

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.

AUDIT FILES STRUCTURE

Environmental audit reports are stored digitally by EPA in three parts: the audit report (part A), report appendices (part B) and, where applicable, the certificate or statement of environmental audit and an executive summary (part C). A report may be in colour and black-and-white formats. Generally, only black-and-white documents are text searchable.

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 to ensure the currency of the audit document.

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FURTHER INFORMATION

For more information on Victoria's environmental audit system, visit EPA's website or contact EPA's Environmental Audit Unit.

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

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

Executive Summary

This environmental audit report and accompanying Statement of Environmental Audit (see **Appendix A**) were prepared by Mr Michael Seignior of BlueSphere Environmental Pty Ltd (BlueSphere), an Environmental Auditor appointed pursuant to the *Environment Protection Act 1970* (the Act). The Statement of Environmental Audit was prepared in response to a request by Chandos Bay Pty Ltd (Chandos Bay), to undertake an environmental audit of the property located at 328 Bay Road, Cheltenham, Victoria (herein referred to as the Site), which is owned by Chandos Bay.

The audit was conducted in accordance with section 53X of the Act and in a manner consistent with relevant guidelines issued by the Environment Protection Authority (EPA), in particular, the Environmental Auditor (Contaminated Land): Guidelines for Issue of Certificates and Statements of Environmental Audit (EPA Publication 759.3, December 2015).

Information relating to the Site and environmental audit is provided in **Table 2** below.

Table 2 Summary of Audit Information

Aspect	Description
Auditor	Mr Michael Seignior
Auditor Account Number	75703
Auditor appointment end date	09/08/2019 to 8/02/2021
Audit type	53X
Date EPA notified of audit	19 June 2018
Audit service order number	8005833 (CARMS 74971-5)
Name of person requesting audit	Mr Andrew Johnson
Relationship of person requesting audit to site	Director, Chandos Bay Pty Ltd (Site owner)
Name of premises owner	Chandos Bay Pty Ltd
Date of auditor engagement	18 June 2018
Completion date of the audit	9 April 2020
Reason for audit	Requirement of Clean Up Notice (ID: 90010025)
Audit Categorisation	Risk
Environmental Segments	Air, Land, Groundwater, Surface Water
If the audit was required by an EPA notice, licence or other, please provide EPA reference number	Clean Up Notice ID: 90010025

Table 2 Summary of Audit Information

Aspect	Description
Current land use zoning	Commercial 2 Zone (C2Z)
EPA Region	Southern Metro
Municipality	Bayside City Council
Dominant – Lot on plan	Lot 1 on Plan of Subdivision PS802507
Additional – Lot on plan(s)	-
Site / Premise name	328 Bay Road, Cheltenham
Building / complex sub-unit No.	-
Street / Lot – Lower No.	-
Street / Lot – Upper No.	328
Street Name	Bay
Street type (road, court, etc.)	Road
Street suffix (North, South, etc.)	-
Suburb	Cheltenham
Postcode	3192
GIS Coordinate of Site centroid Latitude (GDA94) Longitude (GDA94)	 37.956456°S 145.041165°E
Site area (in square metres)	3,469 m^2
Members and categories of support team utilised (categories described are in accordance with EPA Publication 865.12)	Hydrogeology, remedial technologies and geotechnology – Dan Hirth Hydrogeology – Darren Ellis Human health and ecological risk assessment - Dr Rory Lane
Further work or requirements	Implementation of the Environmental Management Plan (EMP) and Groundwater Quality Management Plan (GQMP) provided in **Appendix A**
Nature and extent of continuing risk	Asbestos contaminated fill (in the form of fragments of bonded asbestos containing material) remains on the Site and will be managed by an EMP, groundwater contamination exists beneath the Site and will be managed by a groundwater quality restricted use zone (GQRUZ) and GQMP
Outcome of the audit	Statement

Table 2 Summary of Audit Information

<table>
<tr><th>Aspect</th><th>Description</th></tr>
<tr><td>Has EPA determined CUTEP at this site</td><td>Yes</td></tr>
<tr><td>Has the Auditor determined CUTEP at this site?</td><td>No</td></tr>
<tr><td>Has a GQRUZ been identified at the site/beyond the site by EPA?</td><td>Yes
Site and downgradient area is identified as a GQRUZ</td></tr>
<tr><td>Does NAPL remain at the Site?</td><td>No</td></tr>
<tr><td>Please indicate which of the Protected Beneficial Uses of groundwater are precluded due to pollution</td><td>
<table>
<tr><th>Protected Use</th><th>Precluded</th></tr>
<tr><td>Water Dependent Ecosystems</td><td>NA</td></tr>
<tr><td>Potable Water Supply (Desirable)</td><td>Yes</td></tr>
<tr><td>Potable Mineral Water Supply</td><td>NA</td></tr>
<tr><td>Agriculture and Irrigation (Irrigation)</td><td>Yes</td></tr>
<tr><td>Agriculture and Irrigation (Stock Watering)</td><td>Yes</td></tr>
<tr><td>Industrial and Commercial</td><td>Yes</td></tr>
<tr><td>Water Based Recreation</td><td>Yes</td></tr>
<tr><td>Traditional Owners Cultural Values</td><td>NA</td></tr>
<tr><td>Buildings and Structures</td><td>No</td></tr>
<tr><td>Cultural and Spiritual Values</td><td>Yes</td></tr>
<tr><td>Geothermal Properties</td><td>NA</td></tr>
</table>
NA – not applicable
</td></tr>
<tr><td>Historical land use</td><td>Lot 1 of former Nuplex Industries Australia Pty Ltd (Nuplex) chemical storage and handling facility (commercial)</td></tr>
<tr><td>Current land use</td><td>Commercial (Dan Murphy’s store)</td></tr>
<tr><td>Proposed Future Land Use</td><td>Commercial (Dan Murphy’s store)</td></tr>
<tr><td>Surrounding land use – north</td><td>Bay Road, then commercial (Rietmans Business Park). A car wash is located to the north-east.</td></tr>
<tr><td>Surrounding land use – south</td><td>Lots 2, 3 and 4 of the former Nuplex facility, then further commercial properties. Active groundwater remediation is currently being undertaken on Lot 2.</td></tr>
</table>

Table 2 Summary of Audit Information

Aspect	Description
Surrounding land use – east	Chandos Street, then commercial (Laminex facility)
Surrounding land use – west	Hamlet Street, then various commercial and light industrial facilities.
Proposed land use zoning	Commercial 2 Zone (C2Z)
Nearest surface water receptor – name	Port Phillip Bay
Nearest surface water receptor – direction	South-west
Likely point of groundwater discharge	Port Phillip Bay
Site aquifer formation	Sandringham Sandstone Formation
Groundwater flow direction	South-west
Groundwater TDS range (mg/L)	87 – 3,262 mg/L
Groundwater segment	A1
Are there multiple aquifers impacted by pollution at the site?	No
Perched groundwater depth – upper (metres below ground level (m bgl))	0.5 m (ephemeral)
Perched groundwater depth – lower (m bgl)	Not measured
Regional groundwater depth – upper (m bgl)	8.5
Regional groundwater depth – lower (m bgl)	19.0
Number of bores within 2 km	383
Closest extractive use (distance in m)	213 m south (domestic and stock)
Zone of groundwater plume influence (m from site boundary)	76 m
Year groundwater last monitored	2019

Table 2 Summary of Audit Information

Aspect	Description
Have you attached electronic copies of Current Groundwater Analytical Results presented as a summary table?	Yes. Refer to Appendix F (Appendix D CUTEP Tables)

Whilst this Executive Summary has endeavoured to accurately summarise the key points of the audit report, the latter shall take precedence and the Executive Summary must be read in conjunction with the full audit report (BlueSphere Environmental Pty Ltd, Environmental Audit Report, 328 Bay Road, Cheltenham, Victoria 3192, Report No. 8005833) and the Statement of Environmental Audit.

Appendix A

Statement of Environmental Audit

ENVIRONMENT PROTECTION ACT 1970

STATEMENT OF ENVIRONMENTAL AUDIT

I, Mr Michael Seignior of BlueSphere Environmental Pty Ltd, 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 Mr Andrew Johnston of Chandos Bay Pty Ltd to issue a Certificate of Environmental Audit in relation to the site located at 328 Bay Road, Cheltenham, Victoria, identified as Lot 1 on Plan of Subdivision PS802507 ('the Site') owned by Chandos Bay Pty Ltd. The land subject to this audit is shown in **Attachment 1** of this Statement.

2. had regard to, among other things,

   (i) guidelines issued by the Authority for the purposes of Part IXD of the Act

   (ii) the beneficial uses that may be made of the Site

   (iii) relevant State environment protection policies / Industrial waste management policies (IWMPs), namely:

   - State Environment Protection Policy (Prevention and Management of Contamination of Land);
   - State Environment Protection Policy (Waters);
   - State Environment Protection Policy (Ambient Air Quality);
   - State Environment Protection Policy (Air Quality Management);
   - Environment Protection (Industrial Waste Resource) Regulations 2009;
   - Industrial Waste Management Policy (Waste Acid Sulfate Soils).

   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 which 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

3. 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 is suitable for the beneficial uses associated with commercial and industrial land uses, subject to the following conditions attached thereto:

1. Ongoing from the date of this Statement, the Site must be covered with physical barriers. This will comprise either concrete or asphalt in areas occupied by buildings, carparks and driveways. Any landscaped area or garden bed must be constructed and maintained with at least 0.5 m thickness of clean fill below the finished surface, which is demonstrated to be suitable for the site and consistent with EPA Publication IWRG 621 Soil Hazard Categorisation and Management as 'fill material'.

2. All physical barriers (as prescribed in condition 1 above) must be maintained on the Site and if subsequently damaged or removed during development or occupation of the Site, must be reinstated as soon as possible and to the same condition or better as it was prior to any disturbance.

3. If removal of the physical barriers (as prescribed in condition 1 above) is proposed, an environmental auditor appointed under Part IXD of the Act must be engaged to conduct an environmental audit of the Site under Section 53X of the Act, to consider if the barrier is no longer required.

4. Ongoing from the date of this Statement, the owner/occupier/owners corporation of the Site must implement and maintain the Environmental Management Plan provided in **Attachment 2** of this Statement.

5. Groundwater at the Site is polluted and is not suitable for the beneficial uses of potable water supply (acceptable), agriculture and irrigation (irrigation), agriculture and irrigation (stock

watering), industrial and commercial, water-based recreation and cultural and spiritual values. Groundwater must not be used for any precluded beneficial use without prior testing and review of results by a suitably qualified professional to confirm its suitability for the proposed use. It may be extracted for the purpose of environmental monitoring or remediation.

6. Ongoing from the date of this Statement, the groundwater quality management plan (GQMP) formulated for the Site and verified by the environmental auditor must be implemented and maintained by the owner/occupier/owners corporation of the Site. A copy of the GQMP is provided as **Attachment 3** of this Statement.
7. The GQMP must remain in force until such time as an environmental auditor appointed under Part IXD of the Act verifies in writing that the monitoring and management requirements of the GQMP are no longer required, and this verification is accepted by EPA and advised in writing to the planning authority.
8. If a basement is incorporated in any proposed future development of the Site, further assessment and the potential design and installation of mitigation measures to manage vapour risks is required. An environmental auditor appointed under Part IXD of the Act must be engaged to conduct an environmental audit of the Site under Section 53X of the Act, to consider this use.

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:

(i) Soil and groundwater shall be cleaned up to restore all protected beneficial uses or it is demonstrated through risk assessment that its beneficial uses are no longer precluded.

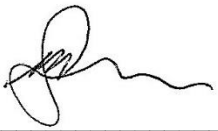
Other related information

1) the Authority has determined that;
   i. groundwater has been cleaned up so far as reasonably practicable, and
   ii. the site is within a Groundwater Quality Restricted Use Zone (GQRUZ).
2) Groundwater is polluted with Site-sourced chlorinated hydrocarbons which extend off-Site. The groundwater is also polluted by metals/metalloids (iron, lead, manganese and nickel), fluoride, ammonia and nitrate, however these analytes are considered to be regionally elevated, with no on-Site source or obvious off-Site source. The polluted groundwater would preclude the beneficial uses of potable water supply (acceptable), agriculture and irrigation (irrigation), agriculture and irrigation (stock watering), industrial and commercial, water-based recreation and cultural and spiritual values. The beneficial uses of water dependent ecosystems and species, traditional owner cultural values and buildings and structures would not be precluded by the pollution.
3) Groundwater at the Site contains naturally elevated concentrations of arsenic, copper, cobalt, chloride, sodium, sulfate and total dissolved solids and an acidic pH. The levels are considered typical of the natural groundwater quality surrounding the site and does not constitute pollution in accordance with clause 17(3) of State Environment Protection Policy (Waters).
4) In accordance with clause 58(4) of State Environment Protection Policy (Waters), the Authority may require periodic reassessment of the practicability of groundwater clean up.
5) In accordance with Section 53ZE of the Act, the owner/occupier of the Site must provide a copy of this Statement to any person who becomes or proposes to become an owner of the Site.
6) Please note that this Statement does not mitigate the ongoing duty of care required under the Act of an owner or occupier to not pollute the environment, either at the Site mentioned herein or elsewhere associated with activities conducted at the Site.
7) Any material excavated from the Site and disposed of off-site or proposed to be brought to the Site, should be appropriately managed in accordance with relevant statutory regulations and EPA guidelines.

This Statement forms part of the environmental audit report (BlueSphere Environmental Pty Ltd, Environmental Audit Report, Transaction Number 8005833, 328 Bay Road, Cheltenham, Victoria, 3192, 9 April 2020).

Further details regarding the condition of the Site may be found in the environmental audit report.

Dated: 9 April 2020

Signed: 

ENVIRONMENTAL AUDITOR

Attachment 1



PROJECT ID 30658.01
DATE 9/04/2020
CREATED BY WM
UPDATED BY SK

BlueSphere ENVIRONMENTAL

Legend

- Former Site Boundary
- Site Boundary
- VicMap Parcel Boundary
- Road



N

0 8 16 24 32 40

Metres

1:800 when printed at A3
GDA 1994 MGA Zone 55
Imagery: Nearmap 25/09/2019

SITE LOCATION PLAN

Environmental Audit Report

328 Bay Road, Cheltenham, Victoria
Chandos Bay Pty Ltd

Figure F1

Disclaimer: BlueSphere Environmental Pty Ltd. (BlueSphere) does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. BlueSphere shall bear no responsibility or liability for any errors, faults, defects or omissions in the information.

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Attachment 2

Environmental Management Plan

Lot 1, 328 Bay Road Cheltenham



Client: Chandos Bay Pty Ltd

Project Number: P001070-001

Environmental Management Plan

Lot 1, 328 Bay Road, Cheltenham, VIC

Prepared for:
Chandos Bay Pty Ltd
144 Church Street
Brighton, Victoria, 3186

Prepared by:
Resolve Environmental Pty Ltd
144 Church Street
Brighton, Victoria, 3186

Ph: 03 9595 3530
ABN: 42 609 904 056

DOCUMENT CONTROL

Site Name: Lot 1, 328 Bay Road Cheltenham

Site Address: Lot 1, 328 Bay Road Cheltenham

Report CEMP Ref: P001070_ChandosLot1_EMP

Document Production / Approval Record

	Name	Date	Position
Prepared by	Jill Mckendrick	10 July 2019	Associate Environmental Scientist
Approved by	David Corrigan	10 July 2019	Principal Environmental Scientist

Document Revision

Issue No	Date of Issue	Details of Revision
1	10 July 2019	Draft
2	12 September 2019	Final
3	18 October 2019	Finalv2

Document Distribution

Number of Copies	Format	Recipient	Contact Person and Company
1	Electronic	Developer/ Owner	Chandos Bay
1	Electronic	Occupier	Dan Murphy's
1	Electronic	External Reviewer	Michael Seignior

ENVIRONMENTAL PLAN IMPLEMENTATION LOG

Document Details	Environmental Management Plan (EMP)
Site	Lot 1, 328 Bay Road Cheltenham
Owner/ Occupier	Chandos Bay Pty Ltd/ Dan Murphy's

This implementation log provides a record of the following elements:

- acceptance of the EMP by the Site owner;
- acknowledgement and acceptance of the EMP by responsible parties; and
- recording and revision of amendments to the EMP by responsible parties.

Action	By Whom	Date	Signed
Acknowledgement and Acceptance			
This EMP has been read and accepted by the following parties:			
Periodic review of this EMP has been implemented by:			
1.			
2			
3.			
4.			

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Appendices

Appendix A – Asbestos Clearance Certificates

Appendix B – Relevant IWRG and WorkSafe Guidance

ABBREVIATIONS

ACM	Asbestos Containing Materials
EMP	Environmental Management Plan
EPA	Environment Protection Authority
HASP	Health and Safety Plan
HDPE	High-Density Polyethylene
NATA	National Association of Testing Authorities
OH&S	Occupational Health and Safety
PPE	Personal Protective Equipment
Resolve	Resolve Environmental Pty Ltd
SWMS	Safe Work Method Statement

1. Introduction

This Environmental Management Plan (EMP) has been prepared by Resolve Environmental Pty Ltd (Resolve) for the development of a retail liquor store at Lot 1, 328 Bay Road Cheltenham. The EMP has been prepared following the *"Detailed Site Investigation, Remediation & Validation Report"*, Resolve Environmental, October 2019, and as part of the 53x Environmental Audit undertaken by Mr Michael Seignior of BlueSphere Environmental. This EMP must be implemented and followed for the ongoing commercial use of the site. The site location is shown on **Figure 1.**



Figure 1: Site Location - 328 Bay Road, Cheltenham

The site occupies an area of approximately 3,369m^2 and is defined as Lot 1 on Plan of Subdivision PS802507T and is zoned as Commercial 2 Zone.

Environmental Site Assessment works conducted for the property identified asbestos containing material (ACM) within soils. This EMP details management measures required for the effective and safe management of any ACM which may be encountered during sub-surface excavation works.

1.1. Background

During previous development activities and soil assessment by ARC Environmental at the site, the presence of asbestos containing materials (ACM) as asbestos cement sheet fragments was observed at the site. The ACM contaminated soil was considered to have been imported to site prior to the construction of the former Nuplex facility.

Inspection, assessment and validation of the ACM in soil by an appropriately licenced contractor was completed and deemed as 'non-friable ACM'. This assessment and asbestos clearance certificates have been attached as **Appendix A**. It is considered that further management of the soils will be required to manage the potential risk posed by the soils in an ongoing commercial setting where ACM may be encountered during sub-surface excavation works.

Other contaminants were detected above the adopted ecological criteria for commercial/ industrial sites, including copper, zinc, petroleum hydrocarbons and benzo(a)pyrene. Chlorinated hydrocarbons and formaldehyde were also detected at concentrations below the adopted commercial/ industrial criteria for the site. Due to the placement of at least 0.5m of fill in garden beds and an impermeable barrier (concrete or asphalt at 100mm thick) across the remainder of the site, these contaminants do not pose an ongoing risk to human health or environment and are therefore not implicitly discussed within this EMP.

Clean fill has been placed on the surface of all garden beds across the site to an approximate depth of 0.5m with the exception of two garden beds in the north east and western boundary, where undisturbed natural material is encountered directly below imported topsoil. This clean fill creates a preventative barrier for gardeners undertaking shallow soil works and site visitors who may be exposed to airborne dusts. Therefore the clean fill and impermeable paving across the site provide a sufficient contamination barrier for site visitors and workers completing any shallow soil works in garden beds.

1.2. Objective

This EMP has been developed to manage risks from asbestos soils beneath the site during sub-surface excavations (>0.5m in garden beds, or where the impermeable barrier is penetrated). This EMP has also been prepared to minimise the potential for adverse impacts

to the environment, surrounding community and contractors during any sub-surface works undertaken at the site.

Such impacts may potentially include:

- Generation of asbestos fibres from ACM contaminated soil;
- Inadvertent exposure to asbestos contaminated soil by contractors (including gardeners excavating below 0.5m in garden beds), site visitors and the surrounding community i.e. during onsite subsurface excavation works; and
- Transport of contaminated soil offsite during any subsurface excavation works.

