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# Remediation Action Plan

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Lots 200-212 Astra  
Aerolab, Williamtown  
NSW

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NEW24P-0090-AG  
21 May 2024

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# Document control record

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## Executive Summary

Qualtest Laboratory NSW Pty Ltd (Qualtest) were engaged by Greater Newcastle Aerotropolis Pty Ltd to prepare a Remediation Action Plan (RAP) for the site located at the Astra Aerolab, Williamtown Drive, Williamtown NSW (the site).

The site covers an area of approximately 1.5 ha and comprises part Lot 11 DP1036501 and Part Lot 1 DP1147810. It is understood that the site is proposed to be developed for a light industrial and commercial subdivision and development.

Qualtest completed a Preliminary Contamination Review (PCR) (ref: NEW24P-0090-AAv1, dated May 2024 (Qualtest, 2024a)) and a Detailed Site Investigation (DSI) for the site (ref: NEW24P-0090-AC, dated May 2024 (Qualtest, 2024b)). The DSI identified contamination in the form of Asbestos Fines (AF) in stockpile SP4 (soil sample SP4-6) located in the south-eastern portion of the site.

In order for the proposed development to proceed, the identified contamination will need to be either remediated and/or managed. This RAP outlines the remedial strategies to render the site suitable for the proposed use, from a contaminated land perspective.

The objective of the RAP is to provide guidance on the remediation and management activities to be undertaken in order to ensure the site can be made suitable for the future light industrial and commercial subdivision and development.

The proposed remediation method is removal/excavation of contaminated soils in SP4 and disposal to an appropriately licensed waste facility, followed by validation of the resulting footprint of SP4.

Implementation of the RAP by appropriately qualified remediation/earthworks contractor and environmental consultant, who would conform to the strategies and procedures outlined in this RAP, would mitigate the potential risk of environmental impacts (from contaminated soil) during remediation and bulk earthworks.

Conformance with the remediation, material tracking and validation procedures would enable a comprehensive validation assessment and Validation Report to be completed, to demonstrate that the site is suitable for the proposed development.

Based on the above, it is considered that appropriate implementation of the RAP would achieve the objective of rendering the site suitable for the proposed development.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)*, NEPC 2013, Canberra (referred to as ASC NEPM 2013).

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## 1.0 Introduction

### 1.1 General

Qualtest Laboratory NSW Pty Ltd (Qualtest) were engaged by Greater Newcastle Aerotropolis Pty Ltd to prepare a Remediation Action Plan (RAP) for the site located at the Astra Aerolab, Williamtown Drive, Williamtown NSW (the site). The location of the site is shown on Figure 1, Appendix A.

The site covers an area of approximately 1.5 ha and comprises part Lot 11 DP1036501 and Part Lot 1 DP1147810. It is understood that the site is proposed to be developed for a light industrial and commercial subdivision and development. The proposed development plan is attached in Appendix A.

Qualtest completed a Preliminary Contamination Review (PCR) (ref: NEW24P-0090-AAv1, dated May 2024 (Qualtest, 2024a)) and a Detailed Site Investigation (DSI) for the site (ref: NEW24P-0090-AC, dated May 2024 (Qualtest, 2024b)). The DSI identified contamination in the form of Asbestos Fines (AF) in stockpile SP4 (soil sample SP4-6) located in the south-eastern portion of the site.

In order for the proposed development to proceed, the identified contamination will need to be either remediated and/or managed. This RAP outlines the remedial strategies to render the site suitable for the proposed use, from a contaminated land perspective.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)*, NEPC 2013, Canberra (referred to as ASC NEPM 2013). This report comprises a RAP in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 4 Stage 3 assessment.

### 1.2 Objectives

The objective of the RAP is to provide guidance on the remediation and management activities to be undertaken in order to ensure the site can be made suitable for the future light industrial and commercial subdivision and development.

### 1.3 RAP Requirements

The NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land provides requirements that are to be considered in the preparation of RAPs. As such, this document addresses the following requirements:

- Summary of site identification, site history, site condition and surrounding environment;
- Summary of previous contamination assessments;
- The contamination requiring remediation and/or management;
- Remediation objectives;
- Remediation criteria;
- Discussion of possible remediation options;
- Rationale for selecting the preferred remedial option;
- Validation programme and Sampling, Analysis and Quality Plan (SAQP);



- Contingency plans for unexpected finds; and
- Health, Safety, and Environmental requirements.

## 1.4 Regulatory Control and Relevant Guidelines

The RAP was prepared with reference to the following guidelines, regulations and legislation:

- NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure 1999, as amended in 2013, National Environment Protection Council (ASC NEPM, 2013).
- NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land.
- NSW EPA (2022) Sampling Design Part 1 – Application, Contaminated Land Guidelines.
- NSW EPA (2014) Waste Classification Guidelines.
- WA Department of Health (2021) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.
- State Environmental Planning Policy 2021 (Resilience and Hazards), Chapter 4 (formerly SEPP 55).
- Contaminated Land Management Act, 1997.
- Protection of the Environment Operations Waste Regulation, 2014.
- Resource Recovery Orders/Exemptions under Part 9, Clause 91 to 93 of the Protection of the Environment Operations (Waste) Regulation 2014.

## 2.0 Roles and Responsibilities

Table 2.1 summarises the roles and responsibilities during remediation and validation.

**Table 2.1: Role and Responsibilities**

Role	Responsibilities
Principal / Site Owner – Greater Newcastle Aerotropolis Pty Ltd	<ul style="list-style-type: none"> <li>- To engage suitably qualified personnel/companies to carry out the works.</li> </ul>
Contractor – TBA	<ul style="list-style-type: none"> <li>- Only engaging suitably qualified and competent staff and contractors.</li> <li>- Enforcing the implementation of this plan on the site by staff, subcontractors and visitors.</li> <li>- Authorised to stop work as deemed necessary where unsafe activities are being carried out or where management plans are not being followed.</li> <li>- Overseeing the proper use and maintenance of site safety equipment, including staff Personal Protective Equipment (PPE) and first aid equipment.</li> </ul>

Role	Responsibilities
Environmental Consultant – Qualtest	<ul style="list-style-type: none"> <li>- To provide advice regarding the management of contaminated materials.</li> <li>- To carry out validation observations and sampling &amp; analysis.</li> <li>- To prepare the validation report at the completion of remediation.</li> <li>- Authorised to stop work as deemed necessary where unsafe activities are being carried out or where management plans related to contamination are not being followed.</li> </ul>
Site Workers	<ul style="list-style-type: none"> <li>- Taking reasonable care for their own safety and the safety of others.</li> <li>- Following site rules and work instructions.</li> <li>- Taking immediate action to rectify hazards that may arise during the course of the work.</li> <li>- Complying with management plans, relevant OHS legislation and industry standards.</li> <li>- Establish and maintain a positive safety climate on the project.</li> </ul>

## 3.0 Site Description

### 3.1 Site Identification

General site information is provided below in Table 3.1. The site location is shown in Figure 1, Appendix A.

