Doyalson Wyee RSL Club Limited
care of
Urbis Pty Ltd

Interim Environmental Management Plan
49-65 Wentworth Avenue and
80, 90, 100 and 110 Pacific Highway
Doyalson, NSW

1 November 2019

57611/125365 Rev 0

JBS&G Australia Pty Ltd

www.jbsg.com.au

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Abbreviations

Term	Definition
ACM	Asbestos Containing Material
AF/FA	Asbestos Fines/Fibrous Asbestos
AHD	Australia Height Datum
bgs	below ground surface
COC	Contaminants of Concern
Council	Central Coast Council
DP	Deposited Plan
EPA	Environment Protection Authority
JBS&G	JBS&G Australia Pty Ltd
IEMP	Interim Environmental Management Plan
PPE	Personal Protective Equipment
OC	Occupation Certificate
RAP	Remedial Action Plan
SAS	Site Audit Statement
SWMS	Safe Work Method Statement

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by Doyalson Wyee RSL Club (the client) via Urbis Pty Ltd (Urbis) to prepare an interim environmental management plan (IEMP) for a portion of the property located at 49-65 Wentworth Ave and 80, 90, 100 and 110 Pacific Highway, Doyalson, NSW (the site). The site is legally defined as Lots 1 to 9 Deposit Plan (DP) 215875, Lot 1 DP 503655, Lot 11 DP 2400685, Lot 49 DP 707586 and Lot 7 DP 240685 and occupies a total area of approximately 35 hectares (ha) as shown in **Figure 1**.

Previous investigations by JBS&G (2019a) identified asbestos containing material (ACM) in filling in the eastern portion of the sports fields located at 90 Pacific Highway (**Figure 2**). The eastern and southern portion of the sports fields consisted of the same fill profile imported between the 1994 – 2005 historical aerial photographs. JBS&G have identified this fill profile as the management area which was subject to a data gap investigation as part of a human health risk assessment JBS&G (2019b) **Figure 2**. This IEMP applies only to the land subjected to this investigation (herein referred to as the management area).

The objective of this IEMP is to ensure the ongoing suitability of the site via identification and maintenance of cap/cover measures that form a physical barrier to the underlying contaminated soil present at depth beneath the management area. The purpose of this IEMP is to protect the health and safety of personnel who use or work on the site, and to protect the environment – both on and off site. It is anticipated that this IEMP will operate on an interim basis until future remediation and redevelopment works are undertaken on the site, and in particular to the management area.

The plan includes:

- A description of the nature and location of contamination remaining at depth on site;
- The objectives of the IEMP;
- Procedures for residual contamination management;
- Responsibilities for the IEMP implementation; and
- An implementation schedule for each action in the IEMP.

The site shall be maintained for the duration of occupational usage as a sports/recreational facility in accordance to the requirements of the IEMP.

1. Introduction, Background and Objectives

1.1 Introduction, Purpose and Objectives

JBS&G Australia Pty Ltd (JBS&G) was engaged by Doyalson Wyee RSL Club (the client) via Urbis Pty Ltd (Urbis) to prepare an interim environmental management plan (IEMP) for a portion of the property located at 49-65 Wentworth Ave and 80, 90, 100 and 110 Pacific Highway, Doyalson, NSW (the site). The site is legally defined as Lots 1 to 9 Deposit Plan (DP) 215875, Lot 1 DP 503655, Lot 11 DP 2400685, Lot 49 DP 707586 and Lot 7 DP 240685 and occupies a total area of approximately 35 hectares (ha) as shown in **Figures 1**.

Previous investigations JBS&G (2019a[1]) identified asbestos containing material (ACM) in filling in the eastern portion of the sports fields located at 90 Pacific Highway (**Figure 2**). The eastern and southern portion of the sports fields consisted of the same fill profile which was imported between 1994 and 2005, based on review of historical aerial photographs. JBS&G have identified this fill profile as the management area which was subject to a data gap investigation as part of a human health risk assessment JBS&G (2019b[2]) **Figure 2**. This IEMP applies only to the land subjected to this investigation, defined by the orange-brown area on **Figure 2** (herein referred to as the management area).

The objective of this IEMP is to ensure the ongoing suitability of the site via identification and maintenance of cap/cover measures that form a physical barrier to the underlying contaminated soil present at depth beneath the management area. The purpose of this IEMP is to protect the health and safety of personnel who use or work on the site, and to protect the environment – both on and off site. It is anticipated that this IEMP will operate on an interim basis until future remediation and redevelopment works are undertaken on the site, and in particular to the management area.

The management area consists of a sports fields and a surrounding buffer zone. Current occupational activities include non-intrusive (recreation, general maintenance and operation, etc.) and intrusive (landscape gardening and potential construction/maintenance related) activities. Maintenance activities include, amongst other things, regular watering by sprinklers and periodic application of topsoil as a top dressing. The sprinkler system is served by a shallow sub-grade network of water supply pipes

The IEMP has been prepared in accordance with the requirements outlined in the NSW Environment Protection Authority (EPA) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd edition)*[3], as referenced in the remedial action plan (RAP, JBS&G 2019c[4]) prepared for the site. 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 and controlled.

The plan includes:

- A description of the nature and location of contamination remaining at depth on site;
- The objectives of the IEMP;
- Procedures for residual contamination management;

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1 *R001 (DSI 49-65 Wentworth Ave and 80, 90, 100, 110 Pacific HWY, Doyalson, NSW) Rev B*. JBS&G Australia Pty Ltd dated 6 September 2019 reference 56387/123975 (JBS&G 2019a)

2 R01 Asbestos in Soils Assessment – 49-65 Wentworth Avenue and 80, 90, 100 and 110 Pacfic Highway, Doyalson NSW. JBS&G Australia Pty Ltd dated 1 November 2019 reference 57611/125538 (JBS&G 2019b)

3 *Contaminated Land Management – Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. The NSW EPA dated October 2017 (EPA 2017). Previously Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd Edition). Department of Environment and Conservation (DEC 2006)

4 *R002 (RAP 49-65 Wentworth Ave and 80, 90, 100, 110 Pacific HWY, Doyalson, NSW) Rev B*. JBS&G Australia Pty Ltd dated 3 October 2019 reference 56387/124948 (JBS&G 2019a)

- Responsibilities for the IEMP implementation; and
- An implementation schedule for each action in the IEMP.

It is anticipated that this IEMP will allow the continued recreational use of the management area (sports fields). The site shall be maintained for the duration of occupation for recreational and related site maintenance activities in accordance to the requirements of the IEMP.

1.2 Background

Previous detailed site investigations, as documented in JBS&G (2019a) identified the presence of ACM in a specific fill type which was imported to the southern and eastern portions of the sports fields between 1994 and 2005 (management area). The fragments were identified in 3 of the 22 test pits (13 %) advanced in this area, all at greater than 1.9 m below ground surface (bgs). The presence of asbestos in this fill material has resulted in this distinct fill profile being considered as 'asbestos contaminated soil' as per the requirements for management of asbestos in *How to Manage and Control Asbestos in the Workplace Code of Practise* (SWA 2016[5])

A data gap investigation (DGI) as part of a human health risk assessment (HHRA) was completed in October 2019, as documented in JBS&G (2019b). The DGI consisted of manually advancing 45 boreholes to 0.3 m bgs across the management area, samples were collected at 0.00-0.15 and 0.15-0.30 m bgs. All samples were submitted for analysis of asbestos fines (as AF) which all returned a non-detect result. Considering this, JBS&G concluded that the material present to a depth of 0.3 m bgs, as the anticipated upper maximum depth of exposure during non-intrusive site activities, did not represent a potential human health risk to current site users.

[5] *How to Manage and Control Asbestos in The Workplace: Code of Practice*. Safe Work Australia dated February 2016 (SWA 2016)

2. Summary of Site Conditions

2.1 Site Details

The management area that this IEMP applies to comprises a 33,400 m^2 portion of land situated on the eastern and southern portions of the sports fields at 90 Pacific Highway, Doyalson. This land is part of the greater site.

The location and layout of the site are shown in **Figures 1**, respectively, and summarised in **Table 2.1**. The layout and extent of the management area is shown as the orange-brown area in **Figure 2**.