1.3. Commercial Development

The site has been developed for commercial use as a retail liquor store. Limited garden beds at the site include the placement of imported clean fill at approximately 0.5m thick. The remainder of the site is sealed by an impermeable barrier of either concrete or asphalt (approximately 100mm thick).

2. Roles and Responsibilities

Key roles and responsibilities for the development of the site comprise:

- **The site owner/ occupier (Chandos Bay/ Dan Murphy's) is responsible for:** providing this EMP to the any contractors involved in subsurface excavation activities that may expose soils containing ACM; and ensuring controls are put in place to limit/control access to contaminated soils located beneath the site. The site owner is responsible for maintaining the surface cover at the site.
- **The contractor is responsible for:** performing any subsurface excavation/ maintenance works in accordance with the contractual requirements of the owner and with the requirements of this EMP; complying with all applicable legislation and regulations including but not limited to WorkSafe and Environmental Protection Agency (EPA) requirements; and preparing and implementing specific health and safety plans during sub-surface work activities.

2.1. Occupational Health and Safety

Workers in Australian workplaces have specific health and safety obligations. While at work, a worker should:

- Take reasonable care for his or her own health and safety;
- Take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons;
- Comply, so far as the worker is reasonably able, with any reasonable instruction that is given by the person conducting a business or undertaking to allow the person to comply with the relevant legislation; and
- Cooperate with any reasonable policy or procedure of the person conducting a business or undertaking relating to health or safety at the workplace that has been notified to workers.

2.2. Training

All personnel working on the site during the subsurface excavation activities must receive a site induction to explain the relevant asbestos environmental and safety hazards, asbestos environmental and safety protocols, sensitivities and procedures for the site. The content of the induction must include this document plus procedures developed by the contractor for the completion of the works.

3. Potential Risks to Human Health from Known Contamination

A project and contaminant specific Health and Safety Plan (HASP) should be prepared with consideration to the following information and ACM contamination concerns for the site where subsurface excavations are undertaken.

Small fragments of ACM were observed and removed from the site during the development. Asbestos clearance works were undertaken during site excavation and development works in October 2018 and between April and May 2019. These works (including clearance certificates) are included as **Appendix A**. The work area included soils outside the building envelope and asbestos was cleared from all exposed surface soils. The clearance certificates were to facilitate construction works only and were limited to the surface soils, no subsurface or intrusive investigation was undertaken. On this basis, it is possible that ACM is present beneath the soil surface.

This may pose a risk to health during sub-surface excavation works if fibres become airborne. The risk may be increased depending on the type and amount of asbestos material in the soil and if there is a potential for it to become disturbed or airborne.

All workers involved in any subsurface excavation works must be inducted to the site and should be well informed about the likelihood of asbestos contamination present below the soil surface and the required procedures if suspect location is discovered.

3.1. Personal Protective Equipment

Based on previous investigations undertaken at the site, potential hazards for site workers associated with the presence of ACM during any future subsurface excavation works include:

- Inhalation of dust.

Exposure control measures that should be implemented to minimise exposure of site construction workers to soil contamination include the following:

- Avoid unnecessary handling of soil;
- Wash hands before eating, drinking or smoking;
- Store and consume food and drink in a designated, dust free, clean area away from the main area of works;
- Use personal protective equipment as required and as outlined in reviewed and approved site specific Safe Work Method Statement (SWMS); and
- Manage works to occur in optimum weather conditions, i.e. excavation works should be avoided on extremely hot or windy days.

Specific personal protective equipment should include, but not necessarily be limited to:

- Impermeable gloves, if handling potentially contaminated soil;
- Long sleeved shirt and long trousers; and
- Dust masks, if dust cannot be controlled.

3.2. What to do if Asbestos is Encountered

As the site may contain asbestos below the site surface, the following measures should apply throughout the duration of the construction works. If suspect material is identified, workers must stop work immediately and follow the procedures as per the WorkSafe Guidance Note "Asbestos Contaminated Soil", October 2010, or subsequent revisions thereof, (included in **Appendix B**).

- Prior to any subsurface excavation works, an evaluation of the risk must be undertaken.
- The area needs to be cordoned off and a competent person (trained and qualified as per OH&S Regulations) is required to inspect the soil to determine the likely amount of contamination and later to confirm that all visible asbestos containing material (ACM) has been removed, in accordance with SafeWork guidelines.
- Asbestos removal can only be undertaken on a commercial basis by a licensed asbestos removalist.
- Asbestos contaminated soil that is to be disposed off-site, must be damp before being loaded into transport and all loads are to be covered.
- The competent person is to write a statement about their inspection and outcomes.
- All inspection statement copies are to be retained by the primary contractor.
- All activities required to remove asbestos from the soil must be undertaken by a licensed asbestos removalist. This includes the operators of any machinery and equipment (e.g. excavator) to move contaminated soil to disposal vehicles.

Asbestos Fibre Air monitoring shall be conducted as required by a qualified Occupation Hygienist and results analysed and reported by a NATA certified laboratory.

4. Further Management Measures

Further information for the assessment/management of asbestos contamination in soil is provided (but not limited to) the following Sections, and within WorkSafe Guidance Note "Asbestos Contaminated Soil", October 2010 (**Appendix B**).

4.1. Isolation and Signage

An effective method for reducing the potential for exposure to ACM by uncontrolled parties (e.g. general public or site personnel not directly involved in the subsurface works) is to isolate the site and thus limit contact with any potential ACM only to persons provided with a specific site induction and inducted under this EMP.

Appropriate signs to warn of a construction zone and of the restricted area are mandatory.

The site supervisor/contractor shall utilise the following controls to ensure the site is isolated and controlled:

- The Site boundary/work zone should be maintained during proposed works at all times. Any contractor working within the work zone should be inducted in accordance with this EMP and undertake the works subject to its requirements;
- Contractors should not enter the designated work zone without the prescribed PPE and the site supervisor should be aware of the number of contractors entering the work zone.

4.2. Soil Excavation and Stockpile Management

Where excavation of ACM soils is conducted, and onsite stockpiling of the soils is required to manage the soils, the following soil stockpile controls are to be implemented:

- Stockpiles are to be located away from existing drainage lines and where they can be protected from wind.
- Minimise the amount and duration of soil stockpiled on-site at any one time.
- All stockpiled material is to be placed on a High-Density Polyethylene (HDPE) plastic liner to minimise the potential for leaching to occur. Stockpiled material is to be covered with HDPE plastic to minimise erosion and dust generation. In addition, watering (using manual watering or temporary sprinklers) of the stockpiles and/or surrounding areas may be required.
- Where stockpile watering is performed, any surface water run-off should be minimised and/or appropriately controlled on-site. If necessary, soil stockpiles may need to have a suitable drainage system to collect stockpile surface water run-off to enable appropriate disposal of the (potentially) contaminated water.

- Records shall be completed and kept of movements of stockpiled material at the site during construction works in a clear, concise and readily traceable format.

4.3. Dust Control

At any time during construction that soil is exposed to the elements, there is a potential for dust to be generated from site activities. Dust generation should be minimised to the extent possible by ensuring that working surfaces are watered on dry and/or windy days.

4.4. Use of Heavy Equipment

The use of heavy equipment such as bobcats and excavators and trucks can increase the potential for cross-contamination to occur.

The contractor shall utilise the following controls:

- Minimise the effect of cross-contamination from tyres/equipment/boots to clean areas of the site and/or off-site;
- Maintain gravel/hard-stand access roads so as to prevent regress of contaminated soils and prevent dust;
- Clean equipment regularly and thoroughly;
- During excavation works, efforts should be made to minimise dust generation by adopting dust suppression methods (i.e. wetting down);
- Excavator operators should keep cabin doors closed and recirculate the internal air;
- Nominate areas of traffic management; and
- At the completion of works and/or prior to plant leaving the designated work zone it should be inspected and deemed free of ACM so far as reasonably practicable.

Transport of ACM contaminated soils off-site should be minimised wherever practicable the contractor may need to consider washing down trucks and/or a street sweeper should soils be observed to be transported off-site attached to vehicles.

4.5. Off-Site Disposal of Excavated Soil Containing ACM

Excavation and offsite disposal of contaminated soil will be required to meet the requirements of the management measures outlined. All soils must be classified prior to off-site disposal in accordance with EPA Publication IWRG621 (included in **Appendix B**).

Handling, transport and disposal of contaminated soils is controlled by various regulatory instruments, guidelines and policies including but not limited to the current editions of the following:

- Environment Protection Act 1970.
- Environment Protection (Prescribed Waste) Regulations 1998 & 2007 Amendment.
- Environment Protection (Scheduled Premises and Exemptions) Regulations 2007.
- IWRG702 "*Soil Sampling*", (EPA Victoria, June 2009).
- IWRG621 "*Soil Hazard Categorisation & Management*" (EPA Victoria, June 2009).
- IWRG821.2 "*Waste Transport Certificate*" (EPA Victoria, July 2019).
- IWRG611.2 "*Asbestos Transport and Disposal*" (EPA Victoria, June 2017).

All waste soil generated by site excavation works must be managed in accordance with the requirements of the above publications and/or any future variations to these publications.

4.6. Importation of Clean Fill

Any soil imported to the site for backfilling, landscaping or building up site levels must be chemically tested to confirm concentrations of potential contaminants, as listed in EPA Publication IWRG621 (included in **Appendix B**) "*Soil Hazard Categorisation and Management*" are below the maximum threshold values for FILL MATERIAL. The imported clean fill must also be inspected to ensure the material is free of any foreign objects or waste.

5. Changed Conditions

If subsurface conditions or contaminant concentrations in fill or natural soil are encountered at the site which differ significantly from those indicated by those referred to in this EMP, an appropriately qualified Environmental Professional will be contacted. The Environmental Professional will be notified of the conditions encountered and provided with an opportunity to assess the differences and provide appropriate advice.

6. Periodic Review

This EMP will be subject to a periodic review every 5 years by a suitably qualified environmental professional. The review will be undertaken to ensure its continuing suitability with respect to legal requirements, legislative changes, changes in circumstances, identification of improvements and any changed site conditions.

The review will be captured in the Environmental Plan Implementation Log included as page iii.

7. Limitations

Resolve Environmental Pty Ltd (Resolve) has prepared this Environmental Management Plan (plan) in accordance with generally accepted industry practices and standards prevailing at the time this plan was prepared. In preparing this plan, Resolve has applied the level of care and degree of skill ordinarily exercised by reputable members of the Environmental Consulting Profession in the preparation of environmental management plans.

Development of this plan has relied upon data and information available at the time of writing including proposed development plans which may be subject to change that may not be accounted for in this plan.

This plan has been prepared for the exclusive use by Chandos Bay Pty Ltd and BlueSphere Environmental.

The plan is made without any warranty by Resolve either express or implied.

Statements provided in this plan are based on the limited information available at the site at the time of writing.

Resolve confirms that Resolve takes no responsibility or liability for the accuracy or validity of third party information, reports, correspondence and/or data referred to in this plan. This plan does not purport to provide legal advice.

Appendix A: Asbestos Clearance Certificates

5 Burwood Road
Hawthorn, VIC, 3122
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F: (03) 9509 6125
E: admin@prensa.com.au
ABN: 12 142 106 581

15th October 2018

C0054:BMM
28823 328 Bay Road Cheltenham Soil CLET

Michael James
Case Meallin
Level 2, 19 Cato Street
Hawthorn East Vic 3123

Dear Michael,

Asbestos Clearance Certificate - Asbestos Removal Works Conducted at 328 Bay Road, Cheltenham, Victoria

Prensa Pty Ltd (Prensa) was requested by Case Meallin to provide this asbestos clearance certificate in relation to the asbestos removal works completed by Reads Waste (Reads) on the 15th October 2018, in relation to the surface of the soil at 328 Bay Road, Cheltenham, Victoria (the 'Site').

1. Objective

The objective of this clearance inspection was to assess whether the works conducted by Reads at the Site were conducted in accordance with the standard described in the Victorian *Occupational Health and Safety Regulations 2017 S.R. No. 22/2017*.

2. Scope of Asbestos Removal Works

The Site comprises a vacant block bounded by Hamlet Street, Bay Road, Chandos Street and the temporary site fencing to the south of the Site. It is understood that structures were demolished on Site which may have resulted in asbestos cement sheet debris being identified on the soil surface. As such, the asbestos removal works comprised a walk over of the Site with visible asbestos debris removed from the soil surface. The majority of the asbestos debris was removed from the soil surface adjacent Hamlet Street (approximately <0.5m^2 of asbestos debris was removed) (**Photograph 1**).

It is noted that this clearance certificate refers only to area outlined above, which will hereby be referred to as the 'Work Area'.

Further details of the specific location of the Work Area is detailed in the attached Site Plan.

3. Prensa Scope of Works

Prensa's visual inspection was conducted to the standard described in Regulation *297 Clearance certificates* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*.

4. Clearance Inspection

A Prensa consultant visually inspected the soil surface of the asbestos removal work area on the 15th October 2018, and no visible asbestos debris associated with the above listed removal works was found on the surface of the work area (**Photographs 2-3**). It should be noted that the removal works and Prensa's inspection was limited to the soil surface, and no subsurface or intrusive investigation was completed.

5. Findings

Based on the findings of Prensa's clearance inspection, it is Prensa's opinion that the asbestos removal works conducted by Reads at the Site have been completed to a satisfactory standard as per the relevant state regulations outlined in **Section 3**.

In accordance with Regulation *295* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*, Case Meallin should provide the results of this clearance inspection to Reads

6. Limitations

Prensa's visual inspection was limited to the surface soils of the asbestos removal work area only, and area immediately surrounding the work area only, and no intrusive inspection was conducted within the subsurface areas. As such, ACM may be unearthed during future works or significant weathering events such as high winds or rainfall. If any assumed ACM is identified during future works, works should cease and a hygienist should be contacted to attend Site and provided recommendations based on the findings of their assessment.

Should you have any questions regarding this clearance certificate, please do not hesitate to contact the Prensa Melbourne office on (03) 9508 0100.

Yours sincerely,



Brendon Mainey

Health Safety and Environment Consultant

Prensa Pty Ltd

Attachments: Photographs
Site plans
Statement of Limitations



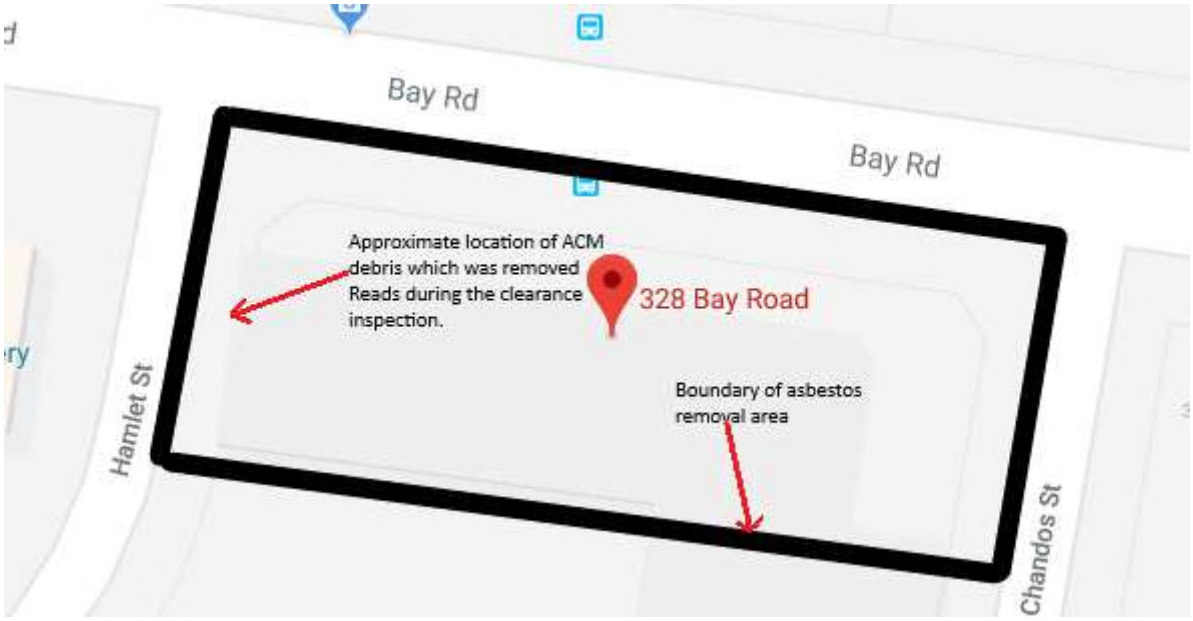
Photo 1. Area adjacent Hamlet Street where some ACM fragments were found but subsequently removed.



Photo 2. Work area adjacent Hamlet Street post asbestos removal.



Photo 3. Work area adjacent Chandos Street post asbestos removal.


Bay Rd
Bay Rd
Approximate location of ACM debris which was removed Reads during the clearance inspection.
328 Bay Road
Boundary of asbestos removal area
Hamlet St
Chandos St

Statement of Limitations

This document has been prepared in response to specific instructions from the Client to whom the report has been addressed. The work has been undertaken with the usual care and thoroughness of the consulting profession. The work is based on generally accepted standards, practices of the time the work was undertaken. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The report has been prepared for the use by the Client and the use of this report by other parties may lead to misinterpretation of the issues contained in this report. To avoid misuse of this report, Prensa advise that the report should only be relied upon by the Client and those parties expressly referred to in the introduction of the report. The report should not be separated or reproduced in part and Prensa should be retained to assist other professionals who may be affected by the issues addressed in this report to ensure the report is not misused in any way.

Unless otherwise stated in this report, the scope is limited to fixed and installed materials and excludes buried waste materials, contaminated dusts and soils.

Unless expressly stated it is not intended that this report be used for the purposes of tendering works. Where this is the intention of the Client, this intention needs to be communicated with Prensa and included in the scope of the Proposal.

Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Visual Inspection Limitations

It is noted that while the visual inspection has attempted to locate any residual asbestos-containing dust or debris materials associated with the scope of removal/remedial works remaining within the work area(s), the inspection was limited to only a visual assessment and limited strategic air monitoring program and/or the review and analysis of previous reports/information made available. Prensa notes that due to the lack of homogeneity of building materials it is possible that the inspection has not detected all asbestos within the nominated locations.

Given that a visual inspection was limited to the removal/remedial scope of works only, not all materials known or assumed or suspected of containing asbestos at the time of the inspection were assessed.

Therefore, it is possible that asbestos materials, which may be concealed within inaccessible areas/voids, may not have been located during the visual inspection. Such areas include, but are not limited to:

- Materials concealed behind structural members and within inaccessible building voids
- Areas inaccessible without the aid of scaffolding or lifting devices
- Areas below ground
- Inaccessible ceiling or wall cavities
- Areas which require substantial demolition to access
- Areas beneath floor covering where asbestos-containing materials were not expected to exist
- Materials contained within plant and not accessible without dismantling the plant
- Areas where access is restricted due to locked doors or safety risks.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. The Client therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Future Works

During future works at the site, care should be taken when entering or working in any previously inaccessible areas or areas mentioned above and it is imperative that works cease immediately pending further investigation and sampling (if necessary) if any unknown materials are encountered. Therefore, during any refurbishment or demolition works, further investigation, sampling and/or assessment may be required should any suspect or unknown material be observed in previously inaccessible areas or areas not fully inspected, i.e. carpeted floors.

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15th October 2018

C0054:BMM
28823 328 Bay Road Cheltenham Soil CLET

Michael James
Case Meallin
Level 2, 19 Cato Street
Hawthorn East Vic 3123

Dear Michael,

Asbestos Clearance Certificate - Asbestos Removal Works Conducted at 328 Bay Road, Cheltenham, Victoria

Prensa Pty Ltd (Prensa) was requested by Case Meallin to provide this asbestos clearance certificate in relation to the asbestos removal works completed by Reads Waste (Reads) on the 15th October 2018, in relation to the surface of the soil at 328 Bay Road, Cheltenham, Victoria (the 'Site').