**Table 3.1: Summary of Site Details**

<b>Site Address:</b>	38 Cabbage Tree Road, Williamtown NSW. Note, site is accessed off Williamtown Drive, Williamtown NSW.
<b>Approximate site area and dimensions:</b>	Approx. 1.5ha. Approx. 150m wide by 100m long at its widest and longest points.
<b>Title Identification Details:</b>	Part Lot 11 DP 1036501 and Part Lot 1 DP 1147810, within the Port Stephens Council local government area. The site within Lot 11 and Lot 1 is shown on Figure 2, Appendix A.
<b>Current Zoning</b>	B7 Business Park
<b>Current Ownership:</b>	Greater Newcastle Aerotropolis Pty Ltd
<b>Previous and Current Landuse:</b>	Former sand quarry Vacant land
<b>Proposed Landuse:</b>	Light industrial and commercial



<b>Adjoining Site Uses:</b>	Newcastle Airport and RAAF Base to the north. Rural-residential properties to the south. Bushland and former sand quarry to the west. Former sand quarry to the east.
<b>Site Coordinates for approx. centre of site:</b>	32°48'28.36" S 151°50'3.28" E

### 3.2 Topography and Drainage

Reference to Google Earth Pro (<https://www.google.com/earth/about/versions/>) indicated the elevation of the site was less than 5m AHD.

During the site walkover, the site was observed to be generally level.

Rain falling on the site would be expected to infiltrate into site soils. Excess surface water would likely flow to Dawsons Drain, located 1.1m south-west of the site. Dawsons Drain discharges to Fullerton Cove located approximately 2.4km south-west of the site.

### 3.3 Regional geology

The 1:100,000 Nelson Bay Coastal Quaternary Geology map indicates that the site is underlain by a Coastal Barrier System comprising Pleistocene dune: marine sand, indurated sand.

### 3.4 Hydrogeology

Groundwater beneath the site is anticipated to be present in an unconfined aquifer and located within 2m below ground surface (bgs).

Groundwater flow direction is anticipated to flow to the south south-west, and discharge to Dawson Drain located 1.1km south-west of the site, and Fullerton Cove located approximately 2.4km south-west of the site.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

A search of the NSW Department of Primary Industries (Office of Water) registered groundwater bores located within a 500m radius of the site was undertaken. The search revealed that there was one bore located within this radius. A copy of the search was provided in the PCR (Qualtest, 2024).

### 3.5 Acid Sulfate Soils

Reference to the Acid Sulfate Soil online database from State of NSW and Department of Planning, Industry and Environment, 2021 (<https://espade.environment.nsw.gov.au>) the site is located in an area of 'Low probability >3m below ground surface' of acid sulfate soils within an aeolian sand plain at an elevation of >4m AHD.

## 4.0 Review of Previous Assessments

### 4.1 Northrop (2024) PFAS Management Plan for Astra Aerolab Stages 2A, 2C, 4 & 5

Northrop Consulting Engineers Pty Ltd (Northrop) prepared a PFAS Management Plan for Astra Aerolab Stages 2A, 2C, 4 & 5 (ref: NL182640-16 dated 25 March 2024, Revision A) (Northrop, 2024).

The PFAS Management Plan provides procedures and management measures for handling of soil and groundwater potentially contaminated with PFAS during earthworks and construction works.

### 4.2 Qualtest (2024) Preliminary Contamination Review

Qualtest carried out a Preliminary Contamination Review (PCR) for the site (Qualtest, 2024a).

The objectives of the PCR were to:

- An assessment of the likelihood for contamination to be present on the site from past uses and activities, based on the DP (2009) PCA and review of updated information; and,
- Provide recommendations on the need for further assessment, management and/or remediation (if required).

In order to achieve the above objective, Qualtest carried out the following scope:

- Review of DP (2009) PCA;
- Review of historical aerial photographs between 2009 and 2024;
- Search of the NSW EPA's list of contaminated sites relevant to the site and nearby properties;
- Site walkover; and
- Data assessment and preparation of a Preliminary Contamination Review Report.

The site history assessment indicated the site was used for cattle grazing from circa 1900 to about 1989. The site was uncleared bushland until between 1975 and 1984, when the majority of the site was cleared of trees. Between 1984 and 1998, grass was cleared and a gravel or asphalt access track was constructed in the southern portion/edge of the site. The site remained relatively unchanged from 1998 to today.

Three Areas of Environmental Concern (AECs) were identified based on the site history and site observations. The AECs related to: 1. Use of fill material in access tracks and stockpiling of fill materials; 2. Illegal dumping of waste materials; and 3. Migration of PFAS contamination onto the site from the RAAF Base.

The Preliminary Conceptual Site Model (CSM) indicated that there was potential for soil and groundwater contamination to exist on the site and potentially complete exposure pathways could exist to site users, construction workers, and the environment.

Based on the above, it was recommended that a Detailed Site Investigation, comprising intrusive investigations, be carried out on the site. It is noted that the assessment would be limited to accessible areas of the site, and that further assessment following vegetation clearing may be required.

### 4.3 Qualtest (2024a) Detailed Site Investigation

Qualtest Laboratory NSW Pty Ltd (Qualtest) completed a Detailed Site Investigation (DSI) on the site in May 2024 (Qualtest, 2024b).

The objectives of the assessment were to:

- Assess the presence of contamination in soil and surface water (if any) on the site;
- Update the Conceptual Site Model (CSM) for the site based on the findings of the DSI; and
- Provide recommendations for further assessments, remediation and/or management, as required.

In order to achieve the above objective, Qualtest carried out the following scope:

- Excavation of 53 test pits, including 45 test pits into stockpiles, and collection of soil samples;
- Collection of 9 surface soil samples;
- Laboratory analysis of selected soil samples for identified Contaminants of Potential Concern (COPC); and,
- Data assessment and preparation of this Detailed Site Investigation Report.

The sampling locations are shown on Figures 4 and 5, Appendix A.

The sampling and analysis identified contamination in the form of Asbestos Fines (AF) in one sample in stockpile SP4. No other contamination was identified on the site, from past or current activities.

Based on the review of the data in the AECOM (2022) report, groundwater beneath the site is inferred to be contaminated with PFAS (PFOS + PFHxS) above the adopted criteria for protection of construction workers.

The Conceptual Site Model identified a complete exposure pathway for:

- Human receptors handling the soils in SP4; and,
- Human receptors (construction workers) during construction/earthworks, if excavations extended into groundwater due regional PFAS contamination of groundwater.

Based on the results of the Detailed Site Investigation, it is considered the site can be made suitable for the proposed commercial/industrial development, with the following recommendations:

- Preparation and implementation of a Remediation Action Plan (RAP) for the asbestos contamination identified in SP4;
- Preparation of a Validation Report, following remediation works;
- Implementation of the Northrop (2024) PFAS Management Plan for Astra Aerolab Stages 2A, 2C, 4 & 5 during earthworks and construction works; and,
- Preparation of an Unexpected Finds Procedure, which would be implemented during earthworks and construction works.

Provided the recommendations made within the DSI report are implemented, it was considered that the site can be made suitable, from a contamination point of view, for the proposed commercial/industrial subdivision development.

