

DEMOLITION MANAGEMENT PLAN

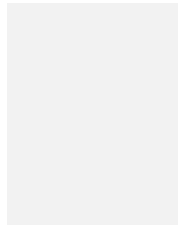
Academy Close, Campbell, ACT

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Incorporating



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DEFENCE HOUSING AUSTRALIA 17067

Demolition Management Plan

Academy Close, Campbell, ACT

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1 INTRODUCTION

1.1 Project Overview

Defence Housing Australia (DHA) proposes to demolish existing low density residential dwellings located along Academy Close, Campbell ACT (the 'site'). Arcadis Australia Pacific Pty Ltd (Arcadis) has been engaged by DHA to prepare this demolition management plan (DMP). When implemented by the Principal Contractor responsible for the demolition of the site, the objective of the management measures outlined will be to ensure that the project can be carried out without significant adverse impact on the environment in the vicinity of the proposed work area.

The site is located on Block 3 Section 65, Campbell and occupies an area of approximately 25,354 square metres (m²). The houses are currently unoccupied. Refer to **Figure 1, Appendix A** for the location of the Site.

1.2 DMP Objectives

This document is an operational DMP which provides the framework necessary to implement the required management measures associated with the proposed Demolition works. It is noted that this is not an asbestos removal control plan which will need to be completed by a licenced asbestos removalist.

Once implemented the objective of the management measures will be to ensure that the excavation of materials present at the site can be carried out without significant adverse impact on the environment or the health of the site workers and neighbouring residence. The management and monitoring aspects and Principal Contractor responsibilities covered in this DMP include air quality, sediments, surface water, waste, noise, vibration, traffic, site security and emergencies.

Arcadis notes that this DMP will focus on mitigating and managing environmental and human health issues associated with the demolition works proposed at the site. It is assumed that the appointed Civil Works Contractor will provide task specific (i.e. operational hours, noise mitigation, traffic control, environmental management, erosion sediment control plan) measures for the proposed construction works.

The objectives of this DMP can be summarised as follows:

- J Prevent, reduce and effectively manage potential impacts to the environment resulting from excavation works, material handling and associated spoil disposal;
- J Ensure that environmental management is undertaken in accordance with relevant legislative and policy requirements;
- J To ensure the Site is suitable for the proposed landuse, in reference to contamination; and
- J Promote environmental awareness amongst employees and contractors.

1.3 Reports Relied Upon in Preparing this DMP

The DMP framework provided in this document has relied upon information provided in the hazardous materials report by Lancaster and Dickenson Consulting Pty Ltd titled '*Intrusive Hazardous Materials Survey Report, Academy Close, Campbell, ACT 2612*'.

2 ROLES AND RESPONSIBILITIES

The following sections set out the organisational structure for the project:

2.1 Project Organisational Structure

All personnel including the Consultants, Contractors, Subcontractors and all other personnel associated with undertaking demolition works on the project at Academy Close, ultimately report to the Principal Contractor.

The Principal Contractor will be responsible for implementing this DMP. This will specifically involve monitoring the environmental performance of the works and ongoing compliance with legislative requirements, this DMP, and all other associated environmental management documentation, operational and post-demolition monitoring and reporting.

2.2 Parties and Responsibilities

The parties involved with, and their responsibilities during, the works are provided in Table 1.

Table 1: Project Parties and Responsibilities

Party	Responsibilities	Reports to
The Principal Contractor	<ul style="list-style-type: none"> - Ensure all works are implemented in accordance with the DMP. - Promote awareness of appropriate environmental management and occupation health and safety (OHS) practices to the Project Manager. - Ensure the Project Manager is aware of the DMP and site specific issues. - Review risks and identify potential opportunities and issues with the project. - Monitor and inspect activities for compliance with relevant environmental requirements, including ensuring suitable management plans have been submitted and approved prior to undertaking works. - Ensure environmental incidents and non-compliances are reported promptly and investigated. - Undertake environmental audits on the project at a frequency deemed appropriate to the length of the project. - Periodically review the performance of the Project Manager in meeting the objectives of their DMP via regular audits. The audits will review the Project Manager's activities to ensure that environmental hazards have the appropriate mitigation controls in place. Improvement requests and non-compliances will be monitored and corrective action undertaken. - Maintain an environmental audit register to record close out of any actions issued. 	The Contract Administrator / Project Manager (DHA)
Asbestos Assessor	<ul style="list-style-type: none"> - Comply with the requirements of this DMP. 	The Principal Contractor

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	<ul style="list-style-type: none"> - Provide advice to the Principal Contractor where required in relation to asbestos and other hazardous materials that may be unexpectedly encountered. - Undertake air monitoring for asbestos fibres during the removal of asbestos materials. - Conduct clearance inspections after the removal of asbestos materials and where appropriate, provide a clearance certificate. 	
<p>Environmental Consultant</p>	<ul style="list-style-type: none"> - Comply with this DMP. - Provide advice where required to the Principal Contractor in relation to environmental issues associated with the works, if requested. - Conduct environmental incident investigations if requested by the Project Manager. - Demonstrate an understanding and management of the potential environmental impacts associated with the project. - Review risks and identify potential opportunities and issues with the project. - Implement corrective action responses to environmental incidents and non-compliances in consultation with the Project Manager. 	<p>The Principal Contractor</p>
<p>Demolition Contractors / Asbestos Removalist</p>	<ul style="list-style-type: none"> - Implement and comply with relevant components of this DMP. - Report all environmental incidents, hazards, non-compliances and near misses to the Principal Contractor immediately. - Implement corrective action responses to environmental incidents and non-compliances as required by the Contractor. 	<p>The Principal Contractor</p>

3 IMPLEMENTATION OF DMP

3.1 Site Inductions and Training

All personnel including the Principal Contractors staff and subcontractors who will be working on the project or will require regular access to the sites will be required to undertake training and site inductions including environmental requirements as required by the Principal Contractor. All personnel should demonstrate an understanding of potential environmental issues and the measures that will be implemented to protect the environment and local community, as detailed in this document.

3.2 DMP Induction

The DMP awareness induction will be designed to:

-)] Outline the objective and purpose of the works for demolition contractors; and
-)] Present details of the contents of the DMP and their (the workers) responsibility.

All site workers will sign the DMP induction register acknowledging receipt and understanding of this DMP. All induction sessions will be recorded in the induction register.

In addition to this, the demolition contractor managing the works will provide their own management plan for site specific tasks which will be adhered to for the duration of the works.

3.3 Daily Toolbox Meetings

The Principal Contractor will also conduct daily toolbox meetings with all personnel to review management procedures and identify / discuss daily site conditions and potential hazards. Site inductions and toolbox talks will highlight specific environmental requirements and activities being undertaken at the worksite each day.

A record of issues covered in daily toolbox meetings should be maintained for future audit.

3.4 Personal Protective Equipment

All site personnel will be provided with, utilise, and be appropriately trained in the requirements of personal protective equipment (PPE). PPE requirements will depend on the activity or situation, but may include the following:

-)] High visibility clothing;
-)] Protective clothing and footwear;
-)] Eye protection;
-)] Respirable (half-face) masks as required;
-)] Hard hat as required (i.e. in the vicinity of the working excavator or other overhead plant); and
-)] Sun protection as required (long sleeves, sunscreen, hat or hard hat fitted with wide brimmed sun protection).

The above PPE is not an exhaustive list and the contractor will be required to advise any personnel of specific PPE requirements for the site. Personnel will be trained in the requirements and use of PPE to an appropriate level according to responsibilities.

PPE requirements should be detailed in the Safe Work Method Statements (or similar) which will be provided to the Principal Contractor for review and endorsement. Additional PPE will be required to carry out some aspects of the construction process and the PPE outline above should only be considered as the basic requirements.

3.5 Responsibility and Reporting

The Principal Contractor is responsible for ensuring that all personnel under their jurisdiction have been provided with adequate training in the areas outlined in this document.

The Principal Contractor will maintain records of all personnel who have undergone training in relation to the DMP and general environmental responsibilities. Records of trained personnel will be maintained in a log to be kept on site. A record of issues covered in daily toolbox meetings should be maintained.

The Principal Contractor will ensure that anyone who appears to lack an understanding in the above areas undergoes adequate retraining.

4 LEGISLATION

The following is a summary of statutory requirements to be satisfied by the Principal Contractor.

All work shall be conducted, as appropriate, in accordance with (but not limited to) with the following legislation, regulations and guidelines.

