACHIEVE P5 SLIP RATING AND TO BE TESTED ON SELECTED AREAS FOR APPROVAL
 - WPM-001 - ARDEX WPM 908, TRAFFICABLE WATERPROOFING MEMBRANE. CONTINUOUS 300MM UP ADJOINING WALLS
 - LAN-001 - INDUSTRIAL SAND AND GRAVEL MIX TO BLACKSMITH WORKSHOP
 - GLA-001 - TOUGHENED GLAZED PANEL - P1 SLIP RESISTANT
 - EXISTING FOOTING OR METAL FLOOR PLATE
 - CONCRETE PLINTHS; REFER TO MECH. ENG. DETAILS
 - CONCRETE HOB; REFER TO MECH. ENG. DETAILS
 - STA-002 - STA-002 - BRASS TACTILE INDICATOR TO AS1428
 - MET-007 - MET-007 - OXIDISED MILD STEEL FLOOR PLATE
 - EXPANSION JOINT FOR TILES WITH BRASS TRIM
 - EXPANSION JOINT FILLING TO MATCH CONCRETE COLOUR
 - ISOLATION JOINTS
 - SAW CUT JOINT
 - DTU - DRAINAGE TURN UP
 - CO - CLEAR OUT
 - GTU - GAS TURN UP
 - EP + - ELECTRIC POINT
 - FB + - RECESSED FLOOR BOX ON HORNED CONCRETE WITH OXIDISED STEEL GROMET
 - FB1+ - RECESSED FLOOR BOX IN TENANCIES
 - FH - FIRE HYDRANT
 - RWO - RAIN WATER OUTLET
 - TD - TURNDISH
 - TW - TRADE WASTE
 - TWV - TRADE WASTE VENT
 - TWVP - TRADE WASTE VENT PIPE
 - STU - SANITARY TURN UP
 - V - VENT
 - H - NEW STEEL COLUMN
 - EXISTING STRUCTURAL COLUMN
 - EXISTING STRUCTURAL COLUMN
 - ESL - EXISTING SLAB LEVEL
 - FSL - FINISH SLAB LEVEL
 - FFL - FINISH FLOOR LEVEL
- NOTES**
- DRAWINGS TO BE READ AND PRINTED IN COLOUR.
 - NOMINATED CODES SHOULD BE CROSS REFERENCED WITH THE ARCHITECTURAL SCHEDULES.
 - LINE MARKING - 100 WIDE AT 600 CTC WITH YELLOW PAINT.
 - ALL NEW GROUND SLABS TO HAVE NECESSARY TRAFFICABLE DAMP PROOF MEMBRANE UNDER SLAB UNLESS OTHERWISE STATED. REFER TO AS-0340 CONCRETE FINISHES SPECIFICATIONS.
 - ALL EXPOSED CONCRETE FINISHES TO HAVE CLEAR PENETRATIVE SEALER. REFER TO AS-0340 CONCRETE FINISHES SPECIFICATIONS. REFER TO DWG 2117 & 2118 FOR CONCRETE DETAILS.
 - REFER TO STRUCTURAL DRAWINGS.
 - REFER TO DWG 5551 FOR EXISTING COLUMN DETAILS.
 - ALIGN EXPANSION JOINTS TO BARRIERS WHERE POSSIBLE.
 - REFER TO STRUCTURAL ENGINEER'S DRAWINGS FOR ALL SLAB AND BEAM THICKNESSES, AND COLUMN SIZES. THICKNESSES AND UNDERSIDE RL'S ARE PROVIDED FOR COORDINATION PURPOSES ONLY.
 - REFER TO STRUCTURAL ENGINEER AND GEOTECH ENGINEER'S DRAWINGS FOR PILE SIZES AND DEPTHS.
 - REFER TO HYDRAULIC ENGINEER'S DRAWING FOR SETOUT OF ALL FLOOR WASTES, SANITARY AND STORM WATER DRAINAGE PENETRATIONS AND ALL INVERT LEVELS. FINAL DIMENSIONS OF HYDRAULICS WASTE AND DRAINAGE TO BE ADVISED BY HYDRAULIC CONTRACTOR DURING SHOP DRAWINGS PHASE.
 - REFER TO CIVIL ENGINEER'S DRAWINGS AND SPECIFICATION FOR ALL INTERFACE REQUIREMENTS WITH EXTERNAL AND PUBLIC DOMAIN WORKS.
 - MOVEMENT JOINTS REFER TO STRUCTURAL ENGINEER'S DRAWINGS.
 - REFER TO DWG 1/5551 FOR EXISTING COLUMN DETAILS.
 - DRAWING TO BE READ IN CONJUNCTION WITH HERITAGE INTERPRETATION PACKAGE.
 - 100MM SETBACK FROM ANY ADDITIONAL HERITAGE MACHINERY FOOTINGS IF FOUND

notes

ALL EXISTING CONDITIONS TO BE CHECKED ON SITE. ALL OMISSIONS OR DISCREPANCIES TO BE NOTIFIED TO THE ARCHITECT.