### 4.4 Conceptual Site Model

**Table 4.4 – Conceptual Site Model (Post Detailed Site Investigation)**

AEC	COPC	Likelihood of Contamination	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential Mechanisms of Exposure	Sampling Completed	Potential & Complete Exposure Pathways
1. Fill material: <ul style="list-style-type: none"> <li>Potential use of contaminated fill on access tracks.</li> <li>Potential stockpiling of contaminated fill.</li> </ul>	TRH, BTEX, PAH, Metals, Asbestos, PFAS	<ul style="list-style-type: none"> <li>Low to Medium</li> </ul>	<ul style="list-style-type: none"> <li>Import of contaminated fill.</li> <li>Leaching of fill contaminants to surface water and groundwater.</li> </ul>	<ul style="list-style-type: none"> <li>Fill soils</li> <li>Surface Soils</li> <li>Surface water</li> <li>Groundwater</li> </ul>	<ul style="list-style-type: none"> <li>Site users</li> <li>Construction workers</li> <li>Soil biota/plants and transitory wildlife</li> <li>Offsite surface water – Dawsons Drain located about 1.1km south-west of the site, and Fullerton Cove located approximately 2.4km south-west of the site</li> <li>Offsite groundwater discharge point – Fullerton Cove located approximately 2.4km south-west of the site.</li> </ul>	<ul style="list-style-type: none"> <li>Direct dermal contact with contaminated soil and/or groundwater</li> <li>Ingestion of contaminated soil and/or groundwater</li> <li>Inhalation of asbestos fibres or contaminated soil (as dust)</li> <li>Inhalation of hydrocarbon vapours</li> <li>Leaching of soil contaminants to surface water and/or groundwater</li> <li>Surface water discharge to Dawsons Drain.</li> <li>Groundwater discharge to Fullerton Cove.</li> </ul>	SS6 to SS10 (access track) SP1-1 to SP1-10 SP2-1 to SP2-4 SP3-1 SP4-1 to SP4-10 SP5-1 to SP5-10 SP6-1 to SP6-10	<ul style="list-style-type: none"> <li>Complete exposure pathway for site users and construction workers handling SP4, as AF identified above HSL in one sample.</li> <li>Incomplete exposure pathway for site users and construction workers for remainder of site, as no contamination identified.</li> <li>Incomplete exposure pathway for surface water as no contamination identified other than asbestos in SP4, and distance to Dawsons Drain (1.1km).</li> <li>Incomplete exposure pathway for site activities to have contaminated groundwater, as no contamination other than asbestos in SP4 identified. Groundwater is contaminated with PFAS, as discussed below for AEC 3.</li> </ul>
2. Waste materials: <ul style="list-style-type: none"> <li>Potential contamination from illegally dumped waste materials.</li> </ul>	TRH, BTEX, PAH, Metals, Asbestos (CoPCs dependent on waste type)	<ul style="list-style-type: none"> <li>Low to Medium</li> </ul>	<ul style="list-style-type: none"> <li>Top-down leaks/spills, flakes/fibres onto soil.</li> <li>Leaching of soil contaminants to surface water and groundwater.</li> </ul>				No waste encountered, so no sampling completed.	
3. PFAS contamination: <ul style="list-style-type: none"> <li>Potential migration of contaminated groundwater and surface water onto the site.</li> </ul>	PFAS	<ul style="list-style-type: none"> <li>Med to High</li> </ul>	<ul style="list-style-type: none"> <li>Migration of contaminated groundwater.</li> <li>Migration of contaminated surface water across site, contaminating surface soils.</li> </ul>	<ul style="list-style-type: none"> <li>Soil</li> <li>Surface water</li> <li>Groundwater</li> </ul>	<ul style="list-style-type: none"> <li>Site users</li> <li>Construction workers</li> </ul>	<ul style="list-style-type: none"> <li>Direct dermal contact with contaminated soil or groundwater</li> <li>Ingestion of contaminated soil or groundwater</li> </ul>	TP01, TP02, TP04, TP05 SS1 to SS5	<ul style="list-style-type: none"> <li>Potentially complete exposure pathway for future construction and/or maintenance workers, if excavations extend to the groundwater table.</li> <li>Incomplete exposure pathway for site visitors and site users, as they are unlikely to come into contact with groundwater, and no soil PFAS contamination identified.</li> <li>PFAS in the region is managed under the RAAF Base Williamtown, PFAS Management Area Plan.</li> </ul>

## 4.5 Contamination Requiring Remediation

Based on the results of the PCR and DSI completed for the site, the following contamination requires remediation.

**Table 4.5 – Contamination Requiring Remediation**

Location	Contamination	Area/Volume
Stockpile 4 (SP4)- Located in the south-eastern portion of the site.	AF above HSL in sample location SP4-6.	~ 250m <sup>3</sup> to 300m <sup>3</sup>

It is noted that the estimated volumes could vary by  $\pm 50\%$ .

The location of the stockpile requiring remediation is shown on Figures 6 and 7, Appendix A.

## 5.0 Remediation Program

The remediation goal for the site, with respect to contamination, is to remediate the site to a condition such that it can be made suitable for the proposed light industrial and commercial subdivision.

### 5.1 Remediation Hierarchy

The NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 1999) provides a preferred hierarchy of options for site clean-up and/or management which is outlined as followed:

- If practicable, on-site treatment for the contamination so that it is destroyed and the concentrations are reduced below the adopted site clean-up criteria; or
- Offsite treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level.

If the above is not practicable:

- Consolidation and isolation of the soil on site by containment within a properly designed barrier; or
- Removal of contaminated material to an approved facility followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicated remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

### 5.2 Remediation Options

Options for the remedial strategies for the contamination that requires remediation (see Table 4.3) are outlined in Table 5.2, along with the advantages and disadvantages of each remedial option. Note, options that are not suitable/appropriate for the contamination type have not been included.

**Table 5.2 – Remediation Options**

Contamination/Issue	Remediation Options	Advantages	Disadvantages
Contaminated/impacted stockpile 4 <ul style="list-style-type: none"> <li>AF/FA above HSL</li> </ul>	Segregate area of known asbestos contamination, and test remainder of stockpile for suitability to remain on site. The portion(s) with asbestos would be subject to one of the remediation options below.	Potentially reduced volume of soil requiring remediation.	May not result in reduced volume of soil requiring remediation.
	Excavate and dispose to landfill	No ongoing management of impacted soil (i.e. no need for long-term EMP).  Proven remediation method in NSW.  Typically more cost effective for small volumes of material.  Often a community expectation that asbestos is removed from site.	Generally, not in line with ESD principles.  Landfill disposal fees can be excessive when volumes are large.

Contamination/Issue	Remediation Options	Advantages	Disadvantages
<p>Contaminated/impacted stockpile 4</p> <p>AF/FA above HSL</p>	<p>Cap and contain on site</p>	<p>Generally, more in line with ESD principles than removing materials to landfill.</p> <p>Lower cost than disposal to landfill.</p>	<p>Generally not considered suitable for residential land use.</p> <p>Would require excavation of a containment cell to place contaminated material in.</p> <p>On-going management of impacted soil (i.e. long-term EMP).</p> <p>The location and extent of contamination, and associated EMP, would require notification on title and Section 10.7 certificate.</p> <p>Council approval required.</p>



Contamination/Issue	Remediation Options	Advantages	Disadvantages
<p>Contaminated/impacted stockpile 4</p> <p>AF/FA above HSL</p>	<p>Chemical immobilisation (i.e. mix soils with concrete)</p>	<p>Can be used for asbestos.</p> <p>Can be used to reduce the management requirements of capped contamination (i.e. no long term EMP required).</p> <p>In line with ESD principles.</p>	<p>Not suitable for residential landuse or for areas proposed for landscaping or gardens, as soils unlikely to support plant life following immobilisation.</p> <p>Would require excavation of a containment cell to place contaminated material in.</p> <p>Immobilised material would likely need to be placed away from surface water and groundwater, to prevent potential aggressivity and/or erosion impacts.</p> <p>Effectiveness can be hindered by moisture content, clay content, and particle sizes.</p> <p>The location and extent of immobilised contamination would require notification on title and Section 10.7 certificate.</p> <p>Council approval required.</p>

*Note: ESD = Environmentally Sustainable Development, EMP = Environmental Management Plan*

### 5.3 Preferred Remedial Strategy

Following discussion with the client and based on the results of the contamination assessment, the likely volume of contaminated soils, and estimated costs of remediation options, the preferred remedial strategy for the site is:

- Classification of the soil in the proposed excavation area in accordance with the NSW EPA (2014) Waste Classification Guidelines;
- Excavation of the contaminated stockpile soils;
- Disposal of the soil to a licensed waste facility; and,
- Validation of the surface soils below the excavated stockpiled soils.