-] Australian Standard (AS) 2436-1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
-] AS 2601 - 2001: Demolition of Structures;
-] AS 2436- 1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
-] AS 2986.1-2003 Workplace air quality - Sampling and analysis of volatile organic compounds by solvent desorption;
-] AS 2986.2-2003 Workplace air quality – Part 2: Diffusive sampling method;
-] AS NZS ISO 19011-2003 Guidelines for quality and or environmental management systems auditing;
-] AS/NZS 3012-2003: Electrical Installations- Construction and Demolition sites;
-] BS6472 -1992: Evaluation and Human Exposure to Vibration in Buildings (1 to 80Hz);
-] BS7385 Part 2-1993: Evaluation and measurement of Vibration in Buildings Part 2;
-] DEC (now EPA), NSW (2005): Approved Methods for the Modelling and Assessment of Air Pollutants in NSW;
-] DEC (now EPA), NSW (2007): Approved methods for the Sampling and Analysis of Air Pollutants in NSW;
-] ACT EPA (2011) 'Environment Protection Guidelines for Construction and Land Development in the ACT'
-] National Environmental Protection Measure (NEPM) on Ambient Air Quality;
-] National Environment Protection Council (NEPC) 'National Environment Protection (Assessment of Site Contamination) Measure 1999' (Amended 2013);
-] ACT EPA (2017) 'Information Sheet 1: Decommissioning, Assessment and Audit of Sites Containing Above Ground or Underground Fuel Storage Tanks'
-] ACT EPA (2017) 'Information Sheet 3: Requirements for the Assessment and Validation of Sites Containing Above Ground or Underground Fuel Storage Tanks';
-] ACT EPA (2017) 'Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT';
-] ACT EPA (2017) 'Information Sheet 5: Requirements for the Transport and Disposal of Asbestos Contaminated Wastes';
-] ACT EPA (2017) 'Information Sheet 6: Management of Small Scale, Low Risk Soil Asbestos Contamination';
-] Environment ACT (2000) 'ACT's Environmental Standards: Assessment and Classification of Liquid & Non-liquid Wastes'.

5 OCCUPATIONAL HEALTH AND SAFETY

The following Health and Safety plan contains procedures and requirements that are to be implemented as a minimum during the site works.

The objectives of the health and safety plan are:

-) To apply standard procedures that reduces risks resulting from the above works;
-) To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
-) To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

-) Assignment of responsibilities;
-) An evaluation of hazards;
-) Establishment of personal protection standards and mandatory safety practices and procedures; and
-) Provision for contingencies that may arise while operations are being conducted at the site.

This health and safety plan does not provide safety information specific to demolition or excavation activities carried out by contractors, such as the safe operation, maintenance and inspection of plant, etc. Contractors will be required to prepare their own Safe Work Method Statements for their work activities. All parties working on the site shall comply with all applicable Work Health and Safety legislation, regulations, codes and guidelines.

5.1 Responsibilities

Principal Contractor

The Principal Contractor is responsible for ensuring that the work is carried out in accordance with the health and safety plan. This will include:

-) Ensuring a copy of the health and safety plan and DMP is available at the site during the excavation/construction activities;
-) Confirming individuals are competent in performing assigned tasks;
-) Liaison with the contractor representatives, as appropriate, regarding safety matters; and
-) Investigation and reporting of incidents and accidents.

Every individual worker is responsible for conducting their allocated tasks in a safe manner and in accordance with their training and experience. They must give due consideration to the safety of all others in their proximity and cooperate in matters of health and safety. All workers must leave their work areas in such a condition that the location will not be hazardous to others at any time.

5.2 Hazards

The known or potential hazards associated with the work activities described are listed below:

-) Potential chemical hazards;
-) Presence of hazardous materials (e.g. asbestos);
-) Physical hazards, including;
 - Work in or near excavations;
 - Operating machinery;

- Demolition traffic
- Heat stress and UV exposure;
- Underground or overhead services;
- Manual handling;
- Noise.

In the event of the discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, or of any new hazard that could potentially cause serious harm to personnel or the environment, work will be suspended until the Project Manager has been notified and appropriate instructions have been provided to field personnel.

5.3 Potential Chemical Hazards

The main potential chemical hazards associated with the excavation/construction works are petroleum hydrocarbons, PAHs, heavy metals, asbestos and soil gasses.

When working with identified contaminated materials in general, care needs to be taken to ensure that the contamination is not introduced to the worker via ingestion, inhalation or dermal contact. The personal protective equipment (PPE) and decontamination requirements outlined in Section 3.4 shall be followed to control the risks posed by chemical hazards at the site.

5.4 Physical Hazards

Operating Machinery

Heavy plant and equipment operating in the vicinity of field personnel presents a risk of physical injury. Personnel should be cognisant of their position in relation to operating machinery at all times.

Never walk behind or to the side of any operating equipment without the operator's knowledge. Do not assume that the operator knows your position. Personnel should stay at least 2 m from the operational area of heavy equipment and should not stand directly below any load or piece of equipment (eg. excavators).

Traffic

Where possible, mobile plant and trucks should use the existing Academy Close for access. As the street is a residential road, it is narrow and passing of vehicles will be difficult and may pose a collision hazard. Therefore, vehicle movement should be in a clockwise direction around Academy Close. **Figure 3** illustrates the recommended route for vehicles during demolition.

Working in or Near Excavations

All excavations shall be shored, sloped or otherwise constructed so as to comply with SafeWork Authority safety regulation to minimise the potential for collapse.

In addition to the above an excavation engineering plan has been prepared (details not available at the time of preparing this DMP) documenting slopes of batters, off ramps etc. This Plan should be adhered to at all times.

Cuts and Abrasions

The manual work associated with the site works gives rise to the risk of cuts and abrasions to personnel working in the area. As well as the direct consequences of any cut or abrasion, such injuries can lead to the possibility of exposure to contaminants through the wound as well as diseases such as tetanus. To minimise the risk of direct or indirect injury, personnel will wear the personal protective equipment described.

Heat Stress and UV Exposure

Site personnel may experience heat stress due to a combination of elevated ambient temperatures and the concurrent use of personal protection equipment; this depends in part on the type of work and the time of year.

There are four main types of heat stress related problems:

- J Heat Rash - caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreased ability to tolerate heat, as well as being a nuisance.
- J Heat Cramps - caused by profuse perspiration with inadequate fluid intake and chemical replacement. Signs: muscle spasms and pain in the extremities and abdomen.
- J Heat Exhaustion – is caused by increased stress on various organs as they meet the increasing demand to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness, and lassitude
- J Heat Stroke - result of overworked cooling system. Heat Stroke is the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration, nausea; dizziness and confusion; strong, rapid pulse and coma. Medical help must be obtained immediately.

In addition to the above, overexposure to UV radiation in sunlight can result in sunburn to exposed skin. The use of a high protection sunscreen (SPF15 or greater) on all exposed skin is recommended. Hats (including hard hats in specified areas) will also provide additional sun protection during the peak (i.e. 10:00 am to 3:00 PM) sun period. Sunglasses should be worn (where appropriate) to protect eyes from effects of UV exposure.

5.5 Underground Services

There is the potential for underground services (electricity, natural gas lines, water, telephone, sewer, and stormwater) to be present beneath the work area. The demolition contractor shall ensure that appropriate procedures will be taken to minimise the risk associated with excavation near services. This should include but not be limited to dial before you dig plan review, service provider notification and work clearance, service location by an approved contractor, manual test pitting, adherence to safe excavation distances (for overhead and below ground services), spotting during excavation, assessment of structural considerations etc.

Arcadis notes that due to the age of the site and nature of the buried services, asbestos pipes may exist on the site.

5.6 Aboveground Electrical Hazards

All electrical plant and equipment must comply with the requirements of Australian Standard AS 3000. Hand held portable tools shall comply with AS/NZS 3160 "hand-held portable electric tools" and shall be double insulated. A Residual Current Device (RCD) shall protect plug-in portable equipment, which is connected to a supply above Extra Low Voltage - 12-24 Volts (including equipment supplied from a generator or welding set). RCD protection shall be provided during maintenance of portable electrical equipment at all times while the equipment is connected to a power supply above Extra Low Voltage, irrespective of whether power is switched ON or OFF. RCD's shall comply with AS 3190 and shall be type II units, rated to trip at or below 30 milliamps within 40 milliseconds.

No excavator may work within 2 m of overhead distribution power lines.

5.7 Manual Handling

When lifting or handling heavy objects, use correct lifting techniques, bending the knees not the back. If the item to be lifted is too heavy or awkward for one person to lift, seek assistance from other employees or use mechanical help.

5.8 Noise

Long-term exposure to high levels of noise is unlikely. However, operating machinery may cause significant noise exposures for short periods. Earplugs or earmuffs should be worn in any situation where noise levels make normal conversation difficult.

6 ENVIRONMENTAL MANAGEMENT

The remaining sections of this document set out the environmental management activities and management measures, which will be implemented during the Excavation works at Academy Close, Campbell. The Principal Contractor will ensure that personnel responsible for undertaking the works are aware of their roles and responsibilities detailed in this DMP.

6.1 Potential Environmental Issues

The potential environmental issues associated with the proposed demolition works include:

-) Impact of noise and air emissions from plant, equipment and vehicles used in the project and associated transport of infrastructure;
-) Potential impacts to terrestrial within close proximity to the work area and the surrounding areas;
-) Disturbance to, and release of potentially contaminated soil and groundwater to the local environment;
-) Protection of trees on the site; and
-) Disruption to amenity of any residents and other land users in the vicinity of the site.