Table 2.1: Summary of Site Details

Site Legal Identifier (as shown on Figure 1)	Lots 1 to 9 in DP 215875, Lot 1 DP 503655, Lot 11 DP 2400685, Lot 49 DP 707586 and Lot 7 DP 240685
Site Address	Lots 1 to 9 in DP 215875 – 49-65 Wentworth Avenue, Doyalson, NSW, 2262 Lot 1 DP 503655 – 80 Pacific Highway, Doyalson, NSW, 2262 Lot 11 DP 2400685 – 90 Pacific Highway, Doyalson, NSW, 2262 Lot 49 DP 707586 – 100 Pacific Highway, Doyalson, NSW, 2262 Lot 7 DP 240685 – 110 Pacific Highway, Doyalson, NSW, 2262
Site Area	34.78 ha
Local Government Authority	Central Coast Council (Council)
County/Parish	Munmorah
Site Geographic Coordinates (Map Grid of Australia (MGA) 56)	Easting Northing 362737.407 6326401.156 363268.110 6326317.710 363167.179 6325795.900 363129.137 6325741.108 362510.288 6325839.129 362639.587 6326017.426 362539.000 6325787.314 362504.086 6325814.896 362516.363 6325862.500 362617.393 6325983.027 362639.690 6326017.545
Registered Site Owner	Doyalson Wyee RSL Club Ltd
Current Zoning (Wyong Local Environmental Plan (LEP) 2013)	RE2 (Private Recreation) Lots 1 to 9 in DP 215875, Lot 1 DP 503655 and Lot 11 DP 2400685 RU6 (Transition) Lot 49 DP 707586 and Lot 7 DP 240685
Previous Land Uses	Agriculture/horticulture, forestry, sports facilities
Current Land Uses	Commercial (RSL club and amenities) and Recreational (sports fields and endurance course)
Proposed Land Uses	Mixed-use Precinct (residential allotments, retail/commercial incl. childcare centre and recreational/open space)

2.2 Site Condition

The site consists of a generally square shaped parcel of land situated to the east of the Pacific Highway and north of Wentworth Avenue. The site currently hosts the Doyalson Wyee RSL Club and amenities, four full sized sports fields, forestry and scrub, one dam and a number of water bodies associated with the endurance course which occupies the majority of 110 Pacific Highway and extents into 100 Pacific Highway in the south. Two distinct fill methods had been used in the creation of the fields, cut and fill of natural material in the two western sports fields and importation of fill in the south and eastern portion of the fields (the management area).

The management area (orange-brown area shown on **Figure 2**) consisted of grassed level playing fields surrounded to the south, east and north of the eastern portion by a tall chain link fence. The

management area was bounded to the west and north of the western portion by a terrace and the cut and fill playing fields.

2.3 Maintenance of the Cap/Cover Barrier Measures

The top 0.3 m bgs of material in the management area must be maintained for the period until remedial works begin, in order to minimise the potential for uncontrolled exposure of future site users and/or workers to potentially impacted material underneath. Provided this barrier is maintained in accordance with the IEMP, there are no unacceptable health or contaminant migration risks associated with underlying impacted material, as there are no complete pathways between humans and the impacted soil.

In the event that the barrier is disturbed at any time as a result of planned or unplanned activities, the procedures documented in this IEMP are required to be implemented to repair the barrier such that there continues to be an effective barrier between impacted soil and future site users/workers 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 monitoring or management of subsurface soil contaminant conditions is required during everyday operation of the site. Procedures as provided in **Appendix C** will only be needed in the event of either planned or unplanned breaches of the cap/cover physical barrier. The cap/cover physical barrier shall be reinstated appropriately and promptly.

3. Summary of Identified Contamination Issues

A description of the cap/cover barrier is provided in **Section 2.3.** The following is a summary of contamination issues at the site beneath the cap/cover physical barrier. Analytical summary tables pertaining to the site are included in **Appendix B**.

3.1 Asbestos

Asbestos impacted soil remains in soil beneath the physical barrier and needs to be managed. From a review of assessment results, including laboratory analysis provided in JBS&G (2019a), it has been identified that non friable asbestos is present in the specific fill material within the management area.

Non-friable asbestos material is any asbestos-containing material that is considered not to be friable asbestos, including material containing asbestos fibres reinforced with a bonding compound (SWA 2016). The materials defined in NEPM (2013[6]) as bonded asbestos are non-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 Aesthetics Issues

In addition to the non-friable asbestos impacts identified in JBS&G (2019a) aesthetic issues of anthropogenic inclusions including asphalt, brick, astroturf, terracotta pipe, timber, concrete blocks, plastics PVC and metal piping, corrugated iron, band saw blades, plastic matting, tyres and bonded building material fragments were identified in 8 of 22 test pits in the management area.

While no anthropogenic inclusions were identified during the HHRA DGI (JBS&G 2019b) (< 0.3 m bgs) known inclusions represent an aesthetics issue requiring management. JBS&G consider the 0.3 m cap/cover to be sufficient as a separation barrier between recreational users and anthropogenic materials, provided the cap/cover is maintained as per this IEMP.

[6] *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. National Environment Protection Council (ASC NEPC 2013)

4. Application, Enforcement and Regulatory Requirements

4.1 Application of IEMP

This IEMP will apply in the interim until such time as further assessment, remediation and/or redevelopment works begin on the site/management area or until such time as a site audit statement (SAS) can be prepared by a NSW EPA Accredited Site Auditor or the NSW EPA stating that the IEMP is not required for the site.

The requirements of this IEMP are intended to apply to any activities within the subject site which could involve disturbance or exposure of asbestos impacts in soil beneath the cap/cover barrier, or partial removal of the physical barrier including, but not limited to:

- Field maintenance likely to be greater than 0.3 m bgs (ploughing, tilling, etc.);
- 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 IEMP comprise the maintenance of the fields, construction of buildings or sporting structures (goal posts, etc.) or investigation works that require removal of part or all of the physical barrier.

4.2 Enforcement of IEMP

Appropriate notation on a planning certificate issued under s.10.7(2) of the *Environmental Planning and Assessment Act* shall in the future provide notification to parties of the ongoing applicability of the management measures outlined in this IEMP.

4.3 Regulatory Requirements

Future activities on site are required to be completed in accordance with several sections 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 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

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.

Waste Classification Guidelines (EPA 2014)

All wastes generated and proposed to be disposed off-site shall be assessed, classified and managed in accordance with this guideline. Where wastes require immobilisation prior to off-site disposal an immobilisation approval shall be sought in accordance with Part 2 of this guideline.

Protection of 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. IEMP Implementation

This IEMP has been designed to ensure, via the implementation of a number of ongoing management measures pertaining to the areas of impacted sub surface fill material, that:

- The risk to the future users of the site from impacted sub surface fill material continues to be acceptable; and
- Contingency actions are available to be implemented where potential risk to human users may occur via penetration and/or excavation of the physical barrier (top 0.3 m of soil) and exposure of impacted fill material.

JBS&G are not aware of any long term environmental management plans and/or health and safety plans pertaining to the site. It should be noted that if any long term planning instruments are created for the site that this IEMP is to be considered where appropriate. Otherwise this IEMP should be considered to deal with issues unique to the asbestos impacted fill material in the management area.

5.1 Responsibilities

This IEMP will come into force on the date of final issue. The client, or its nominated representative, will be responsible for the ongoing implementation of this IEMP. A formal list of procedures is provided in this IEMP (**Appendix C**). 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 Person with Management or Control of a Workplace (the Responsible Person)

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

- Implementation of the IEMP;
- Ensuring that workers, employees and sub-contractors operating in the management area are made aware of the IEMP and its requirements, and their obligations under the IEMP;
- 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 IEMP and statutory requirements;
- Ensure that the physical barrier material is not breached unless absolutely necessary, and if this does occur then ensure that appropriate management procedures are implemented ;
- When necessary, co-ordination of environmental monitoring, data assessment and reporting;
- Where necessary, review of environmental reports and inspections and initiating any actions to rectify conditions;
- 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

A copy of this IEMP shall be maintained onsite by The Responsible Person (refer to **Section 5.1.1**). To ensure compliance with the *Work Health and Safety Regulations 2011* an asbestos register is provided in **Appendix A**.