### 5.4 Contingency Remedial Strategies

Should the above remediation strategy not be possible/practical for parts of the site, the following contingency remedial options would be considered:

- Capping of contaminated soil on the site.

In the event the contingency option (capping) is undertaken, it is anticipated to comprise:

- Placing contaminated material away from proposed underground services or infrastructure where future construction or maintenance works may be required;
- Placement of a brightly coloured marker layer, such as orange geo-fabric. The marker layer will act as a “marker” for the top of the contamination, so that future workers, if required to breach the cap, would visually be able to see they are about to encounter the contaminated material;
- Placement of “clean” imported material suitable for the use (i.e. roadbase for a carpark, select fill for concrete slab etc), at the thickness required to meet the design for the pavement or concrete slab;
- Construction of the concrete slab and foundations for the proposed building(s) and/or car parks. Alternatively, for car park areas, an asphalt pavement could be used in place of concrete. Minimum thicknesses for caps would be: Concrete slab - 150mm, and, Asphalt pavement – 50mm asphalt and 300mm road base;
- Survey of the contaminated material and capping layers; and
- Preparation and implementation of a Long Term Environmental Management Plan (LTEMP).

### 5.5 Proposed Remediation Plan

#### Step 1 – Preparation of Unexpected Finds Procedure and Asbestos Management Plan

As discussed in Section 4.0, above, AF were previously identified in stockpiled soils in stockpile 4, located in the south-eastern portion of the site.

As asbestos has been identified, an Asbestos Management & Removal Plan (AMRP) will be required. The ARMP will be prepared by the remediation contractor prior to works commencing. Qualtest will review the ARMP prior to implementation.

There is a low potential for unexpected finds to be encountered during earthworks on the site. Unexpected finds could include ACM (in areas not previously identified), stained and/or odorous soils, illegally dumped waste materials, or potentially contaminated material/fill (based on visual and/or olfactory assessment).

An Unexpected Finds Procedure has been developed for implementation during remediation and earthworks. The Unexpected Finds Procedure outlines procedures to follow in the event ACM, stained/odorous soils, illegally dumped waste, or potentially contaminated material/fill is identified on the site during remediation and earthworks. The Unexpected Finds Procedure is attached in Appendix B.

## **Step 2 – Segregation of Stockpile 4**

The stockpile would be segregated into two portions:

- Portion 1 – containing soil known to be contaminated with AF; and,
- Portion 2 – containing soil to be re-assessed for asbestos.

Portion 1 will be remediated as per Step 3 below.

Portion 2 would be re-assessed using the following procedures:

- Collection of samples from the stockpile at a rate of one sample per 25m<sup>3</sup>. Samples would be collected with the aid of an excavator to obtain representative samples;
- For each sample, onsite assessment for ACM using the gravimetric method – collection of a 10L sample, sieving the sample through a 7mm sieve, and weighting of any potential ACM fragments. A 500ml zip-lock bag sample would also be collected for laboratory analysis;
- Despatch of samples to a NATA accredited laboratory, and analysis of the samples for asbestos %w/w in accordance with ASC NEPM (2013); and
- Assessment of field and laboratory results to assess whether Portion 2 (or part of Portion 2) requires disposal off-site, or is suitable to be re-used on site.

The data from this assessment would also be used to assess the volume of soil to be disposed off-site.

## **Step 3 – Excavation and Disposal of Contaminated Soils in Stockpile 4**

The earth works will be carried out by a suitably qualified, licensed and experienced earth works contractor. Based on the type of asbestos identified to date (AF), a Class A licensed asbestos removalist is required.

The excavation and disposal of the asbestos contaminated/impacted stockpiled soils in SP4 (sample location SP4-6), in the south-eastern portion of the site is anticipated to comprise:

- Classification of the material in accordance with NSW EPA (2014) Waste Classification Guidelines. See below for waste classification procedure;
- Excavate the material stockpiled in SP4 (sample location SP4-6) located in the south-eastern portion of the site (see Figure 6, Appendix A). The portion of the stockpile requiring excavation/disposal will be updated based on results of Step 2, above;
- Disposal of the material to an appropriately licensed waste facility, and dockets retained for inclusion in the validation report;
- Completion of an asbestos clearance/validation assessment, following removal. See section 6.7.1 below for further details.

Note, the material could be waste classified using data from the DSI (Qualtest, 2024b).

## **Step 4 – Importation of Fill Material (if required)**

If material is required to be imported to the site, it will comprise:

- Material that meets the definition of VENM as defined in NSW EPA (2014) Waste Classification Guidelines; or,
- Materials that meet an appropriate Resource Recovery Order/Exemption under Part 9, Clause 93 of the POEO (Waste) Regulation 2014 (i.e. Excavated Natural Material).

If VENM is imported and sourced from a local quarry, then a certificate from the source will be requested confirming the type of material. If the proposed material is VENM sourced from local earthworks (or similar), then Qualtest will carry out an assessment of the source site, with reference to the VENM Checklist in Appendix C, to ensure the material is VENM.

If the proposed fill material has a Resource Recovery exemption, then the material will need to have been assessed in accordance with the relevant Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014. The Resource Recovery material will also need to be suitable for the proposed use.

Relevant information, required to be recorded by the generator under the Resource Recovery Order, will be reviewed by Qualtest with reference to the ENM Checklist in Appendix C, prior to importation of the material to site. If the material has not been assessed by others, then Qualtest may, if directed by the site owner/manager, carry out an assessment of the material in accordance with the Resource Recovery Order prior to importation of the material to site.

During remediation works, observations will be made by Qualtest of the material as it is delivered to site. On at least the first occasion, Qualtest will check that the material is consistent with the source and that there is no apparent potential contamination such as chemical staining, odours or anthropogenic materials.

The earthworks contractor will be responsible for tracking of materials that are imported to the site. Copies of dockets pertaining to imported soils will be retained by the contractor to confirm the source, type and quantities of materials. A copy of these dockets will be provided to Qualtest for review.

## 6.0 Validation Program and Reporting

In order to evaluate the data required to assess a site, ASC NEPM (2013) recommends the use of the seven-step DQO process. The seven-step DQO process is an iterative planning approach that is used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of a site. The NSW EPA (2022) Sampling Design Part 1 Appendix A has updated the seven step process for use on contaminated sites within NSW.

The seven steps are:

- Step 1: State the Problem;
- Step 2: Identify the decision/goal of the study;
- Step 3: Identify the information inputs;
- Step 4: Define the boundaries of the study;
- Step 5: Develop the analytical approach;
- Step 6: Specify performance and acceptance criteria; and,
- Step 7: Develop the plan for obtaining data.

This DQO process has been adopted for the validation programme.

## 6.1 Step 1 – State the Problem

The site contains a stockpile (SP4) contaminated with AF that requires remediation through offsite disposal followed by validation. The following issues are required to be addressed as part of the remediation:

- The contaminated soils in SP4 in the south-eastern portion of the site, needs to be disposed to an appropriately licensed waste facility; and,
- The resulting excavation from the removal of the contaminated stockpile soils needs to be validated.

## 6.2 Step 2 – Identify the Decision

The decision to be made based on the results of the validation assessment:

- Is the site suitable for the proposed light industrial and commercial subdivision and development from a contamination perspective?