6.2 General Structure of Environmental Management

Individual management measures have been prepared to address the issues listed in Environmental Elements 1 to 9. The numbering order should not be considered as a ranking of priority of each element as each element will have some overlaps in procedures and monitoring requirements. Each plan is comprised of a number of elements, each with an overall associated management policy, mechanisms of policy implementation, proposed monitoring programs and potential corrective actions as described in Table 2.

Table 2: Structure of DMP

EMP Element	Description of Content
Element	The environmental aspect of construction or operation requiring management consideration.
Potential Impacts	The potential impacts in relation to the environment.
Management Actions	The procedures to be undertaken to avoid or minimise potential impacts
Performance Objectives	The target or strategy to be achieved through the specific management actions.
Performance Indicator	The criteria against which the implementation of the actions and the level of achievement of the performance objectives will be measured, as well as the success of the implementation of the policy.
Monitoring	The intended monitoring program and the process of measuring actual performance.
Responsibility	The entity assigned responsibility for carrying out each action.

Reporting	The process of documenting actual performance, or how well the policy has been achieved, including the format, timing and responsibility for reporting and auditing of the monitoring results.
Corrective Action	The action to be implemented and by whom in the case where a performance requirement is not met.

7 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 1: AIR QUALITY

7.1 Summary of Potential Impacts

Potential impacts to air quality resulting from the works include emissions from exposed soils, asbestos dust, groundwater, plant and equipment and dust generated during earthworks and land clearance and demolition work. Since asbestos is present in some soil samples, asbestos air monitoring is required and is discussed in Element 2.

Potential odour / vapour impacts may also occur as a result of the release of odours from impacted soils / groundwater / gases and exposure from unexpected finds, hydrocarbon hotspots and soil gas pathways within any uncontrolled fill.

Ambient air levels will likely vary as earth works proceed. Earth works will also be conducted up to the site boundaries in some areas and odour or dust will be subject to changes in wind direction and weather conditions. The application and effectiveness of odour suppressant mitigation will need to be well managed under the discretion of the Principal Contractor and the environmental consultant.

The following potential impacts from air quality may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Unsuitable conditions for construction works
-) Safety and Health related issues to workers, visitors and public;
-) Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

7.2 Procedures

A summary of the minimum plan requirements is provided in Table 3.

Table 3: Summary of Air Quality Management Procedures

Element	Air Quality
Performance Objectives	<p>The objective of this management measure is not to generate any odours or dust and to adopt the necessary management strategy and PPE if presented with the occurrence of odours and/or dust if encountered.</p> <p>Avoid or minimise the potential for odour and/or vapour emissions during the handling of exposed soils.</p> <p>Maintain plant and equipment such that exhaust emissions are minimised.</p> <p>Avoid or minimise disruption to amenity of residents and other land users in the vicinity of site works.</p>
Management Actions	<p>Use of sealed cabins on excavation equipment. This should prevent ambient air (potentially contaminated) and asbestos dust to intrude into the cabin. Pressurised air should be initially run through a scrubber and filter first.</p> <p>Heavy equipment and vehicles will be appropriately maintained to minimise exhaust emissions.</p>

	<p>Appropriate methods of dust suppression will be implemented, such as ensuring earthworks and asbestos containing materials remain moist to ensure dust is minimised during works.</p> <p>Evaluate weather conditions prior to works commencing and during any change in wind direction.</p> <p>Cease works if dust or odour generation is excessive.</p> <p>Covering of any stockpiles that are to remain for greater than two days, or if weather forecasts predict strong winds; with plastic or Hessian material.</p> <p>All dust/odour control measures will be kept in good operating condition and functional at all times, with regular maintenance.</p> <p>All loads are to be covered and appropriately fitted with tarpaulins to contain dust and/or odour during transport.</p> <p>A complaints register will be established and maintained to receive and address complaints from the community regarding the detection of nuisance odour and/or dust during the works.</p> <p>Residents in the vicinity of the proposed works will be informed of potential dust/odour impacts prior to the commencement of works.</p>
<p>Performance Indicator</p>	<p>No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to dust quality issues.</p> <p>All complaints will be responded to within 2 business days</p> <p>No onsite observation of dust generation during excavation works by Project team.</p> <p>No visual evidence of exhaust smoke during idle of equipment.</p> <p>No visual evidence of tracked material on public roads.</p> <p>A reduction in the number of complaints received in relation to air quality each month.</p>
<p>Monitoring</p>	<p>The air quality will be evaluated by the Project Manager.</p> <p>Continuous work zone boundary monitoring for asbestos should be conducted during asbestos removal works. Air monitoring for airborne fibres must be conducted by a licensed asbestos assessor.</p> <p>Should odorous soil be detected then monitoring of the affected work area(s) with a photo-ionisation detector (PID). The PID should be calibrated and record of the calibration reported to a suitably qualified environmental consultant.</p> <p>If monitoring for volatile compounds is required, then the daily average PID levels at the work area boundary should not exceed 2.1 ppm (and 10ppm maximum) at all times. PID levels at the work zone boundary should be measured on an hourly basis using a PID.</p> <p>Furthermore, the following work zone boundary monitoring regime is required at 4 locations (with one location being downwind of the daily site activities) surrounding the work zone or within 10m of the location of asbestos removal work in order to assess impact on offsite sensitive receptors.</p>

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	Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records on site of visual, PID and Asbestos monitoring undertaken.
Corrective Action (as required)	<p>Replace or repair emission control devices.</p> <p>Provide equipment to enable wetting of exposed soils if required.</p> <p>Should excessive dust be generated during works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented.</p> <p>The use of PPE with appropriate filters where required. In the event that odours are detected and PID readings exceed the limits set by the environmental consultant for the Site/area, then the following action shall be undertaken:</p> <ul style="list-style-type: none"> ▪ Backfill any excavation or cover with plastic sheeting; ▪ Temporarily cease works until levels drop; and ▪ Increase the use of suppressant near the excavation. <p>In the event that boundary monitoring exceeds the daily works shall be stopped immediately. The earthworks and/or demolition methods need to be reassessed to minimise the generation of dust and/or odours. If odours are considered to be excessive by the environmental consultant, then the application of odour suppressants may be used. Works can recommence once a suitably qualified environmental consultant has assessed ambient air quality to be satisfactory.</p>

8 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 2: ASBESTOS DUST

8.1 Summary of Potential Impacts

Possible asbestos dust-generating activities include the mechanical removal of building materials, demolition and earth disturbance works along with vehicle movement over asbestos impacted soils. The generation of asbestos dust should be minimised and meet relevant air quality standards as specified in the NOHSC:1003 (1995) *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment*.

Air monitoring when disturbing the soils across the site should be implemented. Any air monitoring of asbestos should be performed in accordance with the NOHSC:3003 (2005) *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*.

8.2 Procedures

A summary of the minimum Asbestos Air Monitoring plan requirements is provided in Table 4 with addition measures for asbestos removal air monitoring.

Table 4: Summary of Asbestos Dust Management Procedures

Element	Air Quality
Performance Objectives	<p>The objective of this management measure is to prevent the generation of asbestos dust and to adopt the necessary PPE if presented with the occurrence of asbestos dust and to minimise the impacts of dust levels encountered.</p> <p>Avoid or minimise the potential for dust emissions during the handling of exposed soils and asbestos containing material (predominantly located within the existing buildings as identified in the hazardous building materials survey).</p> <p>Maintain plant and equipment such that decontamination procedures are followed and cross contamination outside the impacted work areas are minimised.</p> <p>Avoid or minimise disruption to amenity of residents and other land users in the vicinity of site works.</p>
Management Actions	<p>Use of water spray (onsite in close proximity of the earthworks <u>and</u> at the site boundary/fences) is required for dust suppressant during earthworks. Water sprays might be used during demolition works on the removal of ACM within the current buildings on the site (this is up to the discretion of the Project Manager, licensed asbestos assessor and asbestos removalist).</p> <p>Once the earthworks of each area is finished, this area of the site should be covered with plastic sheeting or the use of water spray to minimise dust generation (this to the discretion of the Project Manager and the environmental consultant).</p> <p>Use of enclosed and sealed cabins on excavation equipment and trucks entering the site or work area (if staged). This should prevent ambient air (potentially contaminated with asbestos dust) and dust to intrude into the cabin.</p> <p>Appropriate methods of dust suppression will be implemented, such as ensuring earthwork and material removal. Soils and</p>

