



INFORMATION REGARDING ENVIRONMENTAL AUDIT REPORTS

August 2007

VICTORIA'S AUDIT SYSTEM

An environmental audit system has operated in Victoria since 1989. The *Environment Protection Act 1970* (the Act) provides for the appointment by the Environment Protection Authority (EPA Victoria) of environmental auditors and the conduct of independent, high quality and rigorous environmental audits.

An environmental audit is an assessment of the condition of the environment, or the nature and extent of harm (or risk of harm) posed by an industrial process or activity, waste, substance or noise. Environmental audit reports are prepared by EPA-appointed environmental auditors who are highly qualified and skilled individuals.

Under the Act, the function of an environmental auditor is to conduct environmental audits and prepare environmental audit reports. Where an environmental audit is conducted to determine the condition of a site or its suitability for certain uses, an environmental auditor may issue either a certificate or statement of environmental audit.

A certificate indicates that the auditor is of the opinion that the site is suitable for any beneficial use defined in the Act, whilst a statement indicates that there is some restriction on the use of the site.

Any individual or organisation may engage appointed environmental auditors, who generally operate within the environmental consulting sector, to undertake environmental audits. The EPA administers the environmental audit system and ensures its ongoing integrity by assessing auditor applications and ensuring audits are independent and conducted with regard to guidelines issued by EPA.

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Report executive summaries, findings and recommendations should be read and relied upon only in the context of the document as a whole, including any appendices and, where applicable, any certificate or statement of environmental audit.

AUDIT REPORT CURRENCY

Audit reports are based on the conditions encountered and information reviewed at the time of preparation and do not represent any changes that may have occurred since the date of completion. As it is not possible for an audit to present all data that could be of interest to all readers, consideration should be made to any appendices or referenced documentation for further information.

When information regarding the condition of a site changes from that at the time an audit report is issued, or where an administrative or computation error is identified, environmental audit reports, certificates and statements may be withdrawn or amended by an environmental auditor. Users are advised to check [EPA's website](http://www.epa.vic.gov.au) to ensure the currency of the audit document.

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Web: www.epa.vic.gov.au/envaudit

Email: environmental.audit@epa.vic.gov.au



CSIRO Property Services

Grassy Woodland, 37 Graham Road, Highett, Victoria

Environmental Audit Report

CARMS Reference 68549–3, Service Order No. 8003038

May 2020

ENVIRONMENT PROTECTION ACT 1970**Statement of Environmental Audit**

I, John Throssell of GHD Pty Ltd 180 Lonsdale Street, Melbourne, a person appointed by the Environment Protection Authority ('the Authority') under the *Environment Protection Act 1970* ('the Act') as an environmental auditor for the purposes of the Act, having:

1. been requested by Karen Wright of Commonwealth Scientific and Industrial Research Organisation (CSIRO) Business & Infrastructure Services to issue a certificate of environmental audit in relation to the site located at CSIRO Grassy Woodland, 37 Graham Road, Highett VIC 3190, located in the Bayside City Council, comprising the land defined by the Certificate of Title Volume 8032 Folio 504 (part of Lot 1 on TP223183), owned by CSIRO. The site is currently unoccupied.
2. had regard to, amongst other things,
 - a. guidelines issued by the Authority for the purposes of Part IXD of the Act,
 - b. the beneficial uses that may be made of the site, and
 - c. relevant State environment protection policies/industrial waste management policies, namely:
 - (i) State environment protection policy (Prevention and Management of Contamination of Land) 2002
 - (ii) State environment protection policy (Waters) 2018
 - (iii) State environment protection policy (Air Quality Management) 2001
 - (iv) State environment protection policy (Ambient Air Quality) 1999
 - (v) Industrial Waste Management Policy (Waste Acid Sulphate Soils) 1999
 - (vi) Environment Protection (Industrial Waste Resource) Regulations 2009
3. in making a total assessment of the nature and extent of any harm or detriment caused to, or the risk of any possible harm or detriment that may be caused to, any beneficial use made of the site by any industrial processes or activity, waste or substance (including any chemical substance), and
4. completed an environmental audit report in accordance with section 53X of the Act, a copy of which has been sent to the Authority and the relevant planning and responsible authority.

HEREBY STATE that I am of the opinion that the site (as shown on the figure attached to this Statement) is suitable for the beneficial uses associated with:

- *Recreation/Open space*
- *Commercial*
- *Industrial*

subject to the following conditions attached thereto:

- Condition 1 From the date of completion of this audit, the owner of the site must implement and maintain the Environmental Management Plan (22 May 2020) which forms part of this Statement of Environmental Audit and is also attached to this environmental audit report.

The condition of the site is detrimental or potentially detrimental to any (one or more) beneficial uses of the site. Accordingly, I have not issued a Certificate of Environmental Audit for the site in its current condition, the reasons for which are presented in the environmental audit report. The terms and conditions that need to be complied with before a Certificate of Environmental Audit may be issued are set out as follows:

- Removal of all residual ACM impacted fill and aesthetic impacts within designated Tree Protection Zones and beneath the area labelled as Fifth St.

Other related information:

- Asbestos containing materials (ACM) are present within fill in the designated Tree Protection Zones and beneath Fifth St (>1 m depth), and soil in these areas needs ongoing management in accordance with the attached Environmental Management Plan. For the remainder of the site, ACM has been removed as far as practicable, however occasional ACM fragments may be encountered within the soil during excavation works. These ACM fragments do not represent a health risk to occupiers of the site. If encountered, any fragments must be handled and disposed in accordance with the relevant regulations.
- Groundwater at the site contains naturally elevated concentrations of inorganics (chloride, nitrate and total dissolved solids) and metals (copper, zinc). These levels are considered typical of the natural groundwater quality surrounding the site and do not constitute pollution in accordance with clause 15(d) of State Environment Protection Policy (Waters) 2018.
- Groundwater in the southern part of the site has historically reported concentrations of organics (trichloroethene). The concentrations are considered to be associated with an off-site source to the south of the site, and do not preclude any relevant beneficial uses of groundwater.
- In accordance with Section 53ZE of the Act, the occupier of the site must provide a copy of this Statement to any person who proposes to become an occupier of the site.

This Statement forms part of the Environmental Audit Report: GHD Pty Ltd, “*CSIRO, Environmental Audit Report, Grassy Woodland, 37 Graham Road, Highett, Victoria, CARMS Reference 68549-3, Service Order No. 8003038*” (May, 2020). Further details regarding the condition of the site may be found in the Environmental Audit Report.

DATED: 25 May 2020

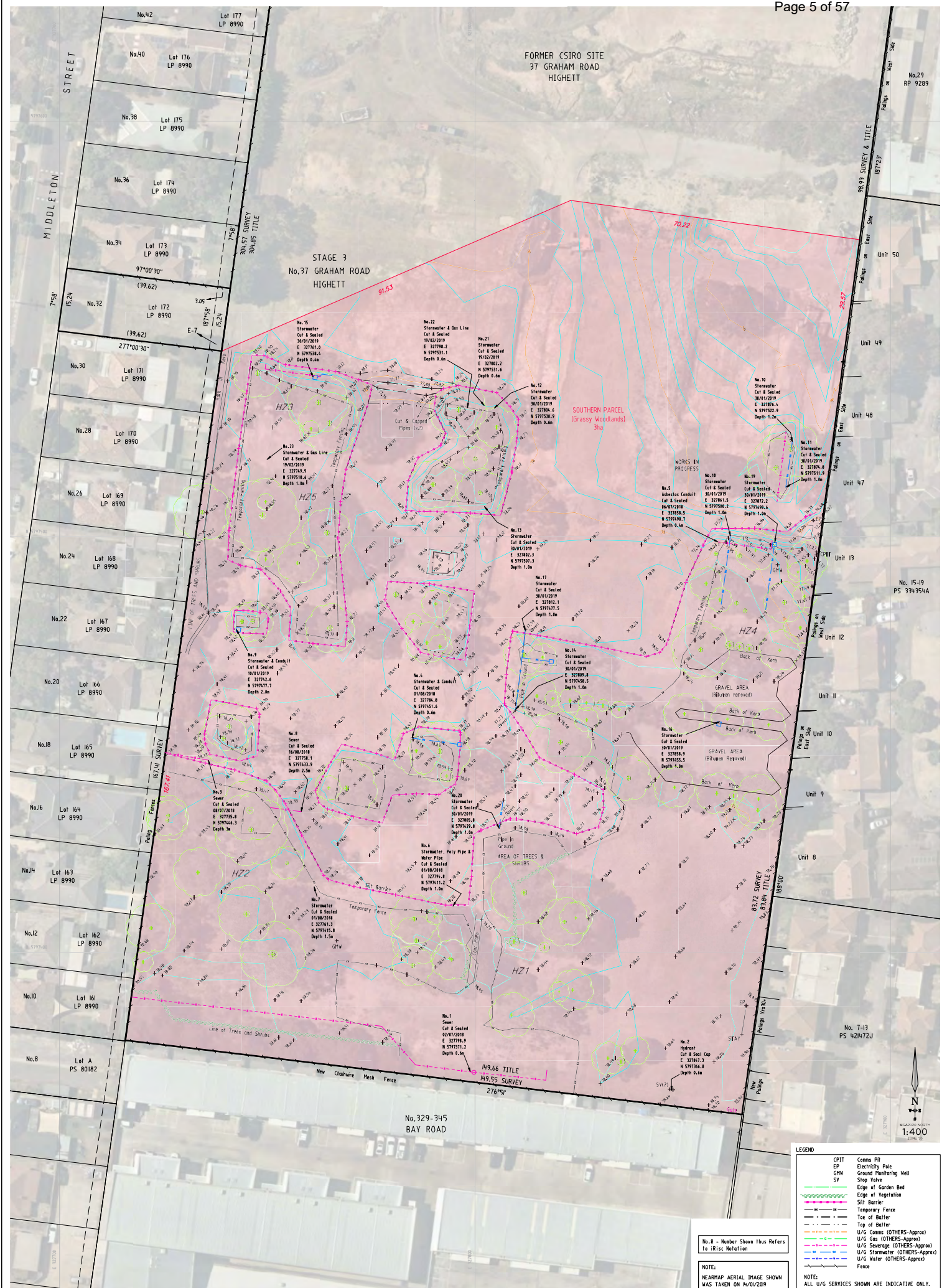
SIGNED:



MR JOHN THROSSELL

ENVIRONMENTAL AUDITOR

(Appointed Pursuant to the Environment Protection Act 1970)



B	KK	AJ	27-08-19	SURVEY FEATURES OPEN UPDATED
A	KK	AJ	26-02-19	DRAWING REVISED

SURVEYED	AJ	05-02-19
ASSISTED		
DRAWN	KK	08-02-19
CHECKED	AJ	14-02-19
LEVEL DATUM	AHD	
COORD DATUM	MGA2020	

MONACCO
HICKEY

PROJECT		THIS PLAN	
<i>CSIRO</i> 37 GRAILAM ROAD HIGHETT		GRASSY WOODLANDS PARCEL EXISTING CONDITIONS SURVEY	
SCALE (m)	0 4m 8m 12m 20m	DRAWING REF.	SHEET No.
			REV.



CSIRO Highett - Grassy Woodlands

Environmental Management Plan

674398CH-0007-NP-RPT-0001 | 4

22 May 2020

Commonwealth Scientific and Industrial Research Organisation



CSIRO Highett - Grassy Woodlands

Project No: 674398CH
 Document Title: Environmental Management Plan
 Document No.: 674398CH-0007-NP-RPT-0001
 Revision: 4
 Document Status: Final
 Date: 22 May 2020
 Client Name: Commonwealth Scientific and Industrial Research Organisation
 Client No: -
 Project Manager: Jye Grogan
 Author: Jye Grogan / Monique Farmer / Liam Gooley
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Document history and status

Revision	Date	Description	Author	Reviewed	Approved
Rev0	24/02/2020	Draft for comment	LG/MF	PB	LG
Rev1	06/04/2020	Revised draft	JG	LG	LG
Rev2	14/04/2020	Final for issue	LG	LG	LG
Rev3	19/05/2020	Revised based on Auditor comments	JG	PB	JG
Rev3.1	20/05/2020	Re-issue, correction of typographical error and update to Appendix B (B.2.1) and Appendix B (B.3)	JG	PB	JG
Rev4	22/05/2020	Revised based on Auditors comments	JG	PB	JG

Key Information

Who should use this EMP – any employee or contractor on-site.