1. Objective

The objective of this clearance inspection was to assess whether the works conducted by Reads at the Site were conducted in accordance with the standard described in the Victorian *Occupational Health and Safety Regulations 2017 S.R. No. 22/2017*.

2. Scope of Asbestos Removal Works

The Site comprises a vacant block bounded by Hamlet Street, Bay Road, Chandos Street and the temporary site fencing to the south of the Site. It is understood that structures were demolished on Site which may have resulted in asbestos cement sheet debris being identified on the soil surface. As such, the asbestos removal works comprised a walk over of the Site with visible asbestos debris removed from the soil surface. The majority of the asbestos debris was removed from the soil surface adjacent Hamlet Street (approximately <0.5m^2 of asbestos debris was removed) (**Photograph 1**).

It is noted that this clearance certificate refers only to area outlined above, which will hereby be referred to as the 'Work Area'.

Further details of the specific location of the Work Area is detailed in the attached Site Plan.

3. Prensa Scope of Works

Prensa's visual inspection was conducted to the standard described in Regulation *297 Clearance certificates* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*.

4. Clearance Inspection

A Prensa consultant visually inspected the soil surface of the asbestos removal work area on the 15th October 2018, and no visible asbestos debris associated with the above listed removal works was found on the surface of the work area (**Photographs 2-3**). It should be noted that the removal works and Prensa's inspection was limited to the soil surface, and no subsurface or intrusive investigation was completed.

5. Findings

Based on the findings of Prensa's clearance inspection, it is Prensa's opinion that the asbestos removal works conducted by Reads at the Site have been completed to a satisfactory standard as per the relevant state regulations outlined in **Section 3**.

In accordance with Regulation *295* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*, Case Meallin should provide the results of this clearance inspection to Reads

6. Limitations

Prensa's visual inspection was limited to the surface soils of the asbestos removal work area only, and area immediately surrounding the work area only, and no intrusive inspection was conducted within the subsurface areas. As such, ACM may be unearthed during future works or significant weathering events such as high winds or rainfall. If any assumed ACM is identified during future works, works should cease and a hygienist should be contacted to attend Site and provided recommendations based on the findings of their assessment.

Should you have any questions regarding this clearance certificate, please do not hesitate to contact the Prensa Melbourne office on (03) 9508 0100.

Yours sincerely,



Brendon Mainey

Health Safety and Environment Consultant

Prensa Pty Ltd

Attachments: Photographs
Site plans
Statement of Limitations



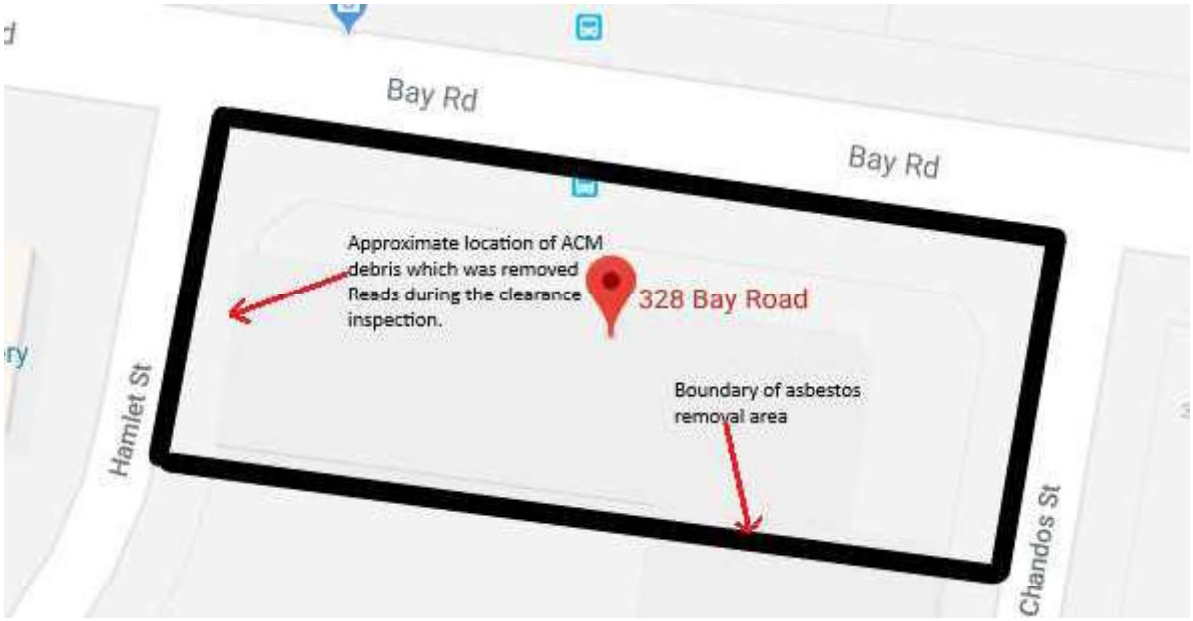
Photo 1. Area adjacent Hamlet Street where some ACM fragments were found but subsequently removed.



Photo 2. Work area adjacent Hamlet Street post asbestos removal.



Photo 3. Work area adjacent Chandos Street post asbestos removal.


Bay Rd
Bay Rd
Approximate location of ACM debris which was removed Reads during the clearance inspection.
328 Bay Road
Boundary of asbestos removal area
Hamlet St
Chandos St

Statement of Limitations

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Unless otherwise stated in this report, the scope is limited to fixed and installed materials and excludes buried waste materials, contaminated dusts and soils.

Unless expressly stated it is not intended that this report be used for the purposes of tendering works. Where this is the intention of the Client, this intention needs to be communicated with Prensa and included in the scope of the Proposal.

Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Visual Inspection Limitations

It is noted that while the visual inspection has attempted to locate any residual asbestos-containing dust or debris materials associated with the scope of removal/remedial works remaining within the work area(s), the inspection was limited to only a visual assessment and limited strategic air monitoring program and/or the review and analysis of previous reports/information made available. Prensa notes that due to the lack of homogeneity of building materials it is possible that the inspection has not detected all asbestos within the nominated locations.

Given that a visual inspection was limited to the removal/remedial scope of works only, not all materials known or assumed or suspected of containing asbestos at the time of the inspection were assessed.

Therefore, it is possible that asbestos materials, which may be concealed within inaccessible areas/voids, may not have been located during the visual inspection. Such areas include, but are not limited to:

- Materials concealed behind structural members and within inaccessible building voids
- Areas inaccessible without the aid of scaffolding or lifting devices
- Areas below ground
- Inaccessible ceiling or wall cavities
- Areas which require substantial demolition to access
- Areas beneath floor covering where asbestos-containing materials were not expected to exist
- Materials contained within plant and not accessible without dismantling the plant
- Areas where access is restricted due to locked doors or safety risks.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. The Client therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Future Works

During future works at the site, care should be taken when entering or working in any previously inaccessible areas or areas mentioned above and it is imperative that works cease immediately pending further investigation and sampling (if necessary) if any unknown materials are encountered. Therefore, during any refurbishment or demolition works, further investigation, sampling and/or assessment may be required should any suspect or unknown material be observed in previously inaccessible areas or areas not fully inspected, i.e. carpeted floors.

prensa
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ABN: 12 142 106 581

10 April 2019

B0004:SXM
29423 322 Bay Road Cheltenham Soil CLET 04042019

Brett Taylor
Becon Construction Pty Ltd
68-70 Abbott Rd
Hallam, VIC 3803

Dear Brett,

Asbestos Clearance Certificate - Asbestos Removal Works Conducted at 322 Bay Road, Cheltenham Victoria

Prensa Pty Ltd (Prensa) was requested by Becon Construction Pty Ltd (Becon) to provide this asbestos clearance certificate in relation to the asbestos removal works completed by Professional Asbestos Removal (PROAS) on the 4th of April 2019, within the north-western portion of 322 Bay Road, Cheltenham, Victoria (the 'Site').

1. Objective

The objective of this clearance inspection was to assess whether the works conducted by PROAS at the Site were conducted in accordance with the standard described in the Victorian *Occupational Health and Safety Regulations 2017 S.R. No. 22/2017*.

2. Scope of Asbestos Removal Works

The asbestos removal works at the Site comprised the removal of the following from the north-western portion of the Site:

- Excavation of one (1) soil stockpile contaminated with asbestos-containing material (ACM) in the form of fibre cement sheet fragments. This soil was subsequently relocated to the southern portion of the Site to undergo abatement (approximately 10 m^3); and
- Removal of asbestos-containing fibre cement sheet debris from the soil surface following the removal of the asbestos-contaminated soil stockpile (**Photograph 1**).

It is noted that this clearance certificate refers only to area outlined above, which comprised an area of approximately 55 m^2, which will hereby be referred to as the 'Work Area', see attached **Site Plan** for further details pertaining to the location of the Work Area.

3. Prensa Scope of Works

Prensa conducted control airborne asbestos monitoring and a visual clearance inspection following the removal of the asbestos-contaminated soil stockpile.

Airborne asbestos fibre monitoring was conducted in general accordance with:

- Victorian *Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*;
- Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)]; and
- Prensa Test Method – Asbestos & SMF Fibre Counting Method PRLAB2003.

Prensa's inspection was conducted to the standard described in Regulation *297 Clearance certificates* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*.

4. Air Monitoring

Prensa conducted control airborne asbestos fibre monitoring (air monitoring) adjacent to the Work Area during the asbestos removal works.

The results from the air monitoring are described in the previously issued NATA laboratory report **29423.010 AR 04042019**. It is noted that the results of the air monitoring are less than the laboratory detection limit (<0.01 f/ml).

5. Clearance Inspection

A Prensa consultant inspected the Work Area on the 4th of April 2019 and observed the asbestos removal works had been satisfactorily completed, and no visible asbestos debris associated with the above listed removal works remained in the Work Area, or in the area immediately surrounding where the asbestos removal work was performed (**Photographs 2 & 3**).

It should be noted that the visual inspection was limited to the surface of the soil within the Work Area where the asbestos contaminated stockpile was previously located. Prensa confirms visible asbestos has been removed from the final surface of the soil within the north-western portion of the Site. No intrusive or sub-surface investigation was undertaken as part of this clearance inspection.

It should be noted that the asbestos-contaminated stockpile was relocated to the southern portion of the Site and will undergo abatement at a later stage. As such, the asbestos barricade tape will remain in the area denoted 'Abatement Work Area' (see attached **Site Plan** for further details).

6. Findings

Based on the findings of Prensa's clearance inspection it is Prensa's opinion that the asbestos removal works conducted by PROAS at the Site have been completed to a satisfactory standard as per the relevant state regulations outlined in **Section 3**.

Prensa recommends that this clearance certificate be kept with the Site asbestos register as a record of these asbestos removal works being completed and the remaining asbestos-contaminated soil stockpile in the southern portion of the Site. In accordance with Regulation *295* of the *Victorian Occupational Health and Safety Regulations 2017. S.R. No. 22/2017*, Becon Construction Pty Ltd should provide the results of this clearance inspection to PROAS.

7. Limitations

Prensa notes that this clearance inspection relates to the removal of the asbestos-containing materials from the surface of the areas outlined in **Section 2** only, and was true at the time and date of Prensa's inspection.

Prensa's inspection was limited to the final soil surface and no intrusive investigation was undertaken as part of the clearance process. It is further noted that given fill soil still remains at the Site, buried asbestos may become unearthed following disturbance including weather events such as heavy rainfall or winds.

Prensa also recognises that further asbestos-containing materials may be present within the area and if any assumed asbestos-containing materials are found during future works, then a competent hygienist should be contacted to undertake sampling.

Should you have any questions regarding this clearance certificate, please do not hesitate to contact the Prensa Melbourne office on (03) 9508 0100.

Yours sincerely,



Souzy Melahridis

HSE Consultant

Prensa Pty Ltd

Attachments: Photographs
Site Plans
Statement of Limitations



Photo 1. Asbestos fiber cement sheet debris prior to asbestos removal works.

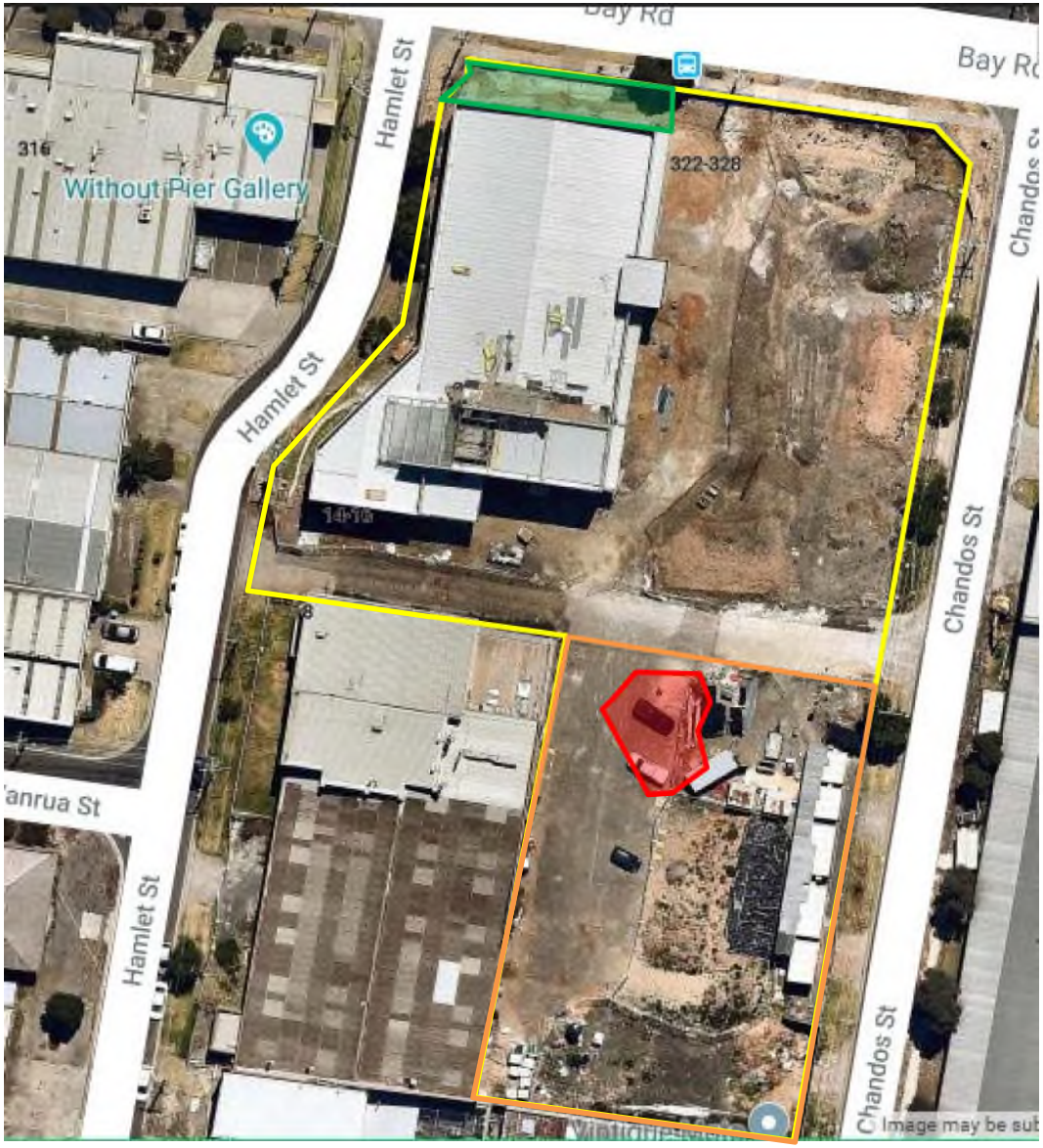


Photo 2. The Work Area following the asbestos removal works.



Photo 3. The Work Area following the asbestos removal works.

Site Plans



Legend

- Site boundary
- Cleared Work Area
- Abatement Work Area
- Soil Stockpile contaminated with ACM.

N

Statement of Limitations

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Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Visual Inspection Limitations

It is noted that while the visual inspection has attempted to locate any residual asbestos-containing dust or debris materials associated with the scope of removal/remedial works remaining within the work area(s), the inspection was limited to only a visual assessment and limited strategic air monitoring program and/or the review and analysis of previous reports/information made available. Prensa notes that due to the lack of homogeneity of building materials it is possible that the inspection has not detected all asbestos within the nominated locations.

Given that a visual inspection was limited to the removal/remedial scope of works only, not all materials known or assumed or suspected of containing asbestos at the time of the inspection were assessed.

Therefore, it is possible that asbestos materials, which may be concealed within inaccessible areas/voids, may not have been located during the visual inspection. Such areas include, but are not limited to:

- Materials concealed behind structural members and within inaccessible building voids
- Areas inaccessible without the aid of scaffolding or lifting devices
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- Areas which require substantial demolition to access
- Areas beneath floor covering where asbestos-containing materials were not expected to exist
- Materials contained within plant and not accessible without dismantling the plant
- Areas where access is restricted due to locked doors or safety risks.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. The Client therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Future Works

During future works at the site, care should be taken when entering or working in any previously inaccessible areas or areas mentioned above and it is imperative that works cease immediately pending further investigation and sampling (if necessary) if any unknown materials are encountered. Therefore, during any refurbishment or demolition works, further investigation, sampling and/or assessment may be required should any suspect or unknown material be observed in previously inaccessible areas or areas not fully inspected, i.e. carpeted floors.

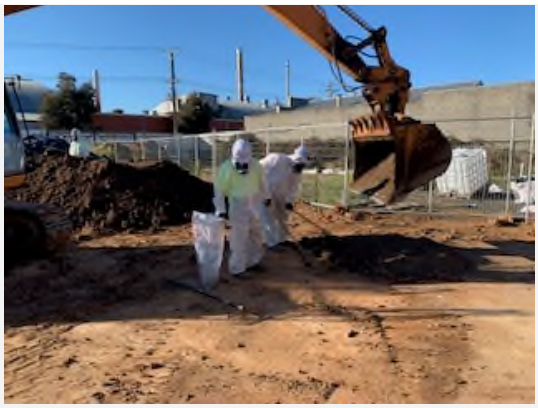
Daily Site Notes

Client Number:	B0004	
Client Name:	Becon Constructions	
Job Number:	29423	
Project and Project Manager:	322 Bay Road, Cheltenham	Dane Fankhauser/Nathan Reynolds
Date and Attending Consultants:	12th April 2019	Souzy Melahridis
Air Monitoring Report:	29423.017 AR 12042019	
Result of Air Monitoring:	All results are less than 0.01 fibres per millilitre of air, which is the detection level of the analytical method.	

GENERAL WORKS

Time	Activity
07:00 – 08:00	Prensa attend pre-start toolbox and set up air-monitoring equipment.
08:00 – 11:00	Abatement works continue, within the Domain D1 stockpile.
11:00 – 12:00	Lunch Break
12:30 – 14:00	Abatement works continue, within the recently Domain D1 stockpile. Simultaneously trenching works continued in the DM carpark under Asbestos Work Conditions.
14:30	Prensa collect pumps prepare air monitoring slides and conduct airborne asbestos fibre count. Following the fibre counting, the air monitoring report and daily site notes are consolidated.