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	<p>materials are to remain moist to ensure dust is minimised during works.</p> <p>Evaluate weather conditions prior to works commencing and during any change in wind direction.</p> <p>Cease works if dust generation is excessive.</p> <p>Covering of any stockpiles that are to remain for greater than two days (Waste reclassification stockpiles), or if weather forecasts predict strong winds; with plastic or Hessian material.</p> <p>All dust control measures will be kept in good operating condition and functional at all times, with regular maintenance.</p> <p>All loads are to be covered and appropriately fitted with tarpaulins to contain dust during transport. Where asbestos soils and materials are to be removed offsite, loads are to be encapsulated in black plastic, prior to tarpaulins covering being fitted.</p> <p>A complaints register will be established and maintained to receive and address complaints from the community regarding the detection of nuisance dust during the works.</p> <p>Residents in the vicinity of the proposed works will be informed of potential dust impacts prior to the commencement of works.</p>
Performance Indicator	<p>No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to dust quality issues.</p> <p>Respirable fibre concentrations are below the threshold criteria.</p> <p>All complaints will be responded to within 2 business days</p> <p>No onsite observation of dust generation during excavation works by Project team.</p> <p>No visual evidence of tracked material on public roads.</p>
Monitoring	<p>The air quality will be evaluated by the Project Manager and assessed by a suitably qualified environmental consultant. Continuous exclusion zone boundary monitoring during excavation works using asbestos air monitoring equipment is required. The air pumps should be calibrated to the required flow rate in accordance with Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003(2005)].</p> <p>Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.</p>
Responsibility	<p>The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.</p>
Reporting	<p>Maintenance of records on site of visual dust and asbestos monitoring must be undertaken by a licensed asbestos assessor.</p> <p>Daily asbestos air monitoring results should be made available 24hr after collection and notification of the results made available to the Project Manager.</p>

<p>Corrective Action (as required)</p>	<p>Replace or repair dust control devices.</p> <p>Provide equipment to enable wetting of exposed soils and materials if required.</p> <p>Should excessive dust be generated works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented.</p> <p>The use of PPE with appropriate filters, inside the works zone will be mandatory, in accordance with the requirements outlined in the AMP. The level presented in the CEMP prevails. When the 0.1 f/mL (Fibres per millilitre of air) level with the work area is exceeded the following action shall be undertaken:</p> <ul style="list-style-type: none">) Backfill any excavation or cover ground surface with plastic sheeting;) Revise excavation methods to reduce fibre concentrations) Increase the use of suppressant near the excavation. <p>In the event that boundary monitoring exceeds the 0.1 f/mL (Fibres per millilitre of air) works shall be stopped immediately. The earth works shall quickly backfill any excavation and the area cover with black plastic and the situation reassessed if by the Principal Contractor, the application of dust suppressants should be used/increased and then works can recommence once licensed asbestos assessor has assessed ambient air quality to be satisfactory.</p>
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9 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 3: SEDIMENTS

9.1 Summary of Potential Impacts

Potential impacts from sediments resulting from the works include dust emissions (Refer to Element 1: Air Quality) and storm water (Refer to Element 4: Surface Water) generated during earthworks/land clearance and construction.

The following potential impacts from sediments may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Increased turbidity and sediment concentrations due to accidental release;
-) Increased sediment load on storm water drains and infrastructure;
-) Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to local ecological communities.

9.2 Procedures

A summary of the minimum plan requirements is provided in Table 5.

Table 5: Summary of Sediment Management Procedures

Element	Sediments
Performance Objectives	<p>The objective will be to avoid an impact on water quality in surface water and drains which eventually discharge offsite by implementing prevention measures to control any sediment that is generated.</p> <p>Avoid or minimise soil migration and loss to surface waters and drains.</p> <p>Avoid or minimise pollution of creeks and waterways.</p> <p>Avoid or minimise increased sediment load on storm water drains and infrastructure.</p>
Management Actions	<p>Prior to the start of the works a stormwater and sediment control plan should be prepared by the Principal Contractor. This Plan should be in accordance with the ACT EPA 'Environment Protection Guidelines for Construction and Land Development in the ACT'.</p> <p>Site contractors will be required to observe any increases in sediment load in storm water drains when excavations are close to surface drains or waterways.</p> <p>Sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with the Stormwater and Sediment Control Plan prior to the commencement of works.</p> <p>Evaluate weather conditions prior to works commencing and during any change in wind direction.</p> <p>Cease works if dust generation is excessive (by visual assessment).</p>

	<p>Covering of any stockpiles that are to remain for greater than two days, or if weather forecasts predict strong winds; with plastic or Hessian material.</p> <p>All sediment control measures will be kept in good operating condition and functional at all times, with regular maintenance.</p> <p>Strategic placement of such structures down-gradient of stockpiles and slopes to minimise sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels.</p> <p>If a significant rain event occurs, fieldwork will cease. There will be sediment control measures available for placement down gradient of the work area; and</p> <p>Works will also be conducted in a manner to minimise the potential for sediment and soil migration, whereby excavated material will be hauled offsite as soon as practicable and/or reinstated and compacted.</p>
Performance Indicator	<p>The prevention of sediment runoff is the best approach.</p> <p>Site contractors will be required to observe any increases in sediment load in storm water drains when excavating close to surface drains and site boundaries.</p> <p>No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to sediment issues.</p> <p>No onsite observation of dust generation during excavation works by Project team.</p> <p>No visual evidence of tracked material on public roads.</p>
Monitoring	<p>Regular observations will be made by the Site Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted.</p> <p>Records of all corrective actions and known sediment releases will be kept.</p> <p>Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.</p>
Responsibility	<p>The Project Manager is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff.</p>
Reporting	<p>Maintenance of records on site of visual monitoring undertaken</p>
Corrective Action (as required)	<p>Clean-up of sediment.</p> <p>Installation of sediment and erosion controls.</p> <p>Additional storm water control measures.</p> <p>Altered excavation works.</p> <p>Cease works if a major storm event is likely to occur.</p> <p>Replace or repair sediment and erosion control devices.</p> <p>Should excessive dust be generated excavation works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented.</p>

10 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 4: SURFACE WATER

Works must comply with requirements for storm water management in accordance with ACT EPA (2011) *'Environment Protection Guidelines for Construction and Land Development in the ACT'* to minimise direct or indirect un-authorized release of surface water during site works to minimise impacts to surface water quality of surrounding environs.

Excavation pump out water (if any) shall be pumped from the excavation by a licensed contractor and disposed of off-site as "liquid waste" in accordance with the Environment ACT (2000) *'ACT's Environmental Standards: Assessment & Classification of Liquid & Non-liquid Wastes'*.

10.1 Summary of Potential Impacts

The following potential impacts from surface water may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Increased turbidity and sediment concentrations due to accidental release;
-) Increased sediment load on storm water drains and infrastructure;
-) Ruts and gullies in soil surfaces;
-) Unsuitable conditions for construction works;
-) Safety and Health related issues; and
-) Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

10.2 Procedures

A summary of the minimum plan requirements is provided in Table 6.

Table 6: Summary of Water Quality Management Procedures

Element	Water Quality
Performance Objectives	<p>Avoid or minimise the disturbance to, and release of potentially contaminated soil or sediment laden water to the surrounding environs.</p> <p>Prevent increased water flows causing erosion damage to drainage infrastructure and water ways.</p> <p>Prevent safety related incidents associated with wet or slippery work conditions.</p>
Management Actions	<p>Assessment of weather during excavation operations and consideration of temporarily halting works until more favourable conditions are encountered.</p> <p>Install sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with ACT EPA (2011) <i>'Environment Protection Guidelines for Construction and Land Development in the ACT'</i> prior to the commencement of works. This would include strategic placement of such structures down-gradient of temporary stockpiles and slopes to minimise</p>

	<p>sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels.</p> <p>Control of drainage on the site by interception and redirection of clean storm water in a controlled manner.</p> <p>Provide inlet protection to be provided for any potentially impacted locations.</p> <p>Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level.</p> <p>Provision of a spill cleanup kit on all sites where bulk fuel is stored or is being transferred.</p> <p>Maintain a hardstand or lined and bunded area for the refueling and storage of equipment.</p> <p>Cease works if excessive surface water makes conditions unsuitable for construction works.</p> <p>Cease works if excessive surface water makes creates safety concerns.</p>
Performance Indicator	<p>The prevention of increased storm water runoff is the best approach.</p> <p>Site contractors will be required to observe any increases in sediment loads and volumes in storm water drains when working close to surface drains and report any discharges beyond the site boundaries.</p> <p>Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level.</p> <p>Zero records of near miss or injury in relation to wet conditions</p>
Monitoring	<p>Regular observations will be made by the Site Contractors and the Project Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted.</p> <p>Monitoring requirements from a pump-out-permit or other required license shall be adhered to at all times.</p>
Responsibility	<p>The Project Manager is responsible for ensuring that each of the monitoring programs is implemented by appropriately trained/qualified staff. These programs may be sub-contracted out to a specialist sub-consultant as required.</p>
Reporting	<p>Records of all corrective actions and known sediment releases will be kept.</p> <p>Records of Near Miss and Injuries will be kept.</p> <p>The Project Manager will immediately report to the Contract Administrator any incidents of water discharging off site.</p>
Corrective Action (as required)	<p>Installation of sediment and erosion controls in accordance with the ACT EPA (2011) '<i>Environment Protection Guidelines for Construction and Land Development in the ACT</i>'</p> <p>Additional storm water control measures if and when necessary.</p> <p>Cease works if a major storm event is likely to occur.</p>

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Cease works if excessive surface water or groundwater ingress makes conditions unsuitable for construction works.