Why was this EMP developed – asbestos contaminated soil remains on parts of the site and requires on-going management.

Why is there asbestos contaminated soil on the site – the site was formally part of a larger CSIRO facility, and as some buildings were constructed between 1950s-1980s they contained bonded asbestos cement sheeting as a building material. Over time, some of the asbestos was mixed with near surface soil.

Where is the asbestos contaminated soil – it's mostly deeper than 10 cm in the areas closest to the trees. However due to activity such as rain or burrowing animals, asbestos can be brought up to the surface. This is why it needs to be managed.

How will the asbestos contaminated soil be managed – it will be managed by:

- Access to the asbestos contaminated soils is restricted through fenced off areas and restricted general access.
- A 10 cm ground cover, such as mulch or topsoil and grass has been laid on the site surface to act as a separation layer and this will be maintained into the future.
- Unrestricted excavation of soils on the site is not allowed. Excavation of soil can only be carried out by specialist personnel trained in asbestos, and requires a work permit to be issued.

Is there a risk to using the site – the site has undergone environmental assessment and remediation works. A statutory environmental audit has been completed by an EPA appointed Environmental Auditor, a process which is rigorous and conservative. The Environmental Auditor has reviewed all the available site information and has concluded that the site is suitable for use as a public open space, as long as residual contamination is managed through the implementation of this EMP. The EMP sets the framework and requirements for managing the asbestos contaminated soil.

What do I need to do – anyone undertaking work or visiting the site needs to be inducted and made aware of the requirements of this EMP. These are detailed within this document.

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Appendix J. Additional Information

Appendices G, H, I and J of this EMP are provided in full within Appendix I of the Audit report

Acronyms and Abbreviations

µg/L	Micrograms per Litre
>	Greater Than
%	Percent
ACM	Asbestos Containing Material
AF	Asbestos Fines
BCC	Bayside City Council
CH2M	CH2M HILL Australia Pty Ltd
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CoPC	Contaminants of potential concern
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority
ESL	Ecological screening level
FA	Fibrous Asbestos
GME	Groundwater monitoring event
ha	Hectares
HIL	Health Investigation Level
iRisC	Independent Risk Consulting Pty Ltd
Jacobs	Jacobs Group Australia Pty Ltd
LOR	Limit of Reporting
m	Metres
m ²	Square Metres
m ³	Cubic Metres
mAHD	Metres Australian Height Datum
mbgl	Meters Below Ground Level
mg/kg	Milligrams per Kilogram
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
SEPP	State Environmental Protection Policy
TDS	Total dissolved solids

1. Introduction

CH2M HILL Australia Pty Ltd (CH2M), now Jacobs¹, was commissioned by the property division of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) as the environmental consultant overseeing contamination investigation and validating remediation works at the CSIRO-owned facility located at Graham Road, Highett, Victoria (the facility). The location of the facility is shown in Figure 1, and is described as 37 Graham Road, Highett, or Lot 1 of TP223183.

In 2012, for the purposes of investigation and remediation, CSIRO requested that the facility be split into two separate parcels of land ('Highett north' and 'Highett south'). The facility was later split into three separate parcels of land, referred to as 'Highett north', 'Highett south' and 'the Future Grassy Woodlands'. The Future Grassy Woodlands (the site), as shown in Figure 1, is located in the southern portion of the facility and comprises an area of approximately 3 ha.

The proposed future use of the site, following transfer from the purchaser, understood to be Chaolong Developments Pty Ltd or its nominee Sunkin Highett Pty Ltd (the purchaser)², to Bayside City Council, is intended to be Public Conservation and Resource Zone (PCRZ)³, which broadly corresponds to a public open space land use (NEPM, 2013). Further information on the site is provided in Section 2. Whilst the proposed land use with respect to the BCC planning scheme is not confirmed, this EMP has been prepared in consideration of the NEPM (2013) public open space land use.

It is noted that at the time of completing this EMP, CSIRO was the owner of the site, and Chaolong Developments Pty Ltd or its nominee Sunkin Highett Pty Ltd the proposed purchaser⁴; ultimately the land will be transferred to BCC as the future owner. On that basis, and for the purpose of implementation of this plan, Table 1.1, below, identifies the site owner, their key responsibility for management of the site, the period of time over which that responsibility applies, and the relevant section of this EMP that is required to be implemented.

Table 1.1: Site Ownership, Responsibility for Management and EMP Implementation Schedule

Site Owner	Anticipated Site Use	Period of Ownership	Management Responsibility	Implementation Schedule
CSIRO	No Public Access	Until transfer to Sunkin Highett Pty Ltd	- Implement monitoring and maintenance of existing site controls - No public access to site - Access to site by authorised persons only	Appendix A of this EMP
Sunkin Highett Pty Ltd		Until transfer to Bayside City Council		
Bayside City Council	Controlled Access	Upon transfer from Sunkin Highett Pty Ltd	- Preparation of site for on-going public access - Implement monitoring and maintenance of site for on-going public access	Appendix B of this EMP

1.1 Background

Since January 1999, several environmental investigations at the facility were undertaken that identified historic potentially contaminating activities and associated contaminants of potential concern (CoPC). Investigations

¹ On December 15, 2017, CH2M officially became part of Jacobs as a wholly-owned direct subsidiary. At present, CH2M remains a separate legal entity and will continue to operate and conduct business accordingly.

² Chaolong Developments Pty Ltd has nominated Sunkin Highett Pty Ltd as the proposed nominated purchaser. Subject to CSIRO approval (pending) Sunkin Highett Pty Ltd will be eventual purchaser of the land from CSIRO.

³ Bayside City Council, 2018 Highett Structure Plan, September 2018, https://s3.ap-southeast-2.amazonaws.com/hdp.au.prod.app.bays-yoursay/files/3415/3679/2513/Final_Highett_Structure_Plan_September.PDF

⁴ Subject to CSIRO approval of the nomination – see footnote 2.

prior to CH2M involvement are documented and summarised in “CSIRO Highett Facility (South), Victoria: Phase 1 and 2 Site Investigation” report (CH2M, 2012).

CSIRO engaged CH2M in 2009 to undertake an investigation of the entire facility given the concern regarding contamination (CH2M, 2012). Following completion of this investigation, CSIRO engaged John Throssell of GHD Pty Ltd (GHD) as an Environment Protection Authority (EPA) Victoria appointed Environmental Auditor to perform an environmental audit of the facility pursuant to Part IXD of the Environment Protection Act 1970.

Works completed since the 2012 investigation included demolition of buildings and removal of associated demolition debris, removal of surface soils in and around building footprints, and asbestos abatement overseen by iRisC Pty Ltd (iRisC) engaged by PSG Holdings Pty Ltd (PSG) on behalf of CSIRO. Areas occupied by trees earmarked for protection, were designated as tree protection zones (Section 2.2). Tree protection zones were established in consultation and agreement between CSIRO and BCC and were exempted from any remediation activities to ensure longevity of the trees.

The validation of remediation for the Future Grassy Woodlands is documented in the validation report, titled Validation Report: Portion of Southern Area of 37 Graham Road Highett – “Future Grassy Woodland” (Jacobs 2020) (herein referred to as “the Validation Report”). The Validation Report identified residual asbestos containing material (ACM) and fibrous asbestos (FA) within the soils at the site which requires management by an environmental management plan (EMP), which is the purpose of this document.

1.2 Objectives

The objective of this EMP is to identify that there are requirements for on-going use of the site that pertain to the presence of asbestos in surface and subsurface soils. The EMP is arranged to address two land use scenarios (based on the intended transition of site ownership), as follows:

- The current use of the Site (Vacant lot with no public access); and
- The intended long-term use of the Site as a public open space (PCRZ)

This EMP summarises the site contamination status following remediation and validation works undertaken (Jacobs 2020), and identifies requirements as outcomes from the Site Environmental Audit, including:

- measures required to ensure on-going suitability of the site for its intended use (public open space), including establishment of ground cover/landscaping at certain areas;
- site inspection and monitoring frequencies;
- the requirement that processes for on-going management of health and safety are established;

This EMP aims to ensure that health and safety risks associated with the site are appropriately managed. To achieve this, the EMP requires preparation of task-specific Asbestos Management Plan(s) (AMP) and Safe Work Method Statement (SWMS) for site works, to be prepared by an Environmental Consultant / Occupational Hygienist, for the conduct of maintenance works as may be required at the Site that have the potential to disturb surface and subsurface soils. The task-specific AMP and SWMS are to meet the requirements of Victorian Occupational Health and Safety Regulations (2017) and WorkSafe Victoria requirements.

Accordingly, this EMP includes reference to the following:

- WorkSafe Victoria (2018a) Compliance Code : Managing Asbestos in Workplaces
- WorkSafe Victoria (2018b) Compliance Code: Removing Asbestos in Workplaces.
- WorkSafe Victoria (2010) Asbestos-Contaminated Soil.

It is noted that the EMP is limited to the site as shown on Figure 1 and should be reviewed / revised in accordance with the requirements in Section A.11.4 (Appendix A) and B.11.4 (Appendix B)

1.3 Structure of the EMP

The following sections of the EMP apply to all site owners (identified in Table 1.1) during their period of site ownership:

- Section 1, includes background information on the site; objectives of the EMP; structure of the EMP implementation; guidelines used in the creation of the EMP; enforceability for the implementation of the EMP; and limitations of the EMP.
- Section 2, includes site identification information; details regarding areas of ecological significance at the site; identification of site management areas (Tree Protection Zones, General Access Areas (remediated/validated) and General Access Areas (non-remediated)); information regarding previous site remediation; contamination status at the completion of remediation; and roles and responsibilities pertaining to the EMP.
- Section 3, includes references cited in the EMP.

The following section of the EMP applies to CSIRO and Sunken Highett Pty Ltd, during their period of ownership

- Appendix A. Site Use – No Public Access

The following section of the EMP applies to Bayside City Council

- Appendix B. Site Use – Public Open Space (PCRZ)

1.4 Guidelines

The following guidelines, and standards were considered during the development of the EMP:

- National Environment Protection Council (NEPC), National Environment Protection (Assessment of Site Contamination) Measure, 1999 (NEPC, 1999 (2013 amended)), hereafter referred to as the NEPM.
- State Environment Protection Policy (Prevention and Management of Contamination of Land) (Victorian Government, 2002).
- EPA Victoria, Soil hazard categorisation and management - Industrial Waste Resource Guidelines (IWRG) Publication 621 (EPA Victoria, 2009), hereafter referred to as IWRG 621.
- Western Australian Department of Health (WA DOH), 2009, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA DoH, 2009)⁵.
- enHealth 2012 Guidelines for Assessing Human Health Risks from Environmental Hazards. Australian Government (enHealth, 2012).

1.5 Enforceability

The requirement for implementation of this EMP is an outcome from the process of Environmental Audit, according to the requirements of the Environmental Auditor (Mr John Throssell of GHD).

1.6 Limitations

This EMP is given strictly in accordance with, and subject to, the following limitations:

- The EMP was prepared for CSIRO ("Client") in accordance with the Scope of Work agreed between Jacobs and the Client.
- Jacobs assumes no responsibility for conditions we were not authorised to investigate.
- This report is based, in part, on unverified information supplied to Jacobs from several sources during the project research. Therefore, Jacobs does not guarantee its completeness or accuracy, and assumes no responsibility for errors or omissions related to this externally supplied information.
- An understanding of the Site conditions depends on the integration of many pieces of information; some regional, some site specific, some structure-specific and some experienced-based.
- The advice tendered in this report is based on information obtained from the field investigation locations, test points, sample points and field and laboratory data, and is not warranted in respect to the conditions that may be encountered across the Site at other than these locations. It is emphasised that the actual characteristics of the sub-surface and surface materials may vary between adjacent test points and sample intervals and at locations other than where observations, explorations and investigations have been made. Sub-surface conditions, including groundwater levels and contaminant concentrations can change in a limited space and time.
- The previous investigations reviewed during the preparation of this EMP identified actual surface and subsurface conditions only at those locations where samples were taken and when they were analysed. This data has been interpreted and an opinion rendered regarding the overall environmental conditions.
- This report has not been prepared for the purpose of assessing the suitability of soil and fill on the Site for foundations.