To achieve this, the validation program needs to demonstrate that:

- Contaminated soils have been disposed to appropriately licensed waste facilities;
- The excavation resulting from removal of the contaminated stockpile soils is suitable for commercial/industrial land use; and,
- Any imported material is appropriate for the use (i.e. VENM, or appropriate Resource Recovery Exemption material).

## 6.3 Step 3 – Identify the Information Inputs

Inputs into the decision are:

- Have validation samples been collected in the various materials and/or places as required?
- Have validation samples been collected at the required frequencies, and adequately represent the condition of the materials and/or places?
- Is the data set adequate to perform statistical analysis (i.e. calculate 95% UCL);
- Have validation samples been analysed for the COPCs identified?
- Have concentrations exceeding the adopted criteria been reported in the validation samples?
- If concentrations exceeding adopted criteria have been reported, have these areas been further remediated or otherwise managed?
- Is imported material classified as VENM or appropriate Resource Recovery Exempt material;
- Have materials been disposed to appropriately licensed waste facilities?

The informational inputs into the decision are:

- Field observations;
- Validation laboratory results;
- QA/QC documentation and data;
- Preparation of an asbestos clearance by a Licensed Asbestos Assessor following excavation and disposal
- Material tracking information:

- Records for the excavation, and disposal of material;
- Waste dockets for soil or material disposed offsite;
- Certificates for material imported to site;
- Records of volumes exported and imported;
- Adopted remediation criteria, and relevant NSW EPA endorsed guidelines.

#### **6.4 Step 4 – Define the Boundaries of the Study**

The study boundary is defined laterally as the site boundary as part Lot 11 DP1036501 and Part Lot 1 DP1147810 within the Port Stephens local government area. The site is located at 38 Cabbage Tree Road, Williamtown NSW and covers an area of approximately 1.5ha (refer to Figure 1, Appendix A). Vertically, the study boundary will be defined by the depth of the stockpiled soils.

The temporal boundary will be the date(s) of the remediation and validation activities.

The site boundaries and the remediation area are shown on Figure 1 and Figure 7, Appendix A.

#### **6.5 Step 5 – Develop the Analytical Approach**

The analysis proposed for validation samples is outlined in Step 7 below.

## 6.6 Step 6 – Specify Performance or Acceptance Criteria

### Validation Criteria – Asbestos Materials in Soil

The assessment of known and suspected asbestos contamination in soil is based on:

- *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013, Canberra; and*
- *WA DoH 2009 Guidelines for the assessment and management of asbestos contaminated sites in Western Australia, WA Department of Health and Department of Environment and Conservation.*
- *WA DoH 2021 Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, WA Department of Health and Department of Environment and Conservation.*

Schedule B1, Section 4 NEPM (2013) provides guidance on the assessment of both friable and non-friable forms of asbestos in soil. This guidance is based on the WA DoH (2009) Guidelines that presented risk-based screening levels for asbestos in soil under various land use scenarios.

For the purpose of assessing asbestos impacts in soil, three groups are recognised:

- *Asbestos Containing Material (ACM)* – which is in sound condition although possibly broken or fragmented and the asbestos is bound in a matrix. This is restricted to material that cannot pass through a 7mm x 7mm sieve;
- *Fibrous asbestos (FA)* – friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products;
- *Asbestos fines (AF)* – includes free fibres of asbestos, small fibre bundles and also ACM fragments that pass through a 7mm x 7mm sieve.

The adopted health screening levels for asbestos in soil are shown in Table 6.6.

### Adopted Validation Criteria

The adopted criteria are shown in Table 6.6 below.

**Table 6.6 – Adopted Validation Criteria**

Contaminant	HIL / HSL <sup>A</sup> D
Bonded ACM %	0.05
FA and AF %	0.001
All forms of asbestos	No visible evidence for surface soil (top 10cm)

### Waste Classification Criteria

Soils or materials proposed to be disposed off-site would be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines. The guidelines provide criteria for general solid waste, and restricted solid waste. Where concentrations exceed restricted solid waste, the material is classified as hazardous waste. Material containing asbestos (in any form or quantity) are classified as asbestos waste.



## 6.7 Step 7 – Develop the Plan for Obtaining Data

Validation of the site will comprise:

- Tracking of materials that are disposed offsite.
- Asbestos clearance/validation of the excavation resulting from removal of the contaminated stockpile SP4 (see Figure 6 and 7, Appendix A) to assess that the area is suitable for commercial/industrial land use; and,
- Certification that imported materials are VENM or appropriate Resource Recovery Exempt materials; and,

The validation sampling process is described in the sections below.

### 6.7.1 Validation Sampling

Validation soil sampling will be completed in accordance with the following guidelines:

- Australian Standard AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds;
- ASC NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure;
- The NSW EPA (2022) Sampling Design Part 1 – Application, Contaminated Land Guidelines; and,
- WA DoH (2021) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, WA Department of Health and Department of Environment and Conservation.

### Excavation from Removal of Contaminated Surface Soils

In order to validate the footprint of SP4 following removal, the following works will be carried out:

- Observations of the site surface in the footprint of SP4 to check for potential ACM;
- Validation soil samples will be collected from the stockpile footprint at the following frequencies:
  - One sample per 25m<sup>2</sup> on the excavation bases; or,
  - Where excavations are larger than 200m<sup>2</sup>, samples will be collected from the base at the sampling density outlined in Table 2 of NSW EPA (2022) Sampling Design Part 1 – Application, Contaminated Land Guidelines (minimum of 8 samples).
- The visual observations and validation sampling will be carried out by a “competent person” as per the definition in ASC NEPM (2013).
- As friable asbestos/ asbestos fines have been identified in SP4, a clearance will also be required by a Licensed Asbestos Assessor.

### Validation Sampling Methodology

The following steps will be undertaken in order to obtain representative validation samples for laboratory analysis:

- Samples will be collected using hand tools (stainless steel shovels or trowels), or directly from the excavator bucket.

- Re-useable sampling equipment would be decontaminated between sampling locations using a phosphate free detergent and potable water.
- Samples will be placed into appropriate laboratory-supplied containers, 500ml zip-lock bags for asbestos analysis.
- Hand tools used during sample collection will be decontaminated between samples by rinsing with phosphate-free detergent and potable water.
- A clean pair of disposable nitrile gloves will be worn when handling samples.
- Samples will be placed into secure containers after collection.
- Samples will be submitted to a NATA-accredited laboratory under chain of custody conditions.

### **Quality Assurance / Quality Control**

Works will be carried out by a suitably trained environmental scientist, in accordance with Qualtest Standard Operating Procedures (SOPs).

Due to the nature of the contamination (ACM contamination) no field duplicate, rinsate sample or trip spike/trip blanks are proposed.

#### **6.7.2 Material Tracking**

Material tracking will be undertaken during remediation of the contaminated surface soils to demonstrate the appropriate disposal of materials. The tracking will include the following information:

- Date and time;
- Volume of material; and
- Final destination (i.e. disposal offsite (including location)).

### **6.8 Validation Reporting**

A validation report will be prepared, following completion of remediation works, and will include:

- Description of remediation works completed.
- Unexpected Finds identified during remediation and/or bulk earthworks (if any), and how these were managed/remediated.
- Material tracking documentation, including waste dockets, and tracking of materials.
- Results of validation samples, compared to relevant criteria.
- A statement as to whether the site is suitable for the proposed development, from a contamination perspective.

The Validation Report will be prepared by an experienced contaminated land consultant, in accordance with relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land.

