



APPENDIX E

Environmental Management Plan (EMP) Proposed Remediation Works



9 September 2010

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REGIONAL PARK ZONE, PART LOT 7 AND
8 IN DP1127653, EDMONDSON PARK, NSW

ENVIRONMENTAL MANAGEMENT PLAN (EMP), PROPOSED REMEDIATION WORKS

Submitted to:
Landcom
Level2, 330 Church Street
PARRAMATTA NSW 2150

REPORT

Report Number. 107623047-002-R-Rev1



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Site Owner/Environmental Manager Details

The following table outlines the contact details for the Site Owner or Environmental Manger Representative (EMR) as defined in Section 2.1. The contact details should be updated in this plan should the Site Owner/Site Environmental Manager change.

Name	Organisation	Date Appointed	Contact Information
TBA	TBA	TBA	Phone: TBA Mobile: TBA Email: TBA
			Phone: Mobile: Email:
			Phone: Mobile: Email:
			Phone: Mobile: Email:

Document Distribution and Revision

The following outlines the parties to which the EMP has been distributed. Any complete revision of the document will be accompanied by a new revision number i.e. 001 and date on the front page of this document. All minor changes will be incorporated into this revision and the table below will be updated.

Organisation	Contact	Date	Document ID and Revision Level	Author / Editor
Golder	Glen Fuller	September 2010	107623047_002_R_Rev1	G Fuller
Landcom	David Schofields	September 2010	107623047_002_R_Rev1	NA
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1.0 INTRODUCTION

Golder Associates (Golder) were engaged by Landcom to prepare this Environmental Management Plan (EMP) for proposed remediation works required to be carried out within Landcom's existing landholding at Zouch Road, Edmondson Park NSW (hereafter referred to as "the Site"). A Site Locality Plan is presented as Figure 1. The Site boundary including cadastre titles and boundaries are presented in Figure 2. details.

The purpose of this EMP is to provide a plan for the management of identified environmental issues across the site during the implementation of remediation works.

To assist planning authorities in assessing this document the structure of this EMP has been based on Department of Planning (2004), *Guideline for Preparation of Environmental Management Plans*.

This EMP accompanies a Remediation Action Plan (RAP) prepared by Golder, reference 107623047-001-R-RevB dated August 2010 (Golder 2010a) which details proposed remedial activities and remedial objectives.

The RAP (Golder 2010a) and EMP are submitted as supporting documentation for the Edmondson Park South Concept Plan approval being considered by the Minister for Planning under 3A planning and approval legislation. It is Landcom intent to gain approval for the proposed remediation works under the Concept Plan approval process.

1.1 Project Description

The Site is within the Edmondson Park Release Area, which was initially rezoned by an amendment to Liverpool local Environmental Plan 1997 (Amendment No.83) in March 2006 and subsequently amended by Liverpool Local Environmental Plan (Amendment No. 114) in May 2008. The Site is currently zoned as follows:

- R1 General Residential
- R5 Rural Residential
- B2 – Local Centre
- SP2 Infrastructure (Railway)
- RE1 – Public Recreation
- E1 – National Parks and Nature Reserves

The Concept Plan is generally consistent with the existing zones, but will seek to rezone part of the R1 General Residential zone to SP2 Infrastructure (Educational Establishment), rezone the B2 – Local Centre zone to B4 – Mixed Use zone, and rezone the R5 Rural Residential zone to E4 – Environmental Living.

The development of Site will consist of four distinct zones (refer to Figure 3) identified as the following:

- Rural-Residential Zone West (RRZW) which will consist of up to 14 rural residential lots with a minimum lot size of 4000m² and within a total area of around 8.3 ha located along the western boundary of the Site.
- Residential Zone North of Rail Alignment (RZNRA) which has an area of about 43 ha and will largely consists of R1 General Residential zone, a school, public open space and Mixed Use development in the town centre zone. The development of this area will be progressive with the Town Centre area and school site developed first followed by the remaining residential areas;
- Rail Corridor (RC) has an area of about 6.4 ha, which transects the site from the south eastern corner to the north western corner of the Site. The rail corridor is approximately 60m wide and will be



developed by the Transport Construction Authority (TCA) for the South West Rail Link. This corridor also includes a small wedge of land between the proposed town centre and regional park (refer to site ownership plan)

- Conservation Zone (Regional Park) South of Rail Alignment (CZSRA) which has an area about 36 ha and will form part of the Edmondson Regional Park.

The development of the conservation area is part of a conservation agreement (CA) entered into between the Australian Government and NSW Government in 2009 (CA 2009).

The proposed remediation works within the rail corridor will be carried out by TCA and as such this EMP does not include specific management strategies for the areas within the rail corridor.

1.2 Proposed Remediation Works

Remediation works required to render the Site suitable for the proposed end land use will generally consist of the following:

- A visual site inspection and removal of all military associated objects such as concertina wire, training pits, former structures / concrete slabs, general rubbish, scrap metal and asbestos piping;
- Clearance of vegetation within boundaries of the R1, E4, B4 (residential zones) and SP2 (school zone) to facilitate a 100% UXO search and removal of small arms ammunition (SAA), Vegetation clearance will generally involve the removal of vegetation to near surface level including trees earmarked for removal as part of the proposed development.
- A visual inspection and removal of observed SAA within the E1 and RE1 conservation and open space zones. Limited vegetation clearance (slashing of grasslands) will be carried out to facilitate the visual search and removal of SAA from these areas;
- Remediation / management of lead particulate impacted material associated with the former rifle range stop butt. Remedial works will involve the excavation/re-engineering of lead particulate impacted material, placement within a centralised location and placement of a cap (encapsulation structure) to minimise surface water infiltration and limit access to material by the public;,
- Asbestos Containing Material (ACM) identified will be relocated to the lead particulate re-engineered area for burial in a designated area of the encapsulation structure; and
- Waste material (vegetation and building demolition within the north western corner of the Site) will be excavated and disposed off site subject to further assessment during remediation works;
- PAH impacted material identified at TP599 will be excavated, transported and disposed off site in accordance with NSW DECCW Waste Classification Guidelines

In addition to the proposed remediation works detailed above a Site Management Plan (SMP) will be adopted to manage ongoing potential risks associated with the retainment of lead particulate impacted material, ACM, potential SAA and UXO within the conservation zone. A draft SMP has been prepared by Golder (Golder 2010 B) for discussion and finalisation and accompanies the RAP and EMP

This EMP has been prepared to address the environmental management requirements during the implementation of the above remediation works.

1.3 EMP Objectives and Context

The remedial works follow a detailed site investigation (DSI) and Limited UXO remediation carried out in 2005 (Golder 2005). This EMP accompanies a Remediation Action Plan (RAP) which details proposed remedial activities and remedial objectives. The general objectives of this EMP are to assist in:



- Successful implementation of the RAP in an environmentally responsible manner;
- The project being conducted in a manner that minimises impacts to the physical, biological, cultural and social environment;
- Compliance with all relevant environmental legislation;
- Ensuring all employees and contractors involved in the project are aware of their environmental responsibilities and of the procedures for management and reporting of environmental incidents; and
- Evaluation of potential environmental impacts at the planning stage so that impacts may be minimised or avoided, across the extent of the proposed works.

1.4 Environmental Policy

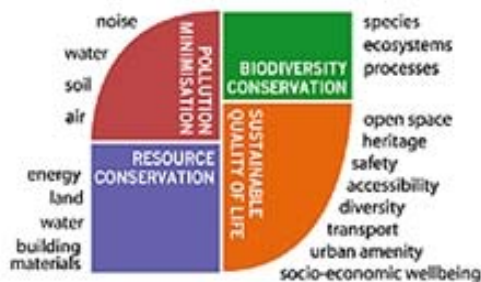
The remediation works will be undertaken on behalf of Landcom and therefore all works will comply with Landcom's sustainability policy.

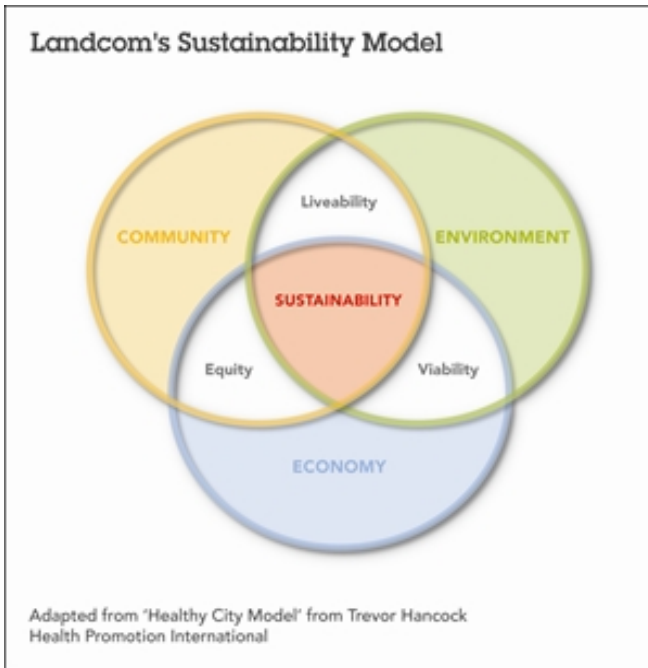
There are four principles that guide Landcom's activities and underpin their sustainability targets. According to these principles they must:

- Deliver a sustainable quality of life;
- Conserve resources;
- Minimise their impact on biodiversity; and
- Minimise pollution.

The way Landcom integrates sustainability into their business revolves around their sustainability criteria and targets. These are set in their business plans, included in staff performance agreements and incorporated into developers' and builders' tenders and contracts. They are also included in the pre-qualification and ongoing performance management of civil works and landscape contractors and project managers.

The diagrams below represent how Landcom integrates sustainability into their internal and external business processes.





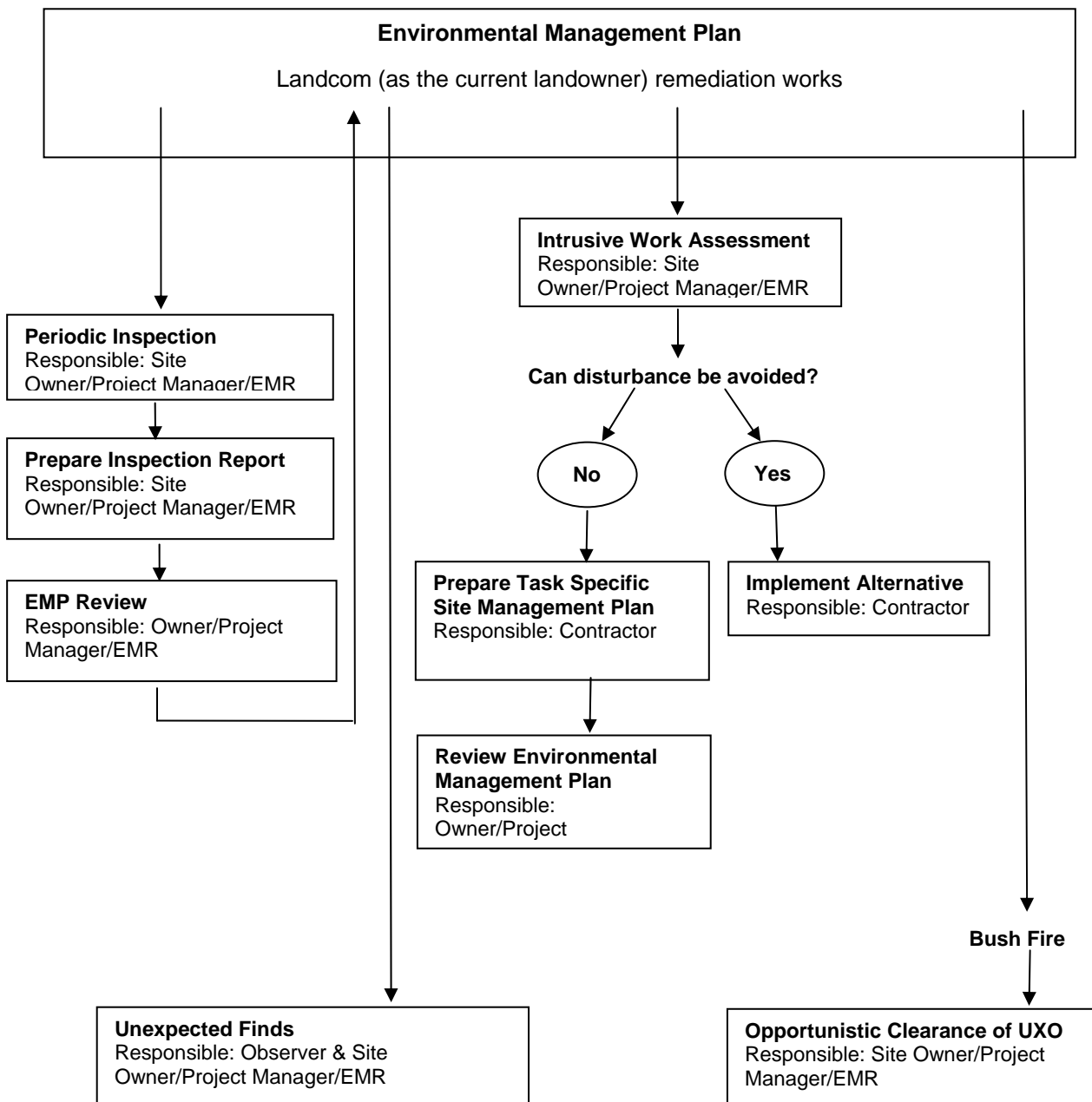


2.0 ENVIRONMENTAL MANAGEMENT

2.1 Environmental Management Structure and Responsibility

Controlled copies of this EMP are to be issued to appropriate staff. All staff on-Site working within the subject area are to be aware of their environmental responsibilities. The lists of contacts at the beginning of this document are to be reviewed and confirmed during the course of any future projects. The figure below presents a management flowchart for the project.

Figure A: Management Flow Chart





2.1.1 Overall Responsibility

Effective implementation of the EMP is necessary to minimise risks associated with the encapsulation structure, potential UXO and protected Cumberland Woodlands at the Site. The overall responsibility for implementing and/or ensuring that implementation of the environmental control measures detailed in this EMP lies with the Site owners, Landcom and its Principal Contractor (during the remediation phase) and the Department of Environment, Climate Change and Water (DECCW) - National Parks and Wildlife Services (NPWS) division, as future owners of the Regional Park.

The site owners may appoint “a responsible party” (Environmental Management Representative, EMR) with the responsibility of implementing this EMP and ensuring its compliance with all Site users. Even when the responsibility is delegated, ultimate accountability that all aspects of this EMP are implemented, rest with the Site owners.

The owners must provide all persons involved in Site operation and all contractors and lessees conducting intrusive works with a copy of the EMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of this EMP be aware of their environmental responsibilities.

The lists of contacts at the beginning of this EMP document are to be reviewed and confirmed during the course of any future project. Any changes to the EMP must be documented and signed off by the Site owner. A register for changes is found at the beginning of this document.