⁵ Noted to be under review by WA DoH. Future revisions of the EMP should consider the currency of this guideline.

-
- This report should not be altered, amended or abbreviated, issued in part and issued incomplete in any way. Jacobs accepts no responsibility for any circumstances that arise from the issue of the report which has been modified as outlined above.
 - This report has been prepared for the use of the Client relating to the property as described in the report in accordance with the terms and limitations stated in the agreement. No warranty, expressed or implied, is made.

2. Site Information

An overview of the existing condition of the site, environmental setting and surrounding land uses based on information obtained from the validation report (Jacobs, 2020) and relevant additional information obtained since its completion is provided in Table 2.1.

Table 2.1: Summary of site description

Site Overview
Site History
The site was formerly used by CSIRO as a scientific research and education facility. The facility was occupied by several divisions (including the Materials Science and Engineering; Process Science and Engineering; Land and Water; Ecosystem Science; Science Education and the Central Engineering Facility) until its closure in the 1990s.
Topography, Surface Water and Drainage
The site is gently undulating with an overall slight fall in gradient towards the east. Localised cut and fill works have occurred prior to construction, after demolition of the buildings and from the remediation works. Stormwater is expected to flow from the site towards Port Phillip Bay, which is located approximately 2.5 kilometres to the southwest.
Local Geology and Soils
Prior to remediation, the average and maximum fill thickness across the site observed by CH2M (2012) was ~0.5 m and ~1.8 m respectively and described as comprising sand, silts and gravel mixed with varying quantities of topsoil and anthropogenic materials, including brick, glass, metal fragments, and ACM. Fill within areas subject to remediation was removed during the remediation works. Fill is underlain by Brighton Sand Group Deposits comprising sand, silty sand and sandy clays and silts. The Brighton Sand Group Deposits are underlain by factored siltstone and mudstone of the Newport Formation and Silurian Age bedrock.
Groundwater
The groundwater-bearing zone is within the Brighton Sand Group Deposits. Based on the gauging of groundwater monitoring wells located across the facility, groundwater has been observed to generally lie at approximately 3.5 mbgl and to flow in a west to southwest direction.
Within the framework of the Victorian State Environmental Protection Policy (SEPP) (Waters) (Victorian Government, 2018), groundwater beneath the site is interpreted to correspond to Segment B defined as concentration of total dissolved solids (TDS) within the range 1,200 to 3,100 mg/L; corresponding protected groundwater beneficial uses are discussed in the Validation Report (Jacobs, 2020).

2.1 Site Identification

Table 2-2: Site Identification

Identifier	Detail
Street Address	37 Graham Road, Highett VIC 3190
Lot and Plan Number ⁶	Lot 1 of Plan TP223183
Site Area	Approximately 3 ha (30,000 m ²)
Current Land Owner	CSIRO
Identified Intended Future Land Owner(s)	Sunkin Highett Pty Ltd (purchaser), for later transfer to Bayside City Council ⁷
Zoning ⁸	CA – Commonwealth Land (not in scheme)
Proposed Zoning	Public Conservation and Resource Zone
Local Government Area	Bayside City Council

⁶ Information current at the time of reporting

⁷ Subject to approval by CSIRO of Sunkin Highett Pty Ltd as nominated purchaser, in the absence of which the purchaser is Chaolong Developments Pty Ltd. It is understood that Bayside City Council will be transferred ownership of the Site, by the purchaser, after a period of up to 12 months following its purchase.

⁸ Information obtained from www.planning.vic.gov.au, planning property report for 37 Graham Road, Highett VIC 3190, current at 5 December 2019.

2.2 Areas of Ecological Significance

Portions of the site are occupied by native vegetation which have been identified to be of high conservation significance in a flora and fauna assessment report (Biosis, 2011) commissioned by CSIRO; including areas described as a “significant example of Plains Grassy Woodland” and “the only remaining example of Yellow Box woodland on Melbourne’s sandbelt”. Four individual habitat zones and seven tree protection zones were identified encompassing River Red Gum, Yellow Box and Swamp Paperbark species. Very high and high conservation significance vegetation was identified to comprise over 0.18 ha and 0.25 ha respectively. The report recommended, with respect to protection of trees, that areas twice the diameter of the tree canopy be protected from adverse impacts. In consultation and agreement between CSIRO and BCC, designated tree protection zones were established at the site (Figure 2); excavation of soils within those areas was not permitted in order to ensure the longevity of the tree stands. Accordingly, no soil remediation within those zones could be undertaken.

2.3 Site Areas

The site includes broadly two distinct areas: the Tree Protection Zones; and the General Access Areas, as outlined below and shown on Figure 3.

2.3.1 Tree Protection Zones

It is understood that BCC wishes to preserve areas of identified ecological significance (Section 2.2), and therefore remediation of soils within those Tree Protection Zones could not be undertaken. As a result, general access to areas within the Tree Protection Zones must be restricted, unless a surface cover layer is introduced to those areas. As such, the areas have been delineated by temporary fencing and sediment fencing, as shown on Figure 2.

2.3.2 General Access Areas

The remainder of the site, outside of the Tree Protection Zones, is for general access. Recognising areas where remediation was not undertaken, the General Access Areas comprise of:

- Remediated Areas (areas where soil was removed and/or validated to remain on the site).
- Non-Remediated Areas (areas which have not been remediated for asbestos). There remains some uncertainty as to the presence of ACM within the top 0.1 m of soil across the General Access Areas (non-remediated).
- Fifth Street Remediation Area – which has been remediated to 1.0 m depth by placement of clean material from surface to 1.0 m depth, however soil below 1.0 m depth is contaminated.

2.4 Site Remediation

Site soil remediation works were conducted between 2016 and 2019, as documented in the Validation Report (Jacobs 2020). The remediation broadly comprised the following:

- Tree Protection Zones – no remediation has been undertaken per Section 2.2.
- General Access Areas – Remediated Areas:
 - The excavation and off-site disposal of soil within former building footprints, roadways, former carparks, garden beds and areas, and in the vicinity of underground assets (shown on Figure 2).
 - Removal and off-site disposal of surface and subsurface infrastructure (i.e. conduit). Subsurface infrastructure comprising ACM which was unable to be removed as it was present beneath Tree Protection Zones was cut, sealed, and surveyed (i.e. it remains in place), as shown on Figure 4.

- The area known as Fifth Street was remediated by excavation to 1 m below ground level and off-site disposal of asbestos impacted soil, then installation of a geofabric membrane capping deeper asbestos impacted fill, and backfilling with site-derived clean fill, as shown on Figure 2.
- General Access Areas – Non-Remediated Areas – no remediation/validation for asbestos was undertaken. Asbestos remediation and validation works overseen and undertaken by iRisC targeted former building footprints, roadways, former carparks, garden beds and grassed areas, and areas in the vicinity of underground assets, where asbestos had been indicated. There remains some uncertainty as to the presence of ACM within the top 0.1 m of soil across the General Access Areas (non-remediated).
- Fifth Street Remediation Area (as shown on Figure 3)
 - The 'Fifth Street Remediation Area', as identified on Figure 3, was remediated to one metre below ground level (1 mbgl), a geofabric membrane was installed to the base and walls of the remediated area, providing a barrier layer between asbestos impacted soil. Clean fill material was backfilled into the area.

The Validation Report (Jacobs, 2020) concluded that the remediation/validation works were successfully completed at the Site and that it is considered suitable for Public Open Space land use, comprising a grassy woodland area; provided the management measures detailed in this EMP are implemented, including actions prior to public access.

2.5 Contamination Status

Previous investigations, remediation, and validation activities have shown that concentrations of contaminants of concern are low and below the relevant criteria for a public open space land use, with the exception of:

- Tree Protection Zones:
 - The presence of ACM within the top 10 cm of soil is present and requires ongoing management.
 - The presence and concentration of ACM and AF/FA deeper than 10 cm within the tree protection zones is also suspected and requires ongoing management.
 - Redundant ACM services remain present at depth across the site, and require ongoing management (as identified in Figure 4).
- General Access Areas (remediated/validated):
 - These areas have been remediated and/or validated and assessed as being suitable for a public open space land use.
 - Erosion and migration of asbestos from adjacent Tree Protection Zones may occur during heavy rainfall and/or high wind events. Ongoing management of General Access Areas is required to ensure that the surface soil profile remains free of asbestos.
- General Access Areas (non-remediated):
 - The presence of ACM within the top 10 cm of soil is suspected and requires ongoing management. An assessment of exposure with respect to the above is provided in Appendix F.
- Fifth Street Remediation Area (as shown on Figure 3)
 - This area was remediated to a depth of 1 metre below ground level (mbgl) indicated by a geofabric membrane layer.
 - Asbestos impacted fill material is present below the geofabric membrane layer at depths greater than 1 mbgl.

2.6 Roles and Responsibilities

General responsibilities are outlined below:

- Environmental Auditor:
 - Approval and enforcement of this EMP as a requirement of the outcome of the Environmental Audit of the Site.
- Site Owner (as identified in Table 1.1):
 - Implementation of the relevant appendix (Appendix A or Appendix B) of this EMP as specified in Table 1.1
 - Incorporate this EMP into their management system
 - Provide a full copy of this EMP to employees and contractors, and discuss it as part of the site induction process.
 - Oversee and enforce the implementation of this EMP.
 - Undertake the required ongoing monitoring and inspections - Engage an Environmental Consultant / Occupational Hygienist to advise upon performance of these works to be compliant with Victorian Occupational Health and Safety Regulations (2017) and WorkSafe Victoria Compliance Code Managing Asbestos in Workplaces (2018)).
 - Implement and complete corrective actions, as required.
 - Complete and maintain the required registers and records.
 - Enforce requirements of this EMP by site contractors.
- Contractors:
 - Implement the EMP with oversight of the site owner.
 - Develop a task/job specific Asbestos Management Plan compliant with Victorian Occupational Health and Safety Regulations (2017) and WorkSafe Victoria Compliance Code Managing Asbestos in Workplaces (2018a). other WorkSafe Victoria requirements (2010, 2018a) and Safe Work Method Statement, and ensure that site works are undertaken in compliance with that Asbestos Management Plan.
 - Provide adequate asbestos awareness training of all employees and sub-contractors during site induction.
 - Complete registers and records as required.
 - Complete works in an environmentally responsible manner.
 - Ensure appropriate environmental protection measures are in place and working correctly.
 - Complete incident reports and complaint reports.
 - Ensure employees and sub-contractors comply with the requirements of this EMP and the Asbestos Management Plan.
- Environmental Consultant / Occupational Hygienist:
 - To be engaged: to advise upon performance of ongoing monitoring and inspections (as identified in the relevant appendix, Appendix A or Appendix B), to be compliant with Victorian Occupational Health and Safety Regulations (2017), WorkSafe Victoria Compliance Code Managing Asbestos in Workplaces (2018a), and other WorkSafe Victoria requirements (2010, 2018a); to undertake further environmental assessment if required in the future; and to prepare revision to this EMP if/when required.
 - Sample, analyse, and classify waste materials for off-site disposal to landfill, as required.

- Provide a report of findings and any recommendations to the site owner from the undertaking of ongoing monitoring and inspections.

3. References

- Biosis (2011) Flora and Fauna Assessment: CSIRO Highett, Victoria (Biosis, 2011).
- CH2M (2012) CSIRO Highett Facility (South), Victoria: Phase 1 and 2 Site Investigation (CH2M, 2012).
- enHealth (2012) Guidelines for Assessing Human Health Risks from Environmental Hazards (enHealth, 2012).
- iRisC (2020) Grassy Woodland Investigations Asbestos in Soil (South), CSIRO 37 Graham Road Highett Victoria (iRisC, 2020).
- Jacobs (2020) CSIRO Highett Remediation Project (Southern), Validation Report: Portion of Southern Area of 37 Graham Road Highett – “Future Grassy Woodland” (Jacobs, 2020).
- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPM, 2013).
- Victorian Environment Protection Authority (EPA) (2009) Industrial Waste Resource Guidelines (IWRG) 621 Soil Hazard Categorisation and Management (IWRG 621).
- Victorian EPA (2009) IWRG 701 Sampling and Analysis of Waters, Wastewaters, Soils and Wastes (IWRG 701).
- Victorian EPA (2017) IWRG 611 Asbestos Transport and Disposal (IWRG 611).
- Western Australian Department of Health (WA DoH) (2009) Guidelines for the Assessment, Remediation, and Management of Asbestos-Contaminated Sites in Western Australia (WA DoH, 2009).
- WorkSafe Victoria (2010) Asbestos-Contaminated Soil (WorkSafe, 2010).
- WorkSafe Victoria (2018a) Compliance Code: Managing Asbestos in Workplaces (WorkSafe, 2018a).
- WorkSafe Victoria (2018b) Compliance Code: Removing Asbestos in Workplaces (WorkSafe, 2018b).