NOMINATED ARCHITECT: ANTHONY PALAMARA NSW ARN 7274

DO NOT SCALE THIS DRAWING. VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK. COPYRIGHT © 2019 BUCHAN. THIS DRAWING REMAINS THE PROPERTY OF THE BUCHAN GROUP AUSTRALIA PTY LTD. REPRODUCTION IN WHOLE OR IN PART WITHOUT PRIOR CONSENT IS FORBIDDEN.

DRAWING BEST PRINTED IN COLOUR

key plan

rev	date	description	by	chk
3	09.10.19	FOR CONSTRUCTION CERTIFICATE -04	SW	SW
4	11.10.19	FOR CONSTRUCTION	PM	SW
5	16.10.19	FOR CONSTRUCTION	SW	SW
6	18.10.19	FOR CONSTRUCTION	SW	SW
7	28.10.19	FOR CONSTRUCTION	PM	SW
8	29.10.19	FOR CONSTRUCTION	AA	SW
9	30.10.19	FOR CONSTRUCTION	SW	SW
10	31.10.19	FOR CONSTRUCTION	AA	SW
11	07.11.19	EARTH FLOORING LOCATIONS	MC	MC
12	15.11.19	CONSTRUCTION CERTIFICATE	SW	SW
13	13.12.19	FOR CONSTRUCTION	PM	MH

client

MIRVAC

Level 28, 200 George St, Sydney, NSW 2000

Tel: +61 2 9080 8000

LOCOMOTIVE WORKSHOPS

2 Locomotive St, Eveleigh NSW 2155

retail & heritage interpretation architect

BUCHAN

Level 1, 7 Kelly St, Ultimo NSW 2007

Tel. 02 9566 1611

principal architect

SISSONS

5/81 Alexander St, Crows Nest NSW 2065

Tel. 02 9460 8002

drawing title

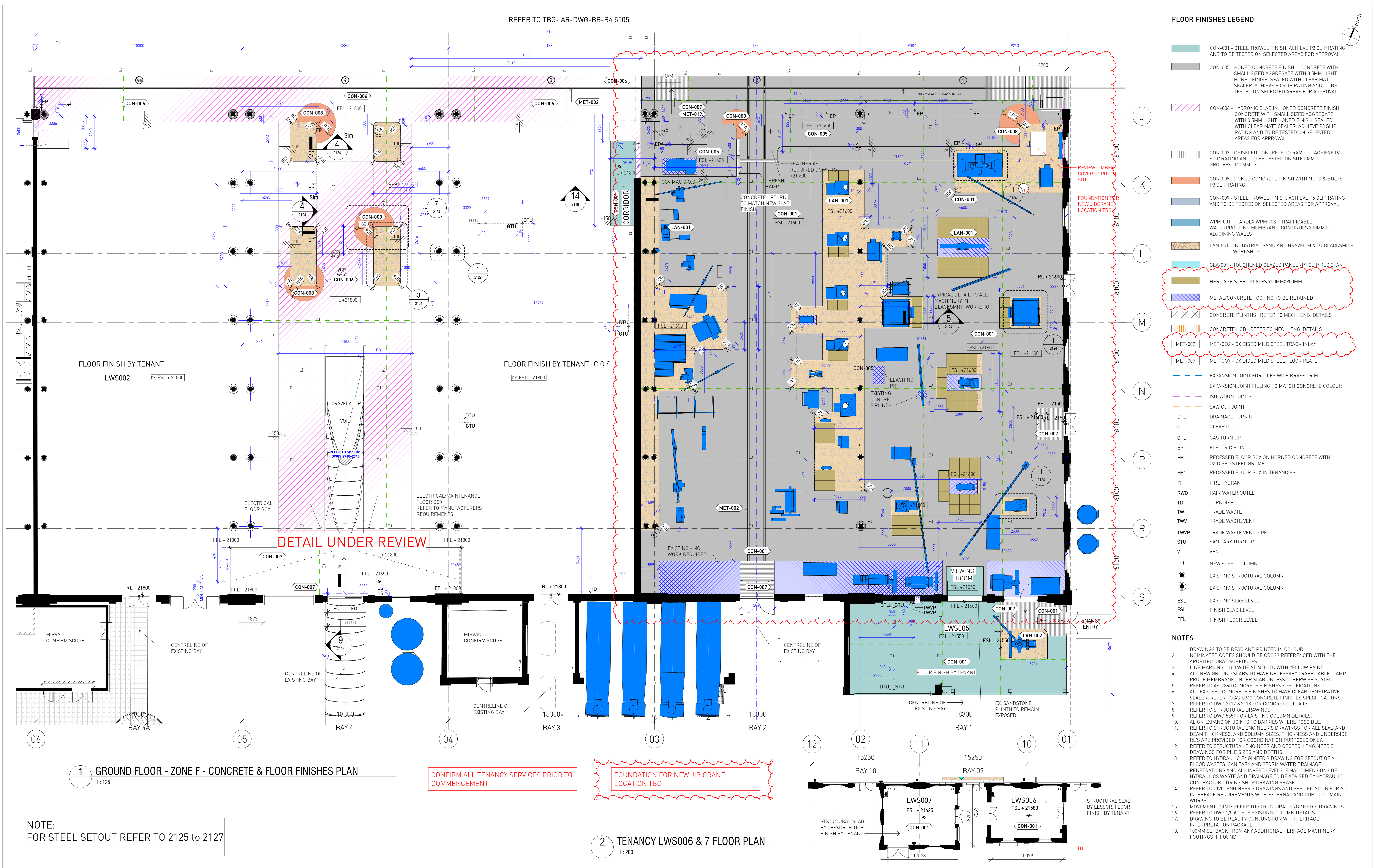
CONCRETE SETOUT & FLOOR FINISHES - GROUND - ZONE E