WORK AREA

Time	Activity	Photograph
Morning – Mid-Morning	Prensa set up air monitoring equipment around the boundary of the Work Area. PROAS contractors begin by prepping the zone for the day's works, including consolidating the stockpiles to make as much rom as possible within the 'Abatement Work Area' prior to continuing abatement works. PROAS and Prensa re-commence abatement works within the recently located in-situ D1 stockpile. The abatement process involving the sifting of material while PROAS pick ACM from the surface and Prensa conduct a walk over to ensure the soil is visibly clear of ACM before the next bucket is sieved. PROAS provide dust suppression during the abatement works. Approximately 60 m^3 of soil is abated before the lunch break.	 *Abating works commence in the 'Domain D1' stockpile*  *ACM handpicked during abatement works*
Afternoon	PROAS and Prensa continue abatement works within 'Domain D1' stockpile. Simultaneous to the abatement works, Prensa, Becon and PROAS continue trenching in the DM carpark. Works involved trenching down to the geo-fabric layer and then ceasing works while the excavation area is set up as an Asbestos Work Area. Once works commenced to trench beyond the geo-fabric the soil was separated into one stockpile according to its associated classification 'in-situ D1'. This material was loaded into a truck and covered with plastic and re-located into within the Abatement Work Area, to be abated at a later stage. Approximately 125 m^3 of soil was abated by the end of works.	 *Continued abatement works within the Domain D1*  *Trenching works in the DM carpark*



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Client: BECON CONSTRUCTIONS

Project: ASBESTOS REMEDIATION

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Drawing Title: DAILY SITE NOTES: SITE PLAN

Job No.:	29423	Client No.:	B0004
Drawn by: SXM	Date: 12/04/2019	Checked by: DXF	Date: 12/04/2019
File name: DAILY SITE NOTES - SITE PLAN		Figure number: 1	Revision: A

Legend:

0 10 20 Metres

N

- Site Boundary
- Asbestos Work Area Boundary
- Cleared Asbestos Work Area
- Stockpile Domain D1 (Fill Material with asbestos)
- Excavation Work Area
- Stockpile (Category C (Contaminated Soil) with asbestos)
- Air Monitoring Sampling Location
- Stockpile (Fill Material with asbestos)
- Abated stockpile (Fill material with asbestos)

Image Source: Near Map
Viewed: 25 January 2019

Daily Site Notes

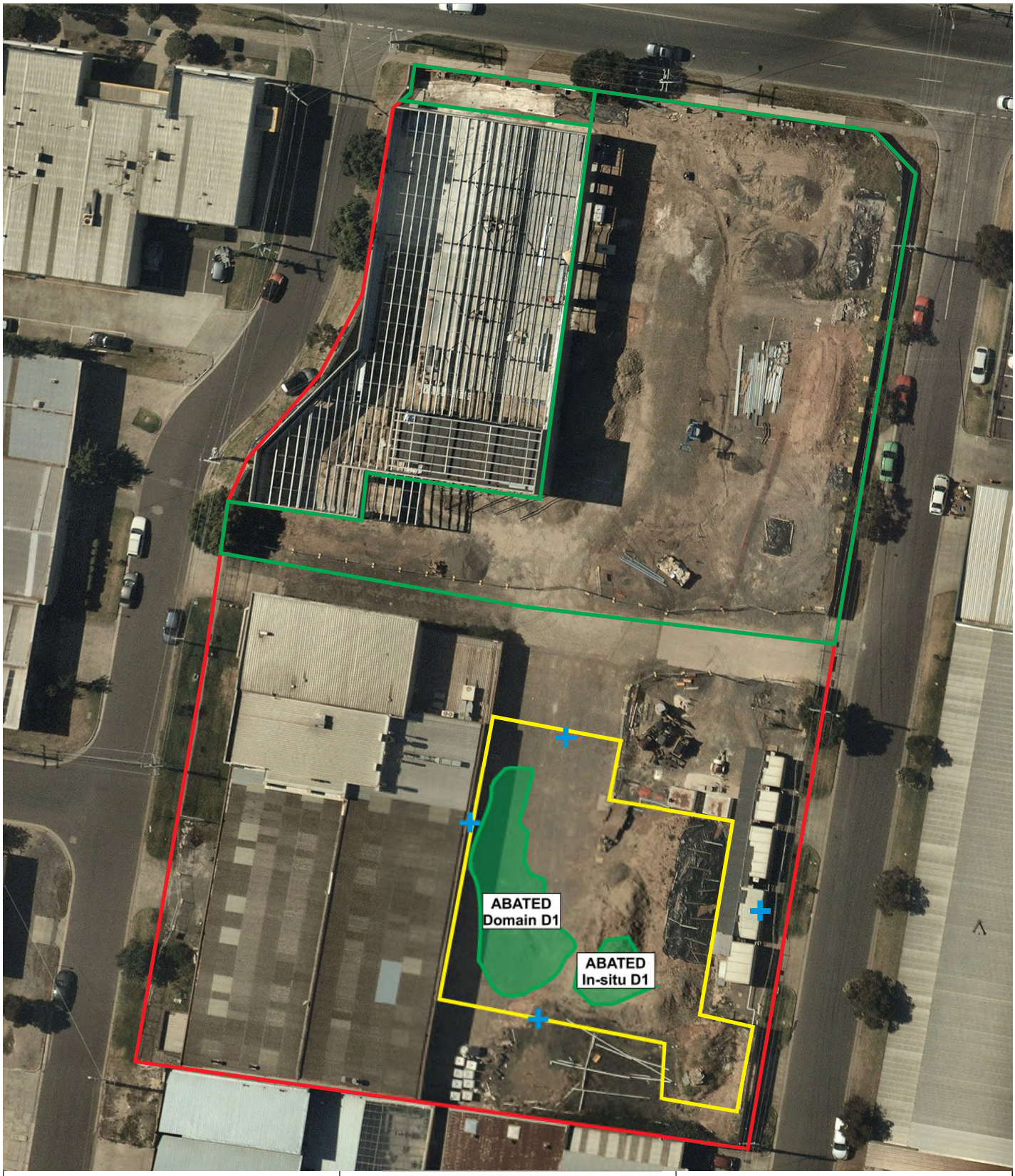
Client Number:	B0004	
Client Name:	Becon Constructions	
Job Number:	29423	
Project and Project Manager:	322 Bay Road, Cheltenham	Dane Fankhauser/Nathan Reynolds
Date and Attending Consultants:	21st May 2019	Souzy Melahridis
Air Monitoring Report:	*Void due to insufficient sample volume	
Result of Air Monitoring:	All results are less than 0.01 fibres per millilitre of air, which is the detection level of the analytical method.	

GENERAL WORKS

Time	Activity
07:00 – 07:20	Prensa attend pre-start toolbox and set up air-monitoring equipment.
7:20 – 10:30	Abatement works finished, within the Domain D1 stockpile, Prensa conducted a visual clearance of the abatement work area and the Case Excavator. PROAS removed the plastic wrapped barricade.

WORK AREA

Time	Activity	Photograph
Morning – Mid-Morning	Prensa set up air monitoring equipment around the boundary of the Work Area. PROAS and Prensa then commence abatement works within the domain D1 stockpile. The abatement process involving the sifting of material while PROAS pick ACM from the surface and Prensa conduct a walk over to ensure the soil is visibly clear of ACM before the next bucket is sieved. PROAS provided dust suppression for the duration of abatement works. The processing works are completed within the Domain D1 stockpile. Prensa conduct a visual inspection of the Abatement Work Area and the Case Excavator used for the duration of works.	 *Abated D1 stockpile*  *Decontamination of the Case Excavator*  *Visual inspection of the Abatement Work Area*



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Drawing Title: DAILY SITE NOTES: SITE PLAN

Job No.:	29423	Client No.:	B0004
Drawn by: SXM	Date: 29/04/2019	Checked by: DXF	Date: 29/04/2019
File name: DAILY SITE NOTES - SITE PLAN		Figure number: 1	Revision: A

Legend:

0 10 20 Metres

N

- Site Boundary
- Asbestos Work Area Boundary
- Cleared Asbestos Work Area
- Stockpile Domain D1 (Fill Material with asbestos)
- Excavation Work Area
- Stockpile (Category C (Contaminated Soil) with asbestos)
- Air Monitoring Sampling Location
- Stockpile (Fill Material with asbestos)
- Abated stockpile (Fill material with asbestos)

Image Source: Near Map
Viewed: 25 January 2019

Daily Site Notes

Client Number:	B0004	
Client Name:	Becon Constructions	
Job Number:	29423	
Project and Project Manager:	322 Bay Road, Cheltenham	Dane Fankhauser/Nathan Reynolds
Date and Attending Consultants:	23 March 2019	Dane Fankhauser
Air Monitoring Report:	29423.002 AR 23032019	
Result of Air Monitoring:	All results are less than 0.01 fibres per millilitre of air, which is the detection level of the analytical method.	

GENERAL WORKS

Time	Activity
07:00 – 08:00	Prensa attend pre-start toolbox and set up air-monitoring equipment.
08:00 – 10:00	Prensa and PROAS undertake site preparation works
10:00 – 12:00	Stockpile relocation works undertaken
12:00 – 13:00	Lunch break
13:00 – 15:30	Stockpile relocation works undertaken
15:30	Prensa collect pumps prepare air monitoring slides and conduct airborne asbestos fibre count. Following the fibre counting, the air monitoring report and daily site notes are consolidated.

WORK AREA

Time	Activity	Photograph
Morning	Prensa and PROAS undertake site preparation works prior to the planned relocation of stockpiles SP1 – SP4 from the northern portion of the Site to the southern portion of the Site. Prensa cordon off two (2) asbestos Work Areas: • Excavation Work Area – (North) • Abatement Work Area – (South) Refer to attached Site Plan for Work Area locations. Prensa set up air monitoring equipment around the boundaries of the Work Areas.	 *Excavation Work Area*  *Abatement Work Area*
Mid-morning - Afternoon	PROAS's subcontracted driver and operator are inducted into the Site and the proposed soil relocation works. PROAS remove the tarps from a portion of SP5 to allow for the consolidation of SP1, SP3 and SP5.	 *PROAS remove tarp from SP5 prior to consolidation with SP1 and SP3*

The excavator loads stockpiles SP1 and SP3 into the truck for relocation into the Abatement Work Area. Prensa advise the operator and driver as to the deposition locations of the stockpiles.

PROAS provide dust suppression during the soil relocation works. An electrical spotter is present during excavation works near overhead power lines.





PROAS commence relocation of SP3



PROAS consolidate SP1 and SP3 with SP5

Becon undertake hand excavation works on the nature strip of the western boundary of the Site, in order to identify locations of underground high voltage power line. Refer to High Voltage Work Area in Site Plan.

During the excavation, Becon and Prensa identify suspected ACM in the form of fibre-cement sheet debris within the soil.

PROAS perform a chicken-pick of the soil surface at the completion of the excavation, and the soil surface is cleared by Prensa.



ACM identified in the nature strip soil on the western boundary of the Site.

PROAS do not relocate stockpiles SP2 and SP4 to the Abatement Area, due to time restraints. Becon propose that the remaining stockpiles are to be relocated on Monday.

In addition, Prensa notes that a small volume of soil classified in report *29423 Bay Road In-situ SCA* as 'In-situ Domain D1' has been excavated and stockpiled adjacent to SP4.

Prensa advise that these three (3) stockpiles are to be kept separated due to their off-site disposal classifications.

Refer to Site Plan for locations of these stockpiles.

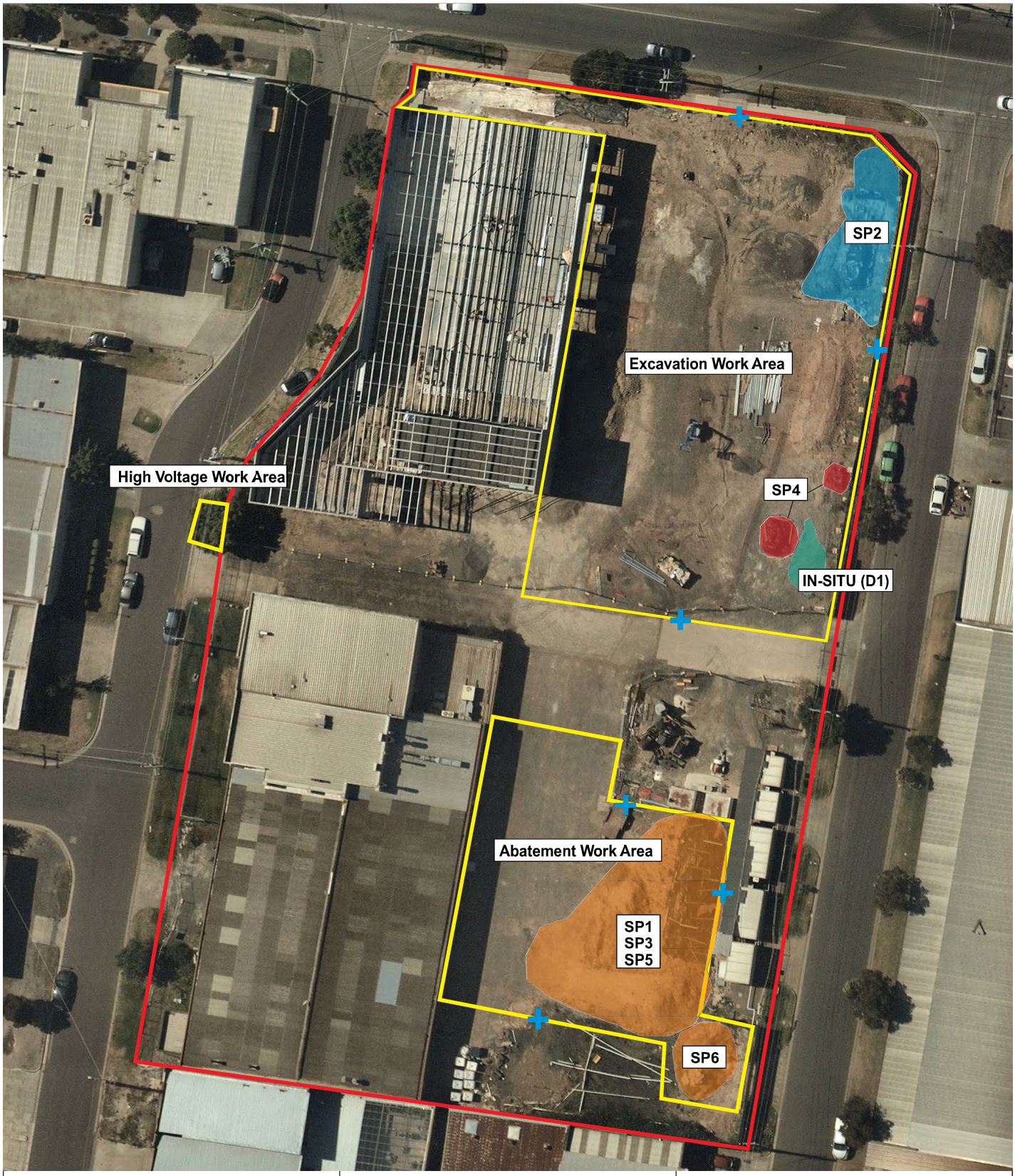


Stockpiled 'In-situ D1', SP2 and SP4 remain within the Excavation Work Area

PROAS decontaminate the truck prior to it leaving the Site. Prensa inspect the truck and conduct a visual clearance inspection. The truck is cleared of visible ACM.



Truck decontaminated prior to leaving site



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Drawing Title: DAILY SITE NOTES: SITE PLAN

Job No.:	29423	Client No.:	B0004
Drawn by: DXF	Date: 23/03/2019	Checked by: DXF	Date: 23/03/2019
File name: DAILY SITE NOTES - SITE PLAN		Figure number: 1	Revision: A

Legend:

0 10 20 Metres

N

- Site Boundary
- Asbestos Work Area Boundary
- Stockpile Domain D1 (Fill Material with asbestos)
- Air Monitoring Sampling Location
- Stockpile (Fill Material with asbestos)
- Stockpile (Category C (Contaminated Soil) with asbestos)
- Stockpiled 'In-Situ D1' (Fill Material with asbestos)

Image Source: Near Map
Viewed: 25 January 2019

Daily Site Notes

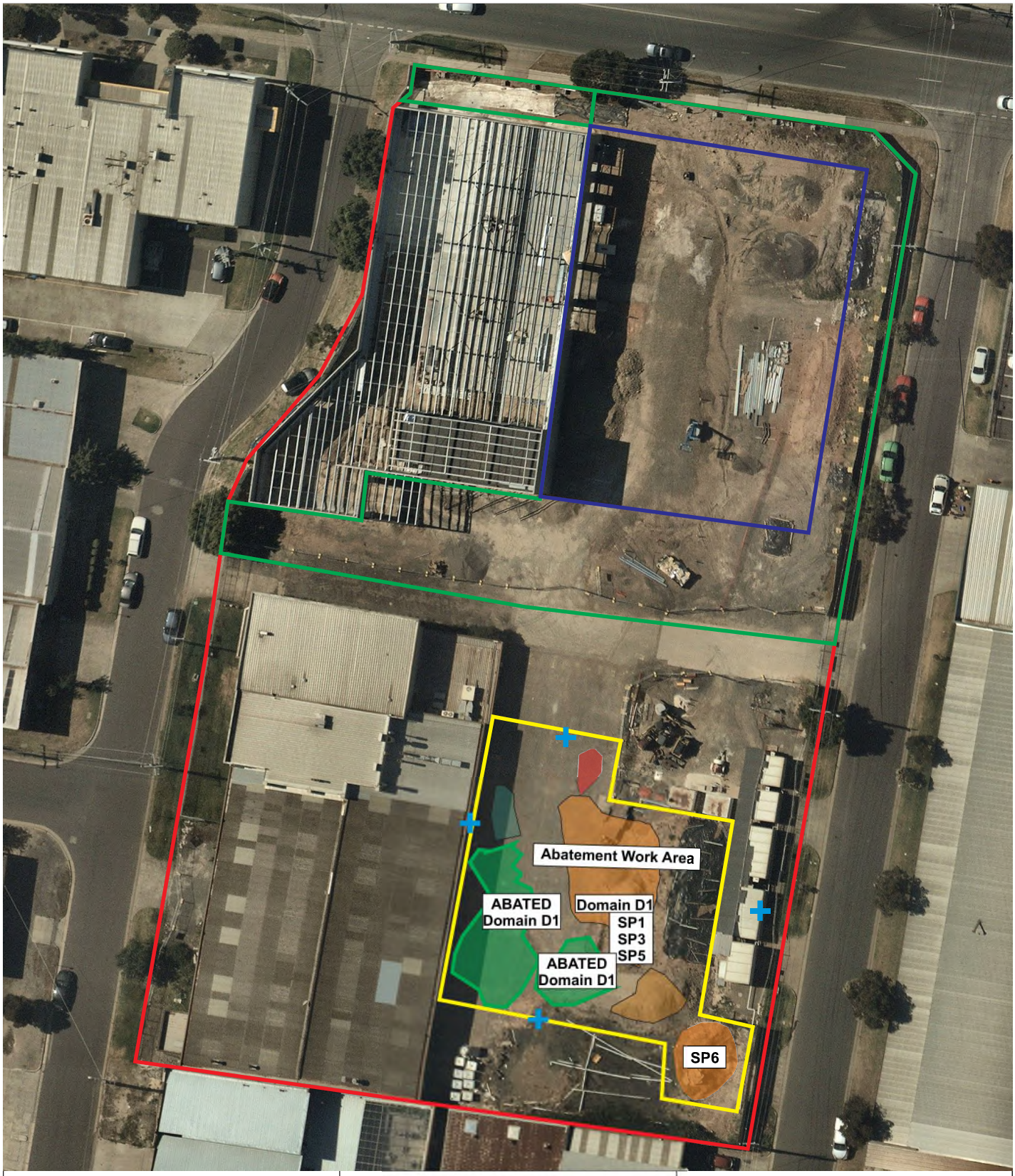
Client Number:	B0004	
Client Name:	Becon Constructions	
Job Number:	29423	
Project and Project Manager:	322 Bay Road, Cheltenham	Dane Fankhauser/Nathan Reynolds
Date and Attending Consultants:	29th April 2019	Souzy Melahridis
Air Monitoring Report:	29423.024 AR 29042019	
Result of Air Monitoring:	All results are less than 0.01 fibres per millilitre of air, which is the detection level of the analytical method.	

GENERAL WORKS

Time	Activity
07:00 – 08:00	Prensa attend pre-start toolbox and set up air-monitoring equipment.
08:00 – 11:00	Abatement works re-commence, within the Domain D1 stockpile that was moved forward, away from the site-sheds on the 23rd of April.
11:00 – 12:00	Lunch Break
12:30 – 14:00	Abatement works continue, within the recently Domain D1 stockpile. Simultaneously trenching works continued in the DM carpark under Asbestos Work Conditions.
14:30	Prensa collect pumps prepare air monitoring slides and conduct airborne asbestos fibre count. Following the fibre counting, the air monitoring report and daily site notes are consolidated.