5.3 Period of Implementation

The IEMP is to be implemented for an indefinite period of time during operation of the site under the current land use, or until remediation/redevelopment works begin in the management area, or a written approval has been provided by the Central Coast Council (as the consent authority), or the NSW EPA, that removed the need for ongoing implementation of the IEMP.

5.4 Environmental Management Procedures

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

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 3rd Edition 2017* (EPA 2017), the responsibilities of Council, in the role of consent authority, shall be limited to:

a) Public Notification of the existence of the IEMP on appropriate property records (refer to **Section 5.2** in this instance);

b) Enforcement of the IEMP as a condition in any future development consent for additions or alterations to the site that may involve a breach of the cap; and

c) Confirmation in writing to the Site Auditor that Council 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 enquires.

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 context of the additional information.

Figures

Legend

- Approximate Site Boundary
- Cadastre
- Jemena Gasline
- Surface Water
- Management Area

JBS&G

Job No: 57611	
Client: Urbis Pty Ltd	
Version: R02 Rev A	Date 30/10/2019
Drawn By: AS	Checked By: RL
Scale 1:4,000	

0 50 100
metres

Coord. Sys. GDA 1994 MGA Zone 56

Pacific Hwy and Wentworth Ave, Doyalson NSW

SITE LOCATION, LAYOUT AND FEATURES

FIGURE 1

File Name: \\JBSG-NSW-FS01\Company Data\Projects\Urbis Pty Ltd\57611 HHRA Doyalson\GIS\Maps\R02 Rev A\57611_01_SiteLocation_Layout_Features.mxd
Reference: www.nearmap.com - Imagery 20190520

Legend

- Approximate Site Boundary
- Cadastre
- Jemena Gasline
- Surface Water
- Soils free of Asbestos
- Management Area (Impacted fill with 0.3m capping of environmentally suitable soils)

JBS&G

Job No: 57611	
Client: Urbis Pty Ltd	
Version: R02 Rev A	Date 1/11/2019
Drawn By: RF	Checked By: RL
Scale 1:4,000	

0 50 100
metres

Coord. Sys. GDA 1994 MGA Zone 56

Pacific Hwy and Wentworth Ave, Doyalson NSW

EXTENT OF IEMP MANAGEMENT AREA

FIGURE 2

File Name: N:\Projects\Urbis Pty Ltd\57611 HHRA Doyalson\GIS\Maps\R02 Rev A\57611_02_ManagementArea.mxd
Reference: www.nearmap.com - Imagery 20190520

Appendix A Asbestos Register

Item	Location	Reference	Condition	Status of Impact	Sample Type	Analytical Results	Material Condition	Approximate Quantity	Risk Rating	Action Required	Date of Last Inspection (incl. company name and initials)	Interim Controls
1	**Management Area (southern and eastern sports fields)**	DSI (JBS&G 2019a)	Isolated ACM has been identified at depth (>0.3 m bgs) in the eastern and southern sports fields (management area).	In-situ, assumed from below 0.3 m bgs to full depth of fill materials.	Fill characterisation samples as presented in the DSI (JBS&G 2019a)	Laboratory analysis of ACM fragments confirmed the presence of asbestos (JBS&G 2019a)	Poor	33 400 m^3	Bonded (non-friable) ACM impacted	Minimise disturbance where possible and maintain existing surface covers/treatment. If ground disturbance is necessary, implement procedures and controls for friable asbestos as detailed in this IEMP	22 October 2019 (JBS&G 2019b) RL	Existing capping arrangements and if ground disturbance, implement this IEMP

Legend

- Approximate Site Boundary
- Cadastre
- Jemena Gasline
- Surface Water
- Soils free of Asbestos
- Management Area (Impacted fill with 0.3m capping of environmentally suitable soils)

JBS&G

Job No: 57611	
Client: Urbis Pty Ltd	
Version: R02 Rev A	Date 1/11/2019
Drawn By: AS	Checked By: RL

Scale 1:4,000

0 50 100
metres

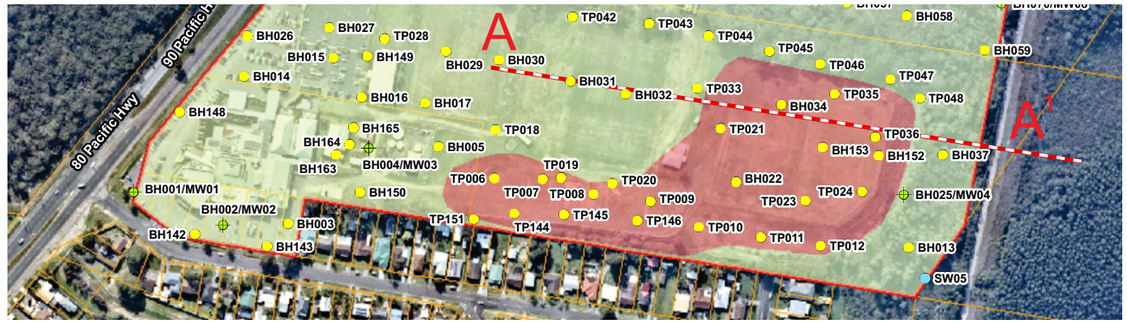
Coord. Sys. GDA 1994 MGA Zone 56

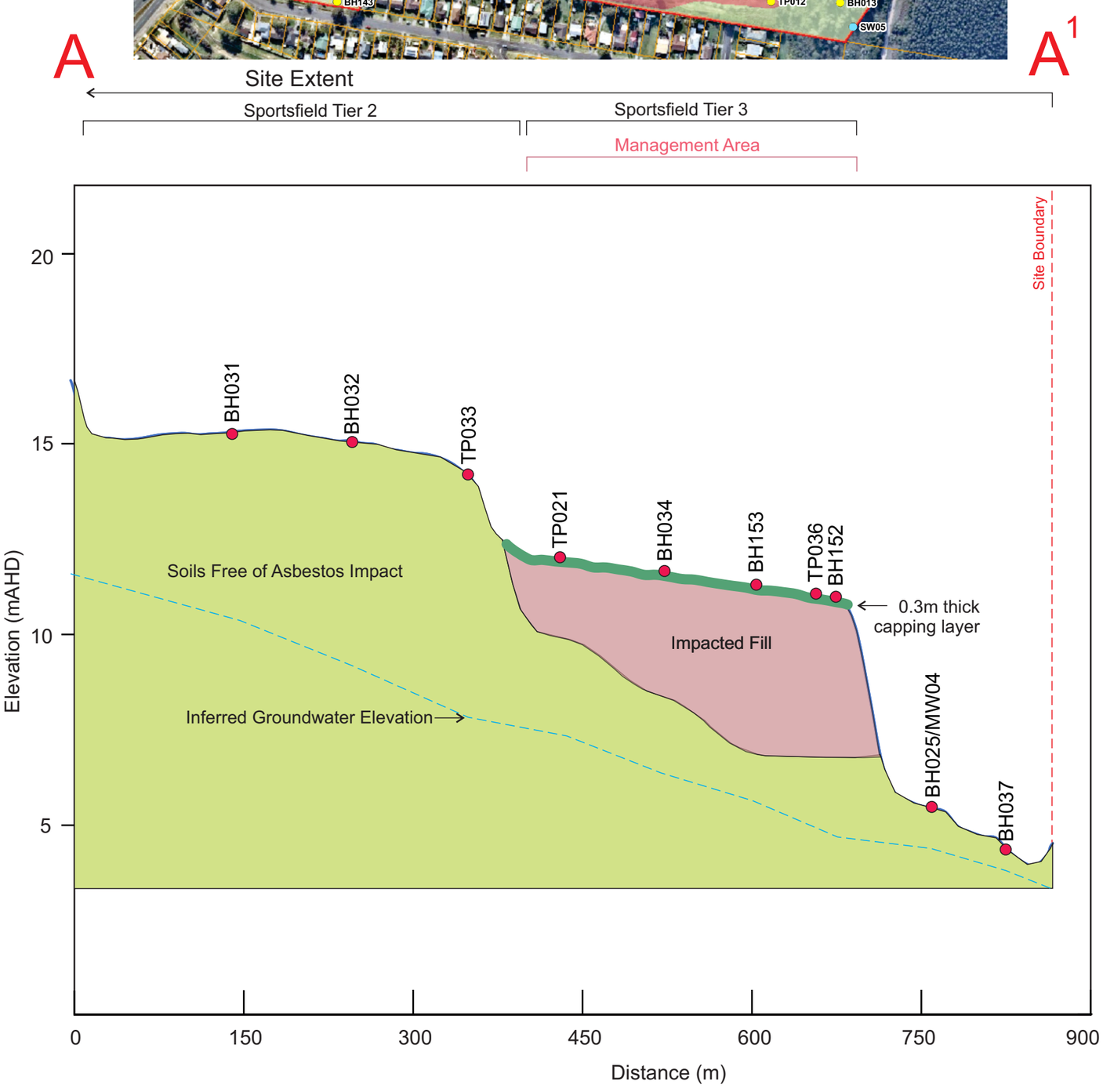
Pacific Hwy and Wentworth Ave, Doyalson NSW