status

FOR CONSTRUCTION

project no.	scale	date
217150	As indicated @B1	13.12.19

drawing no.	rev
TBG-AR-DWG-BB-B4-2105	13



notes

ALL EXISTING CONDITIONS TO BE CHECKED ON SITE.
ALL OMISSIONS OR DISCREPANCIES TO BE NOTIFIED TO THE ARCHITECT.

NOMINATED ARCHITECT: ANTHONY PALAMARA NSW ARN 7274.
DO NOT SCALE THIS DRAWING. VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK. COPYRIGHT © 2019 BUCHAN. THIS DRAWING REMAINS THE PROPERTY OF THE BUCHAN GROUP AUSTRALIA PTY LTD. REPRODUCTION IN WHOLE OR IN PART WITHOUT PRIOR CONSENT IS FORBIDDEN.

DRAWING BEST PRINTED IN COLOUR

key plan

rev

date

description

by

chk

3

09.10.19

FOR CONSTRUCTION CERTIFICATE -04

SW

SW

4

11.10.19

FOR CONSTRUCTION

PM

SW

5

16.10.19

FOR CONSTRUCTION

SW

SW

6

17.10.19

FOR CONSTRUCTION

SW

SW

7

28.10.19

FOR CONSTRUCTION

PM

SW

8

29.10.19

CONSTRUCTION CERTIFICATE

AA

SW

9

30.10.19

FOR CONSTRUCTION

SW

SW

10

31.10.19

FOR CONSTRUCTION

AA

SW

11

15.11.19

CONSTRUCTION CERTIFICATE

SW

SW

12

13.12.19

FOR CONSTRUCTION

PM

MH

13

18.12.19

FOR CONSTRUCTION

PM

MH

client

MIRVAC
Level 28, 200 George St, Sydney,
NSW 2000
Tel. +61 2 9080 8000

LOCOMOTIVE WORKSHOPS
2 Locomotive St, Eveleigh NSW 2015

retail & heritage interpretation architect

Level 1, 7 Kelly St, Ultimo NSW 2007
Tel. 02 9566 1611

principal architect

5/81 Alexander St,
Crows Nest NSW 2065
Tel. 02 9460 8002

drawing title

CONCRETE SETOUT &
FLOOR FINISHES - GROUND
- ZONE F

status

CONSTRUCTION CERTIFICATE

project no.

217150

scale

As indicated @B1

date

18.12.19

drawing no.