WORK AREA

Time	Activity	Photograph
Morning – Mid-Morning	Prensa set up air monitoring equipment around the boundary of the Work Area. PROAS contractors begin by prepping the zone for the day's works, including consolidating the recently moved stockpiles in preparation for the continued abatement of the D1 domain stockpiles, as well as re-establishing the work zone and ensuring the signage, tape and plastic was in-tact. PROAS and Prensa re-commence abatement works within the Domain D1 stockpile. The abatement process involving the sifting of material while PROAS pick ACM from the surface and Prensa conduct a walk over to ensure the soil is visibly clear of ACM before the next bucket is sieved. Approximately 40 m^3 of soil is abated before the lunch break.	 *Abatement Works within the Domain D1 soil*  *ACM material hand-picked during abatement works*
Afternoon	PROAS and Prensa continue abatement works within 'Domain D1' stockpile. Simultaneous to the abatement works, Prensa, Becon and PROAS commence digging boreholes in the DM carpark. Works involved boring down through the geo-fabric layer, with the zone set up as an asbestos work zone, in the event that ACM is identified before re-commencing drilling. The soil was separated into two (2) stockpiles according to its associated classification 'in-situ D1' or D2 Domain. This material was loaded into a truck and covered with plastic and re-located into within the Abatement Work Area, to be abated/loaded out at a later stage. Approximately 70 m^3 of soil was abated by the end of works.	 *Continued abatement works within the Domain D1*  *Drilling works within the DM carpark*



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- Stockpile (Fill Material with asbestos)
- Abated stockpile (Fill material with asbestos)

Image Source: Near Map
Viewed: 25 January 2019

Appendix B: Relevant IWRG and WorkSafe Guidance



SOIL HAZARD CATEGORISATION AND MANAGEMENT

CONTENTS

INTRODUCTION 1
WHAT THIS MEANS FOR YOU 1
WASTE CHARACTERISATION 1
SAMPLING AND ANALYSIS 1
RECOMMENDED METHODS 1
SPECIFIC CONTAMINANTS 1
WASTE CATEGORIES 2
MANAGEMENT OPTIONS 7
FURTHER INFORMATION 7

INTRODUCTION

Producers of contaminated soil must categorise their waste into one of four categories, Category A, B, C or clean fill.

This guideline applies only to soils (it is not suitable for rubble, concrete and other inert solid waste materials).

WHAT THIS MEANS FOR YOU

If you are a producer or treater of contaminated soils, you will be required to categorise the soil into Category A, B, C or clean fill to determine what management options are available for that material.

WASTE CHARACTERISATION

Waste characterisation involves an assessment of the soil, including site history, to identify which contaminants require analysis to determine the hazard category. The assessment must be for all chemical substances known and reasonably expected to be present in the waste.

If the waste contains a contaminant that is potentially poisonous (acute), toxic (delayed or chronic) and/or ecotoxic and the contaminant is not listed in Table 2, the waste generator must apply to EPA for a determination of hazard category.

Allowable contaminant levels for fill material are also specified in Table 2. EPA does not regulate the use of fill material. However, the Environment Protection Act 1970 places general obligations to prevent adverse impacts on the environment and human health. Where there is potential for adverse impacts from the deposit of fill material, advice should be sought from EPA.

SAMPLING AND ANALYSIS

Soil sampling should be conducted in accordance with the IWRG *Soil sampling*, whilst soil analysis should be performed in accordance with the IWRG *Sampling and analysis of waters, wastewaters, soils and wastes*.

EPA requires that leachability testing be undertaken in accordance with the Australian Standard Leaching Procedure (ASLP) (Australian Standards AS4439.2 and 44396.3) by a NATA accredited laboratory. For contaminated soil going to disposal or re-use, it is necessary to perform ASLP using the acetate buffer solution (pH of 2.9 or pH 5, dependant on the pre-testing step as outline in the Australian Standard).

There is no need to conduct leachability tests in cases where total concentration data indicates that all total concentration results are less than 20 times the relevant Category C leachable concentration upper limits. This reflects the effect of dilution resulting from the use of the Australian Standard Leaching Procedure.

RECOMMENDED METHODS

The recommended methods for contaminated soils are provided in the IWRG *Solid industrial waste sampling*. EPA has no plans to mandate methods for 'totals', but the method that is used must be appropriate to determine the 'total concentration' of the contaminants.

Further information on these methods can be found on the USEPA website Test Methods SW-846 www.epa.gov/epaoswer/hazwaste/test/main.htm and from the National Environment Protection (Assessment of Site Contamination) Measure 1999 Guideline on Laboratory Analysis of Potentially Contaminated Soils www.ephc.gov.au/sites/default/files/ASC_NEPMsch__03_Lab_Analysis_199912.pdf

SPECIFIC CONTAMINANTS

Many laboratories conduct Total Recoverable Hydrocarbon (TRH) analysis and report this for Total Petroleum Hydrocarbon (TPH). A number of people have raised concerns with using TRH result and reporting these as TPH due to the presence of other hydrocarbon substances, not related to petroleum hydrocarbons, that are included in a TRH test. Until

This guidance forms part of the Industrial Waste Resource Guidelines (IWRG), which offer guidance for wastes and resources regulated under the *Environment Protection (Industrial Waste Resource) Regulations 2009* (the Regulations). Publication IWRG621 – June 2009.

there is a routine test developed exclusively for TPH, it may be necessary to discuss with clients what options are available to remove non petroleum based hydrocarbons.

To provide consistency in the approach of summing grouped contaminants and interpreting results that are below the limit of reporting, EPA recommends all positive values for the individual components be summed together.

Soils with a pH value of 4 or less or a pH of 9 or more are considered to be Prescribed Industrial Wastes (PIWs). Table 1 provides further information on pH values that are applicable to Category A.

Results for total concentrations are to be reported on a dry weight basis.

WASTE CATEGORIES

To determine the hazard category, contaminated soil must first be considered and excluded from Category A, then considered and excluded from Category B, before it can be considered as Category C. Figure 1 shows a decision flowchart for classifying waste soils.

Contaminated soils that display any specific hazard characteristic listed in Table 1 are categorised as Category A PIW.

Table 2 contains the threshold limit values (upper limits) for each of the categories, including clean fill. Contaminated soils must be assessed against the total concentration (TC0, TC1 and TC2) and leachable concentration (ASLP1 and ASLP2) thresholds specified in Table 2

Contaminated soils with any contaminant level above the TC2 or ALSP2 thresholds are categorised as Category A. Contaminated soils with any contaminant level greater than TC1, but below TC2, or greater than ASLP1, but below ASLP2 are categorised as Category B. Soils with any contaminant level greater than TC0, but below the TC1 and ALSP1 thresholds are categorised as Category C. Soils with all contaminant levels below the TC0 threshold are categorised as clean fill.

If doubt exists as to which hazard category applies to a soil, seek advice from EPA.

Landfill operators will require analytical results to demonstrate that the contaminated soil meets the relevant criteria set out in their licence.

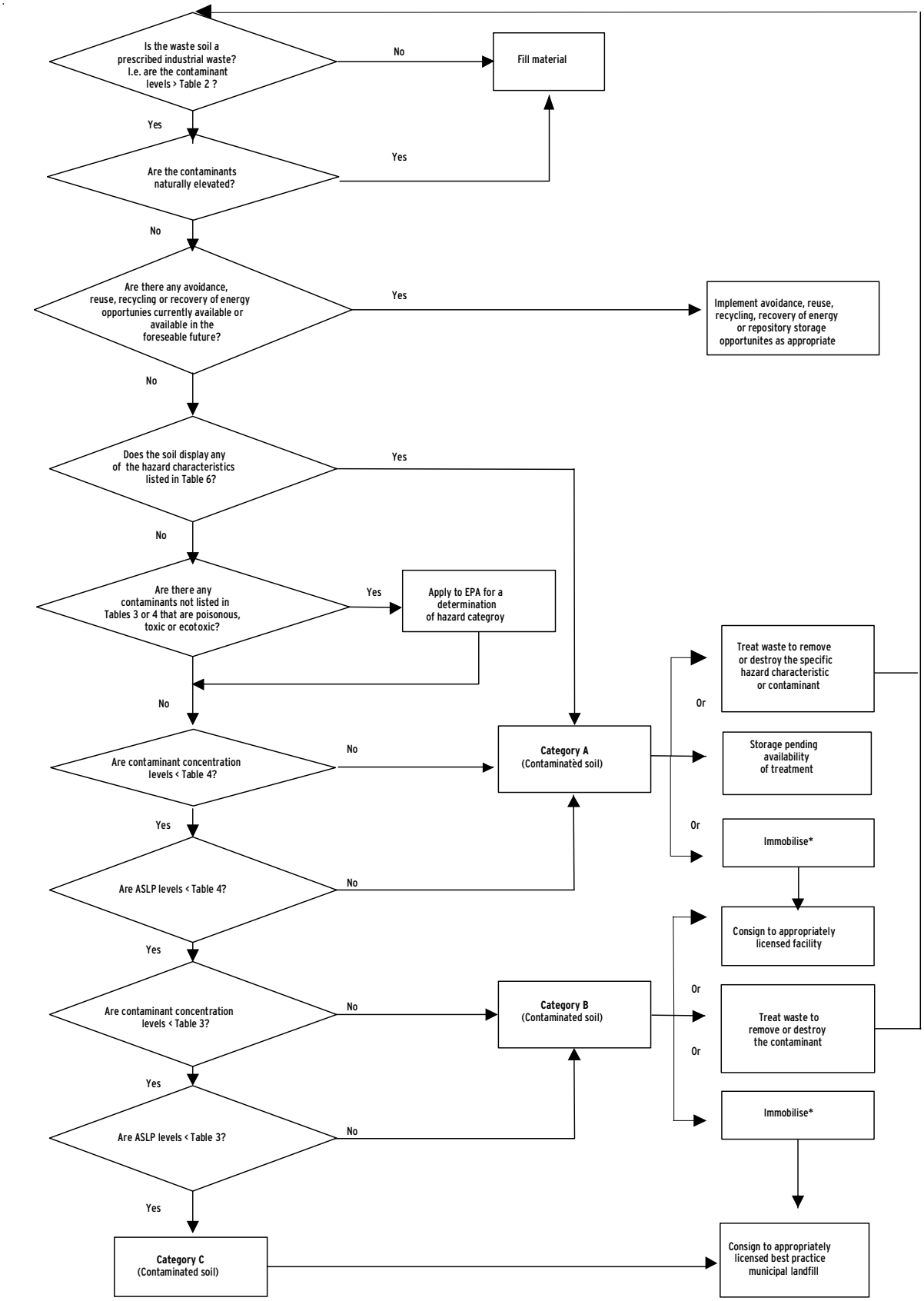


Figure 1: Decision flow chart for waste soil

Table 1: Specific hazard characteristics

Hazard characteristic	Definition1
Explosive wastes	An explosive waste is a solid waste (or mixture of wastes) which is in itself capable, by chemical reaction, of producing gas at such a temperature, pressure and speed, as to cause damage to the surroundings. Note: These are wastes classified as 'Class 1' under the provisions of the Road Transport (Dangerous Goods) Act 1995 and/or classified as 'Goods too dangerous to be transported' under the Australian Dangerous Goods Code.
Flammable2 solid wastes	Waste solids, other than those classified as explosives, which, under conditions encountered in transport or containment, are readily combustible, or may cause or contribute to fire through friction. Note: These are wastes classified as 'Class 4.1' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Wastes liable to spontaneous combustion	Wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and liable to catch fire. Note: These are wastes classified as 'Class 4.2' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Wastes which, in contact with water, emit flammable gases	Wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities. Note: These are wastes classified as 'Class 4.3' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Oxidising wastes	Wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other materials. Note: These are wastes classified as 'Class 5.1' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Organic peroxide wastes	Organic wastes which contain the bivalent-O-O-structure and which are thermally unstable and may undergo exothermic self-accelerating decomposition. Note: These are wastes classified as 'Class 5.2' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Infectious wastes	Wastes containing viable microorganisms or their toxins which are known or suspected to cause disease in animals or humans. Note: These include clinical and related wastes as prescribed in the Environment Protection (Prescribed Waste) Regulations 1998 and is waste classified as 'Class 6.2' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Corrosive wastes	Wastes which, by chemical action, will cause severe damage when in contact with living tissue, or in the case of leakage, will materially damage, or even destroy, other goods or the means of transport or containment. They may also cause other hazards. Where corrosivity testing data is not available, pH may be used to determine if the material is Category A. • pH value of 2 or less • pH value of 12.5 or more Note: This includes wastes classified as 'Class 8' under the provisions of the Road Transport (Dangerous Goods) Act 1995.
Wastes that liberate toxic gases in contact with air or water	Wastes which, by liberation with air or water, are liable to give off toxic gases in dangerous quantities. Note: These are wastes liable to give off toxic gases that are classified as 'Class 2.3' under the provisions of the Road Transport (Dangerous Goods) Act 1995.

1 Definitions are adopted from the *Industrial Waste Management Policy (Movement of Controlled Wastes between States and Territories) 2001*.

2 In this document the word 'flammable' has the same meaning as 'inflammable'. Flammable liquid wastes are waste liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc.) which give off flammable vapour at temperatures of not more than 60.5 °C (closed-cup test), or not more than 65.6 °C (open-cup test). Note: The definition of flammable liquid wastes are those wastes classified as 'Class 3' under the provisions of the Road Transport (Dangerous Goods) Act 1995.

Table 2: Soil hazard categorisation thresholds

Category	Fill Material upper limits		Category C upper limits		Category B upper limits		
Contaminant concentration thresholds (dry weight)		TC0	ASLP1[1]	TC1	ASLP2[1]	TC2	
Units		(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	
Inorganic species	**Inorganic species**		**Inorganic species**		**Inorganic species**		
Arsenic		20	0.7	500	2.8	2,000	
Cadmium		3	0.2	100	0.8	400	
Chromium (VI)		1	5	500	20	2,000	
Copper		100	200	5,000	800	20,000	
Lead		300	1	1,500	4	6,000	
Mercury		1	0.1	75	0.4	300	
Molybdenum		40	5	1,000	20	4,000	
Nickel		60	2	3,000	8	12,000	
Tin		50	-	500	-	-	
Selenium		10	1	50	4	200	
Silver		10	10	180	40	720	
Zinc		200	300	35,000	1,200	140,000	
Anions	**Anions**		**Anions**		**Anions**		
Cyanide		50	8	2,500	32	10,000	
Fluoride		450	150	10,000	600	40,000	
Organic species	**Organic species**		**Organic species**		**Organic species**		
Phenols (halogenated)[2]		1	2	10	8	320	
Phenols (non-halogenated)[3]		60	14	560	56	2,200	
Monocyclic aromatic hydrocarbons[4]		7	-	70	-	240	
Benzene		1	0.1	4	0.4	16	
Polycyclic aromatic hydrocarbons[5]		20	-	100	-	400	
Benzo(a)pyrene		1	0.001	5	0.004	20	
C6-C9 petroleum hydrocarbons		100	-	650	-	2,600	
C10-C36 petroleum hydrocarbons		1,000	-	10,000	-	40,000	
Polychlorinated biphenyls[6]		2	see note 6		see note 6		
Chlorinated hydrocarbons[7]		1					
Hexachlorobutadiene			0.07	2.8	0.28	11	
Vinyl chloride			0.03	1.2	0.12	4.8	
Other chlorinated hydrocarbons[8]			-	10	-	50	
Pesticides	**Pesticides**		**Pesticides**		**Pesticides**		
Organochlorine pesticides[9]		1					
Aldrin + dieldrin			0.03	1.2	0.12	4.8	
DDT + DDD + DDE			2	50	-	50	
Chlordane			0.1	4	0.4	16	
Heptachlor			0.03	1.2	0.12	4.8	
Other organochlorine pesticides[10]			-	10	-	50	

FILL MATERIAL | CATEGORY C CONTAMINATED SOIL | CATEGORY B CONTAMINATED SOIL | CATEGORY A CONTAMINATED SOIL

Notes

1. Australian Standard Leaching Procedure (acetate buffer) as specified in Australian Standards 4439.2 and 4439.3.
2. Total sum of 4-chloro-3-methylphenol, 2-chlorophenol, 2,4-dichlorophenol, 2,6-dichlorophenol, pentachlorophenol, 2,3,4,5-tetrachlorophenol, 2,3,4,6-tetrachlorophenol, 2,3,5,6-tetrachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.
3. Total sum of phenol, 2-methylphenol (o-cresol), 3-methylphenol (m-cresol), 4-methylphenol (p-cresol), 2,4-dimethylphenol, 2.4-dinitrophenol, 2-methyl-4,6-dinitrophenol, 2-nitrophenol, 4-nitrophenol, 2-cyclohexyl-4,6-dinitrophenol and dinoseb.
4. Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene.
5. Total sum of naphthalene, acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene and pyrene.
6. Soil containing polychlorinated biphenyls (PCBs) must be managed in accordance with the *Notifiable Chemical Order for Polychlorinated Biphenyls*. Industrial Waste Guidelines section *Polychlorinated Biphenyls (PCBs)* provides further information.
7. Total sum of carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, dichloromethane (methylene chloride), 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, tetrachloroethene, vinyl chloride and hexachlorobutadiene.
8. Total sum of carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, dichloromethane (methylene chloride), 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and tetrachloroethene.
9. Total sum of aldrin, hexachlorobenzene, alpha BHC, beta BHC, gamma BHC (lindane), delta BHC, chlordane, DDT, DDD, DDE, dieldrin, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, methoxychlor and endosulfan (includes endosulfan I, endosulfan II and endosulfan sulphate).
10. Total sum of hexachlorobenzene(HCB), alpha BHC, beta BHC, gamma BHC (lindane), delta BHC, chlordane, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, methoxychlor and endosulfan (includes endosulfan I, endosulfan II and endosulfan sulphate).

MANAGEMENT OPTIONS

Waste generators must classify contaminated soil by hazard category in order to determine which facility is licensed to accept the soil. If the soil does not meet the acceptance criteria, further treatment or stabilisation will be required.

Category C and Category B Contaminated soil can be accepted at a landfill or facility licensed by EPA to accept such waste.

Category A Contaminated soil will require treatment to reduce or control the hazard before meeting acceptance criteria for disposal at an appropriate EPA-licensed facility.

Table 3: Contaminated soil management options

Category A contaminated soil	• On-site remediation • Off-site remediation • Storage pending availability of treatment	No disposal to landfill. • EPA transport certificates must be used. • Vehicles must hold EPA permit (unless exemption issued).
Category B contaminated soil	• On-site remediation • Off-site remediation • Licensed facility	Disposal to licensed facility. • EPA Transport certificate system must be used. • Vehicles must hold EPA permit (unless exemption issued).
Category C contaminated soil	• On-site remediation • Off-site remediation • Licensed landfill	Disposal to licensed landfill. • EPA Transport certificate system must be used. • Vehicles must hold EPA permit (unless exemption issued).

Generators of contaminated soils may wish to submit a classification application to EPA for approval, where it can be demonstrated that a different category from that outlined above is appropriate for a particular contaminant or group of contaminants in soil. For example, a contaminant that is intrinsically immobilised (without treatment) may display a low hazard because of the very low leachable concentration, despite a relatively high total concentration. Applications will need to provide justification as to why the proposed management will achieve the best environmental outcome. Further analytical testing may also be required. The Industrial Waste Resource Guidelines (IWRG) Classifications - for Disposal provides further information on the requirements for a classification.