2.1.2 Environmental Management Representative (EMR)

The EMR will supervise and/or observe the work and will provide the verification of the actions. This will ensure that safeguards are met and that there is an early identification and resolution (where possible) of unforeseen issues.

Responsibilities of the EMR are:

- Management of the site environmental aspects and day to day implementation of SMP;
- Ensure that all works on the Site are undertaken in accordance with this SMP;
- Ensure that required parties (contractors, environmental consultants) are engaged to implement the requirements of this SMP and are inducted to its requirements;
- Maintain all site records related to implementation of this SMP;
- Ensure that relevant inspections and reports are completed, submitted to appropriate stakeholders (as required) and maintained by Council;
- Report environmental issues to Council when and/as required; and
- Notifying relevant stakeholders of intended any below ground works as required.

2.1.3 Site Contractors

- All Site contractors must implement the EMP fully and be aware of risks and obligations indicated in the document;
- The EMP must be referenced as a part of the Contractor induction to the Site that all operators and workers on the Site are aware of these requirements, the risks involved and the reporting of any breaches of EMP; and
- The contractor is responsible for preparing task specific EMPs and an Occupational Health and Safety Plans as required.



2.1.4 Environmental Personnel / Environmental Consultant

Monitoring, response to issues, review and reporting activities and supervision of any intrusive works must be conducted by suitably trained personnel and/or qualified environmental consultant who is preferably a member of the Australian Contaminated Land Consultant Association (ACLCA). It is the Environmental Personnel/Consultant's responsibility to:

- Plan, conduct and report on specific monitoring aspects of the SMP;
- Make sound environmental recommendations for action arising from the monitoring;
- Ensure that the EMP has been implemented and that all activities have been carried out in accordance with *Protection of the Environment Operations Act (1997; POEO Act)*; and
- When deviations to this EMP occur, the Personnel/Consultant shall notify the Site EMR.

2.2 Approvals, Licensing Requirements and Reporting

The proposed remediation works will be considered under the Part 3A Concept Plan Approval being sought by Landcom.

All activities associated with the project must comply with relevant legislation and regulations.

2.2.1 State Legislation, Regulatory Licences and Approvals

Activities associated with the project must comply with State legislation and policies including, although is not limited to:

- *State Environment Planning Policy (SEPP) (Major Development) 2005*;
- *SEPP (Infrastructure) 2007*;
- *SEPP 55 (Remediation of Land) 1998*; and
- *Environmental Planning and Assessment Act 1979 (EP&A Act)*.

Depending on how the Minister exercises his powers under Section 75P of the *EP&A Act*, (which applies to Part 3A Concept Plan Approval), a number of state regulatory instruments (including, although is not limited to those listed in Table 1) may also apply.

Also subject to the Minister's discretion under Section 75P of the *EP&A Act*, the following authorisations may not be able to be refused if necessary for carrying out an approved Part 3A project and may be required to be substantially consistent with the Part 3A approval (under Section 75V):

- An aquaculture permit under Section 144 of the *Fisheries Management Act 1994*;
- An approval under Section 15 of the *Mine Subsidence Compensation Act 1961*;
- A mining lease under the *Mining Act 1992*;
- A production lease under the *Petroleum (Onshore) Act 1991*;
- An environmental licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any purposes referred to in Section 43 of that Act);
- A consent under Section 138 of the *Roads Act 1993*; and
- A licence under the *Pipelines Act 1967*.



Under Section 75U of the EPA&A Act, if approval to carry out the project is granted under Part 3A of the EPA&A Act, the following authorisations (and the provisions of any Act that prohibit an activity without such an authority) would not be required:

- The concurrence under Part 3 of the *Coastal Protection Act 1979* of the Minister administering that Part of the Act;
- A permit under Section 201, 205 or 219 of the *Fisheries Management Act 1994*;
- An approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977*;
- A permit under Section 87 or a consent under Section 90 of the *National Parks and Wildlife Act 1974*;
- An authorisation referred to in Section 12 of the *Native Vegetation Act 2003* (or under any Act to be repealed by that Act) to clear native vegetation or State protected land;
- A permit under Part 3A of the *Rivers and Foreshores Improvement Act 1948*;
- A bush fire safety authority under Section 100B of the *Rural Fires Act 1997*;
- A water use approval under section 89, a water management work approval under Section 90 or an activity approval under section 91 of the *Water Management Act 2000*; and
- Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of an approved project.

Whilst the above authorisations would not be required, consultation with the relevant agencies that administer these Acts should be undertaken to ensure the intent of the Acts is appropriately observed.

2.2.2 Commonwealth Legislation

In addition to the above State legislation that may be relevant to the proposal, approval required under Commonwealth legislation includes, although is not limited to:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Aboriginal and Torres Strait Island Heritage Protection Act 1984*

2.2.3 Australian Standards

Activities associated with the project must also comply with relevant Australian Standards including:

- *Storage and Handling of Dangerous Goods Code*;
- *AS 1940 for the Storage of Hazardous Substances*; and
- *AS 2601-2001 for the Demolition of Structures*.

Table 1 below presents a list of legislation (and regulators) which may be relevant to the Project along with any licenses, approvals and permits required. Table 1 also identifies the person responsible for ongoing compliance monitoring.



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

Table 1: Regulatory Compliance Requirements

Regulatory Instrument	Licence/Permit/Approval/ Guideline/Plan	Responsible Regulatory Body	Responsibility for Ongoing Compliance Monitoring	Reporting Frequency/ Milestones	Report Content
State Legislation and Policies					
<i>SEPP (Major Development) 2005</i>	Part 3A Concept Plan Approval identified in this instrument is being sought to undertake proposed remediation works.	Department of Planning	Project Manager, EMR	N/A	N/A
<i>SEPP (Infrastructure) 2007</i>	Site works to be conducted primarily under this instrument would be works within the Rail Corridor to be carried out by others.	Department of Planning	Transport Construction Authority (TCA)	N/A	N/A
<i>SEPP 55 (Remediation of Land) 1998</i>	Classed as Category 1 works due to fauna and flora issues. Remediation Agreement not considered to be required.	NSW Department of Environment, Climate Change and Water and Department of Planning	Project Manager, EMR	N/A	N/A
<i>Environmental Planning and Assessment Act 1979</i>	Remediation and earthworks to comply with Council conditions made under Part 4 of the Act. Section 75U outlines other approvals that are not required for an approved Part 3A project.	Department of Planning	Project Manager, EMR	N/A	The structure of this EMP is based upon the <i>Guidelines for the Preparation of Environmental Management Plans.</i>
Other State Legislation that may apply					
<i>Heritage Act 1977</i>	No Non-Indigenous heritage items affected by the remediation and earthworks. Note: Approval under Part 4 and excavation permit under Section 139 are not required and Division 8 Part 6 does not apply for an approved Part 3A project (EP&A Act, Section 75U)	Heritage Branch of Department of Planning and council	EMR	N/A	N/A



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

Regulatory Instrument	Licence/Permit/Approval/ Guideline/Plan	Responsible Regulatory Body	Responsibility for Ongoing Compliance Monitoring	Reporting Frequency/ Milestones	Report Content
<i>National Parks and Wildlife Act 1974</i>	Parts of the Site are to be retained as part of a Regional Park under the Act. Note: Permit under Section 87 and consent under Section 90 are not required for an approved Part 3A project (EP&A Act, Section 75U)	National Parks and Wildlife Service	EMR	N/A	N/A
<i>Native Vegetation Act 2003</i>	Cumberland Plains Woodland to be managed under the National Parks and Wildlife Act Note: Authorisation under Section 12 is not required for an approved Part 3A project (EP&A Act, Section 75U)	National Parks and Wildlife Service	EMR	N/A	N/A
<i>Fisheries Management Act 1994</i>	N/A Note: Permits under Sections 201, 205 and 219 are not required for an approved Part 3A project (EP&A Act, Section 75U)	State Fisheries	EMR	N/A	N/A
<i>Soil Conservation Act 1938</i>	N/A	NSW Office of Water	EMR	N/A	N/A
<i>Rivers and Foreshores Improvement Act 1948</i>	Approval now transferred to Water Management Act 2000 Note: A permit under Part 3A is not required for an approved Part 3A project (EP&A Act, Section 75U)	NSW Office of Water	EMR	N/A	N/A



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

Regulatory Instrument	Licence/Permit/Approval/ Guideline/Plan	Responsible Regulatory Body	Responsibility for Ongoing Compliance Monitoring	Reporting Frequency/ Milestones	Report Content
<i>Water Management Act 2000</i>	Works to take place within 40 metres of the high bank of two creeks on-Site. Therefore, although a controlled activities approval is not required, consultation should be undertaken to ensure the intent of the Act is appropriately observed. Note: Approvals under Section 89, 90 and 91 are not required for an approved Part 3A project (EP&A Act, Section 75U)	NSW Office of Water	EMR	N/A	N/A
<i>Protection of the Environment (Operations) Act 1997</i>	All wastes generated on-Site are to be pre-classified prior to off-Site disposal as per NSW DECCW <i>Waste Classification Guidelines</i> .	Department of Environment, Climate Change and Water	Project Manager and EMR	N/A	N/A
<i>Contaminated Land Management Act 1997</i>	Classed as Category 1 works due to fauna and flora issues. Remediation Agreement not considered to be required.	NSW Department of Environment, Climate Change and Water	Project Manager, EMR	N/A	N/A
<i>Environmentally Hazardous Chemicals Act 1985</i>	N/A	Department of Environment and Climate Change	EMR	N/A	N/A
<i>Occupational Health and Safety Act 2000</i>	N/A	WorkCover NSW	EMR	N/A	N/A
<i>Occupational Health and Safety Regulation 2001</i>	N/A	WorkCover NSW	EMR	N/A	N/A
<i>Occupational Health and Safety Amendment (Dangerous Goods) Act 2003</i>	N/A	WorkCover NSW	EMR	N/A	N/A



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

Regulatory Instrument	Licence/Permit/Approval/ Guideline/Plan	Responsible Regulatory Body	Responsibility for Ongoing Compliance Monitoring	Reporting Frequency/ Milestones	Report Content
<i>Waste Avoidance and Resource Recovery Act 2001</i>	N/A	Department of Environment and Climate Change	EMR	N/A	N/A
Commonwealth Legislation					
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	The Site falls under a Conservation Agreement which has been enacted under the Act.	Commonwealth Department of the Environment, Water, Heritage and the Arts	EMR	N/A	N/A
<i>Aboriginal and Torres Strait Island Heritage Protection Act 1984</i>	Items to be managed under the <i>National Parks and Wildlife Act</i>	Department of the Environment, Water, Heritage and the Arts	EMR	N/A	N/A



2.3 Environmental Training

All employees on the project should undergo general environmental awareness training regarding their responsibilities under the EMP. The training should ensure that all employees understand their obligation to exercise due diligence for environmental matters. It should be noted that “employees” in this instance means all people working on-Site including tenants, contractors and sub-contractors.

It is the responsibility of the remediation contractor to prepare their Site specific training; however any environmental training programme should incorporate the following:

- A general site induction;
- Familiarisation with the requirements of the EMP (summary of the EMP and all associated management plans);
- Environmental emergency response training (outlining potential environmental emergencies and relevant contacts and response procedures), including spill management/response procedures;
- Familiarisation with Site environmental controls (bunded areas, spill kit locations, emergency shut-off points etc);
- The location and nature of physical exclusion zones on-site and people authorised to enter these zones;
- Types of materials which are expected to require handling during the course of the project (i.e. asbestos containing materials, lead particulate and UXO), and the people authorised to handle them; and
- Targeted environmental training for specific personnel. For example, the Construction Manager or the HSEQ Manager may require specific training in spill management and compliance monitoring.

As noted in Section 3.4, an environmental training register for implementation during the project is presented in Appendix C of this document.

2.3.1 Exclusion Zone Training

Exclusion zones on-site refer to areas which comprise Cumberland Plains Woodland. In order to limit disturbance to these areas only limited site workers will be authorised to enter these zones. All authorised site staff (who will generally comprise the remediation manager, Landcom representatives and project ecology and heritage consultants) will require site-specific training in addition to the standard environmental training for the project and will be registered as being authorised to enter the exclusion zones.

This specific training will include (but not be limited to) the following:

- The nature of the exclusion zones and particular items which are not to be disturbed by works (both biological and heritage items);
- Special access requirements (i.e. sign-on, sign-off and specific access points along zone perimeters);
- Special management and mitigation measures to be employed within exclusion zones (e.g. weed management protocols); and
- Activities which are prohibited within exclusion zones.

All project staff that have not undergone this training will not be authorised to enter these zones.

2.3.2 Additional Training Requirements

The need for additional or revised training shall be identified and implemented from outputs of:

- Monitoring programmes;



- Changes to the Site and surrounding receptors;
- Purge burn methods for management of the blow down; and
- Alterations to regulatory frameworks and future reviews of the EMP as required.

2.4 Emergency Contacts and Response

Table 2: Emergency Contacts

Agency/Organisation	Name	Phone
Landcom	Development Director	(02) 9841 8600
Golder	Project Manager (Jonathon Hilliard)	(02) 9478 3908 0418 469 235
Remediation Contractor	Remediation Contracting Manager	TBA
Department of Planning	Head Office	(02) 9228 6111
Department of Environment, Climate Change and Water	Head Office Pollution Hotline	(02) 9995 5000 131 555
Transport Infrastructure Development Corporation	General Enquiries Urgent Enquiries	1800 684 490 1800 775 465
Campbelltown City Council	General Enquiries	(02) 9605 5336
National Parks and Wildlife Service	General Enquiries	(02) 9995 5000
NSW Office of Water (Campbelltown)	Mohammed Ismail	(02) 9895 7978
Sydney Water Corporation	Emergencies	13 20 90
SES	NSW Headquarters	(02) 4226 2444
Fire Brigade Ambulance Police	As Required	000 or 112 (mobile)



3.0 IMPLEMENTATION

3.1 Risk Assessment

Golder has carried out a general qualitative environmental hazard risk assessment to assist in the assigning of risk associated with activities carried during the remediation and earthworks. Risk is assessed based on the three risk matrix tables below (Tables 3 to 5) and individual potential risks are assessed in Table 6. Any additional hazards which may be identified by the EMR should be assessed based on this risk matrix.

The use of this matrix will allow the EMR to predict potential hazards and their risk ranking and thus put in place appropriate management options to mitigate the risk based on its likelihood and consequences.