TBG-AR-DWG-BB-B4-2106

rev

13

Appendix D Procedures

Site Surface Maintenance		EMP01
Responsibility:	Site Manager	
Frequency:	Continuous	
Objective:	To prevent potential exposure to environmental impact present in the sub-surface	
Procedure		
The site surface shall be maintained so as to prevent contact with impacted sub-surface soils. This shall include assurance that: • Excavations shall not be undertaken; and • Concrete hardstand shall not be breached; unless undertaken in accordance with the specific requirements of the LTEMP (EMP02 and EMP03). Regular inspection (six monthly) of the capping arrangement shall be undertaken by maintenance personnel as directed by the Site Manager to identify any obvious signs of breaches/ deterioration of the physical barrier (concrete pavement). Should any of the above be noted during inspections, reinstatement of the surface condition will be required via implementation of EMP03. A register of the completion of visual inspections and documentation associated with works completed subsequent to inspections identifying the need for reinstatement will be maintained by the Site Manager. External reporting of the register by the Site Manager is considered not necessary, however, the register will be made available to environmental/planning officers upon request in the event of a Site inspection. The register of inspections will include (but not be limited to) the following: • Time and date of the inspection and/or incident; • Details of any visual indications of capping layer breaches or deteriorations observed; • Details regarding the cause (suspected or known) of the breach/deteriorations; • Details and documentation associated with works undertaken in the reinstatement of surface condition in accordance with EMP03; and • Details of any systems or procedures implemented to prevent similar breaches or deteriorations in the future. In the event that the pavements are unintentionally breached during site activities, reinstatement in accordance with EMP03 will be required to rectify the site management system.		

Excavation Works		EMP02
Responsibility:	Site Manager	
Frequency:	As required for excavations beneath the physical barrier (concrete slab)	
Objective:	To minimise exposure of contractors and site personnel to impacted sub-surface soils during future excavation works beneath the site.	
Procedure		
Fill material impacted with PAHs, TRH and heavy metals has been retained beneath the site detailed in Appendix A .		
Given the heterogeneity of fill materials, historical industrial land use activities, and extensive observations of rubble and other building-material related inclusions on historical borehole logs, potential remains for asbestos impacts to occur within fill material as unexpected finds. As such, an unexpected finds protocol/procedure is required to manage any such unexpected finds (refer to EMP14).		
Measures are required to be put in place to eliminate potential exposure to workers to impacted fill where their work requires that the physical barrier (concrete slab) is breached.		
Potential exposure may occur in the event of a breach of the physical barrier consequent of the presence of contaminated soils via dermal contact, ingestion or inhalation.		
Access to the subsurface material at the site will be controlled by way of a Works Permit provided by the Site Manager to the on site workers, including site employees, subcontractors and infrastructure maintenance personnel (Water, gas, telecommunications etc. providers in addition to building and landscape maintenance personnel). Issue of a Works Permit will be dependent upon preparation of an appropriate Safe Work Method Statement (SWMS) including Job Safety Analysis in addition to any other appropriate documents which may be appropriate for the proposed works.		
The SWMS to be submitted to the Site Manager shall include as a minimum:		
- Contractors undertaking ground disturbance works on the site shall be notified prior to the commencement of any site works of the occurrence of PAH, TRH and heavy metal impacted subsurface fill material beneath the site. - Excavation/disturbance works shall only commence where appropriate precautions are taken, such as use of the correct PPE, as outlined below. - Implementation of dust, noise and sediment control procedures as outlined in EMP04 to EMP07 inclusive during all site excavation works. - The area of the excavation/disturbance shall be barricaded to prevent access of unprotected site personnel and contractors.		
All workers likely to be in contact with contaminated soil beneath the marker layer are required to meet the applicable personal protective equipment (PPE) requirements as outlined below, and must have undertaken Occupational Health and Induction Training as defined in Part 8.2 of the <i>Work Health and Safety Regulation 2017</i> (or as updated). Any person required to directly contact soils shall be required to wear the following PPE:		
- Overboots; and - Gloves.		
Should asbestos impacts be encounter then PPE requirements as outlined in EMP14 are required to be implemented.		
Excavated materials are to be separated during excavation works as applicable, into either concrete capping or alternative material, fill materials or natural soils. They are then to be stockpiled separately in a manner that minimises the potential for contamination of materials other than the impacted material at the site. In addition, impacted soils are to be placed either on an impermeable surface, such as builders plastic, or within a skip or similar container during works to address the potential for impacts to areas surrounding the excavation.		
At the completion of excavation/disturbance works, EMP03 shall be implemented for the reinstatement of disturbed areas. Where materials (soil) disturbed during excavation works cannot be returned to the excavation, this material shall be disposed of off-site in accordance with the requirements of NSW EPA <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (2014) or as updated by NSW EPA.		
It is noted that implementation of the guideline requirements will include the completion of a waste classification assessment prior to off-site disposal of the material to a suitably licensed waste facility. Copies of all documentation, including the classification report, transport and waste facility dockets will be retained by the site manager.		
A qualified contaminated land consultant (Environmental Consultant) or alternatively the appointed Site Auditor, should undertake inspections at the commencement, during and following the completion of the works to confirm the following:		
- The work has not resulted in any potential adverse human health or environmental impact; and - The site capping system has been appropriately reinstated.		