FURTHER INFORMATION

- Australian Standard 4439.2 – 1997, *Wastes, sediments and contaminated soils*. Part 2: Preparation of leachates – Zero headspace procedure
- Australian Standard 4439.3 – 1997, *Wastes, sediments and contaminated soils*. Part 3: Preparation of leachates –Bottle leaching procedure
- Australian Standard 4482.1 – 2005, *Guide to sampling and investigation of potentially contaminated soil*. Part 1: Non-volatile and semi-volatile compounds

Guidance Note

Asbestos-contaminated soil

This information sheet provides advice for any person (including employers, removalists and commercial contractors) inspecting, removing, transporting and disposing of asbestos-contaminated soil.

October 2010

Background

Asbestos may be found in soil on any property, including businesses and residential sites. For example, it may be present because buildings that contained asbestos were not demolished and disposed of properly or asbestos-contaminated soil was used as a top soil or fill material.

Asbestos in soil is a risk to health if fibres can become airborne so they may be inhaled. The risk may be increased depending on the type and amount of asbestos material in the soil, and if there is potential for it to become disturbed or airborne.

Exposure to asbestos can cause mesothelioma, asbestosis and lung cancer. All people must be protected against the risk of asbestos-related disease resulting from the exposure to airborne fibres.

There are legal requirements that prohibit anyone supplying, storing, transporting, selling, using and re-using asbestos-contaminated soil that contains any visible amount of asbestos.

Inspecting asbestos-contaminated soil

If asbestos-contaminated soil is intended to be supplied, stored, transported, sold or used it must be inspected by a competent person.

The person who has management or control of the soil must ensure any visible asbestos-containing material (ACM) is removed so far as is reasonably practicable throughout the supply chain.

After a competent person determines the soil contains no visible asbestos it can be used for its intended purpose.

If ACM becomes visible in the soil at a later stage, the soil must be inspected again and all visible asbestos removed. This is the duty of the person with management and control of the soil at that stage.

This duty does not apply to licensed transporters disposing of asbestos-contaminated soil as asbestos waste.

Sometimes it may be more cost-effective to remove and dispose of soil as asbestos-containing waste instead of following the inspection and clearance processes that may otherwise be required.

Who can inspect asbestos-contaminated soil?

A competent person should inspect the soil to determine the likely amount of contamination and later to confirm all visible ACM has been removed so far as is reasonably practicable.

The extent of the inspection required depends on factors including background knowledge of the soil and site, the likely amount (breadth and depth) of asbestos contamination and the likely source of the contamination.

A competent person should write a statement about the inspection and outcome (see example A). This statement should be given to the person receiving the soil (eg transporter, landfill operator etc).

Note: A competent person must have the ability to identify ACM or potential ACM and have experience in asbestos removal work to undertake visual inspections.

Who can remove asbestos contamination from soil?

All activities required to remove asbestos from soil must be done by a class A licensed asbestos removalist, unless it takes less than one hour to remove the contaminated soil. This includes the use of any machinery and equipment (eg an excavator) to move contaminated soil to disposal vehicles.

If the asbestos contamination is only minor (eg it takes less than one hour to be removed) it can be removed by a class A or class B removalist, or an appropriately trained person.

Transporting asbestos-contaminated soil

Asbestos contaminated soil must be damp before being packaged for transport. This prevents the chance of dust and fibres becoming airborne.

Soil should be carefully transferred to a suitable container, then sealed and labelled as asbestos-containing.

Owners and operators of vehicles that transport waste asbestos from an industrial or commercial source must hold an Environment Protection Authority (EPA) waste transport permit.

If a commercial contractor (eg a licensed asbestos removalist) removes asbestos from a domestic source, they must have transport certificates and a permitted vehicle.

Further information on the transport, disposal and packaging of waste asbestos can be found in Industrial Waste Resource Guidelines – *Asbestos transport and disposal* at **epa.vic.gov.au**

To find a list of licensed transporters see EPA's *Prescribed industrial waste database*.

Disposing of asbestos-contaminated soil

The EPA controls the disposal of waste asbestos from a workplace or household and the transportation of asbestos of industrial origin (including commercial or trade).

Asbestos from industrial and commercial activities, and asbestos from domestic premises that is removed by a contractor, is prescribed industrial waste and must be deposited at a site licensed to accept asbestos using waste code N220.

Soil that contains asbestos and no other contaminants must be disposed of as asbestos-containing material using waste code N220.

Before disposing of waste asbestos, the removalist, appropriately trained person or commercial contractor should contact the disposal site to confirm if and when it can accept this type of waste.

To find sites licensed to accept waste asbestos, go to Asbestos at **epa.vic.gov.au**

If a landfill is licensed to receive asbestos, it can also receive soil with asbestos (no other contaminants). A $30 per tonne asbestos landfill levy would apply.

Soil with contaminants in addition to asbestos must be assessed and labelled as category A, B or C using the Industrial Waste Resource Guidelines – *Soil hazard categorisation and management* at **epa.vic.gov.au**

Soil must then be packaged appropriately for disposal and taken to a facility licensed to accept both asbestos and the category of waste. The waste transport certificate must note the soil category code (contaminated soil A, B, C), listing asbestos as a contaminant.

Example A

Sample statement of a soil inspection and outcome by a competent person

As a competent person in relation to asbestos matters, I inspected the soil at [insert address and specific soil location] for the visible presence of asbestos-containing material (ACM) on [*insert date and time*].

This inspection was undertaken in the presence of a class A licensed asbestos removalist and all removal of ACM was undertaken by a class A licensed asbestos removalist.

The process involved removing any visible ACM from the surface of the soil, then dispersing the soil to a satisfactory depth to be inspected for the presence of asbestos. Any further visible ACM was removed.

I confirm visible asbestos-containing material has been removed so far as is reasonably practicable from the soil at the above-named address and specific soil location. Hence the prohibitions (for supply, storage, transport, sale, use or re-use) relating to asbestos-containing material do not apply to this soil.

If ACM becomes visible at a later stage, any person who has management and control of this soil must also inspect it and remove any visible ACM. If ACM becomes visible and is not removed, the prohibitions relating to asbestos-containing material will again apply to this soil.

Signature:

Name:

Position:

Date:

Further information

WorkSafe Advisory Service
1800 136 089
worksafe.vic.gov.au/asbestos

Environment Protection Authority
03 9695 2722
epa.vic.gov.au

Related WorkSafe publications
Compliance Code, *Removing asbestos in workplaces*

Related websites
ephc.gov.au/contam

On 18 June 2017, the Occupational Health and Safety Regulations 2017 (OHS Regulations 2017) replaced the Occupational Health and Safety Regulations 2007 (OHS Regulations 2007), which expired on this date. **This publication has not yet been updated to reflect the changes introduced by the OHS Regulations 2017 and should not be relied upon as a substitute for legal advice.**

Information on the key changes introduced by the OHS 2017 Regulations can be found in the guidance titled *Occupational Health and Safety Regulations 2017: Summary of changes* - available at https://www.worksafe.vic.gov.au/__data/assets/pdf_file/0011/207659/ISBN-OHS-regulations-summary-of-changes-2017-04.pdf. However, this guidance document contains material of a general nature only and is not to be used as a substitute for obtaining legal advice.

Attachment 3

Groundwater Quality Management Plan

328 Bay Road, Cheltenham, Victoria



Client: Chandos Bay Pty Ltd
Project Number: P001070
Date: 12 September 2019

Groundwater Quality Management Plan

Lot 1, Chandos Bay
328 Bay Road, Cheltenham

Prepared for:
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Figure 3 – Existing Well Network

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Abbreviations

BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
COC	Chain of Custody
CoPC	Contaminant of Potential Concern
DELWP	Department of Environment Land Water and Planning
DCE	Dichloroethene
EIL	Ecological Investigation Levels
EAO	Environmental Audit Overlay
ESL	Ecological Screening Level
EPA	Environment Protection Authority
GME	Groundwater Monitoring Event
GQRUZ	Groundwater Quality Restricted Use Zone
HIL	Health Investigation Levels
HSL	Health Screening Level
IL	Investigation Level
LOR	Limit of Reporting
MAH	Monocyclic Aromatic Hydrocarbons
mBGL	Meters Below Ground Level
mBTOC	Meters Below Top of Casing
mg/kg	Milligrams Per Kilogram
NATA	National Association of Testing Authorities
NA	Not Applicable
ND	Not Detected
NEPM	National Environment Protection Measure
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photo-Ionisation Detector
PPM	Parts Per Million
PSI	Preliminary Site Investigation
QA / QC	Quality Control / Quality Assurance
RPD	Relative Percent Difference
SAQP	Sampling Analysis Quality Plan
SEPP	State Environment Protection Policy
SWL	Standing Water Level
TDS	Total Dissolved Solid
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
VC	Vinyl Chloride
VOC	Volatile Organic Compounds
µg/L	Micrograms Per Litre

1. Introduction

Resolve Environmental (Resolve) was engaged by Chandos Bay Pty Ltd (Chandos) to develop a Groundwater Quality Management Plan (GQMP) for Lot 1 of 328 Bay Road, Cheltenham Victoria (the site). The location of the site is presented in **Appendix A, Figure 1**.

The site was subject to a groundwater investigation as part of a 53x Environmental Audit. Due to the site's historical use as a chemical handling, storage and distribution facility, groundwater contamination, chlorinated hydrocarbons) was present. Site sourced contamination extends off-site to the west and because of this, a Groundwater Quality Restricted Use Zone (GQRUZ) has been established which is presented in **Appendix A, Figure 4**.

The site has a prior GQMP that ceased at the completion of the 53X Audit, which was also prepared to satisfy the requirements of the Environment Protection Authority (EPA) Victoria Clean-Up Notice (CUN, 16/05/2019, Notice ID: 90010025).

This revised GQMP is for the ongoing monitoring and management of groundwater.

1.1. Purpose

The purpose of this GQMP is to:

- Outline a methodology and procedures for ongoing monitoring and management of groundwater, as required to support the clean up to the extent practicable (CUTEP) submission for the site.
- Specify trigger levels for contaminants of concern, including a contingency plan (where required).
- Establish a process for review and cessation of the GQMP.

1.2. Responsibilities

To ensure the GQMP is effectively and successfully implemented, a number of actions and corresponding responsible parties have been allocated and described in **Table 1.1**.

The owner of the site is responsible for the implementation of the GQMP, including monitoring, testing and reporting, at the frequency outlined in this GQMP until the cessation of groundwater monitoring has been approved by the EPA.

Table 1-1: Summary of Responsibilities

Site Details	Description
Site Owner	Ensure implementation of the GQMP The site owner may delegate management of the GQMP performance but remains responsible for implementation of the GQMP. Engage an Environmental Consultant to undertake the activities required under the GQMP. Inform any future site owners and/ or occupiers of the site, by provision of the Statement of Environmental Audit and GQMP, that the groundwater is unsuitable for use. Ensure the tenants occupying the site are aware of the GQMP and its implementation. Provide a copy of the Statement of Environmental Audit and GQMP to tenant management to inform them of the condition of the site and restrictions on groundwater use. Ensure that future conditions of sale placed on transfer of site ownership make reference to the GQMP and its requirements (if at that time the GQMP is still requirement to be implemented). Ensure that all monitoring reports and correspondence regarding action taken under this GQMP are kept in one place and are available to site occupants. Arrange for repair and/or replacement of damaged, inaccessible or lost monitoring wells. Engage an Environment Protection Authority (EPA) appointed Environmental Auditor (Contaminated Land) to review the groundwater monitoring results as specified within the GQMP (and as presented in reporting by the Environmental Consultant), and to review the requirement for further monitoring at completion of the specified monitoring program.
Environmental Auditor	Review and endorse the GQMP and any updates thereof. Review data provided by the Environmental Consultant to ensure the GQMP is being adhered to. Ensure any EPA issues/ concerns are incorporated into the GQMP. Review any changes to the GQMP. Determine the cessation of groundwater monitoring under the GQMP – being subject to discussion and agreement with EPA.
Environmental Consultant	Update GQMP as required Plan, undertake and report on the activities in accordance with the GQMP and applicable guidelines and legislation. Provide recommendation, where required. Notify the Site Owner and Environmental Auditor if trigger levels are exceeded. Initiate contingency measures (in conjunction with the Environmental Auditor), if required.

2. Site Details

2.1. Site Location and Setting

The site is located at 328 Bay Road, Cheltenham as shown on **Figure 1**. The site details are summarised in **Table 2-1**.

Table 2-1: Site Details

Site Details	Description
Site Address	328 Bay Road, Cheltenham
Certificate of Title	Volume 11973 Folio 116.
Lot Details	Lot 1 on Plan of Subdivision PS802507T
Registered Proprietor	Chandos Bay Pty Ltd
Site Area	3,469m^2
Zoning and Planning Overlays	Commercial 2 Zone (C2Z) Cultural Heritage Sensitivity Overlay Development Contributions Plan Overlay
Current Site Use	The site has been developed as a Dan Murphy's liquor store.
Proposed Site Use	The Site has been redeveloped for commercial use with a planning permit in place for a Dan Murphy's liquor store. This include a single storey 1,175 m2 liquor warehouse, a 122 m2 office and a loading dock in the western portion and a car park containing 63 spaces in the eastern portion.

2.2. Site History

The summary of historical site infrastructure and activities was compiled from the PSI completed by ARC (ARC, 2017) which reviewed all relevant historical documentation, site inspections and historical environmental reports. The site is Lot 1 of the former Nuplex Facility which was histroicallty used for the handling, storage and distribution of chemicals. The locations of key site features are provided in **Figure 2.**

3. Groundwater Assessment

3.1. Summary of Previous Investigations

Groundwater investigations as part of the Environmental Audit were undertaken from 2017 to 2019 from on-site and off-site wells to determine the contaminants of concern, characterise the plume, delineate the plume and assess plume stability.

, the measured depth to groundwater at the Site generally ranges from 6 to 10 mbgl, with the water table at most locations encountered around 10 mbgl to 11 mbgl (or approximately 27.2 to 28.2 m AHD), within the Sandringham Sands, which forms the regional aquifer at the Site.

During all groundwater monitoring events undertaken at the site, no evidence of Non-Aqueous Phase Liquid (NAPL), dense or light, has been measured in any of the monitoring wells. Groundwater concentrations are also not indicative of NAPL.

3.2. Final Groundwater Results

Groundwater analytical results from the final sampling rounds (August 2018 onsite wells and October 2018 offsite wells, as well as May and June 2019 for MW59) are shown in **Table 3-2**, together with the relevant beneficial uses that are precluded based on the results. The contaminants presented are considered to be site-sourced or co-sourced, based on historical use of the site.

During groundwater investigations at the site, concentrations of arsenic, cobalt, lead, manganese, nickel, zinc, nitrate, sulfate, ammonia and fluoride were found to exceed the adopted criteria; however, these constituents were found to be related to an off-site source, natural background concentrations or regional pollution and as such, are not relevant to the GQMP.

Table 3-1: Groundwater Analytical Results Summary Table – Final Sampling Round

Analyte (ug/L unless specified)	On-Site concentration Range (Aug 2017 – Oct – 2018)	Up-gradient Concentration Range	Down-gradient concentration Range	Analyte (ug/L unless specified)								
				Potable Water (desirable)	Water Based Recreation (primary contact)	Agriculture & Irrigation (Stock Watering)	Agriculture & Irrigation (irrigation)	Water dependent Ecosystems & Species (Marine 95% protection)	Buildings & Structures	Human Health – Vapour Intrusion	Site Specific RBCs (commercial/ industrial[2])	Site Specific RBCs (residential)
Benzene	<1 - **1**	<1	<1	**1**	**1**	**1**		700	-	900 (HSL A &B) 5,000 (HSL D)	-	-
Chloroform	<1 -**504**	<1	<1 - 3	**250**	**250**	**250**	-	**400**	-	-	380,000	26,000
cis-1,2-dichloroethene (DCE)	<1 - **256**	<1	<1 - 14	**60**	**60**	**60**	-	**20**	--	-	35,000	2,000
Dichloromethane	<2 - **9**	<2	<2	**4**	**4**	**4**	-	1,000	-	-	-	-
Trichloroethene (TCE)	<1 - **254**	<1	<1 - **23**	**20**	**20**	**20**	-	330	-	-	8,000	500
Vinyl chloride	<0.2 – **1.9**	<0.2	<0.2 – **5.7**	**0.3**	**0.3**	**0.3**	-	100	-	-	4,000	200
Trihalomethanes	<1 - **504**	<1	<1 - 3	**250**	**250**	**250**	-	-	-	-	-	-
Iron (mg/L)	<0.05 – **0.66**	0.08 - **1.02**	<0.08 – **12.7**	**0.3**	**0.3**	**0.3**	**0.2**	-	-	-	-	-
Chloride (mg/L)	31 - **786**	33 - **315**	30-244	**250**	**250**	**250**	-	-	6,000	-	-	-

Analyte (ug/L unless specified)	On-Site concentration Range (Aug 2017 – Oct – 2018)	Up-gradient Concentration Range	Down-gradient concentration Range	Analyte (ug/L unless specified)								
				Potable Water (desirable)	Water Based Recreation (primary contact)	Agriculture & Irrigation (Stock Watering)	Agriculture & Irrigation (irrigation)	Water dependent Ecosystems & Species (Marine 95% protection)	Buildings & Structures	Human Health – Vapour Intrusion	Site Specific RBCs (commercial/ industrial[2])	Site Specific RBCs (residential)
Sodium (mg/L)	34 - **550**	117 - **323**	83 - **260**	**180**	**180**	**180**	-	-		-	-	-
pH (pH units)	**5.62 – 10.65**	**5.36** – 6.76	**5.56** – 6.71	**6.5-8.5**	**6.5-8.5**	**6.5-8.5**	**6.0-8.5**	**6.0-8.5**	**>5.5**			
		Notes: 1: On-site wells include MW21, MW36, MW37, MW45A and MW45B 2. Upgradient on and off-site wells include MW20, MW27, MW28 and MW56 3. Downgradient off-site wells include MW52, MW53, MW54 & MW55 4. Fluoride was only analysed in January 2018. **Bold**: Indicates exceedance of the assessment criteria in on-site monitoring wells										

3.3. Contaminants of Concern

Site Sourced:

- Low detection levels Volatile Organic Compounds (VOCs). Although the VOC analytes is greater than those detected above the adopted criteria, it includes all VOCs for which there has previously been low levels of detection in groundwater.
    - 1,1,1-trichloroethane;
    - 1,1-dichloroethane;
    - 1,2-dichloroethane;
    - Carbon tetrachloride;
    - Chloroform;
    - trans-1,2-DCE;
    - Trichloroethene (TCE);
    - Dichloromethane
    - 1,1,2-trichloroethane;
    - 1,1-dichloroethene;
    - Trihalomethanes
    - Chlorobenzene;
    - cis-1,2-dichloroethene (cis-DCE);
    - Tetrachloroethene (PCE);
    - Vinyl chloride;

4. Groundwater Quality Restricted Use Zone

A remediation feasibility assessment was conducted by Resolve as part of the Detailed Site Investigation. All primary and secondary sources of contamination were removed from site. It was also noted that groundwater monitoring results were generally stable across the plume. It was found that the parent product of TCE was degrading to daughter products including DCE and VC. Furthermore, a potential secondary source of chlorinated hydrocarbons was detected in monitoring well MW55, located approximately 100m south- west of the site on Wanrua Street adjacent to commercial/ industrial properties.

Based on the outcome of the remediation feasibility assessment, even after active groundwater remediation, all potential candidate remediation technologies would have the high probability of leaving at least some low-level concentrations of chlorinated hydrocarbons, and therefore, it is unlikely that groundwater beneficial uses will be restored in a reduced timeframe with any degree of certainty.

Conducting active remediation works in an attempt to improved groundwater quality, when concentrations of chlorinated hydrocarbons are already below site-based RBCs and there is a low risk to off-site receptors, is not considered technically, logistically or financially practicable for the site. There would be no net-benefit to the site if active groundwater remediation was undertaken at the site.

Based on the outcome of the remediation feasibility assessment, Resolve considered that CUTEP had been achieved at the site and that the residual contamination evident at the site and offsite was not posing a risk to the identified potential sensitive receptors (on- and off-site). A CUTEP submission was prepared by the Environmental Auditor and presented to the EPA and a groundwater quality restricted use zone (GQRUZ) was proposed. The GQRUZ proposed extends across the entirety of the site, and across Hamlet Street to the west, and encompasses a number of commercial buildings to the west of the site.