## **7.0 Site Management Plan**

The management strategies for environmental issues that may arise during site works are discussed in the sections below. These strategies are considered a minimum requirement to be followed by the remediation contractor before and during remediation activities. It is

envisaged that the remediation contractor will develop site specific environmental work plans for soil excavation and placement.

## 7.1 Asbestos

As discussed in Section 3.0 above, AF has been identified in SP4.

As AF has been identified, an Asbestos Management & Removal Plan (AMRP) will be required. The ARMP will be prepared by the remediation contractor prior to works commencing. Qualtest will review the ARMP prior to implementation. The AMRP will need to be implemented during excavation and loading of materials that include AF.

## 7.2 Air Emissions and Odours

AF contaminated soils have been identified. Air monitoring is required during handling of AF contaminated material. The air monitoring requirements will be outlined in the ARMP to be prepared by the remediation contractor.

The Contractor will properly maintain and operate machinery to reduce engine emissions and exhaust.

No volatile contamination, likely to generate odours, has been identified on the site. If volatile contamination is encountered as an unexpected find (considered unlikely to occur), then the following would be carried out:

Qualtest would monitor the air quality using a PID and olfactory observations, in the vicinity of the volatile contamination during handling of the material, within worker's breathing zones, and down-wind at the site boundary. If PID readings within the site exceed 10ppm then site personnel should wear half face respirators with organic vapour cartridges. If the PID readings within the site exceed 50ppm the works should temporarily cease and workers should move upwind of the excavation until the PID readings decrease. If PID readings above 50ppm persist then odour/vapour control measures should be implemented.

If PID reading at the site boundary exceed 10ppm or persistent odours are observed, then works should cease and odour/vapour control measures should be implemented.

Odour control measures could include spraying of a surfactant such as Biosolve or covering of the excavation and/or contaminated material.

## 7.3 Dust

The remediation works will involve excavation and loading of soil materials, and general vehicular movements across the site. As such, dust generation is considered a potential environmental impact to the surrounding environment and the public.

The following management measures should be implemented to prevent dust impacts:

- A communications and complaints register should be kept on site to ensure that concerns of local residents and workers are recorded and addressed;
- If dust migration from excavation areas is considered excessive due to high winds, the works should be delayed or limited during these periods;
- Trucks removing material from the site should have loads covered;
- Vehicular movements entering and exiting the site should be kept to a minimum;
- Machinery should be floated onto and off the site
- Machinery and vehicle tyre should be washed down prior to leaving the site; and

- Works should be limited during times of high winds.

## 7.4 Noise controls

Noise will be generated during site works, and is considered an important environmental issue. The noise that will be generated is anticipated to be mainly derived from excavation activities. It is anticipated that the level of noise generated will not exceed that of a typical construction site.

Noise limitations imposed by Port Stephens Council are to be adhered to. This may include restrictions on working days and hours, and acceptable noise levels.

## 7.5 Stormwater and Soil Management

Adequate storm water run-off, run-on and sediment control measures will be put in place for the works.

Where temporary stockpiling of material is required, the stockpiles will need to be managed in a way to prevent movement of material beyond the site boundaries. The following recommendations provide guidance on managing stockpiled material:

- Access to the stockpiled material should be limited, keeping the stockpile within site fences;
- Stockpiles should be placed on level ground or ground with slopes of  $<5^\circ$  from the horizontal;
- Placed at least 40m away from creeks;
- Placed away from drainage lines, gutters, stormwater pits or inlets; and,
- Adequate straw bales and/or silt fences should be placed around the perimeter of the stockpile area to filter runoff from the stockpiles and prevent overland storm water flow affecting the base of the stockpile; and,
- Stockpiles should be covered to prevent dust migration, and infiltration of rainwater leading to sediment run-off.

## 7.6 Traffic

Traffic may be a concern to local residents during export and import of material on and off site.

For the remediation component, based on the volume of soil requiring disposal (250 to 300m<sup>3</sup>), and the site is located within Newcastle Airport grounds off a main road, traffic disruptions are expected to be minor if any.

## 7.7 Working hours

Working hours are to be consistent with Port Stephens Council requirements.

## 7.8 Access Restrictions

As the site will be classified as a construction area, it is necessary to restrict access solely to authorised staff and contractors who have appropriate levels of personal protective equipment. Site fencing should be maintained, and unauthorised personnel are to be kept outside.

A sign displaying the contact details of the remediation/civil contractor and site manager will be displayed during the remediation works.

In addition, the ARMP will outline site access restrictions during removal of asbestos contaminated soils.

## 8.0 Occupational Health and Safety

Prior to the commencement of site works, the remediation/civil contractor should prepare Safe Work Method Statements (SWMS), or equivalent, for their activities. The SWMS should contain the following information:

- The steps of the activity to be performed;
- Hazards and perceived risks for each step of the activity;
- Control measures (including PPE) to be adopted to eliminate or minimise the hazards. The minimum PPE requirements for contamination would be:
  - P2 rated face mask for asbestos. P3 rated dust mask and Tyvek suit will be required around areas identified as containing friable asbestos;
  - Nitrile gloves while handling contaminated soils;
  - Long sleeves and long pants;
  - Other requirements for construction sites (i.e. hard hats, safety glasses, steel capped boots, high-vis clothing, as required);
- The persons responsible for implementing control measures;
- Emergency assembly areas;
- Emergency contact numbers;
- Site security procedures; and,
- First aid wardens on the site.

In addition, Qualtest will prepare SWMS for the validation programme. The SWMS will include the following information:

- Likely hazards and control measures;
- Emergency contact numbers;
- Procedures for the safe handling of chemicals and contaminated soil.

The SWMS will be reviewed when new tasks are undertaken. The SWMS will be updated as required to cover the tasks undertaken.

## 9.0 Licenses and Approvals

In accordance with State Environmental Planning Policy (Resilience and Hazards), Chapter 4, the works are considered to comprise Category 2 remediation works, therefore, Development Consent is not required for the remediation works. Development Consent is required from Port Stephens Council for the proposed development (subdivision), and it is anticipated that the remediation works would be included in that Development Consent.

Removal of asbestos containing material would require notification to SafeWork NSW. At least 7 days should be allowed for the notification. A Class A licensed asbestos removalist would be required to undertake removal. Currently, sample location SP4-6 in stockpile SP4 has been identified as having asbestos fines/ friable asbestos in soils.

The volume of material being removed from the site should be documented by the contractor, supported by material tracking sheets and waste disposal dockets.

## 10.0 Contact Details and Community Relations

### 10.1. Contact details

Contact details for the principal contractor and subcontractor are provided in Table 10.1.

**Table 10.1 – Contact details**

Contact Name	Contact Number
Principal/Site Owner – Greater Newcastle Aerotropolis Pty Ltd	(02) 4928 9800
Contractor – TBA	TBA
Environmental Consultant – Qualtest Emma Coleman (Project Manager)	(02) 4968 4468

### 10.2. Community Relations

The community will be aware of the project through exhibition of the DA, and community consultation will occur through the DA process.

Adjacent site owners and occupiers will be notified of the proposed remediation works at least 30 days before the works commence. It is noted that the adjacent land is owned by GNAPL, and therefore notification is unlikely to be required.

The procedures outlined in the RAP should ensure that remediation works on the site have minimal impact on the surrounding community. Enquiries regarding environmental and communication issues from members of the local community and neighbouring properties should be documented and referred to the client.

## 11.0 Contingency Plan / Unexpected Finds

A contingency plan is provided below in Table 11.1. In addition, an Unexpected Finds Procedure is presented in Appendix B for the management of unexpected finds.