Reinstatement of Excavation Works		EMP03
Responsibility:	Site Manager	
Frequency:	As required for future excavations within the site boundary	
Objective:	To prevent exposure of site users to impacted sub-surface soils following the completion of future excavation works within impacted areas of the site.	
Procedure Following implementation of EMP02 Excavation Works, or where unintended breaches of the capping has occurred, site reinstatement works shall be undertaken in accordance with the following procedures. Works associated with penetrations or intrusions of the permanent capping arrangement must ensure that reinstatement includes installation of a vapour proof seal (possibly including a membrane) such that potential vapour migration through a preferential pathways is minimized. In all instances where impacted material is returned to excavated areas, this shall be completed directly from the storage container or impermeable surface in a manner which minimises the potential for contamination of the ground surface beyond the excavation footprint. Any soil removed from the excavation shall be reinstated in the same stratigraphic sequence which it was removed in, or suitably clean materials be imported and used as backfill. In addition, the capping arrangement shall be re-instated to equivalent or greater thickness than the existing capping arrangement, where breaches occur. The contractor will be responsible for installing a clean capping layer as discussed in Section 2.2 and for supplying survey drawings as required to document the completion of installation of this layer during works. The Environmental Consultant or appointed Site Auditor will complete inspections during site activities to verify the completion capping layer installation during backfilling. It is also noted that, in addition to site contamination management requirements, the Site Manager may require implementation of procedures to ensure the suitable compaction of backfilled areas.		

Stormwater and Sediment		EMP04
Responsibility:	Site Manager	
Frequency:	Continuously during any future Ground Disturbance works within the Site	
Objective:	To minimise sediment migration during Site maintenance, utility installation/maintenance works and / or future development works	
Procedure		
Sediment controls are required to prevent the generation and consequent migration of sediment from works areas and stockpiles that may potentially be formed by future ground disturbance works (e.g. installation of new/additional, underground utilities). The following controls shall be implemented: • During excavation works, all care must be taken to minimise the areas of concrete hardstand (physical barrier) disturbance which will result in exposed soil; • Stockpiles will be placed on dedicated plastic-lined parts of the site to prevent contamination of exposed surface soils or spread of stockpiled material across remaining areas of the site; • Stockpiles will be covered if left for more than 24 hours; • Re- instatement of physical barrier in any resulting bare areas on the site as soon as practically possible; • During excavation works, installation of sediment controls at down-gradient extent of the works area and in the vicinity of any on-site drainage structures (drains, pits, etc.), in accordance with Department of Housing <i>'Managing Urban Stormwater Soils and Construction'</i>. Appropriate inspection and maintenance of sediment controls will be completed for the duration of works; and • Re-surfacing of reinstated excavations must be undertaken as soon as practically possible in accordance with the requirements as described in EMP03 Reinstatement of Excavation Works.		

Dust		EMP05
Responsibility:	Site Manager	
Frequency:	Continuously during any future excavation works	
Objective:	To minimise dust emissions from Site maintenance, utility installation/maintenance works and / or future development works	

Procedure

The impacted soil underlying the site has been covered with a permanent physical barrier comprising concrete hardstand to form a complete and permanent barrier between general site users and the impacted soil. As such, any dusts which may be generated from the final finished ground levels at the site during normal site use will not be associated with contaminated material underlying the site.

During any future ground disturbance works which may include exposure of potentially impacted material, dust emissions require to be minimised to the extent that no dust emissions are visible at the works area boundaries. Controls for each potential dust generating activity that will occur during the site development shall be implemented:

- During ground disturbance works, all care must be taken to minimise the areas of exposed soil;
- Where visible dust is observed during excavation works, a fine water spray will be utilised to control the dust;
- Dust/shade cloth will be installed on all temporary construction fencing at the extent of the works area to minimise the potential for transport of dust beyond the works area boundaries; and
- Dust controls must be implemented around subsequent stockpiled soils. Any dust controls will require regular inspection and maintenance to ensure effective operation until stockpiled material is returned to the excavations or removed from site.

Re-surfacing of reinstated excavations must be undertaken as soon as practically possible.

Stockpiling

In the event that stockpiling of excavated material is necessary during works, the following should be implemented:

- Minimisation of stockpile heights and batters to reduce exposed faces;
- Minimising stockpiles with high proportion of fines at the stockpile surface;
- If left for more than 24 hours, the stockpile is required to be covered (**EMP04**); and
- Consideration of regular dampening stockpiles with a fine water spray or covering with appropriate geotextile material during unfavourable weather conditions.