Appendix A. Anticipated Site Use – No Public Access

Appendix A is for implementation by the site owner corresponding to the period of site ownership as identified in Table A.1 (below):

Table A.1: Responsible Party for Implementation of Part A

Site Owner	Anticipated Site Use	Period of Ownership	Management Responsibility	Implementation Requirement
CSIRO	No Public Access	Until transfer to Sunkin Highett Pty Ltd	- Implement monitoring and maintenance of existing site controls - No public access to site - Access to site by authorised persons only	Appendix A of this EMP
Sunkin Highett Pty Ltd ⁹		Until transfer to Bayside City Council		

A.1 Mitigation Measures

WorkSafe Victoria (2018a) provides guidance on mitigation measures to prevent contamination exposure to site users and workers. These control measures should reflect the following hierarchy of controls:

- Eliminating the risk (for example, removal).
- Isolating the risk (for example by barrier, distance or engineering controls).
- Using administrative controls (for example, safe work practices).
- Using Personal Protective Equipment (PPE).

Exposure to impacted soil at the Site could pose a risk to human health and should be avoided or minimised. If soil at the Site, particularly in the Tree Protection Zones (Section A.4.1), General Access Areas (non-remediated) (Section A.4.2) and Fifth Street Remediation Area (Section A.4.4), requires excavation or disturbance then mitigation measures (Sections A.2 to A.10) must be implemented, in accordance with this EMP, to protect human health.

A copy of WorkSafe (2018a) is provided in Appendix H for reference.

A.2 Anticipated Site Use – No Public Access

No permanent mitigation measures are required to be established during the period of site ownership by CSIRO and subsequently Chaolong Developments Pty Ltd or its nominee Sunkin Highett Pty Ltd, on the understanding that the intent for the Site use is that it only be accessible to authorised persons with no access to the general public.

Management measures (including fencing, work zone management, monitoring and inspection) are required to be implemented during the period of site ownership by CSIRO and subsequently Sunkin Highett Pty Ltd, due to the likely presence of asbestos within Tree Protection Zones (Section A.4.1), the General Access Areas (non-remediated) (Section A.4.2), and possibly the Fifth Street Remediation Area (Section A.4.4) identified in Section 2.3).

Ongoing monitoring and inspection requirements are to be undertaken in accordance with Section A.5 below.

The following sections detail the measures to be implemented over this period of site ownership until such point that the site ownership is transferred to Bayside City Council (BCC).

⁹ Or Chaolong Developments Pty Ltd in the absence of CSIRO approval of Sunkin Highett Pty Ltd as nominated purchaser

A.3 Site Access

Site access is to be restricted to authorised persons only, whom have been inducted to the site and this EMP. Appropriate signage must be established and maintained in a clear readable condition to ensure all persons accessing the site are aware that the site is under management due to the potential presence of asbestos at the site.

A.4 Maintenance of Site Conditions

A.4.1 Tree Protection Zones

- Access is to be restricted at these areas because asbestos is likely to be present at surface and at depth in these areas of the site.
- Temporary fencing is to be installed and maintained to prevent access to Tree Protection Zones from unauthorised persons;
- If access, or maintenance works, are required to be undertaken, the works area is to be treated as an asbestos works zone and appropriate management measures are to be employed (in accordance with Sections A.6 to A.10). Any intrusive works within Tree Protection Zones must be notified to BCC and permission or a work permit sought prior to works. Due to the protection status of these areas, BCC will need to assess likelihood for impact to the health of the trees and necessity for the works.
- It is the responsibility of the site owner (in consultation with their Environmental Consultant / Occupational Hygienist) to ensure access is restricted and the measures meet the requirements of WA DoH (2009).
- Silt fencing is to be installed and maintained at the boundary of Tree Protection Zones to prevent cross-contamination of asbestos from Tree Protection Zones to General Access Areas.
- Inspections are to be undertaken in accordance with Section A.5.

A.4.2 General Access Areas (non-remediated)

- There is the potential for ACM to be present within the top 0.1 m of the soil at General Access Areas (non-remediated).
- If maintenance works are required to be undertaken, these areas are to be treated as an asbestos works zone and appropriate management measures are to be employed (in accordance with Sections A.6 to A.10).
- Inspections are to be undertaken in accordance with Section A.5.

A.4.3 General Access Areas (remediated)

- General Access Areas (remediated) were cleared during remediation of the site and are required to be maintained as 'asbestos free' by the site owner.
- Inspections are to be undertaken in accordance with Section A.5.

A.4.4 Fifth Street Remediation Area

- Surface soils in the 'Fifth Street Remediation Area' as identified on Figure 3 were cleared during remediation of the site and are required to be maintained as 'asbestos free' by the site owner.
- 'Fifth Street Remediation Area' is known to contain asbestos at approximately one metre below ground level (1 mbgl).
- If intrusive works (e.g. soil excavations) are required in this area to a depth of 1 mbgl or greater, the area is to be treated as an asbestos works zone and appropriate management measures are to be employed (in accordance with Sections A.6 to A.10).
- The geofabric membrane marking layer must be replaced if intrusive works damage it or require its removal.

A.5 Site Inspections - Monitoring

- Inspections are to be carried out at a frequency of once per month until the site is transferred to BCC.
- Inspections are to be undertaken by an Environmental Consultant / Occupational Hygienist (refer to roles and responsibilities Section 2.6).
- Inspections should assess for adequacy of controls implemented in Sections A.4.1 to A.4.3, requirements for repairs, and presence of asbestos at surface outside of Tree Protection Zones.
- Any visible asbestos observed during site inspections is to be removed and disposed of by the Environmental Consultant / Occupational Hygienist in accordance with WorkSafe (2018a), and documented in the Routine Site Inspection Form (Appendix E).
- Inspections should yield a report detailing the findings and any corrective actions required. The inspections are to be documented, detailing exactly how it has been completed and noting the ground/surface condition (particularly in the Tree Protection Zones and General Access Areas (non-remediated) – refer to Figure 3). Inspections should be timed to coincide with recent rainfall events such as can reveal ACM. See Appendix E for a suggested inspection checklist.
- Ad-hoc inspections are to be undertaken following rain events of more than 25 mm over a 24-hour period. These inspections will include the whole site, though focus should be placed on areas adjacent to Tree Protection Zones, considering potential for run-off from the Tree Protection Zones.

A.6 General Maintenance

Following implementation of the controls for the use of the site outlined in Section A.4, when general maintenance is undertaken on any part of the site (such as landscaping, excavation by hand or machine, repair of silt fencing), measures should be taken to mitigate potential human exposure or environmental damage.

Prior to undertaking maintenance work the following is required:

- a task-specific Asbestos Management Plan (AMP)
- a task-specific safe work method statement (SWMS)

The task-specific AMP and SWMS is to be prepared by an Environmental Consultant / Occupational Hygienist in accordance with WorkSafe (2018a) to identify potential risks to human health and appropriate controls to be implemented. The site owner must ensure that the task-specific AMP(s) and SWMS(s) are implemented. The controls required will vary depending on the nature of and location of work being undertaken. As a minimum, suitable PPE must be worn during general maintenance activities as outlined in Section A.9 and an exclusion zone established to delineate the work area and prevent unauthorised access.

A.7 Soil Excavation

Where soil disturbance or excavation is undertaken on any part of the site (e.g. installation / repair of underground utilities), measures should be taken to mitigate potential human exposure or environmental damage. Works are to be undertaken in accordance with WorkSafe (2018b) and the task-specific AMP and SWMS prepared for those works by an Environmental Consultant / Occupational Hygienist in accordance with WorkSafe (2018a) (see Appendix I). Due to the requirement for vegetation to be protected within Tree Protection Zones, permission or a work permit must be sought from Bayside City Council prior to any excavation works being carried out in Tree Protection Zones.

If excavations are essential for ongoing maintenance of the Site, this should be coordinated with BCC as appropriate and provision should be made for the appropriate excavation, storage and disposal of this material.

Due to the confirmed asbestos presence at the Site, excavated soil must be treated as potentially contaminated by asbestos; particular attention should be paid to regulations and guidelines regarding asbestos within the workplace, including Asbestos-Contaminated Soil (WorkSafe 2010).

Excavation works must adopt appropriate dust control measures to minimise the risk of exposure through inhalation. Controls are to be documented in the task-specific AMP and SWMS so that workers are aware of their importance. If there is a high risk of dust generation then barriers to divert the wind over the excavation area can be constructed and/or excavations and stockpiled material can be wetted down or sprayed with a binding agent. Barriers may include shade cloth walls of a height one-fifth the length of the work area. The level of controls required will vary depending on the nature of the work being undertaken and the location of the works area on the site.

Other measures that may be adopted to minimise dust include:

- Covering of materials and stockpiles.
- Site equipment is to be fitted with dust suppressors.
- Dampening of exposed areas slightly, during excavation or whenever dust is potentially raised.
- Controlling vehicular access and egress, including that vehicles only leave via the stabilised site access path.
- Minimising the area of the Site that is disturbed at any one time.
- Minimisation of number of 'working' stockpiles.
- When windy conditions result in excessive dust generation, works are to cease until the conditions abate.
- Excavated soil should be returned to the depth and location from which it was excavated, so far as practicable.
- Minimise time period over which excavated soil and excavations are exposed / left open.

Any capping layers previously installed to minimise exposure to contaminated soil at the area of impact should be reinstated to the original condition as soon as practicable after intrusive works have been completed.

During excavation works, inspection for indicators of contamination should be undertaken by an environmental consultant / occupational hygienist. If unexpected contamination is encountered, then work should cease until the risk has been assessed and appropriate control measures are in place.

A.7.1 Requirements for Working with Asbestos Impacted Material

This section applies to Tree Protection Zones, General Access Areas (non-remediated) and Fifth Street Remediated Area (Intrusive works to a depth of 1mbgl or greater)

As ACM, and AF/FA (in one soil sample only), have been reported at the Site, an Environmental Consultant / Occupational Hygienist, experienced in the investigation and management of asbestos in soil should be consulted ahead of any excavation works, and appropriate management measures implemented. Site specific procedures for excavation works are to be specified in the task-specific AMP and SWMS prepared for the works; as a guide those procedures may include:

- The works areas must have a perimeter barrier to restrict access (i.e. exclusion zone).
- An asbestos work area shall be defined and clearly marked.
- Only authorised personnel shall enter the works area.
- All personnel within the asbestos works area shall wear P2 (or higher) class respirators, disposable gloves, and asbestos-rated coveralls whilst completing the works.
- A decontamination area will be marked out within the asbestos works area for the removal and disposal of PPE before workers leave the asbestos works area. All disposable PPE must be disposed of as asbestos waste.
- Static air monitoring at a minimum of three locations will be undertaken during the works.

- At the completion of works, an Environmental Consultant / Occupational Hygienist is to verify and report to the Site owner that the top 10 cm of soil within the excavation footprint after reinstatement of the excavation is visibly free of asbestos, and is suitable for a public open space land use.

A.8 Waste Disposal

If soil at the Site requires offsite disposal, it should be assessed, classified and disposed of in accordance with Victorian Environment Protection Authority (EPA) Industrial Waste Resource Guidelines 621 (IWRG) (2009) and Victorian EPA IWRG 611 (2017). In particular:

- An Environmental Consultant / Occupational Hygienist should be engaged to undertake characterisation sampling. The samples should be analysed by a commercial analytical laboratory using methods endorsed by the National Association of Testing Authorities (NATA).
- Samples should be analysed for contaminants outlined in IWRG 621 at the appropriate rate for the volume of excavated material to be characterised. The Environmental Consultant / Occupational Hygienist should provide the appropriate advice, however, the number of samples should be sufficient to enable calculation of the 95% Upper Confidence Limit (UCL) of the average concentrations.
- The results of the laboratory analyses should be compared to the waste classification limits included in IWRG 621. A waste categorisation letter should be prepared by the Environmental Consultant / Occupational Hygienist and provided to the site owner or appropriate representative.
- The waste classification letter must be provided to the landfill facility, to the facility's satisfaction.
- Copies of all weighbridge and tracking documentation should be provided to the site owner (or appropriate representative) to confirm the material tracking.