Cease works if excessive surface water or groundwater ingress makes creates safety concerns.

Storm water collected on-site in trenches and sumps will be subject to waste management and offsite disposal.

11 ENVIRONMENTAL MANAGEMENT MEASURE

ELEMENT 5: TREE MANAGEMENT

A tree management plan was prepared in 2011 and works must be completed in accordance with the plan. A copy of the tree management plan is presented in Appendix B. The tree management plan illustrates the following details:

-) Regulated trees that are to be removed;
-) Non-regulated trees that are to be removed;
-) The locations of regulated trees that are to be protected;
-) Tree protection zones and the location of temporary protective fencing.

11.1 Summary of Potential Impacts

The following potential impacts may result as a part of the demolition works:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Damage to regulated trees that need to be protected;
-) Damage to local ecological habitats.

Any damage to regulated trees is expected to have long term impacts to local ecological communities.

11.2 Procedures

A summary of the minimum plan requirements is provided in Table 7.

Table 7: Summary of Tree Protection Management Procedures

Element	Sediments
Performance Objectives	<p>The objective will be to avoid damage to regulated trees on the site.</p> <p>Avoid or minimise soil damage in the drip line of regulated trees.</p> <p>Avoid or minimise impact to ecological habitats.</p>
Management Actions	<p>Prior to the start of the works protective fencing around regulated trees is to be installed in accordance with the Tree Management Plan.</p> <p>Site contractors will be required to monitor trees for damage, either directly to the trees themselves or the soil conditions around the drip lines of trees.</p> <p>Maintain temporary fencing around regulated trees and monitor fence conditions throughout the demolition process.</p> <p>Evaluate demolition works and manage demolition waste in such a manner that it does not enter the tree protection zones of regulated trees.</p> <p>Cease works if demolition waste enters any tree protection zone. Waste will need to be removed from the protection zone and work practices amended to prevent reoccurrence.</p>

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	<p>All temporary fencing around tree protection zones will be kept in good operating condition and functional at all times, with regular maintenance.</p>
Performance Indicator	<p>The prevention of damage to regulated trees and their surrounding drip lines.</p> <p>Site contractors will be required to observe any damage to regulated trees or surrounding drip lines.</p> <p>No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to sediment issues.</p>
Monitoring	<p>Regular observations will be made by the Site Manager.</p> <p>Records of all corrective actions and known damage to regulated trees.</p>
Responsibility	<p>The Project Manager is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff.</p>
Reporting	<p>Maintenance of records on site of visual monitoring undertaken</p>
Corrective Action (as required)	<p>Stop work should the protective fencing be damaged until such time the fence has been repaired.</p> <p>Waste that enters a tree protection zone should be carefully removed and the tree protection fence repaired where necessary.</p> <p>If the Site Manager considers additional protection around regulated trees is required, then this should be implemented accordingly.</p> <p>Where demolition works occur in close proximity to a regulated tree, care should be taken as to where demolition waste falls.</p>

12 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 6: WASTE MANAGEMENT

Excess soils requiring offsite disposal will require additional assessment and should be stockpiled onsite and assessed by a suitably qualified environmental consultant to classify the soil for disposal. The classification of soil must be completed in accordance with the ACT EPA (2016) '*Information Sheet 4: Requirements for the reuse and disposal of contaminated soil in the ACT*'.

All excavated material must be approved for removal by the ACT EPA prior to transporting soil off the site.

Storm water and/or groundwater collected on-site in trenches and sumps will be subject to waste management if offsite disposal is to take place. Disposal via the storm water system may be undertaken subject to relevant authorities discharge license conditions.

Should excavations require dewatering, water samples will be collected by the Environmental Consultant and analysed prior to pump-out and offsite disposal. Waste liquid disposal dockets should be maintained onsite for inspection.

If during any site earthworks or excavation, asbestos, evidence of gross contamination or unknown type of material not previously detected is observed (Unexpected Finds), site works are to cease until the Project Manager has been notified and appropriate instructions have been provided to field personnel. Further works in such a location should be conducted under the supervision of a suitably qualified environmental consultant.

Other waste, excluding soils and groundwater, generated during the redevelopment works may include:

-) Domestic waste generated by site workers;
-) Asbestos contaminated waste (refer to the AMP for additional information);
-) Concrete Slab;
-) Liquid waste; and
-) Inert building materials

Asbestos waste and decontamination disposal waste should be conducted as outlined in AMP.

Each outbound truck should be logged as clean prior to dispatch along with information pertaining to the amounts of loads and number of trucks leaving the site in addition to copies of all EPA approvals, waste tracking certificates, weigh bridge dockets, and any council approvals should be maintained onsite for inspection.

12.1 Summary of Potential Impacts

The following potential impacts from waste management may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Legislative/Regulatory requirements; and
-) Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

12.2 Procedures

A summary of the minimum plan requirements is provided in Table 8.

Table 8: Summary of Waste Management and Minimisation Procedures

Element	Waste Management and Minimisation Quality
Performance Objectives	<p>The objective will be to minimise and control any wastes and waste categories that are generated, and ensure that they will be appropriately disposed of.</p> <p>Avoid or minimise environmental impacts related to waste management and handling of potentially contaminated soils.</p> <p>Avoid or minimise impacts due to unexpected finds.</p> <p>Avoid or minimise health risks associated with potentially contaminated soil exposure and dust generation.</p>
Management Actions	<p>Provision of a spill cleanup kit on all sites where bulk fuel is stored or is being transferred.</p> <p>Maintain a hardstand or lined and bunded area for the refuelling and storage of equipment.</p> <p>Visual assessment of excavated material by the Environmental Specialist. The Environmental Specialist shall direct the Excavator Operator if the soil has to re-assessed onsite or disposed off-based on the in-situ waste classification.</p> <p>Soil to be disposed from the site is to be approved by the ACT EPA.</p> <p>Trucks to be used for transport of soil are to be fitted with cover tarpaulins to contain the load.</p> <p>Each truck prior to exiting site, shall be inspected prior to dispatch and either logged out as clean (wheels and chassis), or hosed down within a wheel wash down bay.</p> <p>Provide waste receptacles for all waste types and ensure that personnel use these correctly.</p> <p>All trucks leaving the site should be tracked and the truck movement recorded.</p> <p>Cease site works until the Project Manager has been notified of any unexpected finds and appropriate instructions have been provided to field personnel to address the issue.</p> <p>Project Manager to inform the Contract Administrator of any unexpected finds.</p>
Performance Indicator	<p>All waste materials are handled and stored in a safe and appropriate manner</p> <p>Material for off-site disposal is transported to an appropriate landfill facility.</p> <p>A completed transportation form and waste docket shall be returned to the Environmental Specialist who shall maintained a record</p> <p>No environmental impact on, and disturbance to, the surrounding area from waste, no leaks or spills of oil or fuel.</p> <p>No waste is to be disposed of in the surrounding environment.</p>
Monitoring	<p>Regular observations will be made by the Project Manager and measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted.</p>

	<p>Records of all corrective actions and known sediment releases will be kept.</p> <p>An up to date record of waste tracking shall be kept by the Environmental Specialist.</p>
Responsibility	<p>The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant (the Environmental Specialist) as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.</p>
Reporting	<p>Soil classification reports prepared and provided to the ACT EPA for review and endorsement prior to the removal of soil from the site.</p> <p>Maintenance of records on site of equipment inspections undertaken and landfill disposal/waste tracking and weigh bridge dockets, and any council approvals should be maintained onsite for inspection.</p>
Corrective Action (as required)	<p>Revision of the works strategy including relocation and alteration to the operating procedure if waste is shown to be entering the surrounding environment.</p>

13 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 7: NOISE MANAGEMENT

In accordance with the ACT EPA (2011) 'Environment Protection Guidelines for Construction and Land Development in the ACT' site works can be conducted from 7:00 a.m. to 6:00 p.m. Monday to Saturday. Work outside these hours is not permitted.

13.1 Summary of Potential Impacts

The following potential impacts from Noise may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements; and
-) Safety and Health related issues.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to Safety and Health related issues.

13.2 Procedures

A summary of the minimum plan requirements is provided in Table 9.