Table 3: Evaluating Level of Risk

Likelihood (see likelihood table)	Consequence (see consequence table)		
	Low	Medium	High
Low	L	L	M
Medium	L	M	H
High	M	H	H

Table 4: Evaluating Likelihood

Level	Descriptor	Description
High	Almost certain	Is expected to occur in most circumstances
Medium	Likely/possible	May occur at some time
Low	Unlikely/rare	May occur in exceptional circumstances

Table 5: Evaluating Consequences

Level	Description
High	Serious damage to environmental receptor and/or human health Potential prosecution Potential litigation Loss of professional reputation
Medium	Loss of Marina services and clients Unacceptable cost over run Unacceptable delays to Marina operations and project programmes Potential adverse media exposure Involvement of external parties
Low	The consequences are dealt with by routine operations



Table 6: Qualitative Environmental Risk Assessment

Activity	Hazard/Incident	Likelihood	Consequence	Risk
Weed Infestation	Infestation of endangered communities	Medium	Medium	Medium
	Degradation of habitat	Medium	Medium	Medium
	Restriction of access (e.g. blackberry thickets)	Medium	Low	Medium
Vegetation Clearing	Habitat destruction/fragmentation	High	Medium	High
	Reducing health of Cumberland Plains Woodland	Medium	Medium	Medium
	Loss of amenity	Medium	Low	Low
	Loss of habitat for Cumberland Woodland Land Snail	Medium	Medium	Medium
	Erosion hazard	Medium	Medium	Medium
Unexploded Ordnance Remediation	Risk to workers on-Site from potentially explosive materials	Medium	High	High
	Soil erosion from land clearing during remediation	Medium	Medium	Medium
General Remediation / Earthworks	Noise impact during works	Medium	Low	Low
	Increased movement of heavy vehicles onto Site through existing rural residential area (Denham Court) –	High	Low	Medium
	Oil/fuel spill into waterways from vehicles/machinery	Low	High	Medium
	Oil spill	Low	Medium	Low
	Dumped rubbish	Medium	Low	Low
	Runoff flowing into natural waterways	Medium	Medium	Medium
	Ignition source and bushfire hazard	Low	High	Medium
	Human health risk from handling exposed contaminants (asbestos, PAH, lead, etc)	Medium	High	High



3.2 Environmental Management Activities and Controls

3.2.1 Critical Habitat Management Plan

Flora and fauna issues are addressed in the following management strategies. Flora and fauna issues are covered in greater detail in the Cumberland Land Snail Survey and Management plan. The plan includes protocols for threatened flora and fauna species, handling of native fauna, tree protection and weed management.

Impacts

Remediation and earthworks activities have the potential to damage the flora and fauna in natural ecosystems within the Site, and impact on local biodiversity in these areas. Examples of potential impacts are introduction of weed species and damage to threatened species by machinery.

Objectives

The objective of flora and fauna management is to minimise and manage any potential impacts to flora and fauna from Site activities in the following areas:

- Environmentally sensitive areas where natural ecosystems predominate, Cumberland Woodlands; and
- Less sensitive environments (areas zoned for development) where flora and fauna is likely to be disturbed by the Site activities.

Controls and Specific Actions

Flora and fauna management will be carried out in accordance conditions imposed by NPWS (Section 91) and Conservation Agreement entered into by the NSW and Federal Government of Australia (CA 2009). Flora and fauna management shall be completed by generally applying the following measures:

- The areas of native vegetation clearing shall not extend beyond the approved areas;
- Areas where UXO and lead impacted material remediation fall within designated Cumberland Woodlands and critical habitat of the Cumberland Land Snail shall be carried out in a manner so not to impact on these two receptors. More specifically areas identified will be flagged and included in the Site Induction;
- Large plant will be restricted from these identified areas and so impacted material collected using smaller plant as to minimise potential impact from site activities;
- Site vehicles will be required to travel along designated paths, no larking will be tolerated and offending personnel removed from site;
- Prevention of exotic seeds and weeds entering the site will be managed by the following procedure:
 - All site vehicles will need to be cleaned initially prior to entering the site, subsequent access by vehicles will include an inspection at the beginning of each day prior to entering the site;
 - A rock blanket will be placed at the entrance with all vehicles required to enter and leave the site from this location; and
 - If required vehicles will be cleaned using a high pressure cleaner.
- Use of spill control measures to minimise impacts associated with spillage Refer to Spill Control Procedure (Appendix C); and
- Remediation materials, equipment, debris and refuse will be managed to prevent damage to flora and fauna.



Contingency

In the event of damage to endangered Flora such as the Cumberland Woodlands the following procedure will be implemented;

- Report all incidents to the Project Manager;
- Remove machinery and personnel from the area;
- Damaged trees will be inspected by a qualified arborist if required;
- Repairs to trees and a assessment will be carried out by a qualified arborist;
- Prepare an environmental incident report for review by the Landcom Project Manager; and
- Verification of actions has been satisfactorily implemented.

3.2.2 Soil Management Plan

Impacts

Soil erosion is the collection and transportation of soil particles from their place of origin to another location. Areas that have been disturbed represent a high risk of soil erosion as the soil particles are not bound to the soil matrix and are easily transported by water. Soil erosion results in land degradation, and sediments entering the stormwater system of natural and man-made waterways.

Acid Sulfate Soils (ASS) has not been identified at the Site.

Acid Sulfate Soils (ASS) are sediments and soil containing iron sulfides, which generate sulfuric acid when exposed to oxygen. Acid sulfate soils are commonly found in the estuarine floodplains of New South Wales, below 5 m AHD. They may be deeply deposited and covered by other sediments. ASS are usually found in coastal floodplains, rivers and creeks.

Contaminated soils may result from past land uses, including industrial uses, fuel and chemical manufacture or storage, agriculture, landfilling or waste management activities, and historical filling of sites.

Objectives

The objectives of the soil management plan, including erosion control and contaminated soil management is to minimise the impacts to the biophysical environment, including:

- local water ways;
- natural environments;
- local communities;
- construction workers; and
- both the local and regional environment.

Controls and Specific Actions

The EMP adopts a risk management approach to the identification and management of contaminated soils. This approach requires:

- Delineation of known contaminated material based upon the previous investigation works;
- Visual and field assessment of soils and collection of soil samples where other areas of potential contamination risk are identified;
- Laboratory analysis of soil samples considered to be potentially contaminated;



- Notification to Landcom & NSW DECCW of contamination that is considered to represent a significant risk of harm to human health or the environment if identified during site remedial works; and
- Excavation of contaminated materials (considered to predominantly comprise lead particulate, asbestos), and emplacement in an Engineered Fill Area (the details of which are presented in the RAP for this phase of work).

Effective soil management will be accomplished by generally applying the following measures:

- Backfill excavations as soon as reasonably practical; ;
- Stabilisation of exposed surfaces vulnerable to erosion;
- Installation of sediment controls; such as silt fencing in areas immediately adjacent to disturbance and creeks;
- All work associated with contaminated spoil, including the preparation will be carried out in accordance with EPA guidelines and guidelines prepared by the Australian and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NHMRC); and
- In riparian areas and other open areas, develop erosion controls in consultation with the Office of Water and if required, apply for a Controlled Activities Approval under the *Water Management Act 2000*.

3.2.3 Unexploded Ordnance Management Plan

Impacts

UXO management addresses the effects to the environment from disturbance of these materials / objects within known and unknown parts of the Site as a result of site activities.

Potential UXO impacts associated with excavation works and proposed remediation activities are;

- Personal injury to site workers from exposure to unexploded ordnance; and
- Explosive residue and fragments remaining across the Site;

Although residue from explosive charges is considered low there is potential for unburned explosives within areas of the site.

Objectives

The objectives of Unexploded Ordnance Management are to successfully remove UXO from proposed areas to be disturbed as part of remedial works and residential areas while minimising the potential exposure of UXO to general site personnel, local community and flora that may inhabit the site.

Controls and Specific Requirements

The completion of UXO Management will generally be accomplished by the following procedures;

- All sites to be disturbed shall be searched by the UXO consultant with work not permitted until clearance of each location is obtained;
- Objects identified shall be investigated by the UXO consultant and if UXO encountered managed in accordance with the Procedure outlined in Section 4.2.4;
- In areas zoned for urban development (i.e. R1, E4, B4 and SP2 zones) the ground vegetation is to be removed to allow adequate investigation and removal of material to facilitate the construction works. However, no mass vegetation removal is proposed in the conservation zone except for the encapsulation area where some vegetation will be removed to facilitate the collection of ACM, lead particulate and construction activities. As a result only partial investigation and removal can be



conducted. In order to minimise the potential hazard associated with this partial removal it is considered that future opportunistic UXO investigations and removal works be conducted during natural periods where vegetation is low or not present (e.g. following bushfires);

- Site personnel will be required to attend a site induction that will include identification and procedures to be implemented with respect to UXO on the site. The UXO consultant will carry out this part of the induction.

3.2.4 Air Quality Management Plan

Impacts

Air quality management addresses the effect to the biophysical environment from air pollution as a result of the remediation and earthworks activities.

Potential air impacts associated with excavation of test holes and proposed remediation activities are:

- Dust – from excavation, vegetation clearing, vehicle movements and reinstatement;
- Exhaust emissions – excavation plant and general vehicle movements;
- Fugitive emissions – storage of fuels and refuelling of equipment on Site;
- Odour – from possible intersection with contaminated soils during excavation of test holes; and
- Emissions from burning or incineration are not expected as these activities are prohibited at the site.

Objectives

The objectives of the air quality management are to minimise the impacts to the biophysical environment, including the local community, construction workers and structures in the vicinity of the site.

In addition, the reduction of energy wastage, by adopting energy efficient work practices is important in the contribution to the reduction of greenhouse gases.

Controls and Specific Requirements

The air quality management will be completed by generally applying the following measures:

- In areas adjacent to residential areas, dust generating work will be minimised to ensure dust generation is minimised and to minimal impact to residents;
- Recycled concrete gravel will be used at construction site access point where possible to minimise tracking of dirt onto roads;
- Roads will be regularly swept to avoid build-up and generation of dust and any loose soil removed immediately;
- Dust minimisation on the site through application of water spray if dust is appropriate;
- If odour is noted in any areas of site works, a risk management approach will be adopted in accordance with AS 4360 (1999) Figure 4.2 Risk Management Process, to determine an appropriate course of action; and
- No bulk storage of fuels on site will be permitted; equipment refuelling will be either by mobile tanker or small fuel containers of about 50L.



3.2.5 Fire Management Plan

Impacts

- Fire Management addresses the potential impact to the biodiversity and ecological communities present on the site and surrounding area.
- Potential impacts associated with the proposed intrusive soil investigation and remediation include the following;
- Destruction of sensitive ecosystems from grass and bush fires caused by sparks from machinery;
- Grass and bushfires as a result of cigarettes, matches or open fires; and
- Explosions as a result of machinery or site activities encountering UXO on the site

Objective

The objectives of fire management are to minimise the potential impact to the sensitive ecological systems on the site by grass and bush fires resulting from site personnel, vehicles and activities.

Controls and Specific Actions

The fire management strategies are as follows:

- All site vehicles and machinery will be required to carry fire extinguishers;
- A fire extinguisher will be required adjacent to the work area during excavation and drilling activities.
- In addition to the fire extinguishers the Site will maintain a secondary water resource (portable water storage tank or water cart) during remediation works ;
- Notification of site activities will be relayed to the local rural bushfire command with contact detail of site manager in case of an emergency.
- Vehicles shall where possible transverse the site across cleared fire breaks (existing on the site) and minimise travel through tall dry grassed areas.
- Machinery will be required to be well maintained and where possible have surge arresters fitted.

3.2.6 Noise Management Plan

This section addresses the management and mitigation measures of noise generated during the investigation and remediation. Noise from the investigation and remediation activities has the potential to impact local residents. If noise impacts are not managed effectively, they may result in annoyance, sleep deprivation and a reduction in concentration and efficiency.

Impacts

Noise sources associated with the works are expected to include the following:

- Slashing and removal of vegetation;
- Excavation of waste during remediation works;
- Construction of the Engineered Fill Area and emplacement of wastes;
- Truck and vehicular movements within the Site; and
- Increased truck and vehicular movements on the roadways around the Site associated with the works.



It is considered that the main receptor expected to be impacted by these works will include the residential premises along Zouch Road, Culvertson Avenue and Jardine Drive to the west and north and the predominantly agricultural properties along Croatia Avenue to the north-east and east.

Objectives

The objectives of the noise management are to minimise the impacts to the local community and personnel on and in the vicinity of the site.

Controls and Specific Requirements

Noise management strategies are as follows;

- All remediation activities, including entry and departure of heavy vehicles, shall be restricted to the hours of 7.00am to 6.00pm (Monday to Friday); and subject to approval 8.00am to 1.00pm (Saturday) and at no time on Sundays and public holidays without prior approval.
- The owner of the Site (Landcom) will maintain a complaints / information hotline during the implementation of the project.
- The contractor will notify the local residents of the proposed site activities, work program and noise mitigation measures that may be required;
- Machinery will be required to be well maintained and have a suitable muffler fitted so as to minimise noise generating from the machinery;
- Activities within 100m of sensitive receptors such as residential homes will be targeted to be carried out after 8.00am and not after 6.00pm so as to minimise impact to residents;
- Queuing of vehicles and personnel at the site entrance will be minimised at all times and where practical, locate compounds, plant and equipment to minimise noise exposure;
- Minimise reversing of equipment to prevent nuisance caused by reversing alarms; and
- Site induction will cover the importance of noise control and available noise reduction measures to be implemented during the project.

3.2.7 Conservation, Spoil and Waste Management Plan

Impacts

Impacts include the generation and build up of wastes on site, health and safety hazards, risk to the environment, and visual impacts on the surrounding community.

Objectives

The objective of resource conservation and waste management is to reduce the costs involved with resource use and waste generation, storage, handling and disposal of waste materials at the work site and compounds.

Controls and Specific Actions

Resource conservation and waste management will be completed by generally applying the following principles and measures:

- Avoidance, Reduce, Reuse, Recycle waste reduction strategy;
- Waste generated from site activities (such as general rubbish, sample boxes etc) will be collected in waste bins and disposed off site to an appropriate waste collection station with recycling capabilities.
- Communication of waste management requirements during site induction and in tool box talks;



- All wastes generated on-site that cannot be reused or recycled will be classified for offsite disposal in accordance with the NSW DECCW Waste Classification Guidelines;
- Using approved and licensed waste contractors to dispose of construction waste where required; and
- Construction plant will only remain idling when required to do so by the works to reduce energy waste and greenhouse gas emissions, otherwise plant equipment shall be switched off.

3.2.8 Safety and Hazards Management, including Material Storage and Handling Impacts

The main public hazards arising from the site activities are associated with works in the vicinity of residential properties and involve the release of pollutant materials to land, water and air.

In addition following aspects are of particular importance and will be specifically considered during the construction project:

- the location and signage of the Engineered Fill Area is a safety issue in regard to future development and excavation in the vicinity of the Engineered Fill Area;
- excavation stability during remediation works;
- storage of chemicals and materials represents an environmental and safety risk; and
- potential damage and disruption to utilities and services.

Objectives

The objectives of safety and hazard management are to provide a safe working environment for workers and a safe environment for the local community.