A.9 Personal Protective Equipment

Any activity which includes excavation or disturbance of soil at the Site, including routine maintenance work, will require the use of appropriate PPE to prevent potential exposure of site workers to contamination in the soil. PPE requirements are to be specified in the task-specific AMP and SWMS prepared for the works. As a guide, standard PPE requirements identified by WorkSafe Victoria (2018b) include:

- Full length arm and leg coverings.
- Suitable gloves.
- Steel capped boots.
- Disposable boot covers
- Safety glasses.
- Any other activity-specific PPE that may be required.

Table A.2 below provides guidance on the additional level of PPE required to protect workers from potential contaminants during routine work at the Site which have the potential to disturb soil.

Table A.2: PPE Requirements

Activity	Additional Level of PPE Required
Landscaping	Standard + P2 dust mask
Hand excavation	Standard + P2 dust mask
Mechanical excavation	Personnel should have disposable coveralls at all times

Used PPE is to be disposed of in accordance with the decontamination procedures, outlined in Section A.9, below.

A.10 Decontamination Procedures

Further to Section A.7.1, decontamination procedures, including establishment of a decontamination area, are to be specified in the task-specific AMP and SWMS, and implemented in the decontamination area whenever personnel, plant, or equipment leave the exclusion zone. At the completion of the works, soil, water, and PPE stored within the decontamination area is to be disposed of off-site in accordance with Victorian EPA and WorkSafe Victoria (2018b) requirements. As a guide those procedures may include for following.

A.10.1 Personnel

To ensure personnel do not leave the exclusion zone with potentially contaminated clothing, personnel are to:

- Remove outer gloves and store for reuse.
- Remove disposable coveralls, boot covers and dust mask and place in a dedicated bin for asbestos wastes disposal.
- Thoroughly wash hands and face.

A.10.2 Vehicles, Plant, and Equipment

All vehicles, plant, and equipment are to be washed or otherwise cleaned in the decontamination zone to ensure that contaminated soil, water, or dust is removed before leaving site.

A.11 Implementation and Monitoring

This section details responsibilities as the Site owner including, training and awareness, communication and compliance and environmental record keeping.

The requirement for implementation of this EMP is an outcome of the Environmental Audit of the Site; the Environmental Audit Report issued for the Site is a public document, and has been provided to the EPA and the relevant Planning Authority. Implementation and update of this EMP will be the responsibility is the site owner.

A.11.1 Training and Awareness

Workers who will undertake site maintenance and earthwork activities where excavation or disturbance of soil may occur must be inducted and trained in accordance with the requirements of the task-specific AMP and SWMP prepared for those works, prior to undertaking any physical works. All staff and grounds maintenance staff and contractors must have completed asbestos awareness training.

Specific inductions regarding these works should cover the following:

- The type, nature and health risks of the contaminants.
- Location and occurrence of contamination.
- Roles and responsibilities of the stakeholder parties.
- The processes and procedures to be followed to prevent exposure to contaminants.
- The correct use of maintenance and control procedures, protective equipment and work methods to minimise the risk of exposure to contaminants.
- Emergency response and unexpected finds protocols.

The site owner is to keep a record of site inductees provided with the above information Appendix B for Site Induction Register template.

A.11.2 Communication and Complaints

Workers at the Site are to be encouraged to report any concerns regarding contamination to their supervisor. Significant concerns must be communicated to the site owner so that they can be appropriately recorded and managed.

A.11.3 Environmental Records

A record (e.g. an asbestos register) should be kept by the site owner of the nature of the contamination at the Site. This EMP is suitable as an asbestos register. Copies of the EMP and site contamination records should be maintained at the Site; and provided to workers ahead of any excavation works at the Site.

A.11.4 Review and Update

This EMP should be reviewed every five years to confirm its completeness and currency.

At the completion of 12 months of site inspections in accordance with Section A.5, a review of site inspection frequency should be undertaken by an Environmental Consultant / Occupational Hygienist. The review should have regard to the findings of previous site inspections to determine the long-term site inspection frequency required for the ongoing management of the site (should the period of site ownership be extended). Additionally, this EMP should be updated following regulatory changes relevant to site requirements, and following any additional investigations or unexpected finds, to ensure the most current site data are considered in the management protocols.

The EMP may be ceased following advice from a Victorian EPA accredited site auditor that the impacts are below the applicable land use criteria, through the issuing of a Certificate or Statement of Environmental Audit, stating as such.

A.11.5 Record Keeping

The site owner shall keep records of the inductions, inspections, corrective actions (i.e. maintenance) and reports prepared for the site. These records should be evaluated and used for completing reviews of the EMP. The records are required to be maintained until the EMP is no longer required.

A.12 Corrective Action

It is important that initial mitigation measures are followed up with an ongoing management system. The following sections provide guidance on procedures to be followed which will assist in the continued protection of human health and the environment.

A.12.1 Environmental Monitoring, Inspections and Notification

During the routine inspections, any ACM that is identified on the accessible areas should be collected and appropriately disposed in accordance with the WorkSafe Victoria Compliance and Codes of Practice Removing Asbestos in Workplaces (WorkSafe 2018b).

Incidents that may, or are known to, have the ability to increase the potential for exposure onsite (i.e. fire or flooding) are to be reported to the site owner immediately. The EMP may then require modification to reflect any changed exposure rating or maintenance / remediation requirements. Any corrective actions resulting from the identification of incidents or non-conformances should also be documented and communicated to site workers.

A.12.2 Non-Conformances

Each non-conformance (for example, air monitoring results indicating airborne fibres, or a fragment of ACM becoming exposed at the surface) needs to be documented by site owner and site workers are to be notified as

soon as practicable of any non-conformance, and how it can be addressed and avoided in the future. These may include instances where excavation has been undertaken without due consideration of this document.

A.12.3 Corrective Actions

Each corrective action needs to be documented. If the corrective actions impact site workers then these need to be communicated to each site worker and be included in the training. If it is necessary, supplementary training may be required to assist in more fully informing site workers.

A.12.4 Audits

The site owner shall perform audits of the above-mentioned documentation (such as inspection checklists, non-conformance and corrective action reports) to check that this EMP is being followed and that the health of site users is protected from contaminant exposure. Audits should be conducted every six months.

Appendix B. Anticipated Site Use – For Public Access

Appendix B is for implementation by the site owner and period of ownership referred to in Table B.1 (below):

Table B.1: Responsible Party for Implementation of Appendix B

Site Owner	Anticipated Site Use	Period of Ownership	Management Responsibility	Implementation Requirement
Bayside City Council	Controlled Access	Upon transfer from Sunkin Highett Pty Ltd	- Preparation of site for public access - Implement monitoring and maintenance of site for on-going public access	Appendix B of this EMP

B.1 Mitigation Measures

WorkSafe Victoria (2018a) provides guidance on mitigation measures to prevent contamination exposure to site users and workers. These control measures should reflect the following hierarchy of controls:

- Eliminating the risk (for example, removal).
- Isolating the risk (for example by barrier, distance or engineering controls).
- Using administrative controls (for example, safe work practices).
- Using Personal Protective Equipment (PPE).

Exposure to impacted soil at the Site could pose a risk to human health and should be avoided or minimised. If soil at the Site, particularly in the Tree Protection Zones (Section B.4.1), General Access Areas (non-remediated) (Section B.4.2) and Fifth Street Remediation Area (Section B.4.4), requires excavation or disturbance then mitigation measures (Sections B.2 to B.10) must be implemented, in accordance with this EMP, to protect human health.

A copy of WorkSafe (2018a) is provided in Appendix H for reference.

B.2 Anticipated Site Use – For Public Access

This section of the EMP details actions to be undertaken in the understanding that BCC intends the site to be accessible to the general public. Those actions include permeant mitigation measures, and on-going inspection and monitoring requirements, detailed below.

B.2.1 Site Signage

Following implementation of the controls for the use of the site (Section B.2.2), appropriate signage must be established and maintained in a clear readable condition to communicate that excavation (digging holes) should not be undertaken.

B.2.2 Tree Protection Zones

Access is to be restricted at these areas. If access or maintenance works are required to be undertaken, the zones are to be treated as an asbestos works zone and appropriate management measures are to be employed in accordance with a task-specific Asbestos Management Plan (AMP) and Safe Work Method Statement (SWMS) to be prepared for those works by an environmental consultant / occupational hygienist in accordance with WorkSafe (2018a). Further guidance is included in Section B.6 to B.10.

It is the responsibility of the site owner (in consultation with their Environmental Consultant / Occupational Hygienist) to ensure that measures to restrict access are established, and that the measures meet the requirements of WA DoH (2009). Suitable restrictions include:

- Propagation of ground cover (such as grass) and installation of permanent fencing; and/or
- Landscape design which minimises access (i.e. placement of rock or treated timber to delineate the area, and placement of mulch and/or planting of a native garden over current surface soils (that could not be remediated)).

B.2.3 General Access Areas

There is the potential for ACM to be present within the top 0.1 m of the soil at General Access Areas (non-remediated) (Section 2.5) (This does not include the 'Fifth Street Remediation Area' (Figure 3) which has been remediated to 1.0 m depth by placement of clean material from surface to 1.0 m depth, although contaminated soil below 1.0 m depth remains.) Placement of a 0.1 m capping layer of either imported topsoil and turf, or mulch, would on that basis be required to be implemented and maintained to eliminate public access exposure risk at those areas. Ongoing monitoring and implementation of a suitable EMP will still be required to manage deeper residual asbestos.

To reduce the extent of that capping requirement, a WA DOH (2009) compliant assessment and / or remediation of the top 0.1 m, may be undertaken.

In consultation with the Environmental Auditor, the likelihood of encountering gross asbestos contamination at the General Access Areas has been determined to be low. Accordingly, an alternative management approach to capping at non-remediated areas is presented as follows:

- BCC are to implement a monthly inspection regime for the first 12 months of site ownership (in accordance with Sections B.4 and B.5), including removal of incidental asbestos finds from surface soils.

It is intended that alternative approach should negate a requirement for importation of a capping layer for General Access Areas (non-remediated). On-going monitoring requirements are detailed in Section B.5.

B.2.4 Fifth Street Remediation Area

The 'Fifth Street Remediation Area' as identified on Figure 3 was remediated to one metre below ground level (1 mbgl), a geofabric membrane was installed to the base and walls of the remediated area and clean fill material was backfilled into the area.

If intrusive works (e.g. soil excavations) are required in this area to a depth of 1 mbgl or greater, the area is to be treated as an asbestos works zone and appropriate management measures are to be employed (identified in Section B.4.4). The geofabric membrane marking layer must be replaced if intrusive works damage or require its removal.

B.3 Site Access

Following implementation of the controls for the anticipated use of the site, outlined in Section B.2, site access is to be controlled by the accessibility of the General Access Areas. BCC are to install signage at the Site as per Section B.2.1.

Access to Tree Protection Zones is prohibited unless a landscape design which minimises access is incorporated (as discussed in Section B.2.2) or if further investigation and/or remediation is undertaken to confirm the risks of asbestos exposure are low and acceptable.

B.4 Maintenance of Site Conditions

Maintenance of site conditions established for the use of the site as public open space (Section B.2.1 to B.2.4) is required to maintain reduced risk of exposure to asbestos. The following monitoring and maintenance control measures must be undertaken by BCC. On-going inspection and monitoring requirements are detailed in Section B.5.

B.4.1 Tree Protection Zones

- Tree Protection Zones must be maintained to restrict access to surface soils (that could not be remediated) from the general public at all times by maintaining control measures outlined in Section B.2.2.

B.4.2 General Access Areas (non-remediated)

- There is the potential for ACM to be present within the top 0.1 m of the soil at General Access Areas (non-remediated).
- If maintenance works are required to be undertaken, these areas are to be treated as an asbestos works zone and appropriate management measures are to be employed (in accordance with Sections B.6 to B.10).
- Inspections are to be undertaken in accordance with Section B.5.