Table 9: Summary of Environmental Noise Management Procedures

Element	Noise Management
Performance Objectives	Avoid or minimise the impact of noise emissions from plant, equipment and vehicles used in the works.
Management Actions	<p>Plant and equipment will not be permitted to 'warm-up' before the nominated working hours.</p> <p>Where possible, plant and equipment will be located / orientated to direct noise away from the closest sensitive receivers.</p> <p>Undertake regular maintenance of plant and equipment to minimise noise emissions.</p> <p>All machinery will be kept in good working order and will comply with noise attenuation standards.</p> <p>Other noise control measures, including acoustic barriers, will be examined and put in place should the need arise.</p> <p>Maximum operating noise of equipment is to be 85 db(A).</p> <p>Selection of the quietest suitable machinery reasonably available for each work activity.</p> <p>All plant and equipment to have efficient low noise muffler design and be well-maintained.</p> <p>Offset distance between noisy items of plant/machinery and nearby sensitive receivers to be maximized were possible.</p> <p>Where practicable, ensure that noisy plant/machinery are not working simultaneously in close proximity to sensitive receivers.</p> <p>Queuing of trucks is not to occur adjacent to any residential receiver.</p> <p>Where queuing is required engines are to be switched off.</p> <p>If required, trucks to be fitted with efficient low noise mufflers and be well maintained.</p> <p>Trucks will follow the designated haulage route between locations.</p>

	<p>Trucks will adhere to the designated speed limits.</p> <p>Trucks will refrain from using compression breaking where possible.</p> <p>Any pumps or generators used will be encapsulated or appropriately encased to ensure noise generation is minimised and emissions are muffled.</p>
Performance Indicator	No complaints from surrounding residents.
Monitoring	<p>Noise generation is considered to be minimal if no complaints are received from the neighbours and areas of excavator use are in isolated areas away from any onsite facilities or neighbours.</p> <p>A Pre-Works Noise survey at sensitive receptors and routine noise surveys, nominally monthly, throughout the works program</p>
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records on site of equipment inspections undertaken, and results of noise surveys.
Corrective Action (as required)	Revision of the works plan including revision to working hours as necessary or staggering use of noisy equipment to minimise impacts.

14 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 8: VIBRATION

Due to the close proximity of structures on/near the site boundaries the Principal Contractor may wish to undertake a structural integrity assessment by a suitably qualified engineer or specialised consultant of the buildings and structures within closed proximity to the excavation work area. The findings and recommendations of the integrity assessment will supersede the minimum requirements outlined in Table 10.

14.1 Summary of Potential Impacts

The following potential impacts from Vibration may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Safety and Health related issues; and
-) Damage to local infrastructure.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to local infrastructure and Heritage listed buildings.

14.2 Procedures

A summary of the minimum plan requirements is provided in Table 10.

Table 10: Summary of Vibration Management Procedures

Element	Vibration Management
Performance Objectives	Minimise the effects of the project has on adjacent public utilities, structures and buildings from vibration.
Management Actions	<p>Prior to activities that may pose a risk to adjacent public utilities, structures and buildings a visual inspection will be undertaken to access potential damage associated with vibration impacts including cracks and other indications of settlement.</p> <p>Select appropriately sized machinery and equipment and design procedures for use in order to comply with vibration limits and to reduce vibration generation.</p> <p>Establish communication with relevant authorities and local residents.</p> <p>Ensure machinery used is appropriately sized to prevent over-loading and over-revving.</p>
Performance Indicator	<p>Goal of nil complaints relating to vibration issues during the project.</p> <p>Zero damage to adjacent public utilities, structures and residential buildings from vibration.</p> <p>Zero detrimental health problems to personnel in the vicinity of the vibration source.</p>
Monitoring	Vibration monitoring to be adopted upon receiving a complaint or under direction from a government agency.
Responsibility	The Principal Contractor is responsible for ensuring that vibration control is implemented. The Principal Contractor is

	to ensure responsible personnel are suitably qualified to inspect buildings and infrastructure for structural integrity.
Reporting	<p>Inspection, monitoring and surveillance by the project manager and contractors.</p> <p>Maintenance of records relating to any complaints received, including subsequent non-compliance forms and corrective actions.</p>
Corrective Action (as required)	<p>Where vibration results in damage to structures, temporary protection/ rectification works will be completed prior to recommencement of site works.</p> <p>Work practices will be reviewed and modified as appropriate to ensure ongoing damage is minimised.</p>

15 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 9: TRAFFIC MANAGEMENT

The Principal Contractor may wish to undertake a traffic management study by a suitably qualified consultant prior to completing a detailed Traffic Management Plan. The findings and recommendations in the Traffic Management Plan will supersede the minimum requirements outlined below. A summary of the minimum plan requirements is provided in Table 11.

15.1 Summary of Potential Impacts

The following potential impacts from Traffic may occur as part of the works program:

-) Complaints from local residents;
-) Breaches in Regulatory requirements;
-) Safety and Health related issues;
-) Collisions between vehicles; and
-) Damage to local infrastructure.

A plan of the proposed traffic routes on the site are illustrated in **Figure 3, Appendix A**.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to Safety and Health related issues.

15.2 Procedures

A summary of the minimum plan requirements is provided in Table 11.

Table 11: Summary of Traffic Management Procedures

Element	Traffic Management
Performance Objectives	Minimise the effect project related traffic movements (including parking availability and pedestrian movement) has on the local area and chosen haulage routes.
Management Actions	<p>Designated vehicle movement routes on the site. It is recommended that vehicles proceed around Academy Close in a clockwise direction (Figure 3).</p> <p>Truck loading to be provided for on-site where possible.</p> <p>Truck movements to and from the site to be restricted to designated truck routes through the area.</p> <p>The management of the site works will be the responsibility of the site contractor.</p> <p>Pedestrian warning signs to be utilised in the vicinity of the site access points.</p> <p>Pedestrian arrangements, construction activity and erection of safety fencing will be provided in accordance with Safework requirements.</p>
Performance Indicator	Goal of nil complaints relating to traffic issues during the project
Monitoring	Low potential for impacts, however a log of all truck and other heavy equipment (cranes etc.) movement to be retained by the Principal Contractor.

Responsibility	The Principal Contractor is responsible for ensuring that the traffic management plan is implemented by appropriately trained/qualified staff. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	<p>Maintenance of records relating to any complaints received, including subsequent non-compliance forms and corrective actions.</p> <p>A log of all truck and heavy equipment movements to be retained by the Principal Contractor.</p>
Corrective Action (as required)	Revision of the traffic plan including revision to working hours as necessary, staggering truck access or adopting alternate haulage routes.

16 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 10: UNEXPECTED FINDS

During the course of demolition works, unexpected occurrences of contamination may be encountered. To manage the potential for unexpected occurrences of contamination, an unexpected finds protocol has been prepared.

The nature of any undiscovered hazards which may be present at the site are generally expected to be detectable through visual or olfactory means, for example:

-) Additional hydrocarbon contaminated soils (staining / discolouration visible);
-) Additional excessive VOC contaminated soils (odorous (sweet/chemical));
-) Fragments of asbestos-containing materials (visible) or potential friable material;
-) Significant ash and/or slag contaminated soils / fill materials (visible); and
-) Uncovering of an Underground Storage Tank that had not been previously identified or location approximated precisely.

As a precautionary measure to ensure the protection of the workforce and surrounding environment, should any unexpected potentially hazardous substance be encountered the works should cease immediately before being assessed by a suitably qualified environmental consultant. In addition, the ACT EPA and WorkSafe should be informed of any potential immediate risk to either human health or the environment (except for issues relating to UPSS or groundwater impacts where the EPA should be informed).

The sampling strategy for each 'unexpected find event' and remediation works shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance, that is, is it hazardous and, if so, does it exist at concentrations which pose an unacceptable risk to human health or the environment. The sampling frequency of the identified substance / materials meeting the minimum requirements the listed in the NEPM ASC 2013, Australian Standard AS4482.1-2005, AS4482.2-1999 and NSW EPA Sampling Design Guidelines (1995).

The Principal Contractor will ensure that in the event that an unexpected find is of cultural or historical nature, a nominated archaeologist would be available to attend the site, to ensure that there are no extended delays to the program. Should an unexpected relic, archaeological feature or deposit is exposed during works, where an archaeologist is not already on site, work should cease in that area and a suitably qualified archaeologist should be contacted for advice. Depending on the level of integrity and/or significance of the relic, the relic/feature would be assessed and recorded and, if relevant, excavated manually to ensure that important information is not lost, and monitor adjacent works. If the relic/feature is assessed as having state significance the archaeologist would consult with the Heritage Council to develop an appropriate strategy to manage the relic.

Where an unexpected find is of a potential acid sulphate soils (PASS) or acid sulphate soils (ASS) material matter, then an Acid Sulfate Soil Management Plan, in alignment with NSW Acid Sulfate Soils Management Advisory Committee (August 1998) guidelines, must be prepared.

16.1 Procedures

A summary of the minimum requirements is provided in Table 12.