The proposed GQRUZ extent is presented on **Figure 4**.

5. GQMP Monitoring Well Network

All on-site monitoring wells were decommissioned during development of the site The groundwater monitoring network for this GQMP includes:

- 7 off-site monitoring wells targeting the Sandringham Sands (MW23A, MW52 – MW56 & MW59)

The existing monitoring network is shown in **Table 5-1** and the location of existing monitoring wells is shown in **Figure 3**.

The rationale for each bore is as follows:

- MW23A – located south of the site to determine if there is a southerly component to the groundwater flow, to be monitored for water levels only.
- MW52 & MW53 – downgradient of the source area(s) to monitor plume stability within the Sandringham Sands aquifer
- MW54 - downgradient of the site to be monitored for water levels only to determine groundwater elevation contours.
- MW55 – downgradient of the source area(s) to monitor plume stability within the Sandringham Sands aquifer (i.e. vinyl chloride), noting that an additional source of PCE and TCE has been detected in this location from an off-site source.
- MW56 – upgradient of the site to be monitored for water levels only to determine groundwater elevation contours.
- MW59 – downgradient of the source area(s) to monitor plume stability in the deeper portion of the Sandringham Sands aquifer

Table 5-1: Summary of Lot 1 Groundwater Monitoring Well Network

Well ID	Date Installed	Location/ rationale	Status	Total Depth (m)	Screened Interval	GW Level (mBTOC) 2012– 2018	Geology of Screened Interval	TDS (mg/L) range
Off-Site – Sandringham Sands								
MW23A	April 2018	14 Hamlet Street – south of the site	Existing	11.5	8.5 - 11.5	9.48 – 9.63	Clayey Sand	611 - 634
MW52	May 2017	21 Hamlet Street – downgradient off-site	Existing	17.0	14.0 - 17.0	10.00 - 10.15	Clayey/silty sand	592 - 988
MW53	May 2017	19 Hamlet Street – downgradient off-site	Existing	17.0	14.0 - 17.0	9.91 - 10.06	Clayey/silty sand	200 - 312
MW54	March 2018	3 Wanrua Street – downgradient off-site	Existing	17.0	14.0 - 17.0	9.92 - 10.06	Sand	274 - 546
MW55	March 2018	6 Wanrua Street – downgradient off-site	Existing	17.0	14.0 - 17.0	9.12 - 9.26	Sand	358 - 969
MW56	October 2018	Chandos St – East of site – upgradient of site	Existing	12.66	10 - 13	11.08	Clayey Sand	1,021
MW59	April 2019	Hamlet St, nested with MW52. Targeting deeper portion of the Sandringham Sandstone aquifer to delineate chloroform	Existing	25.0	23.5 - 25	10.49 – 10.50	Sandy Silt	3,340 – 4,452

5.1. Inspection of Groundwater Well Integrity

An inspection and visual assessment of the integrity of the groundwater monitoring well network shall be conducted during each groundwater-monitoring event, with any repairs undertaken prior to commencement of subsequent events.

5.2. Damaged Groundwater Monitoring Wells

Should any of the wells in the current monitoring well network become damaged or unserviceable in any way, an appraisal is to be undertaken to determine the most appropriate action(s) which may include:

- Conduct repairs if damage is superficial;
- Complete appropriate decommissioning by a licensed driller if well is deemed to be no longer required or damaged beyond repair;
- Following decommissioning, remove the well from the monitoring well network if no replacement is considered required;
- Replace well to an equivalent depth, screen interval and construction design; or
- Replace well with one or more wells deemed to better meet assessment objectives.

Any replacement well(s) shall be installed by a licensed driller in accordance with the Water Act (1989) and shall comply with the Agriculture and Resource Management Council of Australia and New Zealand 1997 Minimum Construction Requirements for Water Bores in Australia. The well(s) location and measuring point level should be surveyed by a licensed surveyor, and the GQMP updated. The borehole log for any newly installed well(s) should be completed and form part of the reporting of the subsequent sampling event.

6. Assessment Methodology

All investigation works undertaken under this GQMP are to be conducted in general accordance with accepted industry standards and practices as defined in the following documents:

- Environment Protection Act 1970.
- Water Act 1989.
- Occupational Health and Safety Act 2004.
- Planning and Environment Act 1987
- Catchment and Land Protection Act 1994.
- State Environment Protection Policies (SEPPs), including:
    - SEPP (Waters)
    - SEPP (PMCL)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013) (NEPM 2013 Guidelines).
- EPA Victoria (Publication 669), Groundwater Sampling Guidelines, 2000.
- EPA Victoria Industrial Waste Resource Guidelines (IWRG701), Sampling and Analysis of Waters, Wastewaters, Soils and Waste, June 2009.
- EPA Victoria (Publication 840.2), The Clean Up and Management of Polluted Groundwater, 2016.
- EPA Victoria (Publication 759), Environmental auditor (contaminated land): Guidelines for issue of certificates and statements of environmental audit, 2014.

6.1. Frequency and Duration of Groundwater Monitoring Program

Groundwater monitoring will be implemented at the site over a three year program – with biannual monitoring. Given that monitoring during the 53X Audit was undertaken until June 2019, then the next biannual events should be in October 2019 and April 2020.

The frequency and duration of monitoring is subject to change/ review based on the trigger levels and contingency actions provided in **Section 9**.

Resolve estimate the cost of monitoring will be $ 18K/year.

6.2. Groundwater Sampling Procedure

Groundwater sampling will be completed using the low flow method. However, other sampling methodologies may be trialled with the aim of determining the most appropriate

sampling method for the site. Sampling methodologies to be trialled may include: passive (diffusion) samplers, snap-samplers and/or sleave samplers (such as HydraSleeve®). If a sampling method other than low flow (as described below) is to be adopted, a Standard Operating Procedure and justification for the method (including a comparison of analytical results) would be provided to the Environmental Auditor for review prior to adoption.

6.2.1. Low Flow Sampling Procedure

Prior to the commencement of sampling, an interface probe is to be used to gauge and record the water level and test for the presence of Non-Aqueous Phase Liquid (NAPL) (Light NAPL (LNAPL) at the water interface and dense (DNAPL) at the base of the well). The gauging data will be used in conjunction with the Map Grid Australia coordinated and the Australian Height Datum (AHD) survey data to assess the groundwater flow direction.

Groundwater sampling is to be conducted in accordance with EPA Victoria Publication 669 (2000) Groundwater Sampling Guidelines using a low flow sampling technique. Field parameters to be measured and recorded for inclusion in the groundwater monitoring report are:

- Temperature (°C);
- pH (units);
- Electrical conductivity (µS/cm);
- Dissolved oxygen (mg/L);
- Oxidation / reduction potential (mV); and
- Total dissolved solids (mg/L).

Groundwater samples to be obtained following stabilisation of field quality parameters. Once collected, samples shall be immediately placed in laboratory prepared bottles (specific to the analytes) and placed in a sealed cooler chilled with ice for transport to a National Association of Testing Authorities (NATA) accredited laboratory, accompanied by appropriate chain-of-custody documentation.

All waste groundwater generated during the groundwater sampling process is to be disposed from the site in accordance with current EPA Victoria guidelines.

Currently, a 1,000L Intermediate Bulk Container (IBC) is present within Lot 2 of the greater Nuplex Site for the purpose of containing purged groundwater for later disposal.

6.2.2. Sample Collection, Preservation and Storage

Groundwater samples will be collected in the bottles supplied by a National Association of Testing Authorities (NATA) accredited laboratory. The bottles will be placed in ice chests before

being transported to the laboratory along with the appropriately completed Chain of Custody (COC) documentation.

6.2.3. Groundwater Analytical Schedule

The groundwater samples collected from the monitoring well network during monitoring events will be analysed as follows:

- Low detection levels Volatile Organic Compounds (VOCs). Although the VOC analytes is greater than those detected above the adopted criteria, it includes all VOCs for which there has previously been low levels of detection in groundwater.
    - 1,1,1-trichloroethane;
    - 1,1-dichloroethane;
    - 1,2-dichloroethane;
    - Carbon tetrachloride;
    - Chloroform;
    - trans-1,2-DCE;
    - Trichloroethene (TCE);
    - Dichloromethane
    - 1,1,2-trichloroethane;
    - 1,1-dichloroethene;
    - Trihalomethanes
    - Chlorobenzene;
    - cis-1,2-dichloroethene (cis-DCE);
    - Tetrachloroethene (PCE);
    - Vinyl chloride;

The detection limit for vinyl chloride is 0.2µg/L with the remaining chlorinated hydrocarbons having a detection limit of 1µg/L.

7. Assessment Criteria

The framework for relevant beneficial uses and environmental values of groundwater to be protected within Victoria is set out in the State Environment Protection Policy (SEPP) – *Waters* (SEPP Waters, 2018). SEPP Waters identifies the beneficial uses of groundwater to be protected by the inherent capacity (e.g. total dissolved solid (TDS) concentration) of the water to support these specific uses.

These beneficial uses are based on the classification of groundwater into segments with segments being determined by groundwater quality based on measured total dissolved solids (TDS). The segments are defined in **Table 7-1** below.

Table 7-1: Groundwater Segments of TDS Ranges

Segment	A1	A2	B	C	D	E	F
TDS Range (mg/L)	0-600	601-1,200	1,201-3,100	3,101-5,400	5,401 –	7,100 – 10,000	>10,000

Groundwater monitoring indicates that groundwater TDS from wells screened within the Sandringham Sandstone ranged from 87 to 3,262 mg/L. groundwater beneath the Site has been conservatively classified as Segment A1.

The significance of groundwater contamination in Victoria is assessed in terms of the beneficial uses of the groundwater. The beneficial uses to be protected under legislation for each groundwater segment as defined in the SEPP Waters are shown in **Table 7-2** below.

Table 7-2: Protected Beneficial Uses of Groundwater Segments

Beneficial Uses	Segment (mg/L TDS)						
	A1 0-600	A2 601-1,200	B 1,201-3,100	C 3,101-5,400	D 5,400 – 7,100	E 7,101 – 10,000	F >10,000
Water Dependent Ecosystems and Species	✓	✓	✓	✓	✓	✓	✓
Potable Water Supply							
Desirable	✓						
Acceptable		✓					
Potable Mineral Water	✓	✓	✓	✓			
Agriculture and irrigation (irrigation)	✓	✓	✓				
Agriculture and irrigation (stock watering)	✓	✓	✓	✓	✓	✓	

Beneficial Uses	Segment (mg/L TDS)						
	A1 0-600	A2 601-1,200	B 1,201-3,100	C 3,101-5,400	D 5,400 – 7,100	E 7,101 – 10,000	F >10,000
Industrial and Commercial	✓	✓	✓	✓	✓		
Water-based recreation (primary contact recreation)	✓	✓	✓	✓	✓	✓	✓
Traditional Owner cultural values	✓	✓	✓	✓	✓	✓	✓
Cultural and spiritual values	✓	✓	✓	✓	✓	✓	✓
Buildings and structures	✓	✓	✓	✓	✓	✓	✓
Geothermal properties	✓	✓	✓	✓	✓	✓	✓

✓ Beneficial uses requiring protection for a nominated segment
Orange shading indicates segment relevant to the site based on reported TDS

The following beneficial uses are protected for Segment A1:

- Water dependent ecosystems and species
- Potable water supply (desirable)
- Potable mineral water supply
- Agriculture and irrigation (irrigation)
- Agriculture and irrigation (stock watering)
- Industrial and commercial
- Water-based recreation (primary contact recreation)
- Traditional Owner cultural values
- Cultural and spiritual values
- Buildings and Structures
- Geothermal properties

Groundwater contaminant concentrations were compared against criteria relevant for the beneficial uses protected for Segment A1 classified groundwater. These are:

Water dependent ecosystems and species

Groundwater associated with the site is likely to discharge to Port Phillip Bay located approximately 2.8 km to the south-west of the Site. The water quality objectives (applied at

the point of discharge of groundwater to surface water) to protect beneficial uses shall be applied in following order of preference where available:

- ANZECC/ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Criteria for slightly to moderately disturbed marine water ecosystems (95% level of protection) were adopted for this assessment, high to low trigger values (in order of preference). Aquatic ecosystem criteria are generally applied at the point of discharge of the groundwater, however, these criteria are initially applied at the point of measurement (i.e. onsite) as a conservative screening method.
- Netherlands (2009) Groundwater Intervention Values
- US EPA (2003) Region 5 Ecological Screening Levels

For nitrogen species nitrate toxicity guidelines for the National Objectives Framework NIWA (2014) and the Canadian Water Quality Guidelines for the Protection of Aquatic Life/Agriculture - Freshwater (CCME 2007) were adopted.

Potable Water Supply (desirable)

The primary source of criteria for the protection of the beneficial use of 'Potable Water Supply' is the Australian Drinking Water Guidelines (ADWG; NHMRC and NRMMC 2011, updated 2017). Where Australian Drinking Water Guidelines are not available, the hierarchy of documents containing national and international drinking water guideline values outlined within Section 6.5 of the 2017 ADWG were adopted.

Potable Mineral Water Supply

The site is not located in a mineral spring district therefore the use of groundwater for potable mineral water supply is not relevant for this assessment.

Agriculture and irrigation (irrigation)

The ANZECC/ARMCANZ) *National Water Quality Management Strategy – Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) Irrigation Water Quality Guidelines*, Table 4.2.10: Irrigation Water Long-term Trigger Values for tolerance of up to 100 years irrigation, were used to assess this beneficial use.

Agriculture and irrigation (stock watering)

The ANZECC/ARMCANZ) *National Water Quality Management Strategy – Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) Livestock Water Quality Guidelines (Table 5.10)* were used to assess this beneficial use. Where no criteria are available for organics, the National Health and Medical Research Council and the National Resource

Management Ministerial Council (2011) National Water Quality Management Strategy - Australian Drinking Water Guidelines would be adopted as default.

Industrial and Commercial

In the absence of industrial guidelines in ANZECC 2000, ARC Environmental adopted the industrial water uses defined in the ANZECC 1992 (Chapter 6 Industrial Water Quality) relevant to groundwater extractive use are generic processes (heating and cooling), textile industry, chemical and allied industry, food and beverage industry, iron and steel industry, tanning and leather industry, pulp and paper industry and the petroleum industry).

- Once through cooling and make-up water systems for fresh water: TDS <1000 and <500, respectively
- Textile industry: <100 mg/L
- Food and beverage industry: <850 mg/L
- Iron and steel industry: <1,000 mg/L
- Pulp and paper industry: <500 mg/L
- Petroleum industry: <750 mg/L

Water-based recreation (primary contact recreation)

NHMRC (2008) Guidelines for Managing Risks in Recreational Water. Value adopted for health / aesthetics.

NHMRC (2018) National Water Quality Management Strategy – Australian Drinking Water Guidelines (ADWG), version 3.5. Value adopted for health / aesthetics.

Traditional Owner cultural values

SEPP (Waters) does not provide any specific guidance or criteria for the protection of Traditional owner cultural values; however, the beneficial use for Traditional owner cultural values at the site is considered protected by consideration of other protected beneficial uses.

Cultural and spiritual values

SEPP (Waters) does not provide any specific guidance or criteria for the protection of Cultural and spiritual values; however, the beneficial use for Cultural and spiritual values occurs at the point of discharge, Port Phillip Bay, located approximately 2.8km south west of the site. Therefore, the beneficial use of Cultural and spiritual values is considered protected by consideration of the protection of the beneficial use, water dependent ecosystems and species.

Buildings and Structures

The Groundwater SEPP states that "introduced contaminants shall not cause groundwater to become corrosive to structures or building materials". Standards Australia AS2159-2009 *Piling – Design and Installation* (2009), provides exposure classifications for concrete and steel based on sulphate, chloride and pH values of groundwater.

Geothermal properties

Groundwaters at the site do not exhibit the water quality (i.e. temperature) of geothermal waters, therefore the use of groundwaters for geothermal properties is not relevant for this assessment.

Human Health

The groundwater concentrations were assessed against NEPM 2013 Health Screening Levels HSL A/B for sensitive uses (high density residential and other) and HSL D for commercial/industrial land use to assess the vapour inhalation exposure risk. The NEPM HSL D for commercial land uses has been adopted in the first instance for the proposed development.

In addition to the screening levels above, site-specific Risk Based Criteria (RBC) for groundwater COPCs were developed for the Site by EnRisks in March 2018. The slab on grade criteria are considered appropriate for the proposed development. A summary of the screening levels adopted is shown in **Table 7-3**.

Table 7-3: Site-specific Groundwater Risk Based Criteria (mg/L)

Contaminant of Concern	Commercial/ Industrial RBC SL					Open Space RBC	Residential & RBC
	Slab on grade: warehouses	Slab on grade: multistorey offices	Commercial with 1 level basement carpark	Commercial with 2 level basement carpark	Commercial with 3 level basement carpark		
Trichloroethene	18	8	9	8	8	S	0.5
Tetrachloroethene	1,500	720	820	760	690	S	45
Dichloroethene, 1,2-cis-	110	37	42	39	35	7,600	2
Dichloroethene, 1,2-trans-	580	270	310	286	260	S	17
Carbon Tetrachloride	19	10	12	11	10	S	0.6

Contaminant of Concern	Commercial/ Industrial RBC SL					Open Space RBC	Residential & RBC
	Slab on grade: warehouses	Slab on grade: multistorey offices	Commercial with 1 level basement carpark	Commercial with 2 level basement carpark	Commercial with 3 level basement carpark		
Chloroform	1,300	420	470	430	380	S	26
Chlorobenzene	S	3,500	3,900	3,600	3,200	S	220
Dichloroethane, 1,1	2,100	830	940	870	790	S	53
Dichloroethylene, 1,1	750	420	490	460	420	S	27
Trichloroethane, 1,1,1	S	S	S	S	S	S	1,100
Trichloroethane, 1,1,2	1,100	150	160	140	110	S	10
Trichlorofluoromethane	1,500	940	1,100	1,000	940	S	59
Vinyl Chloride	7	4	4	4	4	790	0.2
Dichloroethane, 1,2	160	30	32	28	24	6,000	2
S = derived RBC significantly exceeds the solubility of the VOC Shading denotes adopted criteria							

Within nested groundwater monitoring wells vapour intrusion screening levels are only applicable to the groundwater concentrations reported within the shallowest wells. Only the top of the water table is relevant for vapour intrusion as the vapours have to partition to air which occurs at the water and air (soil pore) interface.

8. Quality Assurance / Quality Control Procedure

A Quality Assurance / Quality Control (QA / QC) program in accordance with the above noted guidance documents and industry standards is to be adopted throughout the implementation of this GQMP. The quality control sampling program forms an essential part of determining the Data Quality Indicators (DQI's) of: acceptability; precision; representativeness; and comparability of data collected during the sampling program(s).

The following sections detail how the DQI requirements for the assessment are to be met:

8.1. Comparability

- All monitoring and sampling events are to be conducted by a suitably qualified and experienced person in accordance with Resolve's procedures and investigation methodology(s).
- Both primary and secondary analytical laboratories are to be NATA accredited for the testing employed and operate under documented procedures.
- All field data collection equipment (water quality meter, interface probe) are to be suitably calibrated, with in-date calibration certificates to be presented in reporting.

8.2. Precision

- Both primary and secondary analytical laboratories are to undertake internal QA / QC programs including internal laboratory duplicate testing, control spike recovery, matrix spike recovery and matrix spike duplicates to assess data precision.
- Laboratory analysis is to be completed to a precision such that all limits of reporting are below applicable assessment criteria.