B.4.3 General Access Areas (remediated)

- General Access Areas (remediated) were cleared during remediation of the site and are required to be maintained as 'asbestos free' by the site owner.
- Inspections are to be undertaken in accordance with Section B.5.

B.4.4 Fifth Street Remediation Area

- Surface soils in the 'Fifth Street Remediation Area' as identified on Figure 3 were cleared during remediation of the site and are required to be maintained as 'asbestos free' by the site owner.
- 'Fifth Street Remediation Area' (Figure 3) is known to contain asbestos at approximately one metre below ground level (1 mbgl).
- If intrusive works (e.g. soil excavations) are required in this area to a depth of 1 mbgl or greater, the area is to be treated as an asbestos works zone and appropriate management measures are to be employed (in accordance with Sections A.6 to A.10).
- The geofabric membrane marking layer must be replaced if intrusive works damage or require its removal.

B.5 Site Inspections - Monitoring

- Inspections are to be carried out at a frequency of once per month during the first year of site ownership.
- After the first year of site ownership, and for the following five years, site inspections should be carried out at a minimum frequency of twice per year, and then on a yearly basis.
- Inspections are to be undertaken by an Environmental Consultant / Occupational Hygienist (refer to roles and responsibilities Section 2.6).
- Inspections should assess for adequacy of controls implemented in Sections B.2 to B.10, requirements for repairs, and presence of asbestos at surface outside of Tree Protection Zones.
- Any asbestos identified during inspections should be collected for offsite disposal (in accordance with Section A.8) by an Environmental Consultant / Occupational Hygienist in accordance with WorkSafe (2018a), and be documented in the Routine Site Inspection Form (Appendix E)..
- Inspections should yield a report detailing the findings and any corrective actions required, to be prepared for BCC. The inspections are to be documented, detailing exactly how it has been completed and noting the ground/surface condition (particularly in the Tree Protection Zones and General Access Areas (non-

remediated) areas – refer to Figure 3). Inspections should be timed to coincide with recent rainfall events such as can reveal ACM. See Appendix E for a suggested inspection checklist.

- Ad-hoc inspections are to be also undertaken following rain events of more than 25 mm over a 24 hour period. These inspections will include the whole site, and noting particularly areas adjacent to Tree Protection Areas, considering potential for run-off from the Tree Protection Areas.
- After the first 12 months of site ownership, site inspections must be undertaken at a minimum frequency of twice per year by BCC (or an Environmental Consultant / Occupational Hygienist) for the next four years, and then annually thereafter.
- Any visible asbestos observed during site inspections is to be removed and disposed of by an Environmental Consultant / Occupational Hygienist disposal (consistent with Section B.8), and documented in the Routine Site Inspection Form (Appendix E).

The inspections are to be documented, detailing exactly how it has been completed and noting the ground/surface condition (particularly in the areas of impact – refer to Figure 3). Inspections should be timed to coincide with recent rainfall events such as can reveal ACM. See Appendix E for a suggested inspection checklist.

Rectification measures, such as maintenance of signage or restoration of mulch/turf capping should be undertaken as soon as practicable.

B.6 General Maintenance

Following implementation of the controls for the use of the site outlined in Section B.4, when general maintenance is undertaken on any part of the site (such as landscaping, hand excavation, repair of silt fencing), measures should be taken to mitigate potential human exposure or environmental damage.

Prior to undertaking maintenance work the following is required:

- a task-specific Asbestos Management Plan (AMP)
- a task-specific safe work method statement (SWMS)

The AMP and SWMS is to be prepared by an Environmental Consultant / Occupational Hygienist in accordance with WorkSafe (2018a) to identify potential risks to human health and appropriate controls to be implemented. The site owner must ensure that the task-specific AMP(s) and SWMS(s) are implemented. The controls required will vary depending on the nature of and location of work being undertaken. As a minimum, suitable PPE must be worn during general maintenance activities as outlined in Section B.9 and an exclusion zone established to delineate the work area and prevent unauthorised access.

B.7 Soil Excavation

Where soil disturbance or excavation is undertaken on any part of the site (e.g. installation / repair of underground utilities), measures should be taken to mitigate potential human exposure or environmental damage. Works are to be undertaken in accordance with WorkSafe (2018b), and the task-specific AMP and SWMS prepared for those works by an environmental consultant / occupational hygienist in accordance with WorkSafe (2018b) (see Appendix H).

If excavations are essential for ongoing maintenance of the Site, this should be coordinated with BCC as appropriate and provision should be made for the appropriate excavation, storage and disposal of this material.

Due to the confirmed asbestos presence at the Site, excavated soil must be treated as potentially contaminated by asbestos; particular attention should be paid to regulations and guidelines regarding asbestos within the workplace, including Asbestos-Contaminated Soil (WorkSafe 2010).

Excavation works must adopt appropriate dust control measures to minimise the risk of exposure through inhalation. Controls are to be documented in the task-specific AMP and SWMS so that workers are aware of their

importance. If there is a high risk of dust generation then barriers to divert the wind over the excavation area can be constructed and/or excavations and stockpiled material can be wetted down or sprayed with a binding agent. Barriers may include shade cloth walls of a height one-fifth the length of the work area. The level of controls required will vary depending on the nature of the work being undertaken and the location of the works area on the site.

Other measures that may be adopted to minimise dust include:

- Covering of materials and stockpiles.
- Site equipment is to be fitted with dust suppressors.
- Dampening of exposed areas slightly, during excavation or whenever dust is potentially raised.
- Controlling vehicular access and egress, including that vehicles only leave via the stabilised site access path.
- Minimising the area of the Site that is disturbed at any one time.
- Minimisation of number of 'working' stockpiles.
- When windy conditions result in excessive dust generation, works are to cease until the conditions abate.
- Excavated soil should be returned to the depth and location from which it was excavated, so far as practicable.
- Minimise time period over which excavated soil and excavations are exposed / left open.

Any capping layers previously installed to minimise exposure to contaminated soil at the area of impact should be reinstated to the original condition as soon as practicable after intrusive works have been completed.

During excavation works, inspection for indicators of contamination should be undertaken by an Environmental Consultant / Occupational Hygienist. If unexpected contamination is encountered, then work should cease until the risk has been assessed and appropriate control measures are in place.

B.7.1 Requirements for Working with Asbestos Impacted Material

This section applies to Tree Protection Zones and Fifth Street Remediated Area (Intrusive works to a depth of 1mbgl or greater)

As ACM and AF/FA (in one soil sample only) have been reported at the Site, an Environmental Consultant / Occupational Hygienist experienced in the investigation and management of asbestos in soil should be consulted ahead of any excavation works, and appropriate management measures implemented. Site specific procedures for excavation works are to be specified in the task-specific AMP and SWMS prepared for the works; as a guide those procedures may include:

- The works areas must have a perimeter barrier to restrict access (i.e. exclusion zone).
- An asbestos work area shall be defined and clearly marked.
- Only authorised personnel shall enter the works area.
- All personnel within the asbestos works area shall wear P2 (or higher) class respirators, disposable gloves, and asbestos-rated coveralls whilst completing the works.
- A decontamination area will be marked out within the asbestos works area for the removal and disposal of PPE before workers leave the asbestos works area. All disposable PPE must be disposed of as asbestos waste.
- Static air monitoring at a minimum of three locations will be undertaken during the works.
- At the completion of works, Environmental Consultant / Occupational Hygienist is to verify and report to the Site owner that the top 10 cm of soil within the excavation footprint after reinstatement of the excavation is visibly free of asbestos, and is suitable for a public open space land use.

B.8 Waste Disposal

If soil at the Site requires offsite disposal, it should be assessed, classified and disposed of in accordance with Victorian Environment Protection Authority (EPA) Industrial Waste Resource Guidelines 621 (IWRG) (2009) and Victorian EPA IWRG 611 (2017). In particular:

- An Environmental Consultant / Occupational Hygienist should be engaged to undertake characterisation sampling. The samples should be analysed by a commercial analytical laboratory using methods endorsed by the National Association of Testing Authorities (NATA).
- Samples should be analysed for contaminants outlined in IWRG 621 at the appropriate rate for the volume of excavated material to be characterised. The Environmental Consultant / Occupational Hygienist should provide the appropriate advice, however, the number of samples should be sufficient to enable calculation of the 95% Upper Confidence Limit (UCL) of the average concentrations.
- The results of the laboratory analyses should be compared to the waste classification limits included in IWRG 621. A waste categorisation letter should be prepared by the Environmental Consultant / Occupational Hygienist and provided to the site owner or appropriate representative.
- The waste classification letter must be provided to the landfill facility, to the facility's satisfaction.
- Copies of all weighbridge and tracking documentation should be provided to the site owner (or appropriate representative) to confirm the material tracking.

B.9 Personal Protective Equipment

Any activity which includes excavation or disturbance of soil at the Site, including routine maintenance work, will require the use of appropriate PPE to prevent potential exposure of site workers to contamination in the soil. PPE requirements are to be specified in the task-specific AMP and SWMS prepared for the works. As a guide, standard PPE in accordance with work safety requirements, i.e. WorkSafe Victoria (2018b) include:

- Full length arm and leg coverings.
- Suitable gloves.
- Steel capped boots.
- Disposable boot covers.
- Safety glasses.
- Any other activity-specific PPE that may be required.

Table B.2 below provides guidance on the additional level of PPE required for routine work at the Site with the potential to disturb soil in order to protect workers from potential contaminants.

Table B.2: PPE Requirements

Activity	Additional Level of PPE Required
Landscaping	Standard + P2 dust mask
Hand excavation	Standard + P2 dust mask
Mechanical excavation	Personnel should have disposable coveralls at all times

Used PPE is to be disposed of in accordance with the decontamination procedures, outlined in Section B.10, below.

B.10 Decontamination Procedures

Further to Section B.7.1, decontamination procedures, including establishment of a decontamination area, are to be specified in the task-specific AMP and SWMS, and implemented in the decontamination area whenever

personnel, plant, or equipment leave the exclusion zone. At the completion of the works, soil, water, and PPE stored within the decontamination area is to be disposed of off-site in accordance with Victorian EPA and WorkSafe Victoria (2018b) requirements. As a guide those procedures may include the following (Section B.10.1 and B.10.2):

B.10.1 Personnel

To ensure personnel do not leave the exclusion zone with potentially contaminated clothing, personnel are to:

- Remove outer gloves and store for reuse.
- Remove disposable coveralls, boot covers and dust mask and place in a dedicated bin for asbestos wastes disposal.
- Thoroughly wash hands and face.

B.10.2 Vehicles, Plant, and Equipment

All vehicles, plant, and equipment are to be washed or otherwise cleaned in the decontamination area to ensure that contaminated soil, water, or dust is removed before leaving site.

B.11 Implementation and Monitoring

Initial implementation of this EMP will be the responsibility of the site purchaser, understood to be Sunkin Highett Pty Ltd until which point the site is transferred to BCC.

Upon transfer of ownership to BCC, BCC, will be responsible for the implementation of this EMP and updates, as required. Information in this EMP should be communicated by BCC to employees and contractors working on the Site.

This section details BCC's responsibilities as the Site owner (once ownership is transferred to BCC), in respect to training and awareness, communication and compliance and environmental record keeping.

The requirement for implementation of this EMP is an outcome of the Environmental Audit of the Site; the Environmental Audit Report issued for the Site is a public document, and has been provided to the EPA and the relevant Planning Authority. Implementation and update of this EMP will be the responsibility of the site owner.

B.11.1 Training and Awareness

Workers who will undertake site maintenance and earthwork activities where excavation or disturbance of soil may occur must be inducted and trained in accordance with the requirements of the task-specific AMP and SWMP prepared for those works, prior to any physical works. BCC is responsible for this training; all BCC staff and grounds maintenance staff must have completed asbestos awareness training.

Specific inductions regarding these works should cover the following:

- The type, nature and health risks of the contaminants.
- Location and occurrence of contamination.
- Roles and responsibilities of the stakeholder parties.
- The processes and procedures to be followed to prevent exposure to contaminants.
- The correct use of maintenance and control procedures, protective equipment and work methods to minimise the risk of exposure to contaminants.
- Emergency response and unexpected finds protocols.

BCC is to keep a record of site inductees provided with the above information Appendix B for Site Induction Register template.

B.11.2 Communication and Complaints

Workers at the Site are to be encouraged to report any concerns regarding contamination to their supervisor and BCC such that they can be appropriately recorded and managed.