Management Strategies

Safety and hazard management will be achieved by generally applying the following measures:

- Develop a site specific Health and Safety Plan that complies with all WorkCover Requirements;
- No work site area will store more than 200 litres of diesel without prior approval. It should be noted that this volume restriction does not apply to diesel fuel contained within plant or refuelling vehicles;
- Supply the necessary safety equipment for workers and ensure that workers use this equipment;
- Maintain all safety measures on a daily basis through the use of daily site inspections;
- Follow best management practise in the location, identification and excavation of test holes in vicinity of underground services,
- At no time shall any site personnel enter an excavation greater than 1.0m deep without an assessment of excavation stability by a suitably qualified Geotechnical Engineer, adequate shoring and confined space training (if required) to ensure a safe working environment;
- All excavations shall be backfilled immediately, however if an excavation is required to be left open then it shall be adequately barricaded on all sides and signs posted;
- Dangerous Goods used on site will be handled and stored in accordance with the Materials Handling Procedure (Appendix E) and will conform to regulations and guidelines attached to the Dangerous Goods Act 1975, the Environmentally Hazardous Substances Act 1985 and AS 1940:1993;



- The spill control procedure for hazardous materials including fuel is included in Appendix D.
- Reporting of all spills and near spills, irrespective of size, and the initiation of appropriate and timely corrective and preventative action; and
- Identification of services prior to the commencement of construction work.

3.2.9 Onsite Maintenance

Impacts

There will be no major maintenance of vehicles or machinery carried out on site therefore the potential impacts are considered low, however, in the event of a major failure of equipment there is potential for loss of fuel, hydraulic oil and machine oils.

Objectives

The objectives of Onsite Maintenance Management are to minimise the potential impact of minor maintenance or potential machine failure on the ecological environment.

Controls and Specific Actions

Onsite Maintenance Management will be generally achieved by following the following procedures;

- There will be no major servicing of vehicles or machinery onsite maintenance carried out on the Site;
- Spill Kits will be carried by all site vehicles;
- In the event of machine failure the spill kits will be deployed and any spillage contained within the vicinity of the Machine;
- The machinery will be removed from site as soon as practical; and
- Any soil impacted will be managed in accordance with the spill control procedure detailed in Appendix D.

3.2.10 Community Liaison

Impacts

Impacts of remediation works are considered minimal but may include nuisance noise and dust and increased vehicular traffic on nearby residential roadways.

Objectives

The community liaison strategies are implemented to provide local communities located adjacent to the site with information on the proposed works and expected impacts arising from the works, and actions that will be taken to ameliorate those impacts.

The objectives of community liaison are to provide each of the identified groups with information on the proposed site works and to address the needs and requirements of these groups within a structured framework.

Controls and Specific Actions

Community awareness will be carried out via:

- Written communication, including a notification to local residents in the way of a letter box drop prior to the commencement of site activities; and
- Verbal communication on an individual basis (as required).



4.0 ENVIRONMENTAL INCIDENT RESPONSE

Incidents that may occur and have the potential to cause significant environmental harm and which may cause cessation of work have been identified as:

- flooding of excavations- as a result of heavy rain or a breach of a water supply pipeline;
- on-site or off-site oil, fuel or chemical spills;
- release of sediment into waterways resulting from a breaching of the bed or banks of waterways during directional drilling activities;
- Exposure to unexploded ordnance; and
- any activities not in accordance with the requirements of the EMP and the Conditions of the 3A Concept Plan Approvals.

An Environmental Incident Management Procedure (attached as Appendix E) will be applied in concert with the Environmental Incident Management Flow Chart and includes coverage of stop work and re-start following an environmental incident.

4.1 Environmental Incident Management Plan

Environmental incident management and the level of reporting are based on the severity of the incident. Criteria used to categorise incident severity are:

Minor incident – minimal environmental harm

- Easily contained and recovered immediately
- Confined to the work site
- Minimal/No interruption to work activities
- Minimal cost of recovery and disposal (< \$200.00)
- No external involvement (community, media, relevant authorities)
- Materials involved with potential for minimal environmental harm (eg. powder or solid materials)
- Materials with potential for environmental harm, but on a minor scale, for example the loss of not more than 2 litres or kilograms of fuel or oil or curing compound

Minor incident – some potential for environmental harm

- Contained using available materials but potential for some minor environmental harm on site (soil staining, localised surface water contamination)
- Materials involved with potential for environmental harm
- Damage to trees other than those identified for removal
- Confined to work site
- Minor interruption to work activities
- Some loss of materials and waste generated (total of > 5 litres/kilograms but < 20 litres/kilograms)
- Waste generated able to be easily transported by a licensed waste contractor to a licensed waste disposal facility



- Cost of recovery > \$200 but < \$5000.00 (including replacement of clean up equipment)
- No external involvement (community, media, relevant authorities)
- Complaints handled and resolved by the site

Major incident – actual or potential for serious environmental harm

- An actual or potential breach of an environmental regulatory requirement
- Actual or potential environmental harm on or off site (such as severe staining, potential for contaminated water to leave site), as defined in the POEO Act
- Material involved with potential for significant environmental harm (e.g. dangerous goods)
- Loss of materials and waste generated greater than 20 litres/kilograms
- Cost of recovery > \$5000.00
- Potential for external involvement (community, media, relevant authorities)
- Complaints that cannot be resolved by site personnel

All incidents and near incidents must be reported using the Incident Report and Investigation form provided in Appendix E. The Environmental Incident Management Flow Chart identifies the sequence of actions and responsibilities for environmental incident management for the various categories of incidents.

Environmental incident response equipment will be provided at each work site at a level appropriate to the identified potential environmental incidents. The Project Manager is responsible for authorising the placement of emergency response equipment. The Project Manager will be responsible for weekly inspection of the availability and condition of this equipment. A list of emergency response equipment at each work site will be prepared for and retained at the site.

Specific training in environmental emergency response will be provided to appropriate personnel and this will include key site personnel in each work crew.

A site evacuation plan will be displayed prominently at each work site. It will identify:

- the circumstances that may require an evacuation
- the initiation of evacuation, and
- Assembly points for site personnel.

A table of emergency response telephone numbers covering internal and external; contacts (such as Police, Ambulance, Fire brigade) will be prepared and displayed in prominent positions at each work site. A list of emergency Contacts has been prepared and presented at the beginning of this document.

Chemical spill clean up equipment will be provided at each work location. A list of spill clean up equipment will be kept with the equipment. The availability and condition of chemical spill clean up equipment will be checked weekly.

4.2 Emergency Response Plans

In the event of an environmental emergency the incident will be managed in accordance with the procedure outlined in Appendix E.

In addition specific response plans have been included in the following section.



4.2.1 Fuel Spillage

In the event of a fuel spillage the following procedure will be implemented:

- Contain the spillage using either the spill kits on site or by bunding the area using soil;
- Implement recovery of the impacted material into a suitable sealed skip bin;
- Cover the skip bin with a tarpaulin or plastic sheet to minimise potential influx of rain water;
- Classify impacted material in accordance with the NSW DECCW *Waste Classification Guidelines*;
- Dispose off site to an appropriately Licensed landfill that accepts the type of waste; and
- Prepare environmental incident report for review by Landcom Project manager.

4.2.2 Sediment Discharge

In the event of a failure of sediment controls the following procedure will be implemented;

- Cease work activity immediately;
- Install adequate controls down gradient of failure such as bunding or silt fencing;
- Pre-treatment of sediment laden water may be required using a flocculating agent prior to discharge; and
- Prepare environmental incident report for review by Landcom Project Manager.

4.2.3 Fire

In the event of a grass fire on the site the following procedures will be implemented:

- Attempt to extinguish the fire using the fire extinguisher located at each work site;
- Evacuate Site personnel to the designated muster point off site;
- Notify relevant authorities and the Project Manager;
- Direct emergency services to the location of the fire;
- Notify local residents if evacuation is required; and
- Prepare environmental incident report for review by Landcom.

4.2.4 Unexploded Ordnance

In the event of uncovering unexploded ordnance the following procedure will be implemented;

- Any live ordnance would be marked in accordance with the UXO Consultants Standard Operation Procedures (Refer to Site Specific Safety Plan);
- The local Defence office and the client would be advised of any UXO finds for the appropriate action.;
- The UXO Consultant/Contractor will stay with the UXO until the item is handed over to the appropriate authorities; and
- All Free From Explosive (FFE) and Explosive Ordnance Waste (EOW) located in the sampling areas would be certified, stowed securely on the site for later removal, and appropriate disposal by the UXO Clearance contractor.



4.2.5 Dust / Odour generation

In the event of excessive dust or odour generation the following procedure will be implemented:

- Cease work activity immediately;
- Evaluate if work can continue without generation of excessive dust or odour;
- Provide dust or odour suppression such as use of water cart or odour suppressants;
- Reschedule work activity for less windy conditions; and
- Prepare environmental incident report for review by Landcom Project manager.

4.3 Environmental Schedules

This Section presents copies of relevant forms and registers to be used during day to day environmental management during the demolition works. The registers and forms are provided in Appendix C of this EMP. The Appendix includes the following:

- Complaints register;
- Complaints form;
- EMP training register; and
- Environmental incident register.

This is not intended as an exhaustive list and as the project progresses new registers and forms may be required to adequately document the environmental performance on the site.



5.0 MONITORING AND REVIEW

5.1 Environmental Monitoring and Auditing

The Environmental Action Table presented below comprises the environmental monitoring and auditing requirements which are set out in the five columns of the table on the following pages:

Action: This column lists each of the requirements under tasks, arranged as far as practicable in the sequence in which they would be undertaken.

Responsibility: The title of the person who is responsible for ensuring that the action is carried out should be listed in this column.

Verification: The title of the person responsible for checking that the action has been performed by the Contractor to a standard required by the EMP or any other documentation should be placed in this column. The verifier should check that the work undertaken fulfils the intention of undertaking the work in an environmentally sensitive manner.

Completed (Initials/Date): The action is to be signed off and dated by the person named in the "Verification" column when the action is satisfactorily completed.

References and Notes: This column is provided as space for cross-referencing actions, other documents or comments as to how work was undertaken.

The Environmental Action Table is set out below:



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

Table 7: Environmental Action Table

ACTION	RESPONSIBILITY	VERIFICATION	COMPLETED (Initials/Date)	REFERENCE & NOTES
1. Critical Habitat Management				
1.01	Implement weed management plan across the site	EMR		
1.02	Native vegetation clearing not to extend beyond the areas identified in the 3A Concept Plan	EMR		
1.03	UXO clearance in Cumberland Woodlands to be carried out to minimise ecological impacts	EMR		
1.04	Plant and vehicles to travel along set road routes	EMR		
1.05	All works to be assessed prior to commencement in relation to fauna and flora impact	EMR		
2. Soil Management				
2.01	Delineation of known contaminated material prior to commencement of remedial works, additional sampling as required, notification of DECCW where required	EMR		
2.02	Excavation of contaminated materials and emplacement in the Engineered Fill Area	EMR		
2.03	Stabilise soils as required following excavation and installation of sediment control structures to prevent sediment laden runoff	EMR/Project Manager		
2.04	Protect waterways from sediment laden runoff and liaise with NSW Office of Water	EMR		
3. Unexploded Ordnance Management				
3.01	Any areas of disturbance are to be investigated by UXO consultant prior to commencement of works	EMR		
		Project Manager		



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

ACTION	RESPONSIBILITY	VERIFICATION	COMPLETED (Initials/Date)	REFERENCE & NOTES
3.02	EMR	Project Manager		
3.03	EMR	Project Manager		
3.04	EMR	Project Manager		
4. Air Quality Management				
4.01	Contractor	EMR/Project Manager		
5. Fire Management				
5.01	Contractor	EMR/Project Manager		
6. Noise Management				
6.01	Contractor	EMR		
7. Conservation, Spoil and Waste Management				
7.01	Contractor	EMR		
8. Safety and Hazards Management				
8.01	EMR/Contractor	EMR/Project Manager		
9. On-site Maintenance				
9.01	Contractor	EMR/Project Manager		
10. Community Liaison				
10.01	EMR	EMR/Project Manager		



EMP, PROPOSED REMEDIATION WORKS - ZOUCHE ROAD EDMONDSON PARK

	ACTION	RESPONSIBILITY	VERIFICATION	COMPLETED (Initials/Date)	REFERENCE & NOTES
11. Environmental Incident Management					
11.01	Environmental Incident Management to be carried out as per Section 4.0 and Appendices D, E and F of this EMP	Contractor/EMR	EMR/Project Manager		
12. Emergency Response					
12.01	Fuel spillage to be managed as per Section 4.2.1 of this EMP	Contractor	EMR		
12.02	Sediment discharge to be managed as per Section 4.2.2 of this EMP	Contractor	EMR		
12.03	Fire to be managed as per Section 4.2.3 of this EMP	Contractor	EMR/Project Manager		
12.04	Unexploded ordnance to be managed as per Section 4.2.4 of this EMP	Contractor	EMR		
12.05	Dust/odour generation to be managed as per Section 4.2.5 of this EMP	Contractor	EMR		



5.2 Responsibility for Implementing this Document

Controlled copies of this EMP are to be issued to appropriate staff. All staff on-site is to be made aware of their environmental responsibilities (as detailed in Section 2.4). The lists of contacts in Table 2 of this EMP are to be confirmed, regularly reviewed and where applicable, updated for ongoing operations.

At each stage of the work, when work has been satisfactorily completed, the Action-Table is to be completed, signed and dated by the relevant person responsible for verification.

The EMR will supervise and/or observe the work and will provide the verification for the actions. This should ensure that safeguards are met and that there is an early identification and resolution (where possible) of unforeseen issues.

Any changes to the EMP must be documented and signed off by the EMR. A register for changes is found in Appendix A. All changes are to be registered in Appendix A.

Where work is likely to require liaison with other government agencies, this liaison should be undertaken as early as possible.

5.3 EMP Review

A record of the implementation of this EMP and any environmental issues which arise are to be kept by the relevant project managers.

During the ongoing remediation and earthworks and following any changes to the regulatory framework under which the works are carried out the manager responsible for delivery of the works (the EMR) would:

- Conduct regular assessments of general environmental compliance of the remedial works and earthworks as highlighted in Section 3.0 of this document;
- Review the EMP records for completeness and update as necessary (particularly relevant following review of environmental compliance); and
- Recommend any modifications to general documentation which would further improve the environmental outcomes of the EMP.



6.0 LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd (“Golder”) subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder’s Services are as described in Golder’s proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

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We would be pleased to answer any questions about this important information



**EMP, PROPOSED REMEDIATION WORKS - ZOUCH ROAD
EDMONDSON PARK**

CLOSURE

We trust this site management plan meets your current requirements, however, if you require any further information please do not hesitate to contact either of the undersigned.

GOLDER ASSOCIATES PTY LTD

A handwritten signature in blue ink, appearing to read 'GJF'.