Table 12: Summary of Unexpected Finds Procedures

Element	Unexpected finds Management
Performance Objectives	<p>Avoid or minimise impacts related to management and handling of potentially contaminated soils.</p> <p>Avoid or minimise impacts due to unexpected cultural finds.</p> <p>Avoid or minimise health risks associated with potentially contaminated soil exposure.</p>
Management Actions	<p>Visual assessment of uncovered unexpected finds by the Environmental Specialist. The Environmental Specialist shall direct the Excavator Operator if the soil has to re-assessed onsite or disposed off-based on the waste classification.</p> <p>In the event that an unexpected find is of cultural or historical nature, a nominated archaeologist would be available to attend the site.</p> <p>Cease site works until the Project Manager has been notified of any unexpected finds and appropriate instructions have been provided to field personnel to address the issue.</p> <p>Project Manager to inform the Contract Administrator of any unexpected finds.</p>
Performance Indicator	<p>All unexpected finds are to be disclosed to the Site Auditor for advisement on the suitability of the management and any sampling regime prior to remediation / validation works proceeding.</p> <p>All unexpected finds are to be handled and stored in a safe and appropriate manner</p> <p>Unexpected finds for off-site disposal is classified and transported to an appropriate landfill facility.</p> <p>A completed transportation form and waste dockets shall be returned to the Environmental Specialist who shall maintained a record</p> <p>No environmental impact on, and disturbance to, the surrounding area from waste, no leaks or spills of oil or fuel.</p> <p>No waste is to be disposed of in the surrounding environment.</p>
Monitoring	<p>Regular observations of the earth work surface and excavations will be made by the Project Manager and Excavator Operator or spotter.</p> <p>Records of all unexpected finds will be kept (any asbestos burial pits uncovered during earth works should be surveyed and a geotextile warning layer placed on it).</p> <p>An up to date record of waste tracking and / or PASS/ASS treatment rates (if treated onsite) shall be kept by the Environmental Specialist.</p>
Responsibility	<p>The Principal Contractor is responsible for ensuring that appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant (the Environmental Specialist and archaeologist) as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.</p>

Demolition Management Plan

Reporting	<p>All unexpected Finds are to be documented, and included into the validation report.</p> <p>Maintenance of records on site of equipment inspections undertaken and landfill disposal/waste tracking and weigh bridge dockets, and any council approvals should be maintained onsite for inspection.</p> <p>A survey of any asbestos burial pits discovered on site should be recorded.</p>
Corrective Action (as required)	<p>Revision of the works strategy including relocation and alteration to the operating procedure if waste/leachate is shown to be entering the surrounding environment from the disturbance of the unexpected find.</p>

17 MONITORING REQUIREMENTS

17.1 Auditing and Records

The Project Manager will conduct regular audits of the Principal Contractors implementation of the DMP. Audits will involve a review of all environmental documents, records and reports to ensure compliance with the requirements of the DMP. If non-compliance is detected, the Principal Contractor will initiate to the satisfaction of the Project Manager the appropriate corrective action. Reference should be made to the audit guidelines in Section 4.

Key environmental and procedural issues to be covered by the audit will include, but may not be limited to:

-) Environmental management measures presented in Environmental Elements 1 to 9;
-) Environmental management measures presented in the AMP;
-) Adherence to reporting procedures;
-) Complaint and incident management; and
-) Legislative requirements.

Records of auditing and reporting will be maintained to demonstrate compliance with environmental requirements.

Environmental and construction records will include, but may not be limited to:

-) Complaint records;
-) Incident, non-conformance and corrective action reporting;
-) Communications with stakeholders;
-) Monthly waste management reporting;
-) Daily asbestos monitoring; and
-) DMP audit documentation.

18 EMERGENCY PREPAREDNESS AND RESPONSE

Specific and immediate responses to emergencies and environmental incidents will be determined by the Principal Contractor.

Table 13: Emergency Contacts

Organisation	Contact Number
Police, Fire, Ambulance	000
Emergency call service - International standard ¹	112
Text Emergency Call	106
ACCESS Canberra (Environment Quality & ACT Parks and Conservation)	13 22 81
State Emergency Service (SES)	24Hrs 132-500
ActewAGL – Electricity Emergency	13 10 93
ActewAGL – Gas Emergency	13 19 09
Icon Water	6248 3111
Campbell Medical Centre	02 6249 7533

19 SECURITY AND PUBLIC SAFETY

19.1 Restriction to Access

Perimeter fencing and/ barricades that restrict access to the proposed work zone and stockpile area should be installed. Only authorised persons wearing the appropriated PPE will be able to enter the excavation/construction and stockpile/staging areas during works.

Whilst excavations remain open, the site is unattended and works are not active, high visibility fencing will be placed around the boundary of the excavation to alert any people on site to the presence of the excavation.

19.2 Pedestrian and Traffic Control

Relevant signage will be in place during the excavation works to warn and protect pedestrians and other traffic of the potential exposures in the vicinity of the work area.

Signage shall also be erected to inform the public whom to contact in case of any complains

20 REPORTING

Environmental Elements 1 to 8 of the Project include Performance Objectives to be applied to specific aspects of the works and Corrective Actions that may be adopted should non-conformances or environmental incidents occur.

20.1 Non-compliance

A non-conformance is defined as a failure to fulfill a requirement of this DMP or other associated environmental document. All non-compliances must immediately be reported to the Contract Administrator, and the appropriate details of the non-compliance should be submitted (in writing via email) within 24 hours of the occurrence of the non-compliance.

The Project Manager or Subcontractors may identify and report a non-conformance.

20.2 Environmental Incident

An environmental incident is defined as an unplanned event that occurs that impacts, or has the potential to impact, on the environment (including natural or built). In the event of an environmental incident, the Contract Administrator should be notified immediately. The details of the environmental incident will be supplied to the Project Manager on reporting of any incident.

20.3 Reporting and Corrective Actions

When reporting a non-compliance or environmental incident, all immediate corrective actions which have been taken to rectify the situation will be documented. Further corrective action should be recommended if required at the time of reporting. Relevant agencies which require notification should also be identified.

The Principal Contractor will maintain a register of all non-compliances and environmental incidents, along with the corrective and preventative actions which have been implemented to mitigate and/or prevent further recurrences. The Principal Contractor must ensure and verify that corrective actions to control environmental impacts, and avoid future non-compliances have been undertaken by the appropriate personnel.

Table 14 details the general procedures to be undertaken when non-compliances and environmental incidents occur.

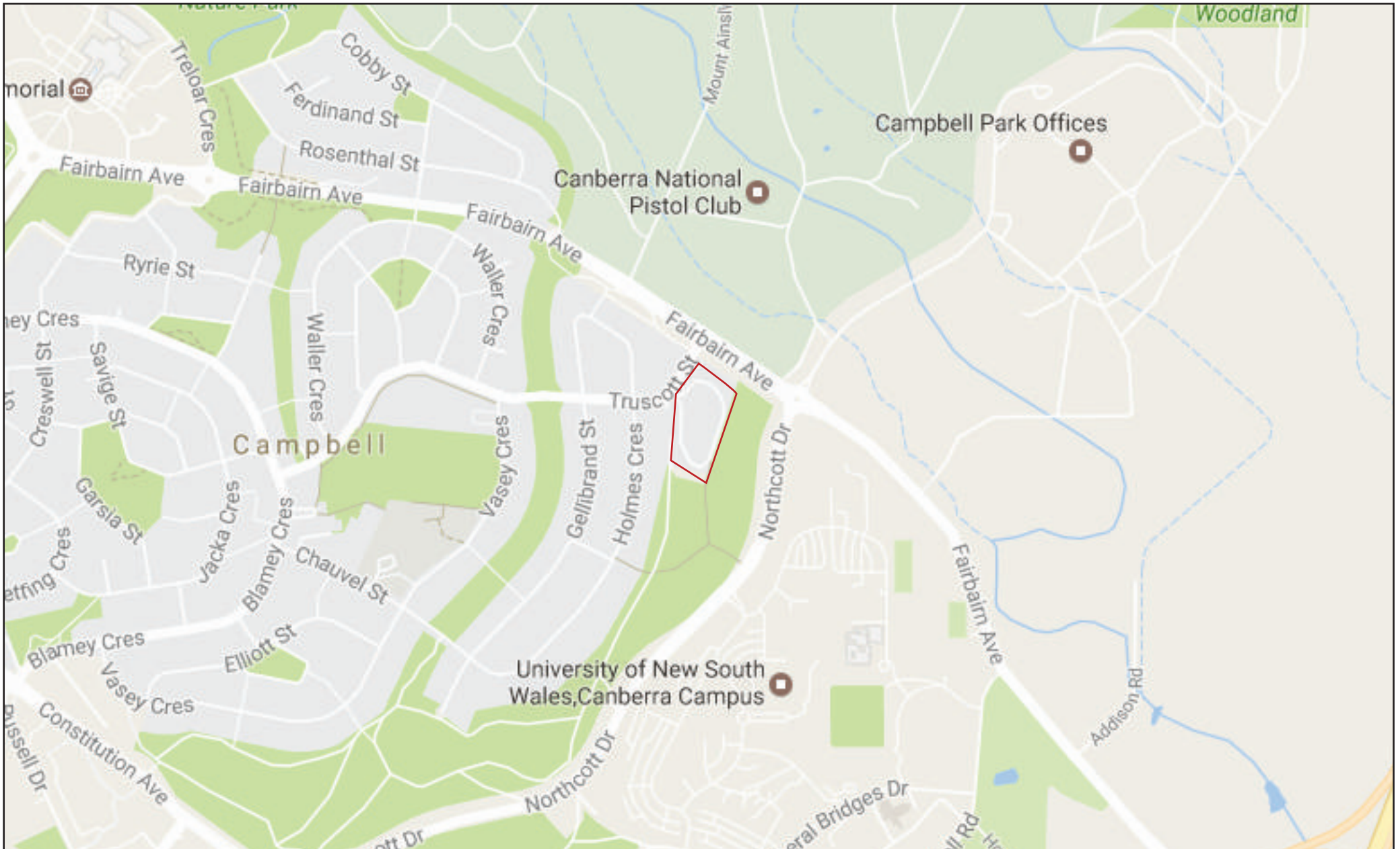
Table 14: Corrective and Preventative Action Procedures