8.3. Accuracy

- All field equipment is to be calibrated according to manufacture specification prior to use and checked periodically throughout operation for accuracy against calibration standards. Calibration certificates are to be provided in reports.
- Both primary and secondary analytical laboratories are to be NATA accredited for the testing employed and operate under documented procedures.
- Duplicate and triplicate sampling is to be conducted to allow comparison of variation in analytical results due to sampling methodology (duplicates) and laboratory methods (triplicate)

8.4. Representativeness

- All samples are to be placed into NATA-accredited laboratory supplied sample containers and stored on ice in a sealed cooler and transported to the laboratory within specified analyte holding times.
- All re-useable sampling equipment (e.g. interface probe, water quality meter and low flow pump) are to be decontaminated prior to and following use by washing items in a bucket of potable water containing Decon-90 solution, then an initial rinse in clean potable water and a final rinse in laboratory supplied de-ionised water.
- A rinsate sample is to be collected for each day of sampling (during which a piece of re-useable sampling equipment is used) to assess the effectiveness of the decontamination process.
- A Trip blank is to be collected and analysed during sampling to assess for potential cross contamination of primary samples during transport.

The frequency and analytes for QA / QC samples are provided in **Table 8-1** below.

Table 8-1: Sampling and Analysis Quality Plan

Quality Control Sampling Program				
Sampling	Duplicate	Triplicate	Rinsate	Trip Blank
Sample Analysis	As Per Primary Samples			TRH C_6-C_{10} / BTEXN / VOCs
Frequency Required	1:20	1:20	1 (Per Day of fieldwork)	1 (Per Batch)

9. Triggers/ Contingencies

Trigger levels have been defined as part of this GQMP to provide contingency actions where groundwater monitoring indicates the potential for an increase in risk to potential receptors. The trigger levels and relevant actions are summarised in **Table 9-1**.

The trigger levels that should be adopted for the GQMP are outlined in the following table and specify a concentration of contaminants that would be unacceptable at a critical location. Should the trigger conditions be exceeded, the site owner and Environmental Auditor are to be notified and, following approval from the Environmental Auditor, a contingency plan comprising the following will be initiated.

Table 9-1: Trigger Levels and Actions

Location	Trigger	Assessing Trends	Action
All monitoring wells	-Increasing concentrations of chlorinated hydrocarbons (except VC) in wells MW52, MW53 and MW59) -Increasing trends of VC in MW55 Increasing concentrations of VC in MW53 along with an observed southerly groundwater flow direction -Concentrations exceed vapour risk criteria (TBC) -NAPL detected	Historical monitoring data to be compiled and provided. Production of trend graphs. The use of Mann-Kendall analysis to be used once sufficient data is obtained (i.e. greater than or equal to 6 monitoring events). The presence of a measurable thickness in DNAPL in any of the monitoring wells, or where groundwater concentrations are indicative of DNAPL.	Notify the Auditor Assess significance of upward trend (rate and risk). If not significant, no further action required with the exception of ongoing monitoring. Notify the site owner and affected stakeholders Re-assess the risks to groundwater beneficial uses and sensitive receptors Re-assess the suitability of the monitoring and management plan for the site Consider the possibility of new sources Consider undertaking further investigative works to refine the conceptual model and quantify the risks to receptors. Consider further dissolved phase plume delineation. Consider the implications of the increasing trend on the conceptual understanding of the plume. Perform a subsequent monitoring event within 3 months. Continue monitoring

10. Reporting

10.1. Monitoring Round Reporting

A brief summary letter is to be provided by the Environmental Consultant to the site owner at the completion of each round of groundwater monitoring. The letter report should include the following information:

- Scope of work conducted.
- The sampling and analytical methods adopted.
- Tabulated summaries of gauging data and field parameter measurements.
- Tabulated analytical results, including quality control results.
- Comparison of results to trigger levels.
- An assessment of data quality including an evaluation of quality assurance and quality control elements against compliance criteria, indication of potential quality issues and details of corrective action taken.
- An assessment of trend in groundwater concentrations for the contaminants of concern using Mann-Kendall statistical analysis.
- Groundwater contour plan indicating the inferred groundwater flow direction of the well network.
- Purging and sampling field logs.
- Equipment calibration documentation.
- Laboratory certificates of analysis, including confirmation of NATA accreditation of the analytical methods used.
- Chain of custody documentation.
- Recommendations or further action in accordance with the GQMP.

10.2. Detailed Review of the Monitoring Program

Upon completion of the three year monitoring program, a detailed groundwater monitoring report will be prepared by the Environmental Consultant, including interpretation of the data collected, to assess whether termination of the monitoring program is feasible. This report should consist of information obtained throughout the duration of the monitoring program and should include:

- Introduction and background.
- Objective.

- Scope of works and methodology.
- Tabulated analytical results and field parameters.
- Tabulated gauging data for each monitoring round.
- Assessment of analytical results against trigger levels.
- Discussion of quality assurance program.
- Concluding statement and recommendations.

Additional information should be appended to the report, including:

- Groundwater contour plans for each monitoring round.
- Purging and sampling field logs.
- Equipment calibration documentation.
- NATA certified analytical results.
- Chain of custody documentation.

An electronic database of analytical results in a reproducible format will be retained by the Environmental Consultant and provided to the Environmental Auditor to assist with data management and interpretation.

10.3. Environmental Auditor Review

An Environmental Auditor is required to review results following each year of monitoring via an annual summary report from the Environmental Auditor to the client.

A more detailed review by an Environmental Auditor and discussions with the EPA will be held following Year 3 to determine the necessity of continuing the GQMP at the site (provide that no significant increases in contaminant concentrations or breaches of trigger levels have been reported during the three-year monitoring schedule).

Discussions should be held periodically with the Environmental Auditor and the EOA regarding the results of the groundwater monitoring program.

11. Review and Cessation of the Plan

To evaluate the progress of the GQMP, the following will be considered as part of the review:

- If any trigger levels are exceeded, the data should be submitted to the appointed Environmental Auditor to assess whether changes to the GQMP are required, and if changes are required, the GQMP will be revised and submitted for approval to the Environmental Auditor.
- After completion of the monitoring program specified in this GQMP, the Environmental Auditor will review the data to assess if further monitoring and/or management is required or if the GQMP can cease. In accordance with current EPA advice, the mechanisms for cessation of groundwater monitoring and management shall be via verification from an Environmental Auditor that the residual risks to beneficial uses of groundwater no longer warrant monitoring and management.
- Following cessation of the GQMP activities, all wells shall be decommissioned in accordance with the *Water Act 1989*.

Furthermore, EPA Victoria may review the practicability of the CUTEP. EPA will review the Environmental Auditor's recommendation and provide feedback regarding the cessation of monitoring.

12. Limitations

Resolve Environmental Pty Ltd (Resolve) has prepared this GQMP in accordance with generally accepted industry practices and standards prevailing at the time this Report was prepared. In preparing this Report, Resolve has applied the level of care and degree of skill ordinarily exercised by reputable members of the Environmental Consulting Profession in the preparation of environmental assessment reports.

This Report has been prepared for the exclusive use by Chandos Group Pty Ltd and Mr Michael Seignior (EPA-Appointed Auditor) of BlueSphere. The Report is made without any warranty by Resolve either express or implied.

Any reliance on this Report either in whole or in part by any third party shall be at such third party's risk unless use is authorised in writing by Resolve. This Report shall only be represented in full and may not be used to support any objective other than the objectives stated in this Report.

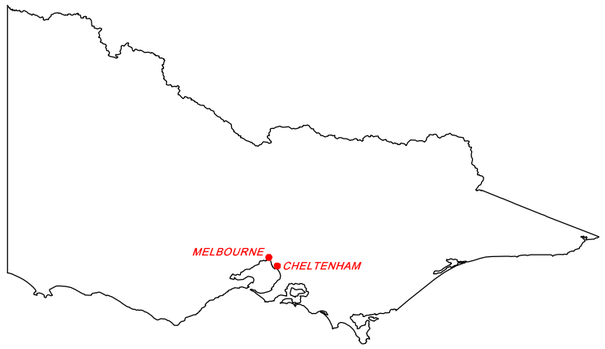
Findings, conclusions and recommendations contained in this Report are based on the assessment of geological, groundwater and chemical conditions encountered at the site at the time of investigation. Subsurface conditions including contaminant concentrations can vary significantly across a site and as such results and estimations expressed in this Report may not represent the extremes of conditions at the site.

Site conditions (including subsurface) may change over time and the conclusions in this Report, while accurate at the time of writing, may or may not be affected by such changes. Resolve confirms that Resolve takes no responsibility or liability for the accuracy or validity of third party information, reports, correspondence and/or data referred to in this Report.

This Report does not purport to provide legal advice.

Appendix A - Figures

Whilst every care has been taken to provide the accuracy of this plan, ARC Environmental make no representation or warranties about its accuracy, reliability, completeness, suitability for any particular purpose and cannot be held responsible or liable in any way (including without limitation, liability in negligence) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or maybe incurred as a result of this plan been inaccurate, incomplete or unsuitable in any way for any reason.



NOT TO SCALE



SCALE 1:5000

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SCALE 1:5000

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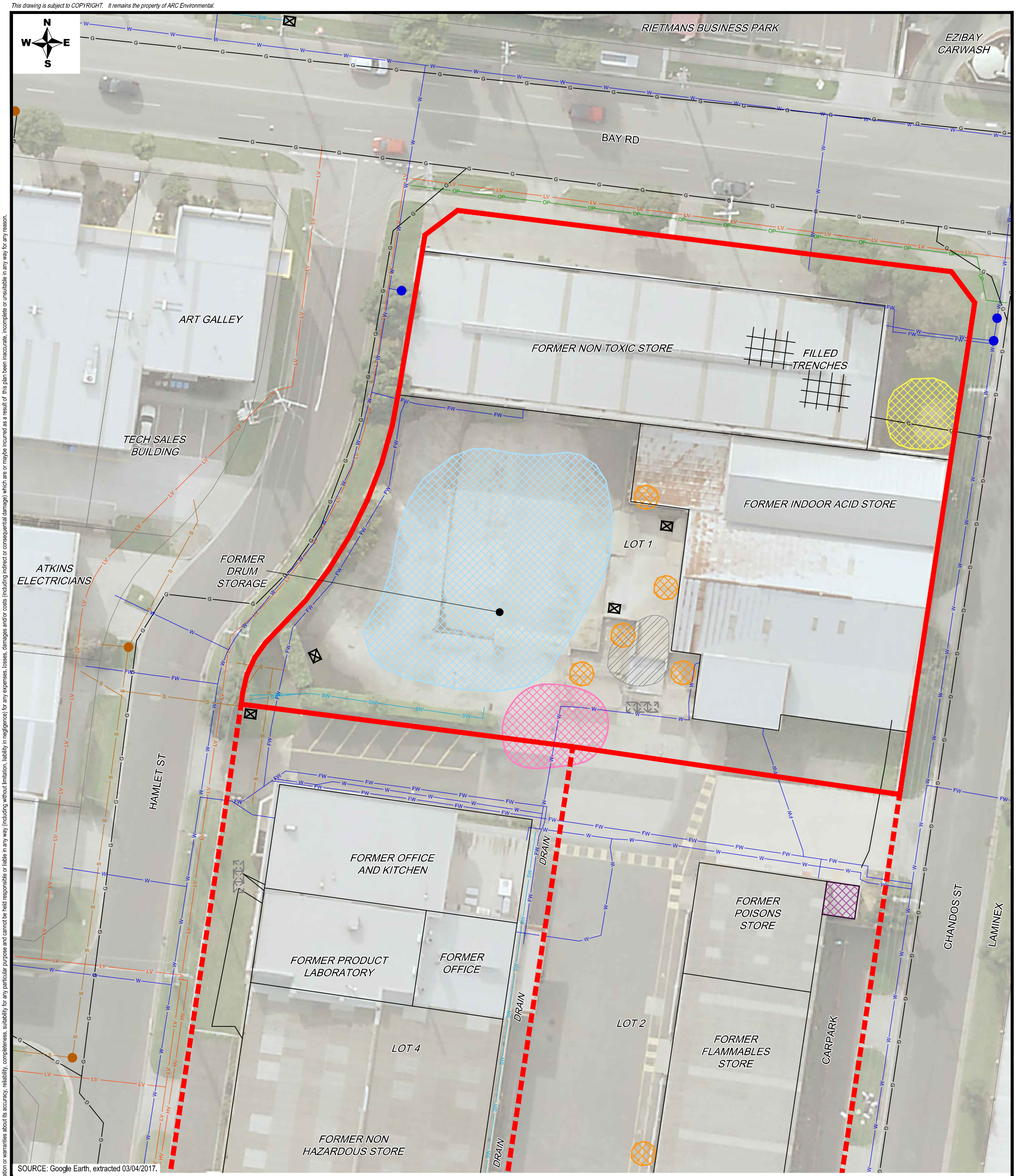
Project: GROUNDWATER QUALITY MANAGEMENT PLAN, LOT 1, 328 BAY ROAD, CHELTENHAM, VICTORIA

Title: SITE LOCATION PLAN

Drawn: BBL	Designed: SP	Date: 28/02/2019	File No.: 1707054-Lot 1-GQMP-Figure 001	Job No.: 1707054	Figure: 001	Rev. A

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SOURCE: Google Earth, extracted 03/04/2017.

LEGEND

- SITE BOUNDARY
- POSSIBLE STORAGE AREA FOR LEAKY DRUMS AND BOAT REPAIR
- POSSIBLE CHLOROFORM FLOCCULATION AREA
- YACHT WASH DOWN AREA
- FIRE WATER PUMP SHED/ FORMER SUBSTATION
- FORMER AST
- POSSIBLE FORMER LEAD ACID BATTERY DISPOSAL PIT
- FORMER TRIPLE INTERCEPTOR TRAP

SERVICES LEGEND

- ELECTRIC LOW VOLTAGE
- ELECTRIC HIGH VOLTAGE
- OPTIC FIBRE
- FIRE WATER
- GAS
- SEWER
- STORMWATER
- DRAIN
- WATER
- UNKNOWN

0 10 20m

SCALE 1:400

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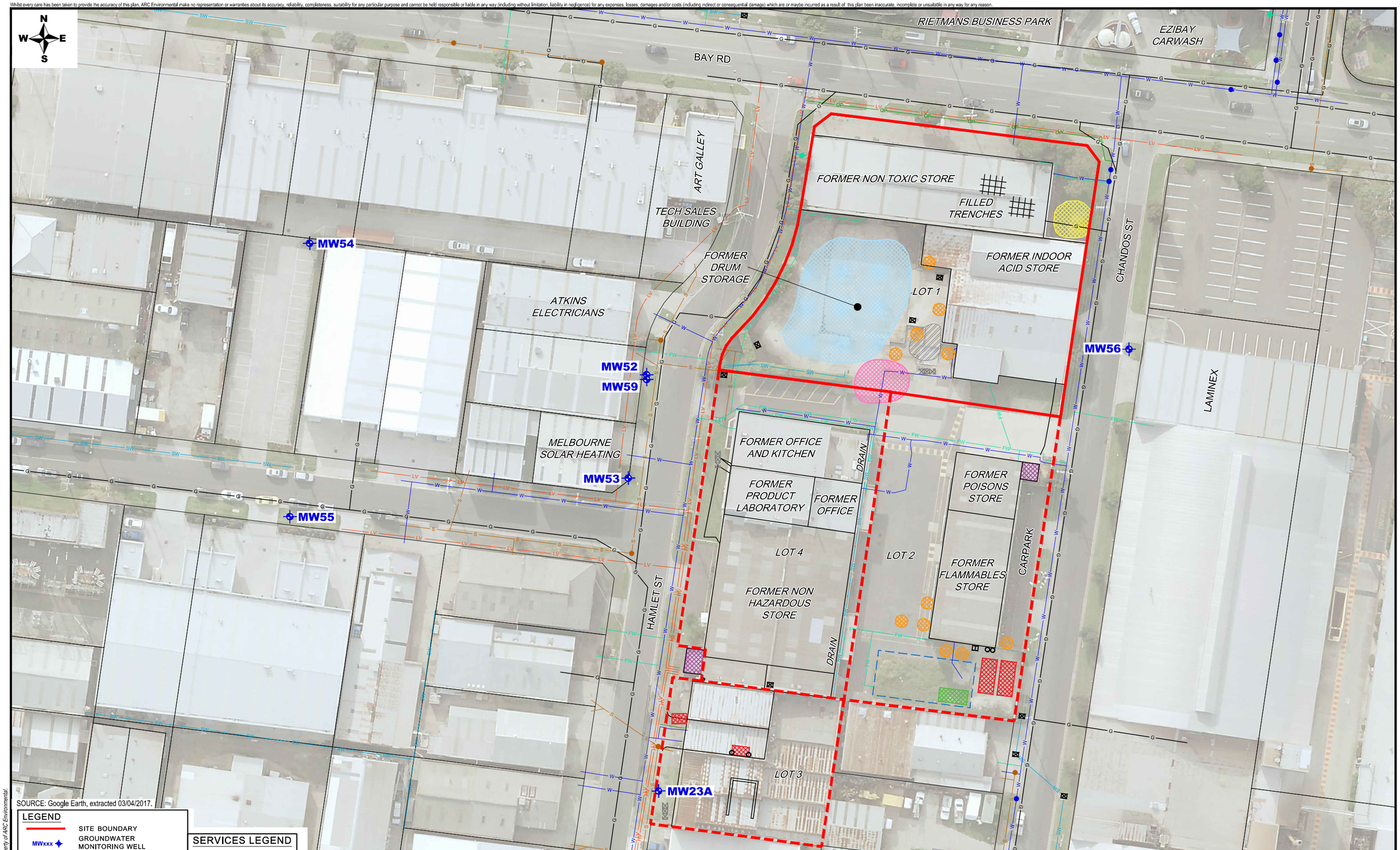
Client: CHANDOS BAY PTY LTD

Project: GROUNDWATER QUALITY MANAGEMENT PLAN, LOT 1, 328 BAY ROAD, CHELTENHAM, VICTORIA

Title: LAYOUT OF FORMER SITE

Drawn: BBL | Designed: SP | Date: 11/07/2019 | File No.: 1707054-Lot 1-GQMP-Figure 002 | Job No.: 1707054 | Figure: 002 | Rev. A

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SOURCE: Google Earth, extracted 03/04/2017.

LEGEND

- SITE BOUNDARY
- MWxxx GROUNDWATER MONITORING WELL
- POSSIBLE STORAGE AREA FOR LEAKY DRUMS AND BOAT REPAIR
- POSSIBLE CHLOROFORM FLOCCULATION AREA
- YACHT WASH DOWN AREA
- FIRE WATER PUMP SHED/ FORMER SUBSTATION
- FORMER AST
- POSSIBLE FORMER LEAD ACID BATTERY DISPOSAL PIT
- FORMER TRIPLE INTERCEPTOR TRAP

SERVICES LEGEND

- ELECTRIC LOW VOLTAGE
- ELECTRIC HIGH VOLTAGE
- OPTIC FIBRE
- FIRE WATER
- GAS
- SEWER
- STORMWATER
- DRAIN
- WATER
- UNKNOWN

0 18,75 37.5m

SCALE 1:750

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Client: CHANDOS BAY PTY LTD

Project: GROUNDWATER QUALITY MANAGEMENT PLAN, LOT 1, 328 BAY ROAD, CHELTENHAM, VICTORIA

Title: EXISTING WELL NETWORK

Drawn: BBL	Designed: SP	Date: 17/10/2019	File No.: 1707054-Lot 1-GQMP-Figure 003	Job No.: 1707054	Figure: 003	Rev. A



Legend

- Site Boundary
- VicMap Parcel Boundary
- Road
- Current Chlorinated Hydrocarbon Plume
- Proposed GQRUZ Extent

SOURCE: BLUESPHERE PROPOSED GQRUZ EXTENT 2019

0 8 16 24 32 40

N

IMAGE © NEARMAP
IMAGERY DATE 25/09/2019

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REV	DESCRIPTION	DRAWN	CHKD	APP	DATE
A	FOR REPORT	CG	JM	JM	15/10/19

N.T.S. - A3

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PROPOSED GQRUZ EXTENTS

GROUNDWATER QUALITY MANAGEMENT PLAN

LOT 1, 328 BAY ROAD, CHELTENHAM, VIC

PROJECT
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FIGURE
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