EXTENT OF INFERRED ASBESTOS IMPACTED SOIL

APPENDIX A1

File Name: N:\Projects\Urbis Pty Ltd\57611 HHRA Doyalson\GIS\Maps\Appendix A\57611_01_MangementArea.mxd
Reference: www.nearmap.com - Imagery 20190520





Legend:

- Cross Sectional - Transect A-A1
- Approximate Site Boundary
- Soils free of Asbestos Impact
- Management Area

Sample Locations

- Borehole
- Boreholoe/Monitoring well
- Surface water

JBS&G

Job No: 56687	
Client: Urbis Pty Ltd	
Version: R02 Rev B	Date: 1/10/2019
Drawn By: RF	Checked By: RL

Scale: Vertical Exageration 3:1

0 25 50
metres

Coord. Sys. GDA 1994 MGA Zone 56

Pacific Hwy and Wentworth Ave, Doyalson, NSW

CROSS SECTION

FIGURE A2:

Document Path:
Reference:

Appendix B Summary Tables

Legend

- Approximate Site Boundary
- Cadastre
- Jemena Gasline
- Surface Water
- Soils free of Asbestos Impact
- Management Area (Impacted fill with 0.3m capping of environmentally suitable soils)

JBS&G

Job No: 57611	
Client: Urbis Pty Ltd	
Version: R02 Rev A	Date 30/10/2019
Drawn By: AS	Checked By: RL
Scale 1:4,000	

0 50 100
metres

Coord. Sys. GDA 1994 MGA Zone 56

Pacific Hwy and Wentworth Ave, Doyalson NSW

EXTENT OF INFERRED ASBESTOS IMPACTED SOIL

APPENDIX B

File Name: \\JBSG-NSW-FS01\Company Data\Projects\Urbis Pty Ltd\57611 HHRA Doyalson\GIS\Maps\Appendix B\57611_01_SiteLocation_Layout_Features.mxd
Reference: www.nearmap.com - Imagery 20190520

Table A - Soil Analytical Data (Asbestos)
Project Number: 57611
Project Name: HHRA Doyalson

						Asbestos										Asbestos
						Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
						g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL																Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL C							0.02[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL								0.001[#2]								
Work Health Safety Regulatio 2017 Friable Asbestos								0.01								
Sample ID	**Investigation**	**Matrix Description**	**Sample Date**	**Lab Report**	**Sample Code**											
Surface Soils (0.0 - 0.3 m bgs)																
HHRA_BH01_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33886	574	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH01_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33887	678	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH02_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33888	604	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH02_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33889	617	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH03_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33890	558	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH03_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33891	571	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH04_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33892	551	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH04_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33893	663	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH05_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33894	583	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH05_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33895	709	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH06_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33896	564	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH06_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33897	634	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH07_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33898	462	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH07_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33899	608	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH08_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33900	532	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH08_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33901	524	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH09_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33902	588	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH09_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33903	658	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH10_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33839	391	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH10_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33840	640	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH11_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33867	560	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH11_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33868	611	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH12_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33869	507	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH12_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33870	494	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH13_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33871	611	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH13_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33872	507	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH14_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33873	530	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH14_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33874	518	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH15_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33875	406	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH15_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33876	403	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH16_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33877	576	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH16_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33878	562	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH17_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33879	500	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH17_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33880	643	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH18_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33881	476	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH18_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33882	504	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH19_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33883	611	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH19_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33884	641	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH20_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33841	700	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH20_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33842	638	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH21_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33905	293	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH21_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33906	420	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH22_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33907	546	0	0	0	0	0	0	0	0	0	Absense
HHRA_QC01	DGI (JBS&G 2019)	HHRA_BH22_0.00-0.15	22-Oct-2019	683935	S19-Oc33904	514	0	0	0	0	0	0	0	0	0	Absense
HHRA-QA01	DGI (JBS&G 2019)	HHRA_BH22_0.00-0.15	22-Oct-2019	228999	228999-1	464	-	<0.001	-	<0.01	-	-	-	-	<0.1	Absense
HHRA_BH22_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33908	603	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH23_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33909	693	0	0	0	0	0	0	0	0	0	Absense

Table A - Soil Analytical Data (Asbestos)
Project Number: 57611
Project Name: HHRA Doyalson

	Asbestos										Asbestos
	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
	g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL											Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL C		0.02[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL			0.001[#2]								
Work Health Safety Regulatio 2017 Friable Asbestos			0.01								

Sample ID	Investigation	Matrix Description	Sample Date	Lab Report	Sample Code										
HHRA_QC02	DGI (JBS&G 2019)	HHRA_BH23_0.00-0.15	22-Oct-2019	683935	S19-Oc33885	501	0	0	0	0	0	0	0	0	0	Absense
HHRA-QA02	DGI (JBS&G 2019)	HHRA_BH23_0.00-0.15	22-Oct-2019	228999	228999-2	718	-	<0.001	-	<0.01	-	-	-	-	<0.1	Absense
HHRA_BH23_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33910	521	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH24_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33911	676	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH24_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33912	534	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH25_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33913	566	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH25_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33914	561	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH26_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33915	541	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH26_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33916	617	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH27_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33917	529	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH27_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33918	631	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH28_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33919	570	0	0	0	0	0	0	0	0	0	Absense
HHRA_QC03	DGI (JBS&G 2019)	HHRA_BH28_0.00-0.15	22-Oct-2019	683935	S19-Oc33923	676	0	0	0	0	0	0	0	0	0	Absense
HHRA-QA03	DGI (JBS&G 2019)	HHRA_BH28_0.00-0.15	22-Oct-2019	228999	228999-3	592	-	<0.001	-	<0.01	-	-	-	-	<0.1	Absense
HHRA_BH28_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33920	593	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH29_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33921	731	0	0	0	0	0	0	0	0	0	Absense
HHRA_QC04	DGI (JBS&G 2019)	HHRA_BH29_0.00-0.15	22-Oct-2019	683935	S19-Oc33866	648	0	0	0	0	0	0	0	0	0	Absense
HHRA-QA04	DGI (JBS&G 2019)	HHRA_BH29_0.00-0.15	22-Oct-2019	228999	228999-4	633	-	<0.001	-	<0.01	-	-	-	-	<0.1	Absense
HHRA_BH29_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33922	664	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH30_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33843	596	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH30_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33844	546	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH31_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33848	775	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH31_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33849	650	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH32_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33850	371	0	0	0	0	0	0	0	0	0	Absense
HHRA_QC05	DGI (JBS&G 2019)	HHRA_BH32_0.00-0.15	22-Oct-2019	683935	S19-Oc33847	600	0	0	0	0	0	0	0	0	0	Absense
HHRA-QA05	DGI (JBS&G 2019)	HHRA_BH32_0.00-0.15	22-Oct-2019	228999	228999-5	646	-	<0.001	-	<0.01	-	-	-	-	<0.1	Absense
HHRA_BH32_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33851	541	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH33_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33852	554	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH33_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33853	592	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH34_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33854	573	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH34_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33855	619	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH35_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33856	668	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH35_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33857	719	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH36_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33858	636	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH36_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33859	637	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH37_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33860	552	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH37_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33861	621	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH38_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33862	563	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH38_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33863	457	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH39_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33864	550	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH39_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33865	504	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH40_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33845	600	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH40_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33846	617	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH41_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33829	783	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH41_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33830	594	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH42_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33831	523	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH42_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33832	789	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH43_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33833	656	0	0	0	0	0	0	0	0	0	Absense