B.11.3 Environmental Records

A record (e.g. an asbestos register) should be kept by BCC of the nature of the contamination at the Site. This EMP is suitable as a basis for an asbestos register; copies of the EMP and site contamination records should be maintained for access at the Site as required; and provided to workers ahead of any excavation works at the Site. In addition, copies of site inspections (Section B.5) should also be retained by Council to ensure an up to date record of ACM observations and removal is maintained.

B.11.4 Review and Update

This EMP should be reviewed by an Environmental Consultant / Occupational Hygienist every five years to confirm its completeness and currency; that review should include review of Council's records of site inspection (Section B.14).

At the completion of 12 months of site inspections in accordance with Section B.5, a review of site inspection frequency should be undertaken by an Environmental Consultant / Occupational Hygienist. The review should have regard to the findings of previous site inspections to determine the long-term site inspection frequency required for the ongoing management of the site.

Additionally, this EMP should be updated following regulatory changes relevant to site requirements, and following any additional investigations or unexpected finds, to ensure the most current site data are considered in the management protocols.

Implementation of the EMP may be ceased only following agreement by a Victorian EPA appointed auditor.

B.11.5 Record Keeping

The BCC shall keep records of the inductions, inspections, corrective actions (i.e. maintenance) and reports prepared for the site. These records should be evaluated and used for completing reviews of the EMP. The records are required to be maintained until the EMP is no longer required.

B.12 Corrective Action

It is important that initial mitigation measures are followed up with an ongoing management system. The following sections provide guidance on procedures to be followed which will assist in the continued protection of human health and the environment.

B.12.1 Environmental Monitoring, Inspections and Notification

During the routine inspections, any ACM that is identified on the accessible areas should be collected and appropriately disposed in accordance with the WorkSafe Victoria Compliance and Codes of Practice Removing Asbestos in Workplaces (WorkSafe 2018b).

Incidents that may, or are known to, have the ability to increase the potential for exposure onsite (i.e. fire or flooding) are to be reported to BCC immediately. The EMP may then require modification to reflect any changed exposure rating or maintenance / remediation requirements. Any corrective actions resulting from the identification of incidents or non-conformances should also be documented and communicated to site workers.

B.12.2 Non-Conformances

Each non-conformance (for example, air monitoring results indicating airborne fibres, or a fragment of ACM becoming exposed at the surface) needs to be documented by BCC and site workers are to be notified as soon as practicable of any non-conformance, and how it can be addressed and avoided in the future. These may include instances where excavation has been undertaken without due consideration of this document.

B.12.3 Corrective Actions

Each corrective action needs to be documented. If the corrective actions impact site workers then these need to be communicated to each site worker and be included in the training. If it is necessary, supplementary training may be required to assist in more fully informing site workers.

B.12.4 Audits

BCC shall perform audits of the above-mentioned documentation (such as inspection checklists, non-conformance and corrective action reports) to check that this EMP is being followed and that the health of site users is protected from contaminant exposure.

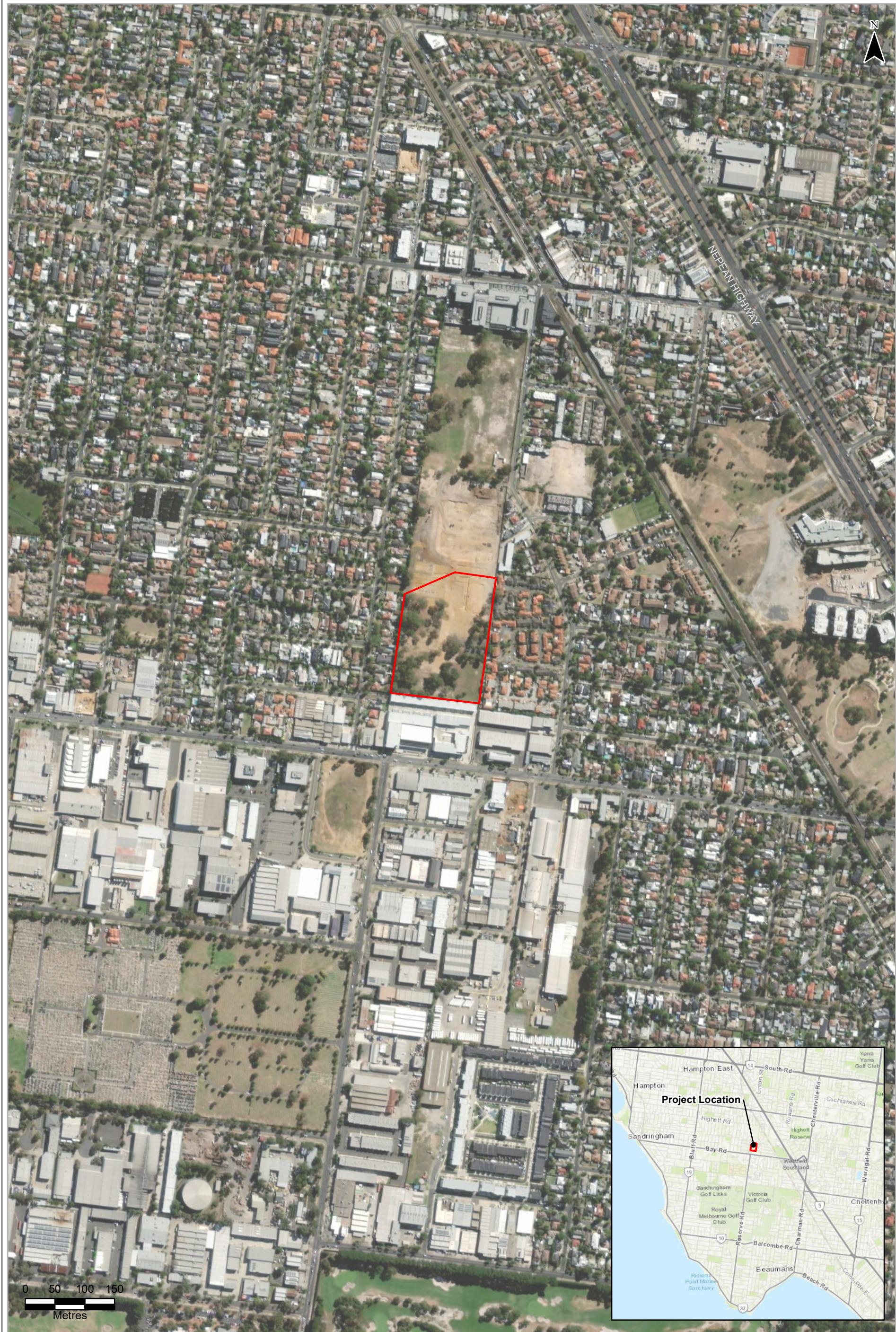
Appendix C. Figures

Figure 1: Site Location

Figure 2: Remediated/Validated Footprints

Figure 3: Site Areas

Figure 4: Location of In-Situ Asbestos Remaining On-Site



JACOBS
Jacobs Australia Pty Ltd
Level 11, 452 Flinders St
Melbourne, Vic, 3000

 Site Boundary

Project No:
Last Modified: March 2020
Coordinate System: MGA Zone 55 (GDA 2020)
Notes:
1. Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and
the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO,
USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance
Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

FIGURE 1
Site Location

Environmental Management Plan
Grassy Woodland, Highett, Victoria



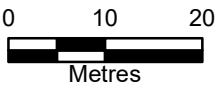
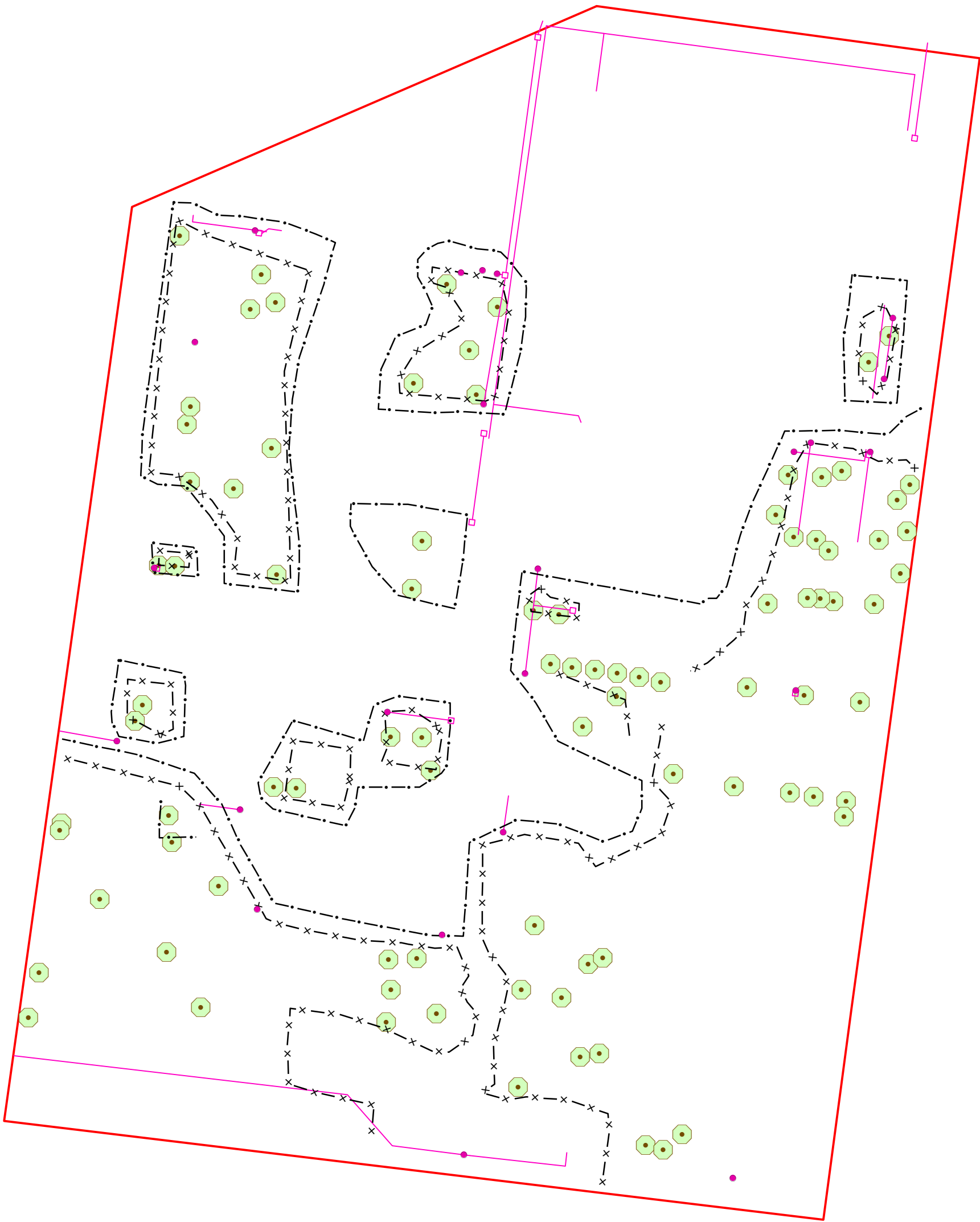
JACOBS
Jacobs (Group) Australia Pty Ltd
Level 11, 452 Flinders St
Melbourne, Vic, 3000

- Silt Barrier
- Tree Protection Fencing
- Concrete Curbs and Slabs
- Tree
- Former Building Footprint
- Non-building Footprint
- Former Grassy Mound
- Site Boundary

Project No: 674398CH
Last Modified: March 2020
Coordinate System: MGA Zone 55 (GDA 2020)
Notes:
1. All data as surveyed unless stated otherwise
2. Survey data source: Madigan Surveying
(provided by Monaco Hickey), Drawing
Reference 7726 032D, 6 September 2019.

FIGURE 2
Remediated/Validated Footprints
Environmental Management Plan
Grassy Woodland, Highett, Victoria





JACOBS

Jacobs (Group) Australia Pty Ltd
Level 11, 452 Flinders St
Melbourne, Vic, 3000

- Cut and Seal Point
- Silt Barrier
- x — Tree Protection Fencing
- Underground Services
- Tree
- Site Boundary

Project No: 674398CH
Last Modified: March 2020
Coordinate System: MGA Zone 55 (GDA 2020)
Notes:
1. All data as surveyed unless stated otherwise
2. Survey data source: Madigan Surveying
(provided by Monaco Hickey), Drawing
Reference 7726 032D, 6 September 2019.