Glen Fuller
Project Manager

jah:mb:pr/GJF/pr

A.B.N. 64 006 107 857

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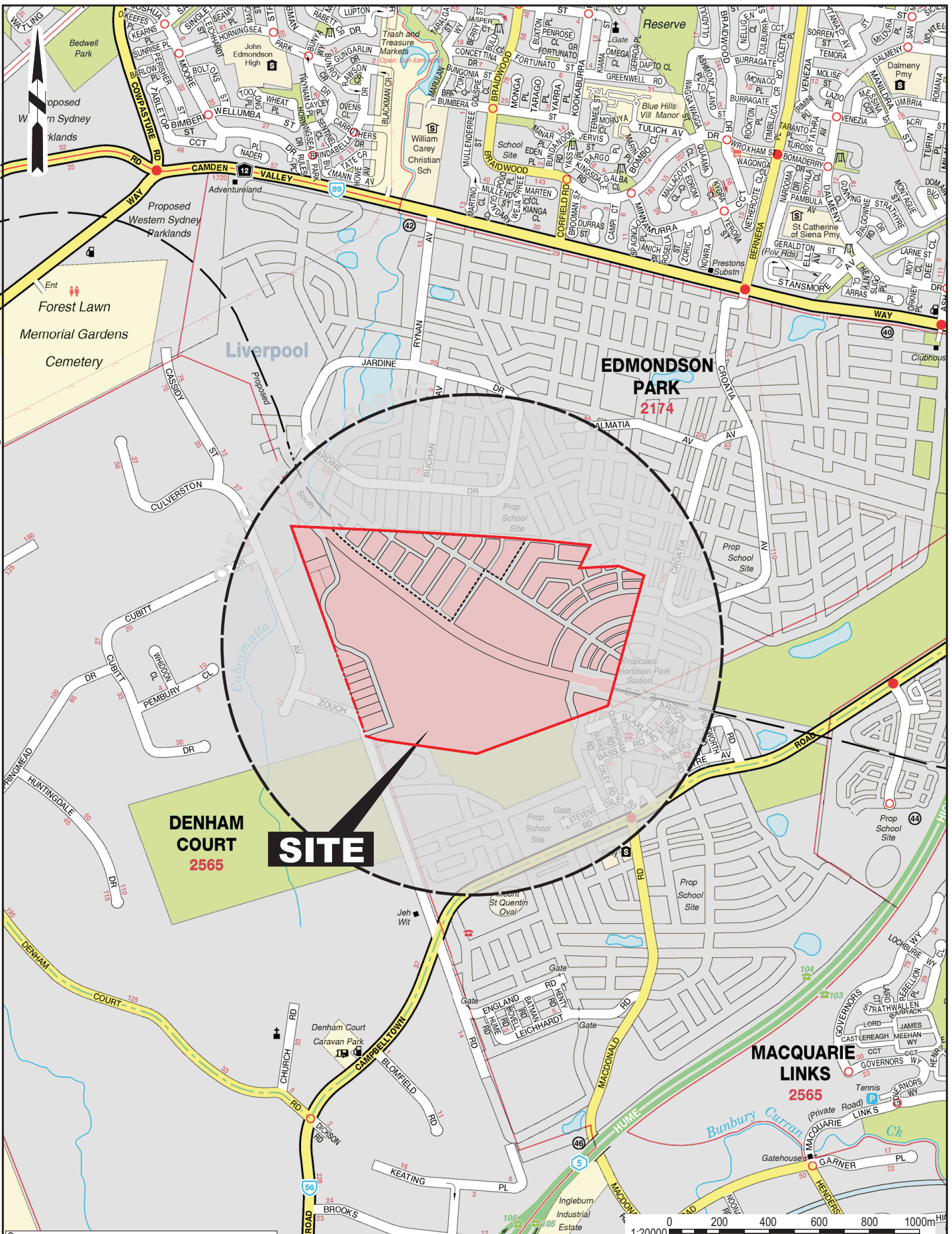
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APPENDIX A

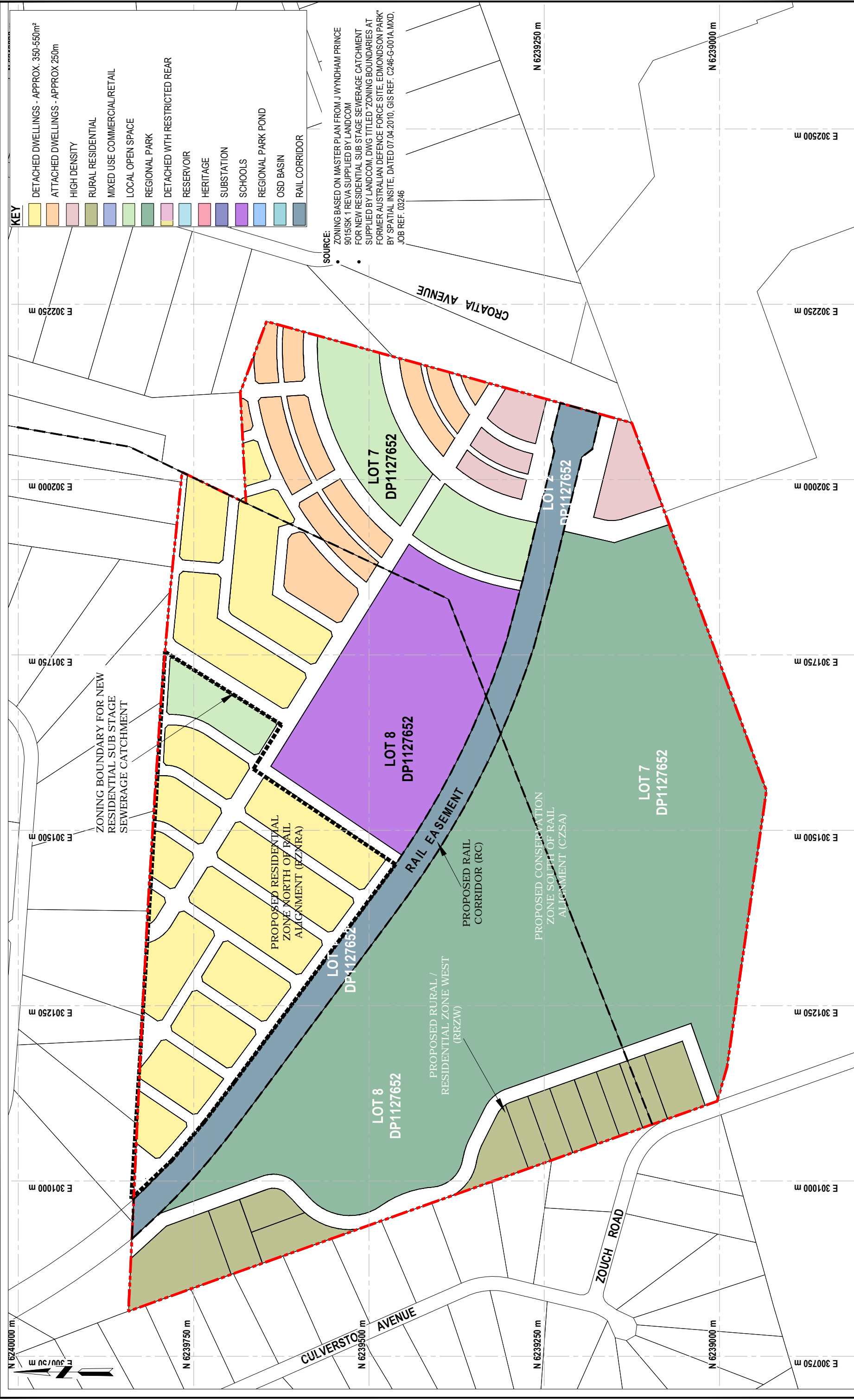
Site Figures

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 <p>www.golder.com GOLDER ASSOCIATES PTY LTD</p>	CLIENT	LANDCOM		PROJECT	ENVIRONMENTAL MANAGEMENT PLAN - ZOUCH ROAD, EDMONDSON PARK					
	DRAWN	HC	DATE	20.04.2010	TITLE	SITE LOCALITY PLAN				
CHECKED	GJF	DATE	27.08.2010							
SCALE	1:20,000		A4	PROJECT No	DOC No	DOC TYPE	FIGURE No	REV No	FIGURE 1	
				107623047	002	R	F0001	0		



KEY

[Yellow]	DETACHED DWELLINGS - APPROX. 350-550m ²
[Orange]	ATTACHED DWELLINGS - APPROX 250m
[Light Green]	HIGH DENSITY
[Light Blue]	RURAL RESIDENTIAL
[Light Purple]	MIXED USE COMMERCIAL/RETAIL
[Light Yellow]	LOCAL OPEN SPACE
[Light Green]	REGIONAL PARK
[Light Blue]	DETACHED WITH RESTRICTED REAR
[Light Green]	RESERVOIR
[Light Blue]	HERITAGE
[Light Purple]	SUBSTATION
[Light Green]	SCHOOLS
[Light Blue]	REGIONAL PARK POND
[Light Green]	OSD BASIN
[Light Blue]	RAIL CORRIDOR

SOURCE:
 ZONING BASED ON MASTER PLAN FROM J WYNDHAM PRINCE
 9015/SK 1 REVA SUPPLIED BY LANDCOM
 FOR NEW RESIDENTIAL SUB STAGE SEWERAGE CATCHMENT
 SUPPLIED BY LANDCOM, DWG TITLED "ZONING BOUNDARIES AT
 FORMER AUSTRALIAN DEFENCE FORCE SITE, EDMONDSON PARK"
 BY SPATIAL INSITE, DATED 07.04.2010, GIS REF. C246-G-001A.MXD,
 JOB REF. 03246

CLIENT
 LANDCOM

DATE
 25.08.2010

CHECKED BY
 GJF

SCALE
 1:5000

SHEET SIZE
 A3

PROJECT No
 107623047

DOC No
 002

DOC TYPE
 R

FIGURE No
 F0002

REVISION
 0

PROJECT
 ENVIRONMENTAL MANAGEMENT PLAN - ZOUC ROAD, EDMONDSON PARK

DRAWING TITLE
 PROPOSED DEVELOPMENT AREAS

FIGURE 2

LEGEND

--- SITE BOUNDARY

Scale
 1:5,000

Scale Bar
 0 100 200 300m

Scale Text
 ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 96 MGA COORDINATES

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Plot Dates: 27 August 2010, Time: 9:54:24 AM By: Campbell, Helen Path: I:\env\2010\107623047_Landcom_Edmondson Park\Technical Docs\CADD\FIGURES - File Name: 107623047_002_R_F0002_REV10.dwg
 Xref: GAP_LOGO-A3.dwg; 9015/SK23-A-Ed_Park_Part_3a_-_Draft_Masterplan_over_0309_aerial_.pdf.jpg; Aerial with zones showing RAP sub stage for zone.jpg; zoning.jpg

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APPENDIX B

Environmental Schedules



APPENDIX C

Spill Control Procedure



APPENDIX C - SPILL CONTROL PROCEDURE

General Instructions

Immediately following discovery of spill: -

- Notify Senior Site Manager/Superintendents Representative/Area manager of spill type, size & locations - the supervisor will take immediate control of the cleanup operation. If site supervisor is unavailable, the Project Manager or Site Engineer will take charge.
- Organise for Emergency Spill Kit to be brought to spill locations.
- Make spill area safe for all personnel. Individuals must ensure that they will not put themselves in danger by attempting to control the spill; this particularly applies in the case of larger spills.
- Use any available materials in the vicinity to limit spread of spill until the site Emergency Spill Kit is available.
- Use disposable gloves provided in kit to protect hands.
- Use pillows as a secondary defence by placing in drain or stormwater inlet down slope from primary spill control point. Pillows can be wrung out and reused if necessary.
- Use absorbent granules to create a bund down slope of spill to soak up excessive fluid.
- Use Plug N Dyke to seal to any leaks in metal tanks, drums, etc.; it will adhere to wet/dry, dirty, rusty or greasy surfaces without any surface preparation.
- Apply directly over & around the leak, working into the hole and press down for good adhesion.
- Plug N Dyke is to be used as a temporary seal only, permanent repairs should be made as soon as practically possible.
- Use absorbent pads to wipe down affected surfaces or to soak up small spills or generally to complete mop up after using other items in the spill kit. Pads can be wrung out and reused if necessary.
- Use plastic bags in spill kit, or any other suitable containers, to collect & store all contaminated materials used to control spill.

All contaminated materials must be disposed of in an environmentally acceptable manner.

SMALL SPILLS - 1 to 100 litres

If any fluid escapes into the drainage system (ie. sewer, stormwater, watercourse), the EPA Unit must be contacted immediately, where an inspector will advise on what further actions are required.

NSW EPA 131 555 (24 hour service)

Refer to above for general instructions.

- After the cleanup has been completed, the Project Manager will organise a toolbox talk to review the incident and recommend actions to prevent any further spills occurring &/or improve site response procedure. An Environmental Incident Report is to be completed and sent to the Project Manager within two (2) days of the accident.



APPENDIX D

Materials Handling Procedures



APPENDIX D - MATERIALS HANDLING PROCEDURE

The purpose of this procedure is to ensure that dangerous goods as defined in the Australian Dangerous Goods Code that have the potential to cause environmental harm are regularly checked, safely stored and fit for service when required.

This procedure applies to:

- Class 1 - Explosives
- Class 2 - Flammable gasses, non flammable and non toxic gasses, poison gasses
- Class 3 - Flammable Liquids
- Class 4 - Flammable Solids, spontaneously combustible substances, and substances that are dangerous when wet
- Class 5 - Oxidising Substances, organic peroxides
- Class 6 – Poisons and harmful substances
- Class 7 – Radioactive substances
- Class 8 – Corrosives
- Class 9 – Miscellaneous dangerous goods.

The Site Engineer is responsible for the creation and maintenance of a Dangerous Goods Register for the site and for ensuring that there is a current Materials Safety Data Sheet (MSDS) available for all Dangerous Goods handled, stored, or used on the site. The Dangerous Goods Register must be displayed in a prominent position at the materials store location and at the entry to the site.

The Site Engineer is responsible for reviewing any request for purchase of dangerous goods not on the site Dangerous Goods Register and for approving purchase.

The Site Engineer, are responsible for ensuring that all regulatory requirements associated with the storage, handling, packaging and transport of materials are complied with and that site personnel are trained in any special procedures that are required.

Materials handling and the use of MSDS are included in the site environmental induction training and may be the subject of a toolbox talk at the discretion of the Site Engineer. Personal protective equipment specified in the MSDS must be provided to and worn by personnel handling or using dangerous goods.

Monitoring of the methods of storage and of the condition of stored materials is included in the weekly inspection carried out by the Project Manager.

The Site Engineer is responsible for ensuring that the use of dangerous goods is carried out in a manner to protect the user, the community, and the environment at all times.

All site personnel are responsible for ensuring that they follow the requirements for use, handling, and storage of dangerous goods described in the MSDS for each product stored or used on the site, and for wearing the required personal protective equipment.