Table A - Soil Analytical Data (Asbestos)
Project Number: 57611
Project Name: HHRA Doyalson

	Asbestos										Asbestos
	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
	g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL											Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL C		0.02[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL			0.001[#2]								
Work Health Safety Regulatio 2017 Friable Asbestos			0.01								

Sample ID	Investigation	Matrix Description	Sample Date	Lab Report	Sample Code										
HHRA_BH43_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33834	588	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH44_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33835	649	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH44_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33836	651	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH45_0.00-0.15	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33837	553	0	0	0	0	0	0	0	0	0	Absense
HHRA_BH45_0.15-0.30	DGI (JBS&G 2019)	Fill	22-Oct-2019	683935	S19-Oc33838	558	0	0	0	0	0	0	0	0	0	Absense
TP06_0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671221	S19-Au20150	601	0	0	0	0	0	0	0	0	0	Absense
TP07_0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671221	S19-Au20147	561	0	0	0	0	0	0	0	0	0	Absense
TP08_0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671221	S19-Au20141	625	0	0	0	0	0	0	0	0	0	Absense
TP09 0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671628	S19-Au23515	609	0	0	0	0	0	0	0	0	0	Absense
TP10 0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671628	S19-Au23519	592	0	0	0	0	0	0	0	0	0	Absense
TP11 0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671628	S19-Au23511	634	0	0	0	0	0	0	0	0	0	Absense
TP19 0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671628	S19-Au23535	531	0	0	0	0	0	0	0	0	0	Absense
TP20_0.0-0.1	DSI (JBSG 2019)	Fill	13/08/2019	671221	S19-Au20144	625	0	0	0	0	0	0	0	0	0	Absense
TP21 0.0-0.1	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23570	790	0	0	0	0	0	0	0	0	0	Absense
BH22 0.0-0.1	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23479	308	0	0	0	0	0	0	0	0	0	Absense
TP23 0.0-0.1	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23572	685	0	0	0	0	0	0	0	0	0	Absense
TP24 0.0-0.05	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23575	519	0	0	0	0	0	0	0	0	0	Absense
TP33_0.0-0.1	DSI (JBSG 2019)	Fill	12/08/2019	671221	S19-Au20167	630	0	0	0	0	0	0	0	0	0	Absense
TP35 0.0-0.1	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23583	690	0	0	0	0	0	0	0	0	0	Absense
TP36 0.0-0.15	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23588	734	0	0	0	0	0	0	0	0	0	Absense
BH152 0.0-0.1	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23548	373	0	0	0	0	0	0	0	0	0	Absense
Soils at Depth (>0.3 m bgs)															
TP23 2.9-3.0	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23574	731	0	0	0	0	0	0	0	0	0	Absense
TP24 1.4-1.5	DSI (JBSG 2019)	Fill	14/08/2019	671628	S19-Au23576	798	0	0	0	0	0	0	0	0	0	Absense
TP33_0.9-1.0	DSI (JBSG 2019)	Fill	12/08/2019	671221	S19-Au20168	627	0	0	0	0	0	0	0	0	0	Absense
QC02	DSI (JBSG 2019)	TP33_0.9-1.0	12/08/2019	671221	S19-Au20176	446	0	0	0	0	0	0	0	0	0	Absense
QA02	DSI (JBSG 2019)	TP33_0.9-1.0	14/08/2019	224101	224101-2	511	0	0	0	0	0	0	0	0	0	Absense
Fragments															
TP08_FRAG01	DSI (JBSG 2019)	TP08 at 3.5 m bgs	13/08/2019	671221	S19-Au20153	38	0	0	0	0	0	0	0	0	0	Absense
TP35 FRAG01	DSI (JBSG 2019)	TP35 at 2.0 m bgs	14/08/2019	671628	S19-Au23586	33	0	0	0	0	0	0	0	0	0	**Presence**
TP35 FRAG02	DSI (JBSG 2019)	TP35 at 3.0 m bgs	14/08/2019	671628	S19-Au23587	85	0	0	0	0	0	0	0	0	0	**Presence**
TP36 FRAG01	DSI (JBSG 2019)	TP36 at 0.5 m bgs	14/08/2019	671628	S19-Au23590	75	0	0	0	0	0	0	0	0	0	**Presence**
BH153 FRAG-01	DSI (JBSG 2019)	TP153 at 2.1 m bgs	14/08/2019	671628	S19-Au23554	42	0	0	0	0	0	0	0	0	0	**Presence**

Statistical Summary of 500 ml Asbestos Analysis											
Number of Results	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Number of Detects	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Minimum Detect	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Maximum Concentration	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Maximum Detect	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Average Concentration	#NAME?	#NAME?	0	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Median Concentration	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Standard Deviation	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Number of Guideline Exceedances	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Number of Guideline Exceedances(Detects Only)	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?

Env Stds Comments

Table A - Soil Analytical Data (Asbestos)
Project Number: 57611
Project Name: HHRA Doyalson

	Asbestos										Asbestos
	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
	g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL											Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL C		0.02[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL			0.001[#2]								
Work Health Safety Regulatio 2017 Friable Asbestos			0.01								

Sample ID	Investigation	Matrix Description	Sample Date	Lab Report	Sample Code

#1:Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
#2:The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). This screening level is not applicable to free fibres.

Table A(2) - Soil Analytical Data (Asbestos)
Project Number: 56387
Project Name: Doyalson DSI