FIGURE 4
Location of In-Situ Asbestos
Remaining On-Site

Environmental Management Plan
Grassy Woodland, Highett, Victoria

Site Induction Register

Signing the site induction register confirms that the inductee has read the EMP, and understands the site risks and requirements of the EMP.

Appendix D. Site Induction Register

Appendix E. Routine Site Inspection Form

Part A: Site details	
Site Location	Highett Grassy Woodland, Graham Road, Highett, VIC 3190
Weather conditions:	
Date of Inspection:	
Inspection conducted by:	
Signature:	

Part B: Complete prior to site inspection		
Item	Description	Yes / No
1	Have you read this Environmental Management Plan, prepared by Jacobs?	
2	Are you aware of the site contamination status and areas where remediation measures have been implemented?	
3	Do you understand the objective of the site inspection?	
4	Do you have a copy of the site plan to mark out any potential areas of concern identified during your inspection?	
5	Do you have a camera to take photos of observations made during your inspection?	

Part C: Complete during the site inspection			
Item	Description	Yes / No	Comments / Action
1	Is signage present and in good condition?		
2	Is vegetation and mulch cover located within publicly accessible locations healthy and adequate?		
3	Are there any indications of illegal dumping activities?		
4	Are surface areas free of waste / potential asbestos containing materials (PACM)?		

Part C: Complete during the site inspection			
Item	Description	Yes / No	Comments / Action
5	Are there any visible signs of ground disturbance within areas of known Asbestos contamination?		
6	Are there any bare patches / ground disturbance in areas where mulch has been formerly applied?		
7	Has any PACM been observed during the site inspection?		
8	Any complaints from members of the public?		
9	Take photographs to help identify if significant changes have occurred since the previous site inspection.		

Part D: Complete after the site inspection			
Item	Description	Yes / No	Comments / Action
1	Are there any corrective actions required? (Provide detailed information and proposed timelines)		
2	Is the Environmental Management Plan adequate or does it require updating?		

Part D: Complete after the site inspection

Item	Description	Yes / No	Comments / Action

Part E: Close Out Process

Item	Description	Comments / Action
1	Corrective action completed:	
2	Close out inspection: Name Signature Date	
3	Site owner (or appropriate representative): Name Signature Date	

Appendix F. General Information Regarding Asbestos

F.1 Asbestos

By way of background, “asbestos” is a generic name given to the fibrous variety of six naturally occurring minerals that have been used in commercial products. The three asbestos minerals commonly used in Australia were amosite, crocidolite and chrysotile. Asbestos is made up of fibre bundles and these bundles, in turn, are composed of thin fibres that can be easily separated from one another. The bundles have splaying ends and are very flexible.

Historically asbestos was used in many products because of its high tensile strength, relative resistance to acid and temperature, varying textures and degrees of flexibility. Asbestos was used in construction and manufacturing from the mid-1940s to the mid-1980s, because it is incombustible, durable, versatile and resistant to chemicals. Chrysotile (white) asbestos was the most prevalent making up 90% of asbestos used in Australia (enHealth, 2013).

In the late 20th century, there was growing evidence that high concentrations of airborne asbestos fibres could cause serious health problems, including scarred lungs, asbestosis and cancer. This was most commonly associated with working directly with asbestos fibres in the occupational environment, such as mining asbestos minerals or manufacturing asbestos containing products. Since then asbestos has been the focus of extensive scientific and medical scrutiny. Australia banned the use or import of blue (crocidolite) and brown (amosite) asbestos / asbestos products in the mid-1980s (enHealth, 2013). From 31 December 2003 a total ban on manufacture, use, reuse, import, transport, storage and sale of all forms of asbestos came into force (enHealth, 2013).

F.2 Asbestos Exposure Pathways

The ‘exposure pathway’ is the course a chemical takes from the source to the receptor, and as such includes the source, an exposure point and exposure route, and typically a transport/exposure medium (e.g. air or water). Routes of asbestos exposure are listed by enHealth (2013) as ingestion, inhalation and dermal absorption. Completed pathways, i.e. where there is a source of contaminant, an exposure pathway and a human receptor indicate a potential for a risk to human health and/or the environment for that substance to occur. Exposure pathways for asbestos exposure are listed by enHealth (2013) as ingestion, inhalation and dermal absorption.

For any qualitative risk assessment, the following information is presented:

- General contaminant information including toxicity.
- Pathways and exposure routes specific to the Site.
- Mitigation measures that can be initiated to manage any potential risk.

Chapter 3 of enHealth (2012) provides guidance on conducting qualitative exposure assessments for sites contaminated with asbestos. Consideration has to be given to the type, nature and condition of the asbestos; as well as exposed surface area, accessibility, location and use of the Site; and potential for migration of contamination.

The identified contaminant of concern at the Site is asbestos; in this case occurring predominantly bound in manufactured building materials (i.e. ACM).

Schedule B1 page 29 of NEPM (2013) states that “asbestos only poses a risk to human health when fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage.”

Asbestos and asbestos materials are described formally using three terms:

- Bonded asbestos-containing-material or 'bonded ACM' (ACM) – material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.
- Fibrous asbestos (FA) – asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure.
- Asbestos fines (AF) – free fibres, small fibre bundles and also small fragments of bonded ACM which is degraded such that fibres could release (NEPC 2013b).

FA and AF containing materials have the potential to generate, or be associated with, free asbestos fibres; FA and AF must therefore be carefully managed to prevent release of fibres to the air (NEPM, 2013).

In this case, the asbestos identified occurs predominantly bound within manufactured building materials (ACM). Due to the confirmed presence of asbestos at the site, there is the potential for generation of AF and FA due to activities such as excavation or trafficking across the site.

A summary of the residual asbestos known and potentially present at the Site is presented in Section 2.5.

F.3 This EMP

The site has undergone environmental assessment and remediation works, and statutory environmental audit has been completed by an EPA appointed Environmental Auditor. The Site will be utilised ultimately as public open space, comprising a mix of recreational and conservation spaces; key receptors for potential exposure to the identified asbestos contamination include recreational users, and site workers undertaking maintenance activities (i.e. landscaping or installation of utilities). The Environmental Auditor has reviewed all the available site information, including this EMP, and has concluded that the site is suitable for use as a public open space, as long as residual contamination is managed through the implementation of this EMP.

This EMP sets the framework and requirements for managing the asbestos contaminated soil.

Executive summary

Table 1 Summary of Audit Information

Summary information required	
Auditor	Mr John Simon Throssell
Auditor account number	75645
Auditor appointment end date	7 February 2021
Audit type	s53X
Date EPA notified of audit	07/10/2010 for the entire CSIRO Highett Site. 04/04/2012 for the audit of Highett South (the southern part of CSIRO Highett Site, which included the Grassy Woodland area). 14/10/2019 for an adjusted area of Highett South. The initial area notified in 2012 has now been split into two audit sites: (1) Highett South and (2) Grassy Woodland (this report).
Audit service order number	80003038 (CARMS 68549-3)
Name of person requesting audit	Karen Wright ¹
Relationship of person requesting audit to site	Project Manager, Capital Works – CSIRO Business & Infrastructure Services
Name of premises owner	CSIRO
Date of auditor engagement	6 June 2010
Completion date of the audit	25 May 2020
Reason for audit	Redevelopment of Commonwealth land to a more sensitive land use (voluntary)
Audit Categorisation	Risk
Environmental segments	Air, Land, Groundwater, Surface Water
If an audit was required by an EPA notice, licence or other, please provide EPA reference number	
Current land use zoning	Commonwealth Land Not Controlled by Planning Scheme (CA)
EPA region	Southern Metro
Municipality	Bayside City Council
Dominant – Lot on plan	Certificate of Title Volume 8032 Folio 504 (part of Lot 1 TP223183H)
Additional – Lot on plan	
Site/premises name	Grassy Woodland (part of CSIRO Highett Site)

¹ Initial Audit request was made by Ross Stevens (CSIRO Property Resource Manager) in 2010

Summary information required		
Building / complex sub-unit No.		
Street/Lot – Lower No.	37	
Street/Lot – Upper No.		
Street Name	Graham	
Street type (road, court, etc.)	Road	
Street suffix (North, South etc.)		
Suburb	Highett	
Postcode	3190	
GIS Coordinate of Site centroid	GDA94 – Longitude / Latitude in decimal degrees	
Longitude / Northing (GDA94)	145.04001259803772	
Latitude / Easting (GDA94)	-37.95407066956861	
Site area (m ²)	30,000	
Members and categories of support team utilised	Eric Friebe (human health risk assessment)	
Further works or requirements	On-going management of soils on the site in accordance with the site specific Environmental Management Plan.	
Nature and extent of continuing risk	Bonded asbestos containing material (ACM) such as below ground services and fragments of ACM in fill remain within areas of the site designated as Tree Protection Zones. Access and management of these areas is prescribed in the Environmental Management Plan which forms part of the Statement of Environmental Audit.	
Outcome of the audit	Statement of Environmental Audit	
Has EPA determined CUTEP at the site?	No	
Has the Auditor determined CUTEP at this site	No	
Has a GQRUZ been identified at the site / beyond the site by EPA	No	
Does NAPL remain at the site	No	
Please indicate which of the protected beneficial of groundwater are precluded due to pollution	Protected Use	Precluded?
	Water dependent ecosystems and species	Not relevant
	Potable mineral water supply	Not relevant
	Agriculture and irrigation (irrigation)	No
	Agriculture and irrigation (stock watering)	No

Summary information required		
	Water-based recreation (primary contact recreation)	No
	Industrial and commercial water use	No
	Buildings and structures	No
	Traditional Owner cultural values	Not relevant
	Cultural and spiritual values	Not relevant
	Geothermal properties	Not relevant

*NB – Leave cell blank if not applicable

Table 2 Physical Site Information

Summary information required	
Historical land use	CSIRO testing and research of coatings, fluid dynamics and hydraulic research, test dynamometer testing, agricultural engineering, mechanical engineering research, as mechanical workshops, office administration and in the storage, handling and use of a wide range of chemicals and inert materials.
Current land use	Vacant
Proposed future land use	Not confirmed but understood to include public open space and other public amenities (including for community, conservation or heritage purposes).
Surrounding land use - north	The central part of the CSIRO Highett Site (Highett South), beyond which is the northern part of the CSIRO Highett Site (Highett North) and the Highett Shopping Centre (formerly Department of Defence land).
Surrounding land use - south	The commercial properties that front onto Bay Road.
Surrounding land use - east	Residential and Commercial (including Clear Edge Filtration (Australia) who provided industrial filtration products and the R E Ross Industrial Centre, now vacant). Progressive redevelopment to residential. A rail easement (Frankston line) is present behind these properties
Surrounding land use - west	Single dwelling Residential
Proposed land use zoning	Public open space
Nearest surface water receptor - name	Melbourne Water flood retarding basin
Nearest surface water receptor - direction	West-southwest
Likely point of groundwater discharge	Port Phillip Bay (approximately 4 km south-west of the site)
Site aquifer formation	Brighton Group
Groundwater flow direction	West-southwest
Groundwater TDS range	1,720 mg/L to 6,250 mg/L in 2019
Groundwater segment	B
Are multiple aquifers impacted by the pollution at the site?	No

Summary information required	
Perched groundwater depth – upper	n/a
Perched groundwater depth - lower	n/a
Regional groundwater depth – upper	9 mbgl
Regional groundwater depth - lower	10.6 mbgl
Number of bores within 2 km	326
Closest extractive use (distance in m)	200 m (WRK974423, registered for domestic and stock use)
Zone of groundwater plume influence (m from site boundary)	N/A
Year groundwater was last monitored	July 2019
Have you attached electronic copies of current groundwater analytical results presented as a summary table?	Yes (submission via EPA Interaction portal)

This Executive Summary presents a brief summary of information described in the audit report.

The Executive Summary should be read in conjunction with the full audit report titled “*Environmental audit report, Grassy Woodland, 37 Graham Road, Highett, Victoria, CARMS Reference 68549–3, Service Order No. 800303*” and interpreted in the context of the more detailed information presented in the body of the audit report, the purpose and scope of the audit, and the disclaimers/limitations discussed in Section 1.6 of the audit report.

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