Element	Management
Objective	To implement a system to identify, document, analyse and implement corrective and preventative actions for environmental non-conformance issues
Management Actions	<p>When a non-conformance or environmental incident occurs the Principal Contractor is to ensure corrective and preventive actions are implemented by:</p> <ul style="list-style-type: none">) Assigning personnel to undertake investigation as per 'Environmental Incident Investigation Report' Form or 'Non-Compliance Report' Form and designate lead investigator.) Maintain documentation of Investigation Report Forms and their corrective/preventive actions on site;) Report environmental non-conformances identified that cause or have the potential to cause a significant environmental impact immediately to the Contract Administrator.

	<ul style="list-style-type: none">) Provide a summary of environmental non-conformances with outstanding corrective actions to the Contract Administrator as requested.) Utilise corrective/preventative actions to revise and update CEMP and/or CEMP objectives, operational controls, and other aspects as required.) Review outstanding corrective action status.
Responsibility	<p>All Staff and Subcontractors are:</p> <ul style="list-style-type: none">) Responsible for informing their immediate manager of environmental non-conformances.) Responsible for undertaking corrective/preventative actions and effectiveness determinations as assigned.
Reporting	<p>Maintenance of records of '<i>Environmental Incident Investigation Report</i>' Forms and '<i>Non-Compliance Report</i>' Forms completed for the duration of the project.</p>

APPENDIX A

Site Figures



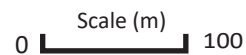
Key:
 Site Boundary



Site location:
 Academy Close, Campbell


Figure 1:
 Site Location

Job: 17067






Google

Key:
 Location of Site Fence



Scale (m)
 0  20

Site location:
 Academy Close, Campbell

Figure 2:
 Detailed Site Plan

Job: 17067

 **ARCADIS** Design & Consultancy
 for natural and built assets



- Key:
- Location of Site Fence
 - Proposed Location of Site Office and Parking
 - - - Traffic Direction



Scale (m)
0 100

Site location:
Academy Close, Campbell

Figure 3:
Site Office and Traffic Management
Plan

Job: 17067



APPENDIX B

Tree Management Plan

TREE PROTECTION NOTES

- Contractors are reminded that the majority of tree roots grow in the top 300 mm of soil. These are the feeder roots, often very fine roots that provide the tree with water, oxygen and nutrients. These roots typically grow between the tree's trunk to well beyond its 'drip-line' (the canopy edge). Ground works within the drip zone of a tree have the potential to do considerable damage to its root system. It can affect tree stability and tree health to such an extent that it will lead to the decline and possible death of the tree over a period of years.**
- Tree Protection**
Existing canopy clearance is not to be altered, unless otherwise approved. Crowns and apex of canopies are not to be altered or reduced. Ensure lifting equipment and load can clear height and width of tree canopy without damage to crown. Ensure construction equipment can pass beneath lowest limb, through driveway access.
- Tree Root Protection**
Excavation greater than 100mm depth that occurs within 2m of the drip zone of a tree must be approved by the relevant government agency.

- Where excavation is approved, the following measures are to be adopted for tree protection:
- Do not sever large roots (>30 mm diameter) closer than halfway from the drip-line to the trunk. Hand trenching to a depth of 300mm is required to locate these roots before any mechanical trenching is undertaken.
 - All roots must be cut cleanly with equipment specifically designed to cut roots cleanly or other suitable pruning equipment.
 - Roots exposed during excavation must be protected from desiccation. Keep lightly watered or cover with hessian, which must be kept moist.
 - Water trees that have had disturbance in their root zone. The amount and frequency of water needs to be adapted to the trees requirement, based on seasonal conditions.
 - Roots 50mm in diameter or larger shall be protected, including by excavation underneath tree roots where feasible;
 - Minimise width of excavation in vicinity of trees as far as possible. shoring of excavations should be adopted in lieu of benching, to minimise overall cut width.

Tree 'Regulated' Status by Virtue of Size

Under the Tree Protection Act 2005 a tree is termed a Regulated Tree and is to be protected if it is growing on Urban Leased Land and has at least one of:

- * A height of 12m or more; or
- * A trunk circumference of 1.5m (approx 0.5m in diameter) or more at 1m above ground level; or
- * Two or more trunks and the total circumference of all the trunks, 1m above ground level, is 1.5m or more, or
- * A minimum crown width of 12m or more, and
- * Must be alive - all dead trees have been ranked as Non Protected tree.
- * Is not a weed species under the Pest Plant & Animals Declaration 2005

Tree Protected Status

YES - The tree has a dimension that any activity must be assessed under the Tree Protection Act.
NO - The tree is sufficiently small or declared a Weed Species that it does not require assessment under the Tree Protection Act.
NA - Not applicable as Off Lease but often protected as these trees are generally on Government (Unleased) Land.

Future Tree Approvals

On-Leased Land: if a tree has protected status then approval must be gained from Tree Protection Unit prior to removal, lopping or ground damaging activity.
Off-Leased (Territory) Land: Please note all trees located external to the block boundary i.e. the verge, cannot be removed, pruned or damaged without the approval of the Urban Tree Management Unit, City Services (13 22 81) as on Government land.

LEGEND

- EXTENT OF WORKS - BLOCK 3 SECTION 65 BOUNDARY
- Existing non-regulated tree to be retained and protected (L = Low value)
- Existing non regulated tree to be removed (L = Low value)
- Existing regulated tree to be retained and protected (P = Poor value; M = Medium value)
- Existing Significant regulated tree to be retained and protected (E = Exceptional value; H = High value)
- Existing regulated tree proposed to be removed (P = Poor value; M = Medium value, H = High value)
- Tree protection zone - 2 metre zone beyond crown dripline
- Temporary Protective Fencing -Trees to be retained are to be surrounded by 1800 high continuous mesh temporary fencing as shown on plan for the duration of works. No stockpiling of material, installation of services or site sheds or storage is allowed within the fenced area. Fencing may be relocated temporarily for the purpose of landscape works and service installations, but must be re-instated to original alignment immediately upon completion of these operations
- Site Hoarding / Construction Fence
- Site Gate
- Site Access Points

NOTE:
 The Construction Tree Management Plan sets in place protective measures during construction of the proposed development. Refer dwg TMP02 for protective measures during demolition of existing buildings and infrastructure.

- NOTES:**
- 1) Generally offset protective fencing maximum 2m from location of proposed building.
 - 2) Generally offset protective fencing from proposed road kerbs maximum 500mm
 - 3) If fences are required to be moved for additional access, softwood timber battens are to be applied to any tree trunk likely to be impacted on by construction activities. Fences are to be reestablished immediately upon completion of works in that zone.
 - 4) No access, parking or stockpiling of materials within fenced zones.

NO.	DESCRIPTION	DWN	APPD	DATE
A	CONSTRUCTION TREE MANAGEMENT PLAN FOR DA	ND	JRD	12/10/11

NOTES
 - Copyright and property of Enviro Links Design Pty Ltd. May be used only for the stated project and issue status, and in accordance with terms of engagement for which it was commissioned.
 - To be used in conjunction with all relevant contracts, specifications, reports, drawings and development approval conditions. Obtain any outstanding statutory approvals prior to commencement of works.
 - Figured dimensions to be taken in preference to scaled measurements. Dimensions in millimetres unless noted otherwise.
 - Contractor to be responsible for locating all services and obtaining necessary clearances and approvals. Contractor to verify dimensions, levels & details to site conditions and prior works, and report all discrepancies to the Superintendent for resolution before commencing work.
 - Present samples and gain approval from Superintendent for any nominated materials or finishes.
 - Adopt and implement approved Tree Management Plan, Landscape Management & Protection Plan & Environmental authorisations. All works to be in accordance with current TAMS (DUS) Standard Specifications for Urban Infrastructure Works unless otherwise prescribed. All disturbance by works must be reinstated to existing condition.

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 PLANNING SUSTAINABLE FUTURES

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 www.envirolinks.com.au

PROJECT

CAMPBELL
 (Block 3 Section 65)

TITLE

CONSTRUCTION TREE MANAGEMENT PLAN

SCALE	NORTH	
1:1000 (A3)	N/A	
JOB NO.	DWG NO.	ISSUE
1120	TMP01	A