					Asbestos										Asbestos
					Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
					g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL															Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL A						0.01[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL							0.001[#2]								
Sample ID	**Matrix Description**	**Sample Date**	**Lab Report**	**Sample Code**											
BH001/MW01 0.0-0.1	Fill	12/08/2019	671221	S19-Au20121	537	0	0	0	0	0	0	0	0	0	Absense
BH002/MW02 0.0-0.1	Fill	12/08/2019	671221	S19-Au20123	550	0	0	0	0	0	0	0	0	0	Absense
BH003 0.0-0.1	Fill	12/08/2019	671221	S19-Au20126	283	0	0	0	0	0	0	0	0	0	Absense
BH004/MW03 0.2-0.3	Fill	14/08/2019	671628	S19-Au23500	504	0	0	0	0	0	0	0	0	0	Absense
QC05	BH004/MW03 0.2-0.3	14/08/2019	671628	S19-Au23555	407	0	0	0	0	0	0	0	0	0	Absense
BH005 0.0-0.1	Fill	14/08/2019	671628	S19-Au23502	212	0	0	0	0	0	0	0	0	0	Absense
TP06_0.0-0.1	Fill	13/08/2019	671221	S19-Au20150	601	0	0	0	0	0	0	0	0	0	Absense
TP07_0.0-0.1	Fill	13/08/2019	671221	S19-Au20147	561	0	0	0	0	0	0	0	0	0	Absense
TP08_0.0-0.1	Fill	13/08/2019	671221	S19-Au20141	625	0	0	0	0	0	0	0	0	0	Absense
TP09 0.0-0.1	Fill	13/08/2019	671628	S19-Au23515	609	0	0	0	0	0	0	0	0	0	Absense
TP10 0.0-0.1	Fill	13/08/2019	671628	S19-Au23519	592	0	0	0	0	0	0	0	0	0	Absense
TP11 0.0-0.1	Fill	13/08/2019	671628	S19-Au23511	634	0	0	0	0	0	0	0	0	0	Absense
BH15 0.0-0.1	Fill	14/08/2019	671628	S19-Au23505	386	0	0	0	0	0	0	0	0	0	Absense
BH17 0.0-0.1	Fill	14/08/2019	671628	S19-Au23508	458	0	0	0	0	0	0	0	0	0	Absense
TP18 0.0-0.1	Fill	14/08/2019	671628	S19-Au23568	795	0	0	0	0	0	0	0	0	0	Absense
TP19 0.0-0.1	Fill	13/08/2019	671628	S19-Au23535	531	0	0	0	0	0	0	0	0	0	Absense
TP20_0.0-0.1	Fill	13/08/2019	671221	S19-Au20144	625	0	0	0	0	0	0	0	0	0	Absense
TP21 0.0-0.1	Fill	14/08/2019	671628	S19-Au23570	790	0	0	0	0	0	0	0	0	0	Absense
BH22 0.0-0.1	Fill	14/08/2019	671628	S19-Au23479	308	0	0	0	0	0	0	0	0	0	Absense
TP23 0.0-0.1	Fill	14/08/2019	671628	S19-Au23572	685	0	0	0	0	0	0	0	0	0	Absense
TP23 2.9-3.0	Fill	14/08/2019	671628	S19-Au23574	731	0	0	0	0	0	0	0	0	0	Absense
TP24 0.0-0.05	Fill	14/08/2019	671628	S19-Au23575	519	0	0	0	0	0	0	0	0	0	Absense
TP24 1.4-1.5	Fill	14/08/2019	671628	S19-Au23576	798	0	0	0	0	0	0	0	0	0	Absense
BH25/MW04 0.0-0.1	Natural	14/08/2019	671628	S19-Au23481	387	0	0	0	0	0	0	0	0	0	Absense
BH27 0.0-0.1	Fill	13/08/2019	671628	S19-Au23546	506	0	0	0	0	0	0	0	0	0	Absense
TP28 0.0-0.1	Fill	14/08/2019	671628	S19-Au23578	792	0	0	0	0	0	0	0	0	0	Absense
BH29 0.0-0.1	Fill	14/08/2019	671628	S19-Au23486	406	0	0	0	0	0	0	0	0	0	Absense
BH32 0.0-0.1	Fill	14/08/2019	671628	S19-Au23580	232	0	0	0	0	0	0	0	0	0	Absense
TP33_0.0-0.1	FIll	12/08/2019	671221	S19-Au20167	630	0	0	0	0	0	0	0	0	0	Absense
TP33_0.9-1.0	Fill	12/08/2019	671221	S19-Au20168	627	0	0	0	0	0	0	0	0	0	Absense
QC02	TP33_0.9-1.0	12/08/2019	671221	S19-Au20176	446	0	0	0	0	0	0	0	0	0	Absense
QA02	TP33_0.9-1.0	14/08/2019	224101	224101-2	511	0	0	0	0	0	0	0	0	0	Absense
TP35 0.0-0.1	Fill	14/08/2019	671628	S19-Au23583	690	0	0	0	0	0	0	0	0	0	Absense
TP36 0.0-0.15	Fill	14/08/2019	671628	S19-Au23588	734	0	0	0	0	0	0	0	0	0	Absense
BH38/MW05 0.0-0.1	Fill	13/08/2019	671628	S19-Au23542	474	0	0	0	0	0	0	0	0	0	Absense
BH39 0.0-0.1	Fill	13/08/2019	671628	S19-Au23544	439	0	0	0	0	0	0	0	0	0	Absense
TP40 0.0-0.1	Natural	14/08/2019	671628	S19-Au23591	790	0	0	0	0	0	0	0	0	0	Absense
TP41 0.0-0.1	Fill	14/08/2019	671628	S19-Au23593	625	0	0	0	0	0	0	0	0	0	Absense
TP42 0.0-0.1	Fill	14/08/2019	671628	S19-Au23595	713	0	0	0	0	0	0	0	0	0	Absense
QC06	TP42 0.0-0.1	14/08/2019	671628	S19-Au23596	689	0	0	0	0	0	0	0	0	0	Absense
QA06	TP42 0.0-0.1	14/08/2019	224101	224101-6	750	0	0	0	0	0	0	0	0	0	Absense
TP43_0.0-0.1	Natural	12/08/2019	671221	S19-Au20169	655	0	0	0	0	0	0	0	0	0	Absense
TP44_0.0-0.1	Fill	12/08/2019	671221	S19-Au20170	465	0	0	0	0	0	0	0	0	0	Absense
TP45_0.0-0.1	Natural	12/08/2019	671221	S19-Au20172	403	0	0	0	0	0	0	0	0	0	Absense
TP46_0.0-0.1	Natural	12/08/2019	671221	S19-Au20173	632	0	0	0	0	0	0	0	0	0	Absense
TP47_0.0-0.1	Natural	12/08/2019	671221	S19-Au20175	588	0	0	0	0	0	0	0	0	0	Absense
TP48_0.0-0.1	Natural	12/08/2019	671221	S19-Au20177	470	0	0	0	0	0	0	0	0	0	Absense
TP49_0.0-0.1	Fill	12/08/2019	671221	S19-Au20178	529	0	0	0	0	0	0	0	0	0	Absense
TP50_0.0-0.1	Fill	12/08/2019	671221	S19-Au20180	590	0	0	0	0	0	0	0	0	0	Absense
TP51_0.0-0.1	Fill	12/08/2019	671221	S19-Au20154	1037	0	0	0	0	0	0	0	0	0	Absense
TP52_0.0-0.5	Fill	12/08/2019	671221	S19-Au20166	762	0	0	0	0	0	0	0	0	0	Absense
TP53_0.0-0.1	Fill	12/08/2019	671221	S19-Au20164	842	0	0	0	0	0	0	0	0	0	Absense
TP54 0.0-0.1	Fill	14/08/2019	671628	S19-Au23558	745	0	0	0	0	0	0	0	0	0	Absense
BH59_0.0-0.1	Natural	15/08/2019	671915	S19-Au25381	264	0	0	0	0	0	0	0	0	0	Absense
TP60_0.0-0.1	Natural	12/08/2019	671221	S19-Au20181	710	0	0	0	0	0	0	0	0	0	Absense
TP61_0.0-0.1	Natural	12/08/2019	671221	S19-Au20182	700	0	0	0	0	0	0	0	0	0	Absense
TP62_0.0-0.1	Natural	12/08/2019	671221	S19-Au20184	636	0	0	0	0	0	0	0	0	0	Absense
TP63_0.4-0.5	Fill	12/08/2019	671221	S19-Au20157	682	0	0	0	0	0	0	0	0	0	Absense
TP64_0.0-0.1	Fill	12/08/2019	671221	S19-Au20159	554	0	0	0	0	0	0	0	0	0	Absense
BH70/MW08 0.0-0.1	Fill	13/08/2019	671628	S19-Au23540	512	0	0	0	0	0	0	0	0	0	Absense
QC03	BH70/MW08 0.0-0.1	13/08/2019	671628	S19-Au23541	422	0	0	0	0	0	0	0	0	0	Absense
QA03	BH70/MW08 0.0-0.1	14/08/2019	224101	224101-3	409	0	0	0	0	0	0	0	0	0	Absense
BH77_0.0-0.1	Fill	15/08/2019	671915	S19-Au25385	529	0	0	0	0	0	0	0	0	0	Absense

Table A(2) - Soil Analytical Data (Asbestos)
Project Number: 56387
Project Name: Doyalson DSI