Trucks

Where excavated material is subject to off-site disposal, all loads will be covered on the completion of loading and prior to vehicle movement off-site. Truck movements will be kept to a minimum and trucks will be required to use sealed (paved) surfaces whenever possible to minimise dust generation.

Ambient Air Monitoring		EMP06
Responsibility:	Site Manager	
Frequency:	Once every 6 months for a period of one year (2 monitoring events)	
Objective:	To ensure that the remedial strategy remains effective	
Procedure		
The impacted soil underlying the site has been covered with a permanent physical barrier comprising concrete hardstand to form a complete and permanent barrier between general site users and the impacted soil. To substantiate previous investigation findings and support conclusions that there is no risk to current and future site users, additional limited ambient air monitoring events are required to be completed as part of this LTEMP. The objectives of the ambient air characterisation activities required are to: • Confirm that changes to the site condition during development activities have not resulted in increases to VOC concentrations in ambient air within the building when compared to the existing data set; • Demonstrate that vapour intrusion does not present a health risk to site occupants under the new site conditions; and • Confirm the remedial strategy (which comprises a cap/cover remedial strategy) has maintained appropriate migration attenuation characteristics. The site manager is required to engage the appointed contaminated land consultant and/or the Site Auditor to collect ambient air analytical data in accordance with NSW EPA made or endorsed guidelines via sampling and analysis during ‘worst case’ conditions (minimum air exchange rates within the building) to confirm the effectiveness of the capping/soil vapour migration attenuation arrangements. Alternatively, air sampling may be undertaken targeting any potential preferential pathways from cracks in the concrete (if present) with an enclosed sampling arrangement (i.e. a bucket or similar enclosure). Ambient air samples are to be collected from a minimum of five locations in proximity to sample locations where VOCs have previously been detected within the site. Samples are to be collected overnight and/or when air conditioning is not operational, such that ‘worst case’ conditions are sampled. Samples are required to be submitted for VOC analysis at a NATA accredited laboratory. A factual letter report is required to be prepared by the appointed contaminated land consultant and/or the Site Auditor in accordance with EPA made or endorsed guidelines documenting the results of the ambient air monitoring with consideration to the existing data set and NSW EPA endorsed criteria demonstrating that there is no ongoing health risk with regard to VOCs contaminant ambient air concentrations. The Responsible Person shall maintain records of the ambient air characterisation activities and reports. Should the characterisation activities identify ambient air contaminant concentrations as differing from that documented in this LTEMP such that there is a reduction in air quality associated with soil vapour intrusion into the building, , then the Responsible Person and appointed contaminated land consultant is required to notify the appointed Site Auditor and contingency measures (EMP 09) will require to be applied.		

Training		EMP07
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	Suitably trained personnel will be available to implement the requirements of the LTEMP	
Procedure		
The Site Manager, or nominated responsible party, shall ensure that any personnel engaged in the implementation of nominated tasks for which the Site Manager is responsible within the LTEMP have been provided with adequate training to manage the Site Contamination and Hazardous Materials conditions which may be encountered during site ground disturbance activities.		
The Site Manager shall maintain records of personnel engaged in the nominated tasks and their relevant training/qualifications for the period of three years in accordance with EMP11.		
In the event of future maintenance and/or construction works which will require implementation of EMP01 and subsequent environmental management procedures, the Site Manager will ensure that all site workers (including employees, contractors and subcontractors) are familiar with the relevant aspects of this LTEMP and its requirements.		
Works involving contractors and subcontractors will be managed in accordance with EMP08.		

Contractor / Subcontractor Management		EMP08
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	Ensure that all persons who may be exposed to contaminated material are suitably aware of conditions and requirements of this LTEMP	
Procedure		
Where future maintenance and/or construction works resulting in ground disturbance as may be required at the site, will include excavation/disturbance of impacted soils, the Site Manager is required to ensure that Contractors and Sub-contractors are advised of potential safety and environmental issues on site during site-specific induction training. This induction will include the occupational health and safety responsibilities, requirements and controls for all (sub)contractors working on site. In addition, all site workers, including contractors and subcontractors will be made aware that they are required to implement the provisions of this LTEMP. All subcontractor activities will be monitored by the Site Manager, or a nominated representative to ensure compliance with the requirements of this LTEMP. They shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. All contractors and subcontractors are responsible for: 1. Providing their own personal protective equipment; 2. Training their employees in accordance with applicable laws; 3. Providing medical surveillance and obtaining medical approvals for their employees; 4. Ensuring their employees are advised of and meet the minimum requirements of this LTEMP and any other additional measures required by their site activities; and 5. Designating their own site safety officer. All contractors/subcontractors must sign an acceptance form prior to commencing work on site. Part 6.5 of the <i>Work Health and Safety Regulation 2017</i> required that an employer of employees undertaking construction work must ensure that the employees have completed induction training as specified by the Regulation. In addition, the Principal Contractor (if required) must not allow any person to carry out construction work unless he/she is satisfied that the person has undergone OHS induction training, including: • General occupational health and safety training for construction work; • Work activity based health and safety training (job specific training); and • Site specific health and safety induction training. The Site Manager shall require all contractors completing such works to maintain, for each person carrying out construction/maintenance works, for a period of three years: • A copy of relevant statements of OHS induction training, or a statement indicating that the Principal Contractor is satisfied that the relevant OHS induction training has been undertaken; and • A brief description of the site specific training undertaken by the person.		