**Table 11.1 – Contingency Plan and Unexpected Finds**

Unexpected Conditions	Proposed Action
The extent of contamination is greater than estimated, and disposal fees are prohibitive.	Further assessment to potentially reduce volume of material requiring offsite disposal.
During the remediation work, material is encountered which appears to be potentially contaminated and appears different from fill or soils described in previous assessment reports.	Implement Unexpected Finds Procedure in Appendix B.  1. Suspicious material/odorous soils which has already been excavated should be banded, placed in a skip bin and/or stockpiled on low-density polyethylene plastic sheeting and protected from erosion and seepage.

Unexpected Conditions	Proposed Action
	<ol style="list-style-type: none"> <li>Excavation works at that part of the site where the suspicious material (soil) was encountered should cease until observations are carried out by Qualtest.</li> <li>Based on the observations, Qualtest will provide interim advice on health and safety of remedial works, soil storage and soil disposal to allow remediation to proceed if possible.</li> <li>Based on sampling and analysis of the material, Qualtest will provide advice as to remedial requirements for the material.</li> <li>Suspicious material/soils may include fibrous, oily or odours materials/soil, drums, metal or plastic chemical containers or brightly coloured material.</li> </ol>
Validation samples exceed the adopted validation criteria.	<p>Continue excavations and re-sample.</p> <p>Assess other remediation options if further excavation is not practical.</p>
Complaints from residents regarding noise pollution, dust or odours.	<p>Increased monitoring, revision of management plans.</p> <p>Investigate and manage source of complaint.</p>

## 12.0 Conclusions

Implementation of the RAP by appropriately qualified remediation/earthworks contractor and environmental consultant, who would conform to the strategies and procedures outlined in this RAP, would mitigate the potential risk of environmental impacts (from contaminated soil) during remediation and bulk earthworks.

Conformance with the remediation, material tracking and validation procedures would enable an appropriate validation assessment and Validation Report to be completed, to demonstrate that the site is suitable for the proposed development.

Based on the above, it is considered that appropriate implementation of the RAP would achieve the objective of rendering the site suitable for the proposed development.

## 13.0 References

**NEPC (2013)** *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended in 2013, National Environment Protection Council (ASC NEPM, 2013).

**NSW EPA (2020)** *Guidelines for Consultants Reporting on Contaminated Land*.

**NSW EPA (2022)** *Sampling Design Part 1 – Application, Contaminated Land Guidelines*.

**NSW EPA (2014)** *Waste Classification Guidelines*.

**WA Department of Health (2021)** *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*



**Douglas Partners Pty Ltd (DP) (2009)** Stage 1 Preliminary Contamination Assessment, ref: 39728.03 dated 16 April 2009

**Qualtest (2024a)** Preliminary Contamination Review (PCR), ref: NEW24P-0090-AAv1 dated 14 May 2024

**Qualtest (2024b)** Detailed Site Investigation (DS), ref: NEW24P-0090-AC dated May 2024

## **APPENDIX A:**

### **Figures**



Image obtained from Nearmaps, image dated 25 September 2023



Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 1
Project:	REMEDIATION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	SITE LOCATION PLAN	Date:	14/05/2024









Image obtained from Nearmaps, image dated 12 October 2023



Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 3
Project:	REMEDIATION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	SITE FEATURES PLAN	Date:	14/05/2024



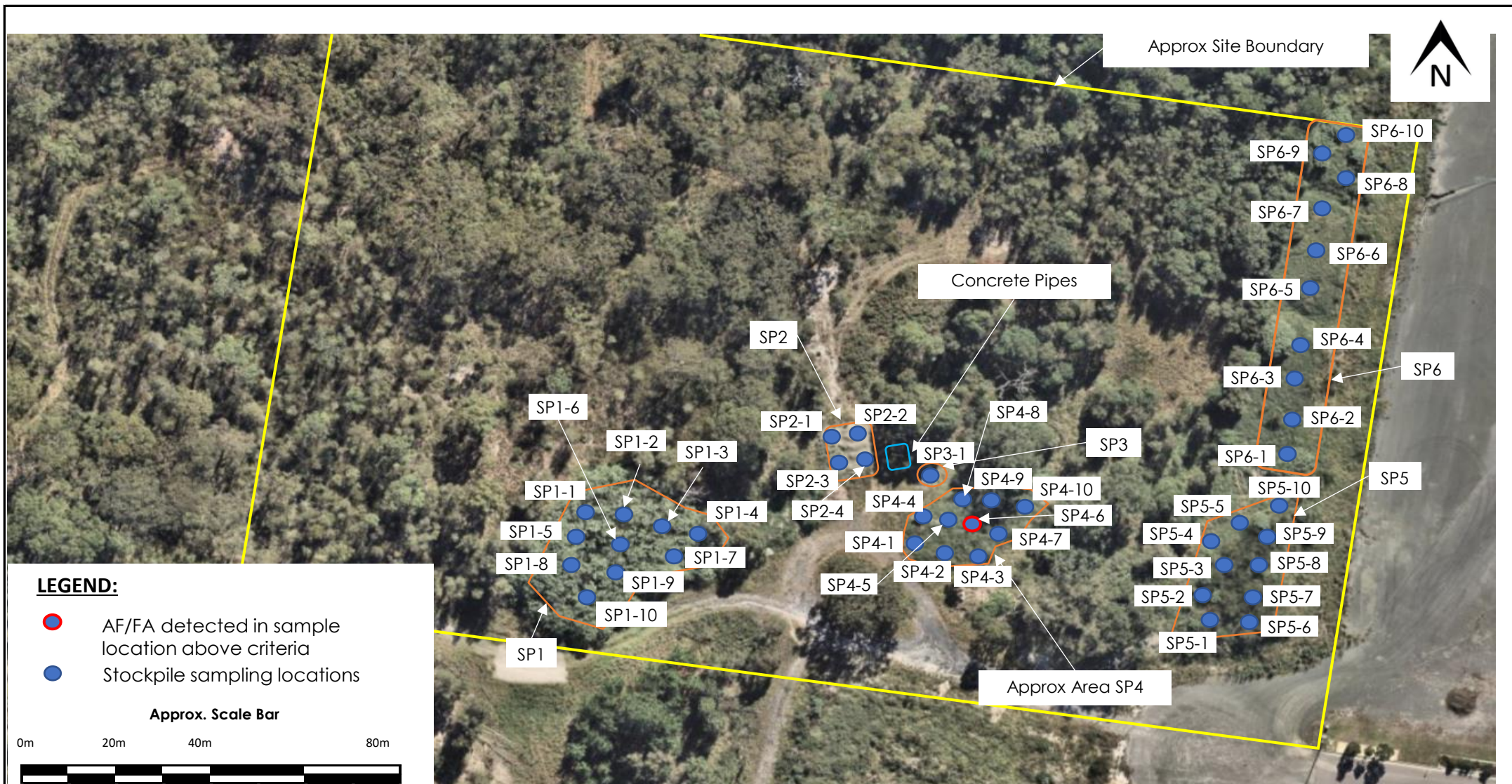


Image obtained from Nearmaps, image dated 12 October 2023

Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 4
Project:	REMEDIATION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	SAMPLE LOCATION PLAN - STOCKPILES	Date:	29/04/2024





Image obtained from Nearmaps, image dated 12 October 2023

Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 5
Project:	REMEDIAION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	SAMPLE LOCATION PLAN - REMAINDER OF SITE	Date:	16/05/2024





**LEGEND:**

Location	Depth
Contaminant	Concentration Exceeds HSL

● Stockpile sampling locations

Approx. Scale Bar

0m 20m 40m 80m



Image obtained from Nearmaps, image dated 12 October 2023



Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 6
Project:	REMEDIATION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	IDENTIFIED CONTAMINATION	Date:	17/05/2024





Image obtained from Nearmaps, image dated 12 October 2023



Client:	GREATER NEWCASTLE AEROTROPOLIS PTY LTD	Drawing No:	FIGURE 7
Project:	REMEDATION ACTION PLAN	Project No:	NEW24P-0090-AG
Location:	PROPOSED LOT 200-212, ASTRA AEROLAB, WILLIAMTOWN NSW	Scale:	N.T.S.
Title:	EXPECTED REMEDIATION AREA	Date:	17/05/2024

## **APPENDIX B:**

### **Unexpected Finds Procedure**

## APPENDIX B – UNEXPECTED FINDS PROCEDURE

### B1.1 Management of Unexpected Finds

Due to the previous uses of the site, there is a potential for unexpected finds to be encountered during works on the site.