All materials stored on the site that are defined in the Australian Dangerous Goods Code as Dangerous Goods must be stored in an approved manner. This includes storage in approved storage cabinets, storage in a secure location, storage under cover, provision of the required level and type of secondary containment, separated from incompatible materials (as defined in the Australia Dangerous Goods Code) and separated from protected works as defined in the Australian Dangerous Goods Code. Storage of Dangerous Goods is covered in the Dangerous Goods Act 1975, the Environmentally Hazardous Substances Act 1985 and AS 1940:1993.



Waste generated from the use of dangerous goods must be handled, stored, classified and disposed of in accordance with the applicable regulatory requirements as defined in NSW EPA Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes and The Protection of the Environment Operations Act 1997 and associated regulations.

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APPENDIX E

Environmental Incident Management



APPENDIX E - ENVIRONMENTAL INCIDENT MANAGEMENT

This Environmental Incident Management Procedure must be read in conjunction with the attached Environmental Incident Management Flow Chart. The Environmental Incident Management Flow Chart will be displayed in a prominent position at the site.

Environmental Incident response is an element of site induction and covers the location and use of spill response equipment and actions to be taken in the event of an environmental incident. All personnel will be instructed in the different categories of incident as indicated in Section 4.1 and the appropriate response to each.

The Project Manager, UXO Consultant or the Site Engineer are the designated site environmental incident response managers for the detailed site investigation and remediation of UXO. Subject to the severity of an incident the Project Director may assume this responsibility.

In the event of an environmental incident there are a number of key actions that must be taken.

- Initial response and notification.
- Protection of people and property – in that order.
- Initiation of additional response assistance. This depends on the type of incident.
- Notification of relevant parties, and relevant external authorities..
- Recording of the incident and the subsequent investigation.
- Initiation and completion of preventative and corrective action.

Initial Response and Notification

The type of incident will determine the initial response. Incident severity is defined in the EMP section 4.1, and in this procedure.

For minor incidents with little or no potential for environmental harm containment and response by personnel involved in or identifying the incident will be appropriate, followed by notification to the Golder Project Manager / Director. Minor incidents are not expected to cause cessation of work for any longer than it takes to complete the required corrective action. The Project Manager must approve resumption of work following a minor incident.

For environmental incidents with potential for environmental harm or major incidents the initial response must be cessation of work in the immediate area. An incident of this type must be notified to the Project Manager or Site Engineer immediately. The Project Manager or Site Engineer will then take charge of the incident.

Subject to the severity of the incident and risk to personnel it may be necessary for work on the whole site to cease. This decision will be made by the Project Manager.

Response to an incident associated with potential environmental harm or a major incident must be directed toward the prevention of harm or injury to personnel, prevention of harm to the environment, and protection of property. Personnel are expressly forbidden from placing themselves at risk in responding to an environmental incident.

Incidents with the potential to cause environmental harm and major incidents must be notified to the Golder Project Manager and the Landcom Project Manager at the first possible opportunity following detection of the incident. Initial notification may be verbal but must be followed up with written notification in the form of the Environmental Incident Report within 24 hours contained at the end of this document. Reporting is covered in a later section of this procedure.

Landcom are responsible for reporting to external regulatory authorities, such as the NSW EPA.



Incident Management

The Project Manager or Site Engineer will assume control of the management of an incident with the potential to cause environmental harm or a major incident until relieved by the Project Director or a relevant authority with statutory responsibility. The Project Manager or Site Engineer will maintain a direct liaison role with the relevant authority to ensure that actions taken are appropriate to work site conditions.

Subject to the severity of the incident external assistance may be required. A register of contact telephone numbers will be established and displayed in a prominent position on site, next to the Environmental Incident Management Flow Chart, (a list of contacts is included in this appendix). External assistance may be provided by contractors employed for that purpose and by external authorities, such as Police, Fire Brigade (hazardous chemical spill), or Utilities (breach of sewer).

Communication with the local community is a critical element of Incident Management. The Project Manager or Site Engineer must communicate with the Landcom Project Manager to ensure that accurate and timely information is available for communication to the community and to the media as required.

The goals of environmental incident management are to:

- Minimise harm to people
- Minimise harm to the environment
- Implement effective corrective and preventative action
- Achieve resumption of work at the earliest possible opportunity

Resumption of work following an incident with the potential to cause environmental harm or a major incident will not commence until approved by:

- a relevant authority that has taken charge of the incident, and subsequently
- by the Landcom Project Manager.

Incident Reporting and Investigation

The core incident reporting document is the Environmental Incident Report and Investigation form which are included in this document.

It is important that this form be used to record critical information from the identification of an environmental incident to its final closure, following investigation and completion of corrective and preventative action.

The Project Manager and Site Engineer are responsible for keeping accurate notes and diagrams related to an incident for attachment to the Environmental Incident Report and Investigation form.

A photographic record should be made if possible and attached to the form. Photographs can be particularly valuable in assessing the actual harm and the community impact.

The completed form with supporting documentation must be copied to the Landcom Project Manager within an agreed time frame. The type of incident, its severity, and the time required for investigation and completion of corrective and preventative action will impact the timing of finalisation of documentation.



Incident Severity Criteria

Minor incident – minimal environmental harm

- Easily contained and recovered immediately
- Confined to the work site
- Minimal/No interruption to work activities
- Minimal cost of recovery and disposal (< \$200.00)
- No external involvement (community, media, relevant authorities)
- Materials involved with potential for minimal environmental harm (eg. powder or solid materials)
- Materials with potential for environmental harm, but on a minor scale, for example the loss of not more than 2 litres or kilograms of fuel or oil or curing compound

Minor incident – some potential for environmental harm

- Contained using available materials but potential for some minor environmental harm on site (soil staining, localised surface water contamination)
- Materials involved with potential for environmental harm
- Damage to trees other than those identified for removal
- Confined to work site
- Minor interruption to work activities
- Some loss of materials and waste generated (total of > 5 litres/kilograms but < 20 litres/kilograms)
- Waste generated able to be easily transported by a licensed waste contractor to a licensed waste disposal facility
- Cost of recovery > \$200 but < \$5000.00 (including replacement of clean up equipment)
- No external involvement (community, media, relevant authorities)
- Complaints handled and resolved by the site

Major incident – actual or potential for serious environmental harm

- An actual or potential breach of an environmental regulatory requirement
- Actual or potential environmental harm on or off site (such as severe staining, potential for contaminated water to leave site), as defined in the POEO Act
- Material involved with potential for significant environmental harm (e.g. dangerous goods)
- Loss of materials and waste generated greater than 20 litres/kilograms
- Cost of recovery > \$5000.00
- Potential for external involvement (community, media, relevant authorities)
- Complaints that cannot be resolved by site personnel.



Resumption of Work (Example)

Location:	Incident No:
Date:	
Description of incident and corrective and preventative action completed:	
Re-commencement of work approved:	
Relevant Authority Name Position Signature	Date:
Golder Project Director Name Signature	Date:
Landcom Project Manager Name Signature	Date:



ENVIRONMENTAL INCIDENT REPORT

Location:	Report No:
Date:	Time:
Reported by:	
Type of Incident	Severity (refer to attached severity criteria)
Hazardous materials <input type="checkbox"/>	Minor – minimal harm <input type="checkbox"/>
Surface water contamination <input type="checkbox"/>	
Soil erosion <input type="checkbox"/>	Minor – potential for harm <input type="checkbox"/>
Sediment discharge <input type="checkbox"/>	
Dust emissions <input type="checkbox"/>	Major <input type="checkbox"/>
Vibration <input type="checkbox"/>	
Noise <input type="checkbox"/>	
Flora/Fauna <input type="checkbox"/>	
Other <input type="checkbox"/>	

Description of incident and immediate cause/s
--

Immediate action taken to manage incident
--

Approved by:	Date:
---------------------	--------------



Environmental Incident Investigation Form (Example)

Location:	Date:
Description of Incident:	
Names of persons involved:	
Names of witnesses:	
Observations Describe how the incident occurred, including details of environmental harm and potential environmental harm	
Analysis What acts, failures to act, or conditions contributed to this incident? Identify basic causes.	
Evaluation Probable recurrence: frequent <input type="checkbox"/> occasional <input type="checkbox"/> rare <input type="checkbox"/> Proposed Preventative/Corrective Action Person/s Responsible	



Confirmation of Action completed

Investigating Officer:

Date:

Project Manager:

Date:

Landcom Project Manager:

Date

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APPENDIX F

Limitations

LIMITATIONS

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APPENDIX E

Site Management Plan (SMP) - Conservation Zone Landcom Site



9 September 2010

CELEBRATING
50
YEARS
in 2010

**CONSERVATION ZONE, PART LOT 7 AND 8
IN DP1127652, EDMONDSON PARK NSW**

SITE MANAGEMENT PLAN (SMP)

Submitted to:
Landcom
Level 2, High Street
Parramatta NSW

REPORT



**A world of
capabilities
delivered locally**

Report Number. 107623047-R-003-Rev1

Distribution:

Landcom - 1 electronic copy
Golder - 1 electronic copy





Site Owner/Environmental Manager Details

The following table outlines the contact details for the Site Owner or Environmental Manger Representative (EMR) as defined in Section 2.0. The contact details should be updated in this plan should the Site Owner/Site Environmental Manager change.

Name	Organisation	Date Appointed	Contact Information
To Be Advised (TBA)	Department of Environment, Climate Change and Water (DECCW) - National Park and Wildlife Service division	TBA	Phone: TBA Mobile: TBA Email: TBA
			Phone: Mobile: Email:
			Phone: Mobile: Email:
			Phone: Mobile: Email:

Document Distribution and Revision

The following outlines the parties to which the SMP has been distributed. Any complete revision of the document will be accompanied by a new revision number i.e. 001 and date on the front page of this document. All minor changes will be incorporated into this revision and the table below will be updated.

Organisation	Contact	Date	Document ID and Revision Level	Editor
Golder	Glen Fuller	May 2010	107623047_003_R_RevA_ Draft SMP	A Searle
Golder	Glen Fuller	August 2010	107623047_003_R_RevB_ Draft SMP	G Fuller
Golder	Glen Fuller	August 2010	107623047_003_R_Rev0_ SMP	G Fuller



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Figure 1: Site Locality Plan

Figure 2: Site Boundary

APPENDICES

APPENDIX A

Figures



1.0 INTRODUCTION

This Draft Site Management Plan (SMP) has been prepared by Golder Associates (Golder) on behalf of Landcom to manage post remediation risks to human health and environment within that part of Landcom's current landholding which will be transferred to the Department of Environment, Climate Change and Water (DECCW) – National Parks and Wildlife Service for the creation of the Edmondson Regional Park (referred to in this report as the 'Conservation Zone').

This Draft SMP accompanies a Remediation Action Plan (RAP), Environmental Management Plan (EMP) prepared for proposed remedial works and Part 3a Concept Plan application being submitted by Landcom. August 2010. The purpose of this SMP is to manage the potential human health and environment risks associated with the encapsulation structure and unexpected finds within the future Regional Park . Specifically:

- Identified lead particulate impacted material;
- Asbestos containing materials (fibro sheeting, pipes and impacted soil); and
- Potential for small arms ammunition (SAA) and unexploded ordnance (UXO).

The Conservation Zone is currently known as Conservation Zone South Rail Alignment (CZSRA) (the Site) forms part of Landcom's Edmondson Park landholding.

It is understood that at the conclusion of remediation works on the Landcom site, the area zoned E1 National Parks, and Nature Reserves will be transferred to DECCW and the National Parks and Wildlife Services (NPWS) will assume responsibility and control of the Conservation Zone which will form part of the much larger Regional Park.

1.1 Background

The Draft SMP has been prepared for the Site shown in Figure 1 that is currently legally described as:

- Part Lot 7 in Plan 1127652 and
- Part Lot 8 in Plan 1127652

The portion of the lots relevant to this SMP (The Site) as shown in Figure 2 are south of the rail corridor and east of the rural residential area.

The Site forms part of a larger property purchased in the early 1990s by Landcom and was previously used as a infantry training area by the Department of Defence (former owners) and has the potential for Unexploded Ordnance (UXO) to be present across the Site. Previous investigations have identified ancillary activities at the Site which have also resulted in lead particulate impacted material, asbestos (from demolition of military buildings), building rubble, unwanted stores and vehicle parts buried in trenches / stockpiles and possibly in existing dams.

The larger property consists of a mixture of open grasslands, protected Cumberland Woodlands and former army infantry training infrastructure such as training pits, obstacles, a grenade range, a rifle range, disposal trenches and former building structures. Portions of the Site with protected and/or densely vegetated Cumberland Woodlands require special management techniques and present challenges to the remediation of the Site.



The Site has been the subject of several UXO investigations, and a Detailed Site Investigation (DSI) and Limited UXO Remediation (Golder, 2006). The soil and groundwater impacts identified at the Site include:

- **Unexploded Ordinance (UXO)** has a low potential to be present across the Site, with a distribution that is not observably localised. Based on the results of the remediation, there is a low risk that inert UXO items may remain on the Site. Limited assessment has been possible within the densely vegetated protected Cumberland Woodlands areas due to their protected status. It is important to note that no live UXO have been identified on the Site during investigations and that live ordnance was not commonly used on this site other than within the grenade ranges which have since been the subject to a 100% search and removal of identified items. Therefore the risk of any live UXO remaining on the Site is considered low though not negligible.
- **Lead particulate** material was observed within the former rifle range, main entrance and access track located within the north western corner and northern boundary of the Site. Based on the information provided in previous reports, the lead particulate material is distributed over the former rifle range area and access tracks (north western and south western corners) at depths from 0.1m to 4.5m at an average depth of about 0.8m. The lead particulate generally consisted of lead fragments and bullet fragments between 5mm to 10mm in size.
- **Asbestos** in the form of fragmented pieces of bonded asbestos sheeting was observed on the surface dispersed over an area of approximately 25,500m² within the rifle range extending to the waste disposal trenches located on the central part of the Site. The area was mapped using a hand held GPS and is shown in Figure 2.
- **Three Waste Disposal Trenches** (Waste Disposal Pits) were investigated by the excavation of test pits through the waste. The buried waste generally consisted of building demolition, scrap metal, plastic, wire and pieces of Asbestos sheeting (predominantly within the eastern parts of the trenches). A clay-capping layer of between 0.1m to 0.7m thickness was observed. This area is shown in Figure 2.
- **Groundwater**, heavy metal concentrations within groundwater across the Site were inferred to be background levels, within the range typical of Wianamatta Group bedrock and residual soil aquifer and unlikely to have been impacted by Site activities. Groundwater levels were observed at depths ranging between 2.5m to 15m below ground level (bgl). Groundwater within the area of the rifle range and proposed capped area was observed to be greater than 15.0m bgl.