					Asbestos										Asbestos
					Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos ID in Soil
					g	%w/w	%w/w	g	g	g	g	g	g	g	Comment
EQL															Presence/ Abesence
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Residential - HSL A						0.01[#1]									
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL							0.001[#2]								
Sample ID	**Matrix Description**	**Sample Date**	**Lab Report**	**Sample Code**											
TP082_0.0-0.1	Fill	15/08/2019	671915	S19-Au25415	87	0	0	0	0	0	0	0	0	0	Absense
TP083_0.0-0.1	Natural	15/08/2019	671915	S19-Au25396	857	0	0	0	0	0	0	0	0	0	Absense
TP085_0.0-0.1	Natural	15/08/2019	671915	S19-Au25406	735	0	0	0	0	0	0	0	0	0	Absense
TP093_0.0-0.1	Natural	15/08/2019	671915	S19-Au25411	540	0	0	0	0	0	0	0	0	0	Absense
TP094_0.0-0.1	Natural	15/08/2019	671915	S19-Au25422	605	0	0	0	0	0	0	0	0	0	Absense
TP099_0.0-0.1	Natural	15/08/2019	671915	S19-Au25527	405	0	0	0	0	0	0	0	0	0	Absense
TP104_0.0-0.1	Natural	15/08/2019	671915	S19-Au25428	637	0	0	0	0	0	0	0	0	0	Absense
TP105_0.0-0.1	Natural	15/08/2019	671915	S19-Au25426	546	0	0	0	0	0	0	0	0	0	Absense
BH113_0.0-0.1	Natural	15/08/2019	671915	S19-Au25856	498	0	0	0	0	0	0	0	0	0	Absense
BH115/MW06 0.0-0.1	Fill	13/08/2019	671221	S19-Au20130	326	0	0	0	0	0	0	0	0	0	Absense
BH115/MW06 0.2-0.3	Natural	13/08/2019	671221	S19-Au20131	579	0	0	0	0	0	0	0	0	0	Absense
TP117_0.0-0.1	Natural	15/08/2019	671915	S19-Au25504	469	0	0	0	0	0	0	0	0	0	Absense
BH135/MW07 0.0-0.1	Natural	13/08/2019	671221	S19-Au20133	463	0	0	0	0	0	0	0	0	0	Absense
TP137_0.0-0.1	Fill	12/08/2019	671221	S19-Au20162	996	0	0	0	0	0	0	0	0	0	Absense
TP139_0.0-0.1	Fill	12/08/2019	671221	S19-Au20160	761	0	0	0	0	0	0	0	0	0	Absense
TP140_0.0-0.1	Fill	12/08/2019	671221	S19-Au20158	731	0	0	0	0	0	0	0	0	0	Absense
TP141_0.0-0.1	Fill	12/08/2019	671221	S19-Au20155	763	0	0	0	0	0	0	0	0	0	Absense
BH142 0.0-0.1	Fill	12/08/2019	671221	S19-Au20127	421	0	0	0	0	0	0	0	0	0	Absense
BH143 0.0-0.1	Fill	12/08/2019	671221	S19-Au20129	268	0	0	0	0	0	0	0	0	0	Absense
TP144 0.0-0.1	Fill	13/08/2019	671628	S19-Au23522	608	0	0	0	0	0	0	0	0	0	Absense
TP144 2.9-3.0	Fill	13/08/2019	671628	S19-Au23525	788	0	0	0	0	0	0	0	0	0	Absense
TP145 0.4-0.5	Fill	13/08/2019	671628	S19-Au23531	679	0	0	0	0	0	0	0	0	0	Absense
BH147 0.0-0.1	Fill	13/08/2019	671628	S19-Au23547	369	0	0	0	0	0	0	0	0	0	Absense
BH150 0.0-0.1	Fill	14/08/2019	671628	S19-Au23498	307	0	0	0	0	0	0	0	0	0	Absense
BH152 0.0-0.1	Fill	14/08/2019	671628	S19-Au23548	373	0	0	0	0	0	0	0	0	0	Absense
TP154 0.0-0.1	Natural	14/08/2019	671628	S19-Au23565	655	0	0	0	0	0	0	0	0	0	Absense
TP155_0.0-0.05	Fill	15/08/2019	671915	S19-Au25413	870	0	0	0	0	0	0	0	0	0	Absense
TP156_0.0-0.1	Natural	15/08/2019	671915	S19-Au25424	651	0	0	0	0	0	0	0	0	0	Absense
TP157_0.0-0.1	Natural	15/08/2019	671915	S19-Au25421	624	0	0	0	0	0	0	0	0	0	Absense
TP158_0.0-0.1	Fill	15/08/2019	671915	S19-Au25419	512	0	0	0	0	0	0	0	0	0	Absense
TP159_0.0-0.1	Natural	15/08/2019	671915	S19-Au25394	782	0	0	0	0	0	0	0	0	0	Absense
TP161_0.0-0.1	Natural	15/08/2019	671915	S19-Au25403	438	0	0	0	0	0	0	0	0	0	Absense
TP162_0.2-0.3	Natural	15/08/2019	671915	S19-Au25418	561	0	0	0	0	0	0	0	0	0	Absense
BH163_0.0-0.1	Natural	16/08/2019	671915	S19-Au25534	446	0	0	0	0	0	0	0	0	0	Absense
BH164_0.0-0.1	Natural	16/08/2019	671915	S19-Au25532	408	0	0	0	0	0	0	0	0	0	Absense
Fragments															
TP08_FRAG01	TP08 at 3.5 m bgs	13/08/2019	671221	S19-Au20153	38	0	0	0	0	0	0	0	0	0	Absense
TP35 FRAG01	TP35 at 2.0 m bgs	14/08/2019	671628	S19-Au23586	33	0	0	0	0	0	0	0	0	0	**Presence**
TP35 FRAG02	TP35 at 3.0 m bgs	14/08/2019	671628	S19-Au23587	85	0	0	0	0	0	0	0	0	0	**Presence**
TP36 FRAG01	TP36 at 0.5 m bgs	14/08/2019	671628	S19-Au23590	75	0	0	0	0	0	0	0	0	0	**Presence**
BH153 FRAG-01	TP153 at 2.1 m bgs	14/08/2019	671628	S19-Au23554	42	0	0	0	0	0	0	0	0	0	**Presence**
GROUND FRAG01	Surface	16/08/2019	671915	S19-Au25558	18	0	0	0	0	0	0	0	0	0	Absense

Statistical Summary of 500 ml Asbestos Analysis

Number of Results	98	98	98	98	98	98	98	98	98	98	1
Number of Detects	98	98	98	98	98	98	98	98	98	98	1
Minimum Concentration	87	0	0	0	0	0	0	0	0	0	0
Minimum Detect	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	1037	0	0	0	0	0	0	0	0	0	0
Maximum Detect	1037	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	572	0	0	0	0	0	0	0	0	0	
Median Concentration	583.5	0	0	0	0	0	0	0	0	0	0
Standard Deviation	173	0	0	0	0	0	0	0	0	0	
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments
#1:Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
#2:The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). This screening level is not applicable to free fibres.

Appendix C Procedures

Site Surface Maintenance		EMP01
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)	
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
- Environmentally suitable soils serving as the physical barrier (ground surface to 0.3 m bgs) shall not be breached;

unless undertaken in accordance with the specific requirements of the IEMP (**EMP02** and **EMP03**).

Inspection (once yearly) of the surface capping arrangements shall be undertaken by maintenance personnel as directed by the Responsible Person to identify any obvious signs of breaches/deterioration of the physical barrier.

Visual signs of capping layer breaches/deterioration may include cracks or sinkholes or worn areas or bare patches of exposed soil in grassed areas.

It is assumed that the water supply pipes for the sprinkler system and junction boxes for surface connection are located within the physical barrier layer above 0.3 m bgs and that maintenance and use of these items will not breach the underlying impacted soil deeper than 0.3 m bgs. Therefore, the provisions of this **EMP01** apply. If maintenance activities are likely to proceed deeper than 0.3 m bgs then implementation of **EMP02**, **EMP03** and other provisions of this IEMP is required.

Should any of the above be noted during inspections, reinstatement of the surface condition will be required via implementation of **EMP03**. A register of visual inspections and documentation associated with any maintenance or reinstatement works completed subsequent to inspections will be maintained by the Responsible Person. External reporting of the register by the Responsible Person is considered not necessary, however, the register will be made available to Council 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 surface treatments are unintentionally breached during site activities, reinstatement in accordance with **EMP03** will be required to rectify the site management system.

Excavation Works	EMP02
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
Frequency:	As required for excavations beneath the physical barrier (greater than 0.3m bgs)
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 asbestos has been retained at depth (greater than 0.3 m bgs). In addition, fill materials have been shown to contain aesthetic impacts (slag, ash, ACM, odours, building and demolition materials, metallic waste and glass) requiring management.

Measures are required to be put in place to eliminate potential exposure of workers to impacted fill where their work requires that the physical barrier (0.3 m of clean surface soils) is breached and underlying fill soil is exposed. Potential exposure to asbestos via inhalation may occur if there is a breach of the physical barrier resulting in uncovering of impacted soils.

Access to the subsurface material at the site shall be controlled by way of a Works Permit provided by the Responsible Person 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 Works Permit shall be provided only upon confirmation that the proposed works method is concordant with relevant regulations (Work Health and Safety Regulation (2017) and Work Health Safety Act (2011)) including, where necessary communication of works with SafeWork NSW and engagement of suitably qualified/licenced persons to conduct asbestos removal works, monitoring and clearances. The SWMS to be submitted to the Responsible Person 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 impacted subsurface fill material underlying 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 **EMP06** inclusive during all site excavation works.
- The area of the excavation/disturbance shall be barricaded to prevent access of unprotected site personnel and contractors, and unauthorised persons and the general public.