Contingency Plan		EMP09
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	Ensure that in the event of unplanned exposure of impacted materials all appropriate measures are implemented to minimise the risk to on-site personnel and the environment.	
Procedure In the event that site operations or conditions result in a significant accidental or unintentional breach of the physical barrier (concrete slab floor) without the prior preparation of specific works/management procedures and implementation of appropriate exposure minimisation measures, the following shall be implemented: • Isolation of the affected area via the placement of temporary barriers or other appropriate measures (i.e. plastic sheeting, clean sand, etc.) to prevent exposure to site personnel; • Implementation of EMP02 and EMP04 to EMP05 inclusive, with respect to personnel and site management; and • Implementation of EMP03 and other relevant provisions of the LTEMP as soon as practicable to reinstate the integrity of the capping/cover layer. Following implementation of these procedures for rectification of the site, consideration shall be given to the requirements of EMP07 and EMP10 to EMP13 inclusive, in relation to documentation and renewal of the LTEMP to minimise the potential for future exposure of impacted material. The incident shall be documented within the activity register as outlined in EMP01 . Where considered appropriate by the Site Manager, appointed contaminated land consultant and/or the Site Auditor, validation of the impacted area will be completed following a breach of the capping layer to demonstrate that contamination of areas within the site beyond the excavation has not resulted in conditions with unacceptable risks to site users or the environment. This may include inspections, and or soil sampling within the site and subsequent analysis of samples for identified contaminants of concern at the site. Following reinstatement of the capping/cover (physical barrier) layer following a significant accidental or unintentional breach, a formal review of the incident will be undertaken by the Site Manager with specialist assistance as appropriate (construction, occupational hygienist, site contamination consultant, etc.). The review will be tasked with identifying the cause of the incident and providing recommendations on alternative procedures or systems to be implemented at the site and/or within the LTEMP to prevent/minimise the likelihood of the incident reoccurring. Dependent upon the review outcome, amendment to the LTEMP as outlined in EMP13 may be appropriate.		

Non-Compliances with LTEMP		EMP10
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	To ensure the LTEMP is implemented as intended.	
Procedure Non-compliances with the intent and procedures of the LTEMP may occur during the implementation of the LTEMP. Such non-compliances may include events such as failure to maintain the integrity of permanently paved areas. Where a non-compliance is identified by a responsible organisation, they shall inform the affected organisations of the non-compliance in writing. Where a non-compliance with the LTEMP is identified by another organisation (in the activities of an alternate organisation), then they shall have the responsibility of informing the non-complying party in writing of the non-compliance. The non-complying party will be required to rectify the non-conformity as soon as possible, as per the requirements of the relevant procedure(s) where non-compliance has occurred. Detail of the action taken to rectify the non-compliance shall be provided to each of the affected organisations in writing. Where a non-compliance cannot be rectified, then the LTEMP will require to be reviewed as per the requirements of EMP13 LTEMP Review.		

Record Keeping		EMP11
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	Records of the implementation of the LTEMP require to be retained.	
Procedure		
The Site Manager shall be responsible for the maintenance of all documents relating to the implementation of the LTEMP. This shall include any additional assessment undertaken, registers for the maintenance of the LTEMP (site inspection forms, works approval checklists, revised plans, etc.) and any relevant correspondence between the Auditor, the Site Manager, Contractors and/or any other party. All records shall be retained by the Site Manager throughout the time of implementation of the LTEMP. In the event that the role of Site Manager is transferred from one organisation to another, control of all relevant (historical and current) documents will be transferred for safe keeping to the current Site Manager.		