Should an unexpected find be encountered during remediation or earthworks, works will stop in the affected part of the site. This area will be isolated to minimise potential for disturbance to the affected soil/material, and prevent contact with the potentially contaminated material. The Contractor will notify the environmental consultant as soon as practical of the Unexpected Find.

### B1.2 Training and Induction of Personnel

Personnel involved in remediation or earthworks on site are to be inducted on the identification of unexpected finds. The induction can be undertaken at the time of general site induction and refreshed periodically at toolbox meetings.

The induction will cover the types of 'Unexpected Finds' that may be encountered, and provide awareness of the general approach when 'Unexpected Finds' are encountered. Personnel involved in remediation, vegetation removal or earthworks on site are to be made aware of the 'Unexpected Finds Procedure' (this document), and a copy must be readily available on site.

Additionally, it is noted that some forms of potential contamination may not be associated with visual or olfactory indications in the field. The unexpected finds procedure would not provide protection against such impacts. Therefore, the CEMP should include requirements for workers in contact with soils to wear appropriate Personal Protection Equipment (PPE), including:

- Long sleeves and pants;
- Chemical resistant gloves, such as nitrile gloves;
- P2 rated face mask (if there is evidence of friable asbestos, P3 rated respirator and disposable coveralls); and,
- If there are strong odours, respirators with appropriate cartridges.

It is noted that workers will also be required to wear PPE associated with working on construction sites, that are not listed above (i.e. hard hats, steel capped boots, and high visibility clothing).

### B1.3 Potential Unexpected Finds

Based on findings of previous investigations and site history, potential 'Unexpected Finds' which could reasonably be expected within the site are summarised in Table B1.

## APPENDIX B – UNEXPECTED FINDS PROCEDURE

**Table B1: Summary of Reasonably Expected 'Unexpected Finds'**

Unexpected Find	Characteristics	Contaminants of Potential Concern
Waste materials	Can include a variety of materials such as metal pieces, tyres, plastic, asphalt, wood, building materials (i.e. bricks, concrete, asbestos containing materials etc), chemical containers, and metals drums.	TRH, PAH, Metals, Asbestos
Structures containing potentially contaminated materials	<p>These could include:</p> <ul style="list-style-type: none"> <li>Pipework constructed of asbestos containing materials, or coated in asbestos lagging;</li> <li>Buried sumps and pipes, potentially used for storage or transport of tars and waste oils;</li> <li>Coal tar coated structures.</li> </ul>	TRH, PAH, Metals, Asbestos
Asbestos Containing Materials	<p>Asbestos has been Identified on this site as asbestos fines/friable asbestos (AF/FA).</p> <p>Generally, asbestos sheeting is identified as being white/grey in colour (often brown due to dirt) with dimples on one side and is a fibrous type of material. It is extremely difficult to tell by visual appearance if a material contains asbestos.</p> <p>Friable asbestos provides a greater threat to human health than bonded asbestos as it has been weathered or degraded to the point where the asbestos fibres can more easily become airborne, increasing the risk of inhalation. Friable asbestos is typically found as small fragments of asbestos sheeting (&lt;7mm diameter), lagging around pipes, insulation products and the like.</p> <p>In the event that an Unexpected Find is suspected to potentially contain asbestos then precautions should be taken immediately.</p>	Asbestos
Soil/material with hydrocarbon odour and/or oily stain or sheen	<p>Generally identifiable by slight to strong odours normally associated with diesel, oil, or petrol.</p> <p>Hydrocarbon stained soils are typically stained grey to black, and may have a sheen.</p> <p>Hydrocarbon sheens may be observed on seepage water.</p>	TRH, BTEX, PAH, Lead



## APPENDIX B – UNEXPECTED FINDS PROCEDURE

Unexpected Find	Characteristics	Contaminants of Potential Concern
Brightly coloured or odorous materials/soil. Drums, metal or plastic chemical containers.	Identifiable by slight to strong odours, bright colours, and/or presence of drums/containers etc.	TRH, BTEX, PAH, Metals, Phenols, VOCs, SVOCs – dependent on type of find

Notes: TRH – Total Recoverable Hydrocarbons; BTEX – Benzene, Toluene, Ethylbenzene, Xylenes; PAH – Polycyclic Aromatic Hydrocarbons; VOCs – Volatile Organic Compounds; SVOC – Semi-Volatile Organic Compounds.

### B1.4 Unexpected Finds Procedure

Should unexpected finds be encountered during remediation or earthworks, the following procedure applies:

1. Stop work in the potentially hazardous area as soon as it is safe to do so and move away from the area. If strong odours are associated with the find, move to the upwind side of the area.
2. Assess the potential immediate risk to human health posed by the unexpected find. The environmental consultant can help make this assessment, if required.
3. Delineate an exclusion zone around the affected area using appropriate barriers and signage. Odour suppression is not considered likely to be required, based on the potential contaminants identified for “unexpected finds”.
4. Contact the Environmental Consultant for advice. The Environmental Consultant will assess the unexpected find and provide advice on:
  - a) Preliminary assessment of the contamination and need for immediate management controls;
  - b) Carry out further assessment and provide advice on what remediation/management works are required and how such works are to be undertaken in accordance with the RAP (and contaminated site regulations and guidelines):
    - i. Assess the remediation/management required for the find;
    - ii. If material is not suitable for reuse on site, waste classify the material and dispose to a licensed landfill;
    - iii. If material is suitable for onsite remediation/management, carry out remediation/management (if required).
  - c) Remediation/management works required (if required);
  - d) Validation works required following remediation works (if required).
5. Works are not to recommence in the affected area until appropriate advice has been obtained from the Environmental Consultant, and the Environmental Consultant has provided relevant information to the Contractor.

## **APPENDIX B – UNEXPECTED FINDS PROCEDURE**

6. If it is deemed safe to do so by the Environmental Consultant and/or the Contractor, works can resume in the affected area.

## **APPENDIX C:**

### **VENM & ENM Checklists**



## VENM Checklist

Source site address	
Volume of material	
Description of material	
Review of VENM assessments by others	
Known source site history (i.e. aerial photographs, anecdotal information)	
Review of geology and acid sulfate soil maps for source site	
Check sampling completed (minimum two samples for TRH, BTEX, PAH, Metals, OCP/OPP and asbestos)	
VENM status	
Signature and date	

## ENM Checklist

Source site address	
Volume of material	
Description of material	
Was there a photo of the material included?	
Was the assessment carried out in accordance with the ENM Order?	
Does the material pass the ENM criteria classifying it as ENM?	
Review of ENM assessments by others	
ENM status	
Signature and date	