All workers likely to be in contact with contaminated soil beneath the cap/cover barrier (sub surface soils deeper than 0.3 m bgs) 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 *Work Health and Safety Regulation 2011*. Any person required to directly contact sub-surface soils deeper than 0.3 m bgs shall be required to wear the following PPE:

- P2 (or higher) class half face respirator;
- Disposable coveralls made from materials which provide adequate protection against fibre penetration;
- Overboot covers; and
- Gloves.

Impacted soils are to be placed either on an impermeable surface, such as builder's 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 classified and then disposed of off-Site in accordance with the requirements of NSW EPA *Waste Classification Guidelines Part 1*: *Classifying Waste* (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 waste classification report, transport and waste facility dockets will be retained by the Responsible Person.

A qualified environmental specialist 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:	The Responsible Person (refer to **Section 5.1.1**)
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.

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. The reinstalment shall occur in reverse order of excavation – last excavated shall be reinstated first etc.

Any cap/cover material removed to allow access to underlying soils shall be re-instated last and subsequent to backfilling of the excavation in accordance with **Section 2.3**.

The contractor will be responsible for installing a clean capping layer as discussed in **Section 2.3** and for supplying survey drawings as required to document the completion of installation/reinstatement of this layer during works.

The qualified environmental specialist will complete inspections during site activities to verify the completion of the capping layer installation during backfilling.

It is also noted that, in addition to site contamination management requirements, the Responsible Person may require implementation of procedures to ensure the suitable compaction of backfilled areas.

It is noted that no waste shall be received at the site and only virgin excavated natural material (VENM), excavated natural material (ENM) or materials covered by a NSW EPA exemption and demonstrated as suitable for land use of the site is to be imported to the site for reinstatement activities.

Stormwater and Sediment	EMP04
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
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 cap/cover (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 cap/cover 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 '*Managing Urban Stormwater Soils and Construction'* (The Blue Book). 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:	The Responsible Person (refer to **Section 5.1.1**)
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 physical barrier comprising clean surface soils to a depth of 0.3 m bgs to form a complete barrier between general site users and the underlying 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, emissions require to be minimised to the extent that no visible airborne dust is present 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 as provided in **EMP03**.

In addition, where works result in disturbance of potentially impacted materials, air monitoring for asbestos fibres will be conducted by the Asbestos Consultant/Hygienist on two representative workers or plant during/for the duration of intrusive works to confirm no unacceptable risks are posed to site workers. Monitoring will be conducted in accordance with *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition (NOHSC: 3003 [2005]), NSW *Work Health and Safety Act 2011* (NSW WHS 2011) and *NSW Work Health and Safety Regulation 2017* (NSW WHS 2017).

Note. Per the SafeWork Australia Asbestos Code of Practice (SWA 2018), the following air monitoring thresholds shall apply:

- Reading of less than 0.01 fibres/mL – control measures in place are working effectively, site works to continue;
- Reading between 0.01 and 0.02 fibres/mL – a review of control measures shall be completed in the work area; and
- Reading greater than 0.02 fibres/mL – works shall cease until the cause of contamination is identified and rectified.

<u>Stockpiling</u>

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 of stockpiles with a fine water spray or covering with appropriate geotextile material during unfavourable weather conditions.

<u>Trucks</u>

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.

All material handling and movement is required to be undertaken in accordance with relevant asbestos WHS guidelines.

Training		EMP06
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)	
Frequency:	As required	
Objective:	Suitably trained personnel will be available to implement the requirements of the IEMP	

Procedure

The Responsible Person, or nominated responsible party, shall ensure that any personnel engaged in the implementation of nominated tasks for which the Responsible Person is responsible within the IEMP have been provided with adequate training to manage the site Contamination and Hazardous Materials conditions which may be encountered during site ground disturbance activities

Asbestos contaminated soil necessitating management are required to be undertaken in accordance with *How to Manage and Control Asbestos in the Workplace: Code of Practice*, Safe Work Australia (SWA 2018).

The Responsible Person shall maintain records of personnel engaged in the nominated tasks and their relevant training/qualifications for the period of three years in accordance with **EMP10**.

In the event of future maintenance and/or construction works which will require implementation of **EMP01** and subsequent environmental management procedures, the Responsible Person will ensure that all site workers (including employees, contractors and subcontractors) are familiar with the relevant aspects of this IEMP and its requirements.

Works involving contractors and subcontractors will be managed in accordance with **EMP07**.

Contractor/Subcontractor Management	EMP07
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
Frequency:	As required
Objective:	Ensure that all persons who may be exposed to contaminated material are suitably aware of conditions and requirements of this IEMP

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 Responsible Person 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 IEMP.

All subcontractor activities will be monitored by the Responsible Person, or a nominated representative to ensure compliance with the requirements of this IEMP.

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 IEMP 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 *Work Health and Safety Regulation 2011* requires 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 Responsible Person shall require all contractors completing such works to maintain training records 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	EMP08
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
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 (top 0.3 m of surface soils) 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**,**EMP04** and **EMP05** , with respect to personnel and site management; and
- Reinstate affected area according to **EMP03** and other relevant provisions of the IEMP 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 **EMP06** and **EMP09** to **EMP12** inclusive, in relation to documentation and renewal of the IEMP 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 Responsible Person, the appointed qualified environmental specialist, 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 Responsible Person 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 IEMP to prevent/minimise the likelihood of the incident reoccurring. Dependent upon the review outcome, amendment to the IEMP as outlined in **EMP12** may be appropriate.

Non-Compliances with IEMP	EMP09
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
Frequency:	As required
Objective:	To ensure the IEMP is implemented as intended.

Procedure

Non-compliances with the intent and procedures of the IEMP may occur during the implementation of the IEMP. 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 IEMP 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 IEMP will require review and amendment if required as per the requirements of **EMP12** IEMP Review.

Record Keeping		EMP10
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)	
Frequency:	As required	
Objective:	Records of the implementation of the IEMP to be retained.	

Procedure

The Responsible Person shall be responsible for the maintenance of all documents relating to the implementation of the IEMP. This shall include any additional assessment undertaken, registers for the maintenance of the IEMP (site inspection forms, works approval checklists, revised plans, etc.) and any relevant correspondence between the qualified environmental specialist, the Responsible Person, Contractors and/or any other party.

All records shall be retained by the Responsible Person throughout the time of implementation of the IEMP. In the event that the role of Responsible Person is transferred from one organisation to another, control of all relevant (historical and current) documents will be transferred for safe keeping to the current Responsible Person.

Audit of IEMP Implementation EMP 11	
Responsibility:	The Responsible Person (refer to **Section 5.1.1**)
Frequency:	As required
Objective:	The implementation of the IEMP requires audit 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 by Council or an appropriately qualified contractor/consultant in general compliance with the DEC '*Compliance Audit Handbook*' (DEC, Feb 2006) as required (typically following a non-compliance) 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 (**EMP12: IEMP Review**).

Specific tasks that will be undertaken as part of the audit include:

- Review of records generated by the Responsible Person, and their respective contractors to ensure they meet the intended scope of the IEMP;
- 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 IEMP; 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 **EMP09: Non-Compliances with IEMP**.

The Responsible Person is required to maintain records of the audit review.

IEMP Review	EMP12
Responsibility:	Responsible Person Site Owner
Frequency:	As required
Objective:	The IEMP requires review to ensure its continued appropriateness to be used on the site

Procedure

A review of the IEMP shall be undertaken as required by Council or an appropriately qualified contractor/consultant in conjunction with the Responsible Person. This review shall consider:

- The results of the IEMP Audit as outlined in **EMP11**;
- Any non-compliances with the IEMP 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 IEMP; or
- Any proposed changes in land-use of the site or adjoining sites which may impact upon exposure pathways.

In the event that Council cease to be recognised as the Responsible Person, a complete review of the IEMP document and compliance measures will be necessary to identify suitable replacement IEMP compliance mechanisms.

In addition, where a review identifies items which are required to be modified, or added to the IEMP, then a revision of the IEMP shall be prepared by a suitably qualified person and endorsed by an appointed NSW EPA Accredited Site Auditor.

Document Distribution

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