1.2 SMP Context

The remediation works proposed for the Site are detailed with the Remediation Action Plan (RAP, reference 107623047-001-R-RevA) prepared by Golder. The remediation works within the conservation zone will include:

- Visual inspection and removal of observed military objects including concertina wire, weapons pits, former structures and visible small arms ammunition;
- Excavation and relocation of distributed lead particulate impacted material from the north western corner of the larger property to the rifle range area;
- Re-engineering of the lead particulate impacted material within the rifle range area and contained on site within the Encapsulation Structure ;
- Excavation and relocation of asbestos impacted materials from other parts of the Site to be contained on site within the Encapsulation Structure ; and
- No mass vegetation clearance is currently proposed within the conservation zone, other than minor clearing works required within the encapsulation area during remediation and construction. Therefore,



there will remain the potential for UXO to be present on-Site, conservation zone and protected densely vegetated Cumberland Woodlands.

Accordingly this SMP is required to manage these Site features and more specifically been prepared to:

- 1) Manage future ground disturbance activities within the Site;
- 2) Manage the encapsulation structure containing impacted materials (lead particulate and ACM);
- 3) Designate the areas of protected Cumberland Woodlands and Indigenous heritage items;
- 4) Provide a framework for the management of periodic inspections;
- 5) Provide a protocol to manage unexpected finds; and
- 6) Facilitate the opportunistic search and clearance of potential UXO.

If Site conditions or regulatory requirements change, this SMP should be modified accordingly with the details of the changes recorded in the document revision at the beginning of the document.

1.3 SMP Objectives

The objectives of this SMP are to:

- Inform the Site users including contractors, owners and occupiers about the Site conditions;
- Supplement the National Parks and Wildlife Services (NPWS) plan for the management of the Edmondson Regional Park;
- Describe control mechanisms for the management of known and potential human health and environmental impacts; and
- Outline responsibilities for implementing the SMP.

1.4 Supporting Documents

Project Specific Documents

The following documents were referenced in preparing this SMP:

- Conservation Agreement
- Golder, 2010, Remediation Action Plan, Landcom Project No: 12619 Zouch Road, Edmondson Park NSW, Golder Ref: 107623047-001-R-RevB dated August 2010; and
- Remediation / Works Completion Report – Yet to be completed by Remediation contractor and Environmental Consultant.

Regulatory Documents

- 1) Contaminated Land Management Act, 1997;
- 2) Environmentally Hazardous Chemicals Act, 1985;
- 3) OH&S Act, 2001;
- 4) Section 149(2) of the Environmental Planning and Assessment Act, 1997;
- 5) Protection of Environment Operations Act, 1997;
- 6) ANZECC 2000. Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand;



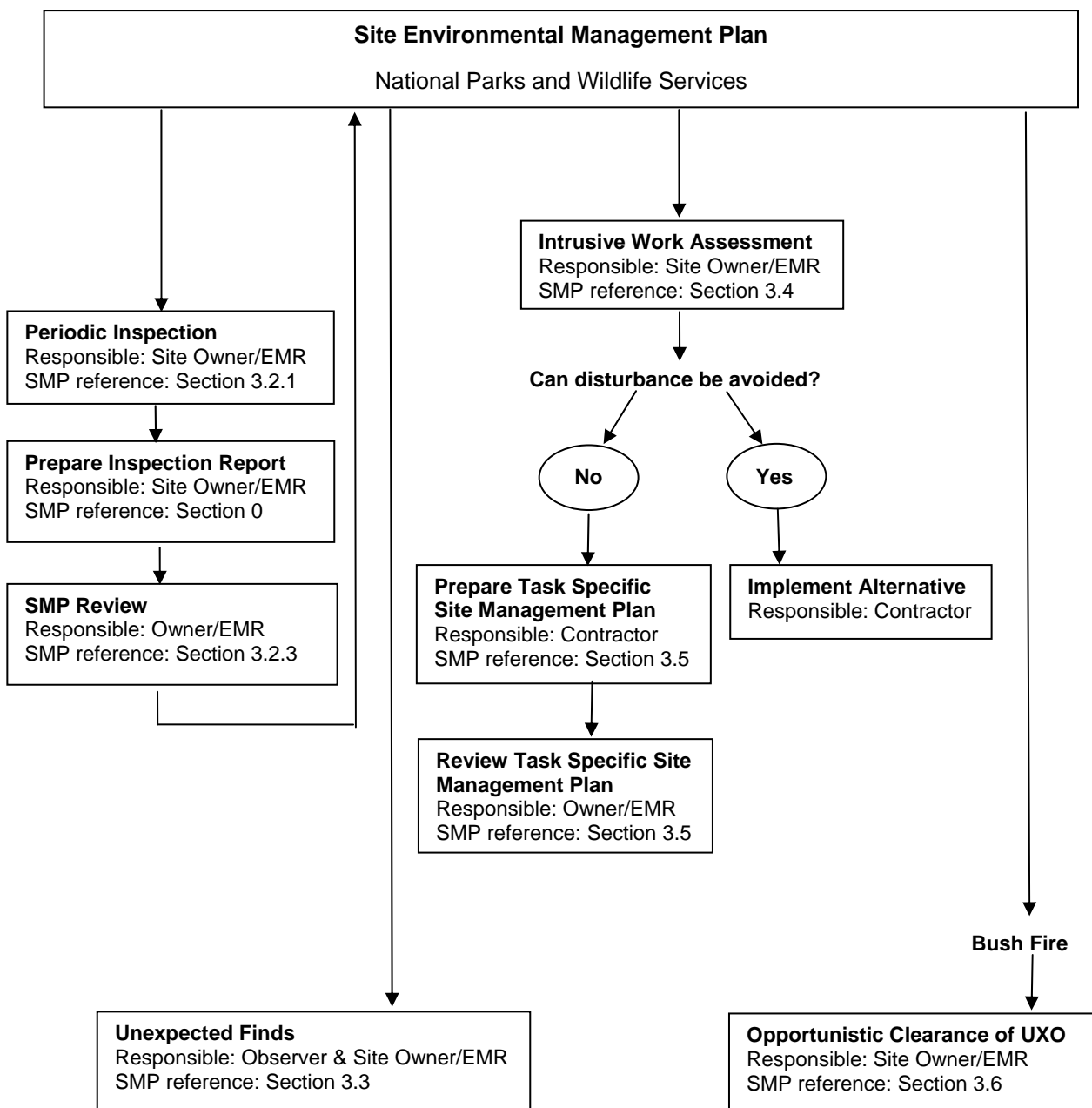
- 7) ASSMAC 1998. Acid Sulfate Soil Manual, New South Wales Acid Sulfate Soil Management Advisory Committee;
- 8) DEC 2006. Guidelines for the NSW Site Auditor Scheme (2nd Edition), April 2006, Department of Environment and Conservation;
- 9) DECC 2008. Waste Classification Guidelines, Part 1: Classifying Waste, April 2008, Department of Environment and Climate Change;
- 10) EPA 1994. Guidelines for Assessing Service Station Sites, NSW Environment Protection Authority, December 1994;
- 11) EPA 1995. Sampling Design Guidelines, NSW Environment Protection Authority, September 1994;
- 12) EPA 1997. Guidelines for Consultants Reporting on Contaminated Sites, November 1997, Environment Protection Authority.



2.0 ENVIRONMENTAL MANAGEMENT

Controlled copies of this SMP are to be issued to appropriate staff. All staff on-Site working within the subject area are to be aware of their environmental responsibilities. The lists of contacts at the beginning of this document are to be reviewed and confirmed during the course of any future projects.

Figure A: Management Flow Chart





2.1 Environmental Management Structure and Responsibility

2.1.1 Overall Responsibility

Effective implementation of the SMP is necessary to minimise risks associated with the lead particulate impacted material, ACM, potential UXO/SAA and protected Cumberland Woodlands at the Site. The overall responsibility for implementing and/or ensuring that implementation of the environmental control measures detailed in this SMP lies with the Site owner which we understand will be National Parks and Wildlife Services (NPWS).

The existence of this document will be required to be noted within Liverpool City Council (Council) Section 149 (2) Planning Certificate data base issued under the Environmental Planning and Assessment Act (EP&A). In addition consideration should be given to a similar notation within the dial before you dig underground asset database to alert potential utility and service providers.

The Site owner may appoint “a responsible party” (Environmental Management Representative, EMR) with the responsibility of implementing this SMP and ensuring its compliance with all Site users. Even when the responsibility is delegated, ultimate accountability that all aspects of this SMP are implemented, rest with the Site owner.

The owner must provide all persons involved in Site operation and all contractors conducting intrusive works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of this SMP be aware of their environmental responsibilities.

The lists of contacts at the beginning of this SMP document are to be reviewed and confirmed during the course of any future project. Any changes to the SMP must be documented and signed off by the Site owner. A register for changes is found at the beginning of this document.

2.1.2 Environmental Management Representative (EMR)

The EMR will supervise and/or observe the work and will provide the verification of the actions. This will ensure that safeguards are met and that there is an early identification and resolution (where possible) of unforeseen issues.

Responsibilities of the EMR are:

- Management of the site environmental aspects and day to day implementation of SMP;
- Ensure that all works on the Site are undertaken in accordance with this SMP;
- Ensure that required parties (contractors, environmental consultants) are engaged to implement the requirements of this SMP and are inducted to its requirements;
- Maintain all site records related to implementation of this SMP;
- Ensure that relevant inspections and reports are completed, submitted to appropriate stakeholders (as required) and maintained by NPWS;
- Report environmental issues to NPWS when and/as required; and
- Notifying relevant stakeholders of any intended below ground works as required.



2.1.3 Site Contractors

- All Site contractors must implement the SMP fully and be aware of risks and obligations indicated in the document;
- The SMP must be referenced as a part of the Contractor induction to the Site that all operators and workers on the Site are aware of these requirements, the risks involved and the reporting of any breaches of SMP; and
- The contractor is responsible for preparing a Task specific SMP (refer to Section 3.5) and an Occupational Health and Safety Plan.

2.1.4 NPWS Environmental Personnel / Environmental Consultant

Monitoring, response to issues, review and reporting activities and supervision of any intrusive works must be conducted by suitably trained personnel and/or qualified environmental consultant who is preferably a member of the Australian Contaminated Land Consultant Association (ACLCA). It is the Environmental Personnel/Consultant's responsibility to:

- Plan, conduct and report on specific monitoring aspects of the SMP;
- Make sound environmental recommendations for action arising from the monitoring;
- Ensure that SMP has been implemented and that all activities have been carried out in accordance with Protection of the Environment Act (1997; POEO Act); and
- When deviations to this SMP occur, the Personnel/Consultant shall notify the Site EMR.



3.0 IMPLEMENTATION OF SMP

3.1 Capped Area (Encapsulation Structure)

The area formerly occupied by a rifle range and stop butt located on the south western part of the Site was re-engineered to create a singular location for the placement of lead particulate impacted material and ACM. This included the excavation of lead particulate impacted material and ACM identified across the larger property and relocation to this centralised location. The surveyed extent of the completed capped area and location of ACM burial pit are shown on Figure 3.

The encapsulation structure is required to maintain a minimum cap thickness of 0.6m made up of 0.4m of clay and 0.2m of growing medium other than in the vicinity of the ACM buried waste where a minimum total cover to be maintained is 1.0m which can include lead particulate impacted material up to base of the cap. This cap will provide a barrier between the waste materials and surface environment. The cap will also reduce the infiltration of rainwater, thereby limiting the potential for leaching from these materials. The clay cap will be installed by the remediation contractor; NPWS will be responsible for the inspection and maintenance of this cap.

The capped area is to be vegetated with shallow rooted native grass species. The remediation contractor will be responsible for establishing this cover; NPWS will be responsible for maintaining it. Vegetation on the capped area will assist in preserving the cap's integrity, and minimising infiltration of rainwater.

Warning signs are to be erected at 50 to 100m intervals around the perimeter of the cell to advise potential contractors to the presence of this Site Management Plan and protocols required prior to works commencing (i.e. Notation directing contractors to NPWS for approval for works to be carried out within this area, e.g. All works prohibited without express permission from NPWS)

Any excavations in the cell area should be avoided. Where this is not possible careful controls must be followed to limit the risk to human health and the environment. See 3.4 for the protocol for works in the capped area.

3.2 Periodic Inspections

The intent of this document is to supplement NPWS plan for the management of the Conservation Zone (Section 1.3). It is understood that the management of the Conservation Zone would include periodic inspections (annual) by NPWS or delegated persons. These periodic inspections should include in their scope the items noted below.

3.2.1 Periodic Inspection Checklist

Annual inspections of the Conservation Zone should include the following items:

- Check signage around the cell and elsewhere across the Site is intact and legible. Verify that any information included on the signs is current (for example contact details or department names).
- Inspection of the capped area. Note any cracks, erosion, landform shape (i.e. batters are safe and intact, no slips or failures that may expose impacted materials)
- Inspection of vegetation material within the capped area for signs of distress or die back;
- Review of weeds in the Conservation Zone. Lantana and Blackberry have been noted as problem weeds in several reports. It is understood this will be included NPWS weed management plan for the Site.



3.2.2 Prepare Inspection Report

The inspection report is to note the condition of the cap and other items observed in the periodic inspection. Further the Inspection Report is to make recommendations about any repairs or improvements that may be required, and be a trigger to instigate these activities. Actions that may be required following an inspection include the following:

- Signage around Cell is to be replaced where necessary.
- Where the integrity of the cap is breached, NPWS will engage an appropriately qualified contractor to make the necessary repairs.
- Any dieback in vegetation covering the cell is to be reported to a suitably qualified environmental consultant, who is to assess the potential cause of the dieback.
- Any deep rooted plants observed covering the cap are to be removed as soon as possible, with minimal disturbance to the cap.
- Removal of any observed noxious weeds in the Conservation Zone.

3.2.3 SMP Review

Following each annual inspection the EMR will complete a review of this SMP and make changes as appropriate. Guidance on appropriate changes is given in Section 6.4. All minor changes will be incorporated into this revision and the table at the beginning of the document will be updated. Any complete revision of the document will be accompanied by a new revision number for example, Rev001 or Rev002, and a date on the front page of the document.

3.3 Unexpected Finds

Due to the historical land use further unknown contamination including the presence of UXO, lead particulate and asbestos may be identified during future intrusive Site works. While unlikely, other forms of impact may also be encountered. If during future excavation works additional impacted or suspect materials are identified, the following methodology should be implemented:

- The EMR will be notified immediately of any incident. The EMR will investigate the incident or potential impact identified. The EMR will determine if the services of a suitably qualified environmental consultant, UXO consultant and/or asbestos consultant are required.
- Subject to the initial inspection by the EMR appropriate safeguards which may include fencing the area, covering the material, odour suppression and/or a response by emergency services will be incorporated if required;
- The EMR will determine whether the incident is reportable and contact DECCW and relevant agencies if required;
- Previously unidentified contamination will be managed in accordance with procedures outlined within this SMP and should be assessed in accordance with NSW DECC Site Auditor Guidelines in consultation with NPWS;
- The material will be managed in a manner which is appropriate to address the results of relevant laboratory analysis. That is material will be required to meet the on-site criteria to remain on Site. If the material is unsuitable to be retained on the Site it will then be managed in accordance with the NSW DECCs 2008 *Waste Classification Guidelines, April 2008 (Waste 2008)*; and
- Excavations where impact is identified will be validated in accordance with NSW DECCW Guidelines. The results of any remediation work will be documented and may include a Validation Report to be prepared for the works, or separately, depending on the nature of the contaminant.