Audit of LTEMP Implementation		EMP12
Responsibility:	Site Manager	
Frequency:	Once every 24 months	
Objective:	The implementation of the LTEMP requires to be audited in accordance with EPA guidance publications to identify areas of non-compliance or partial compliance with relevant legislation/regulations and/or the requirements of this plan.	
Procedure		
An environmental audit shall be undertaken every two years from commencement of the LTEMP to ensure ongoing compliance with the LTEMP. The audit shall be undertaken by an appropriately qualified contractor/consultant in general compliance with the DEC <i>'Compliance Audit Handbook'</i> (DEC, Feb 2006) and identify areas of non-compliance or partial compliance with the requirements of: • Relevant legislation / regulations; and • This plan. The findings of the audit should be documented and form the basis of the management review process (EMP13: LTEMP Review). Specific tasks that will be undertaken as part of the audit include: • Review of records generated by the Site Manager, and their respective contractors to ensure they meet the intended scope of the LTEMP; • Review of records generated by infrastructure maintenance contractors in relation to services underlying the site, to ensure that their activities have met the intended scope of the LTEMP; and • Periodic review and inspection of the standard of surface cover on the site. Where a non-compliance is detected during the audit process, then the non-compliance shall be informed as per the requirements of EMP10: Non-Compliances with LTEMP. The Site Manager is required to maintain records of the audit review.		

LTEMP Review		EMP13
Responsibility:	Site Manager Site Owner	
Frequency:	Once every 24 months or when otherwise required	
Objective:	The LTEMP requires review to ensure its continued appropriateness to be used on the site	
Procedure A review of the LTEMP shall be undertaken biennially by an appropriately qualified contractor/consultant in conjunction with the Site Manager. This review shall consider: • The results of the LTEMP Audit as outlined in EMP12; • Any non-compliances with the LTEMP that have been unable to be resolved; • Practicalities and efficiencies of management measures and whether there are more effective ways to improve environmental compliance; • Any changes in state or national environmental protection legislation or guidelines that impact any part of the LTEMP; or • Any proposed changes in land-use of the site or adjoining sites which may impact upon exposure pathways. In the event that Mirvac cease to be recognised as the Site Manager, a complete review of the LTEMP document and compliance measures will be necessary to identify suitable replacement LTEMP compliance mechanisms. In addition, where a review identifies items which are required to be modified, or added to the LTEMP, then a revision of the LTEMP shall be prepared by a suitably qualified person and endorsed by an appointed NSW EPA Accredited Site Auditor.		

Asbestos (Unexpected Find)		EMP14
Responsibility:	Site Manager	
Frequency:	As required	
Objective:	Provide documented procedures to manage asbestos impacts	
Procedure		
In the event asbestos (or suspected asbestos containing material) is encountered during excavation activities, all site works should be suspended, the area barricaded off and the Site Manager notified. The Site Manager, or nominated responsible party, shall ensure adequate training is provided and Works Permits and associated SWMS as required under procedure EMP02 are updated to be to address <i>Safe Work Australia 2016</i>¹² and <i>Work Health and Safety Regulation 2017</i> requirements. In addition to the standard construction PPE in procedure EMP02, any person required to directly contact soils which contain asbestos shall be required to wear the following PPE: • P2 (or higher) class half face respirator; and • Disposable coveralls made from materials which provide adequate protection against fibre penetration; Where works result in disturbance of potentially asbestos impacted materials, periodic air monitoring for asbestos fibres will be conducted by an Asbestos Consultant/Hygienist on two representative workers or plant during intrusive works to confirm no unacceptable risks are posed to site workers. Monitoring will be conducted in accordance with <i>Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i>, 2nd Edition (NOHSC: 3003 [2005]) and WorkCover 2008. Detection limits above 0.01 fibres/mL will require work to cease and a review of control measures in that area.		

¹² *How to Safely Remove Asbestos: Code of Practice*. Safe Work Australia 2016 (Safe Work Australia 2016)

© JBS&G

This document is and shall remain the property of JBS&G. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited

Document Distribution

Rev No.	Copies	Recipient	Date
A	1 x Electronic Copy	Chris Callaghan (Mirvac Construction Pty Ltd) Tom Onus (Ramboll Pty Ltd)	22/05/2020
0	1 x Electronic Copy	Chris Callaghan (Mirvac Construction Pty Ltd) Tom Onus (Ramboll Pty Ltd)	02/06/2020

Document Status

Rev No.	Author	Reviewer	Approved for Issue		
		Name	Name	Signature	Date
A	Thomas Frisken	Joanne Rosner	Joanne Rosner	For Review	22/05/2020
0	Thomas Frisken	Joanne Rosner	Joanne Rosner		02/06/2020