3.4 Intrusive Work Assessment

All proposals for work in the Conservation Zone are to be reviewed by the EMR.

Works within the Capped area are to be avoided where possible. The EMR is to work with the contractor to find an alternative to any works in the capped area that could compromise the cap or expose the waste materials.

All intrusive works in the Conservation Zone, both within and outside the capped area, require the completion of a Task Specific SMP to the satisfaction of the EMR.

3.5 Development and Review of Task Specific SMP

The task specific SMP must provide the minimum information listed below and should be reviewed and approved by the EMR and an environmental/UXO/asbestos consultant where appropriate. The EMR is to ensure any contractors on the Site have access to this SMP to develop their task specific SMP.

- Description of works to be undertaken;
- Date and duration of works;
- Any land clearing is to be carried out in accordance with Section 3.5.1.
- Any excavation works are to be carried out in accordance with Section 3.5.2
- Any excavation works in the cell area are to be carried out in accordance with Section 3.5.2, Section 3.5.3 and Section 3.5.4
- Location and depth of the proposed excavation;
- Specific Health & Safety plan for the proposed works;
- Specific environmental management plan for the works including measures to prevent the transport of weeds and seeds into the CZSRA and the cleaning of equipment (Section 3.5.7).
- Specific procedures to be used for management of seepage water and soil generated during intrusive site works including:
 - Testing and classification of excavated/disturbed soil (refer to Waste Classification Guidelines, Part 1: Classifying Waste, April 2008, Department of Environment and Climate Change);
 - Contaminated soil management plan (temporary storage and assessment of off-site disposal);
 - Management of excavated/disturbed soil (excavation related activities, transport of materials, storage and handling of disturbed/excavated material, reinstalment of material);
 - Management and disposal of excess soil from the works (and import of fill if required);
 - Surface and groundwater management (Section 3.5.10)
- Emergency response; and
- Monitoring, inspection and documentation (Section 3.5.8)



3.5.1 Land Clearing

The presence of Cumberland Woodlands is a constraint to intrusive works in the Conservation Zone. Any works that require clearance of protected vegetation may only proceed after gaining approval from NPWS.

Where land clearance is in densely vegetated Cumberland Woodlands, that have not previously been remediated, there is a low risk for unidentified UXO to be present. To address this risk, whenever protected Cumberland Woodlands areas are cleared, an army certified UXO consultant will be engaged to either:

- perform the vegetation clearance (preferred); or
- review the contractors method for vegetation clearance and oversee the vegetation clearing process to ensure the methods employed do not pose undue risk given the potential presence of UXO.

Following all vegetation clearance an Department of Defence certified UXO consultant will inspect the area for UXO and certify it is clear before other works proceed in the area.

Where the Department of Defence certified UXO consultant identifies UXO, finds will be made safe in accordance with standard operating procedures and disposed off site to a suitably licensed disposal/destruction facility identified in the instances as the Department of Defence located at Holsworthy Army Base.

3.5.2 UXO Clearance

Due to the potential for unidentified UXO on the Site an UXO consultant and listed as an approved supplier of UXO clearance services by the Australian Defence Department:

- shall complete a UXO clearance of the area and certification prior to excavation works commencing.
- shall perform or oversee Cumberland Woodlands vegetation clearance in accordance with Section 3.5.1.
- shall review the contractors method for excavation and oversee excavation works to ensure the methods employed do not pose undue risk given the potential presence of UXO, whenever excavation works are undertaken in the cell.

3.5.3 Asbestos Clearance

Any excavation in the surveyed asbestos portion of the encapsulation structure (see Figure 3) requires an AS1 licensed contractor to review the method for excavation and oversee excavation works to ensure the methods employed do not pose undue risk given the presence of asbestos containing materials.

The requirement for the presence of the AS1 licensed contractor for excavation works in the asbestos containing portion of the cell is additional to the requirement for an army certified UXO consultant for any excavation works in the cell (Section 3.5.2).

3.5.4 Cap Replacement

Any works proposed in the cell area that damage, or have the potential to damage the cap must allow for reinstatement of the cap to the satisfaction of the EMR.

3.5.5 Occupational Health & Safety

All contractors and consultants working on the Site should design and implement appropriate work practices to protect the health and safety of Site workers and the general public during Site works.

Managers, contractors and subcontractors who work on the Site remain responsible for all health and safety issues associated with their activities. An Occupational Health & Safety Plan should be prepared for works on the Site with the involvement of an environmental consultant. The plan should consider potential risks posed by the known contaminants.



As a part of the Site induction for all workers undertaking intrusive works on the Site, the specific health and safety issues shall be outlined by Contractor as well as the existence and requirements of this SMP.

The information provided in the Health and Safety plan should include:

- Assignment of responsibilities;
- Discussion of the site conditions;
- Details of the work;
- Evaluation of on-site and off-site hazards;
- Established personnel protection standards and mandatory safety practices and procedures;
- Established OHS monitoring procedures;
- Training and responsibilities of emergency team members;
- Evacuation procedures and emergency drills; and
- Provision for contingencies that may arise during the project.

3.5.6 Personnel Protection Equipment (PPE)

Personnel must endeavour not to come into direct contact with potentially contaminated material. Workers are to ensure that surface or groundwater is not ingested or swallowed and that direct skin contact with soil and water is avoided.

All personnel on site should be required to wear the following protection at all times:

- Steel-capped boots;
- Safety glasses or safety goggles with side shields meeting AS1337-1992 requirements (as necessary);
- Hard hat meeting AS1801-1997 requirements; and
- Hearing protection meeting AS1270-2002 requirements when working around machinery or plant equipment if noise levels exceed exposure standards.

In the event that personnel are required to work in areas of potential contact with lead and/or asbestos impacted soil and/or other materials, in addition to the four items noted above the following Modified Level D Protection will be required:

- Nitrile work gloves meeting AS2161-2000 requirements or heavy duty gauntlet gloves;
- Disposable coveralls to prevent contamination of clothing;
- A half-face particulate mask (with two straps) or a half-face respirator fitted with a dust/particulate cartridge appropriate for asbestos (class P2). Masks and respirators must comply with Australian Standard 1716.

After work is complete, used and potentially contaminated overalls, gloves and masks/respirator cartridges must be sealed in a container and marked "asbestos contaminated clothing" for proper disposal.



3.5.7 Equipment Cleaning

Depending on the scope of work, a dedicated wash facility may need to be installed for an effective cleaning of the equipment prior leaving the Site. Equipment which interacts with potentially impacted soil and groundwater should be decontaminated prior to establishment to site and after site works are completed. Decontamination water should be captured, analysed and disposed off site where applicable.

3.5.8 Record Keeping Requirements

The following documentary records (forms, reports or registers) shall be used and maintained during a project's day to day environmental management:

- Site inspection checklist, the outcome of the on-going site monitoring program, weekly meeting and 'site 'walk over' inspections;
- Environmental training register;
- Daily records of site safety briefings regarding works in the Site;
- Daily reports to document management of contaminated media (logs documented quantities of excavated material, quantities removed to landfill, soil and groundwater analytical results and the origin, water discharge to sewer or off-site disposal);
- Soil/groundwater disposal/treatment/discharge receipts, permits;
- Monitoring checklist; and
- Copy of complaints register (if applicable).

3.5.9 Soil Management

Management of excavated material (soil) should be carried out in accordance with Section 3.5.9.

3.5.10 Water Management

Management of surface water and groundwater should be carried out in accordance with Section 3.5.10.

3.6 Opportunistic Clearance of UXO and SAA

As noted in Section 1.2 the removal of potential UXO and SAA was unable to be carried out to in areas of densely vegetated Cumberland Woodlands due to the need to protect this vegetation. Where events such as bushfires, 'back-burning' or construction activities for the establishment of the Regional Park lead to the thinning or clearing of this vegetation an opportunistic clearance of UXO/SAA) should be undertaken by an army certified UXO consultant.

The area(s) cleared should be defined on a plan and attached to this SMP. Records of the clearance shall be retained by the Site owner with the assistance of the EMR.



4.0 ASSESSMENT OF POTENTIAL RISKS

4.1 Small Arms Ammunition (SAA) and Unexploded Ordnance (UXO)

The remediation of small arms ammunition (SAA) and Potential Unexploded Ordnance (UXO) within the Conservation Area is limited due to the presence of threatened species which are unable to be cleared to allow a completed clearance of SAA and UXO to occur.

The preferred remedial option involves visual clearance of UXO and SAA in the conservation zone. The complete clearance of this area would not be possible without vegetation clearance within this area of Cumberland Woodland. The proposed remedial clearance would be carried out by a team of trained UXO consultants, and therefore it is considered that there is a low risk of live UXO / SAA remaining at the site following this remedial exercise. However this risk is not negligible. The presence of live UXO / SAA has not been found during detailed site investigations. A description of the residual UXO / SAA risk at the site is provided as follows.

The assessment of the residual risk is a combination of the likelihood of UXO / SAA being found at the site following the proposed remediation, and the potential consequence of such a discovery. The table below provide a rationale for the assessment of residual risk.

UXO / SAA Likelihood Levels

Level	Descriptor	Probability	Description Regarding Category of UXO / SAA
5	Almost certain	>0.8	Has been observed on site and is almost certain to be present
4	Likely	0.5-0.8	Is likely to be present based on the site history
3	Possible	0.1-0.5	It is possible that UXO / SAA is present
2	Unlikely	0.04 – 0.1	It is unlikely that UXO / SAA will be present, but not impossible
1	Rare	<0.04	It is highly unlikely that UXO / SAA will be present and the likelihood of the category is probably no different from that at non-military land

The significance of the UXO / SAA is dependent on the type of material used at the site. The ranking of consequence will depend on the particular situation that applies to the site and is as follows:

Level	Descriptor	Impact on Site Workers and Users	Impact on Public	Cost to Remedy
5	Catastrophic	Multiple fatalities, large number of injuries	Public exposed to a life threatening hazard	>\$10 Million
4	Major	Single fatality or serious non-recoverable injury; or several major injuries	Public exposed to a hazard that could cause injuries	\$0.5 – 10 Million
3	Moderate	A number of safety incidents requiring treatment by a physician	Public exposed to a hazard that could cause minor injuries	\$0.05-0.5 Million
2	Minor	A number of safety incidents requiring treatment by a qualified first aid person	Exposure of public to a hazard that does not cause	\$5,000-50,000



			injury	
1	Insignificant	Minor safety incidents only	Negligible impact on public	<\$5,000

The risk can then be estimated for each land use at the site by the following equation:

Risk = likelihood x consequence

The resulting number will be in the range 1-25. The higher the value, the higher the risk and the lower the likelihood that the land will be suitable for its proposed use. The risk ranking which is similar to those adopted by the Department of Defence on other projects within Australia, is summarised in Table below, together with the audit response that would typically apply. It can be noted that as the risk increases, the greater the likelihood is that the land is only suitable for its proposed use with management controls with respect to future activities on the site. The extreme case is that the site is not suitable for the proposed use.

Risk Level	Descriptor	Indicative Land Use
16 – 25	Extreme	Land not suitable for proposed use, imminent risk of harm
9 – 15.9	High	Land not suitable for use unless conditions are applied to control the activities at the site
4 – 8.9	Medium	Land may be suitable for use, consider whether conditions are required to control activities at the site
1 – 3.9	Low	Land suitable for use without conditions

In the conservation area, the UXO / SAA clearance has been a clearance using visual techniques due to the vegetative cover constraining the clearances in this area. Therefore the likelihood of encountering items is “possible” and the consequence is “minor”, indicating a medium risk. This would indicate the land to be suitable for open space use.

Therefore this Site Management Plan (SMP) is required to advise landowners / maintenance personnel of the potential risks, maintenance, procedures to be adopted and whether precautions are required and what must be done in the event that an item were to be found.

4.2 Lead Particulate Impacted Material and Asbestos (Capped Area)

The centralisation and encapsulation of lead particulate impacted material and asbestos containing materials (ACM) provides a sustainable management strategy for these types of materials. Residual risk to human health and the environment is further reduced through the implementation of this SMP.

Subject to the implementation of this SMP the risk to human health and the environment is considered low and the potential off site impacts considered negligible.



6.0 EVALUATION AND REPORTING

6.1 SMP Review

This SMP should be reviewed to ensure:

- Information and environmental management strategies are current;
- Opportunities for improvement are identified; and
- Changes to legislation, licence and approval conditions are complied with.

Reviews shall take the following forms:

- Management considerations on an ongoing basis;
- A formal review every 12 months.

6.2 Training Awareness and Competence

The need for additional or revised training shall be identified and implemented from outputs of:

- Monitoring programmes;
- Changes to the Site and surrounding receptors; and
- Alterations to regulatory frameworks and future reviews of the SMP as required.

6.2.1 Site Induction

All contractors and subcontractors performing intrusive works on the Site will undergo an induction process to ensure that they are familiar this SMP. The induction shall address:

- The role of this SMP;
- Contractor/subcontractor and consultant responsibilities;
- Incident/non-conformance reporting procedures;
- Environmental issues described in Section 3.1 .

6.3 Documentation and Reporting Framework

The Site Owner has the responsibility to maintain all records relevant to the management of potentially contaminated soil and groundwater including:

- A Site Activities Register;
- Environmental Management Plans for each Site intrusive work;
- Environmental Procedures;
- Site Induction and training records;
- Minutes of management review meetings for environmental issues;
- Reports of environmental incidents and follow up actions (Section 6.3.1);
- Environmental Compliance Reports (Section 6.3.2);



6.3.1 Corrective Action Requests (CARs) and Instructions

Any non-conformance will be documented on an appropriate form stating the nature of the non-conformance and the mechanisms implemented to rectify the problem. Any CARs (and follow up actions) are to be recorded and kept by NPWS.

6.3.2 Environmental Compliance Reports

Audits of implementation of this SMP shall be carried out by an appointed delegate of the EMR and an Environmental Compliance Report prepared.

6.4 Amendments

All amendments or new editions of this document shall be distributed to the appropriate persons identified at the front of this document). Any amendments must be reviewed and signed off by the Site Owner in accordance with the register at the front of this SMP.



7.0 LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd (“Golder”) subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder’s Services are as described in Golder’s proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

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We would be pleased to answer any questions about this important information



CLOSURE

We trust this site management plan meets your current requirements, however, if you require any further information please do not hesitate to contact either of the undersigned.

GOLDER ASSOCIATES PTY LTD

Adrienne Searle
Environmental Engineer

Glen Fuller
Project Manager

AWS:MB:AP/GJF/aws:ap

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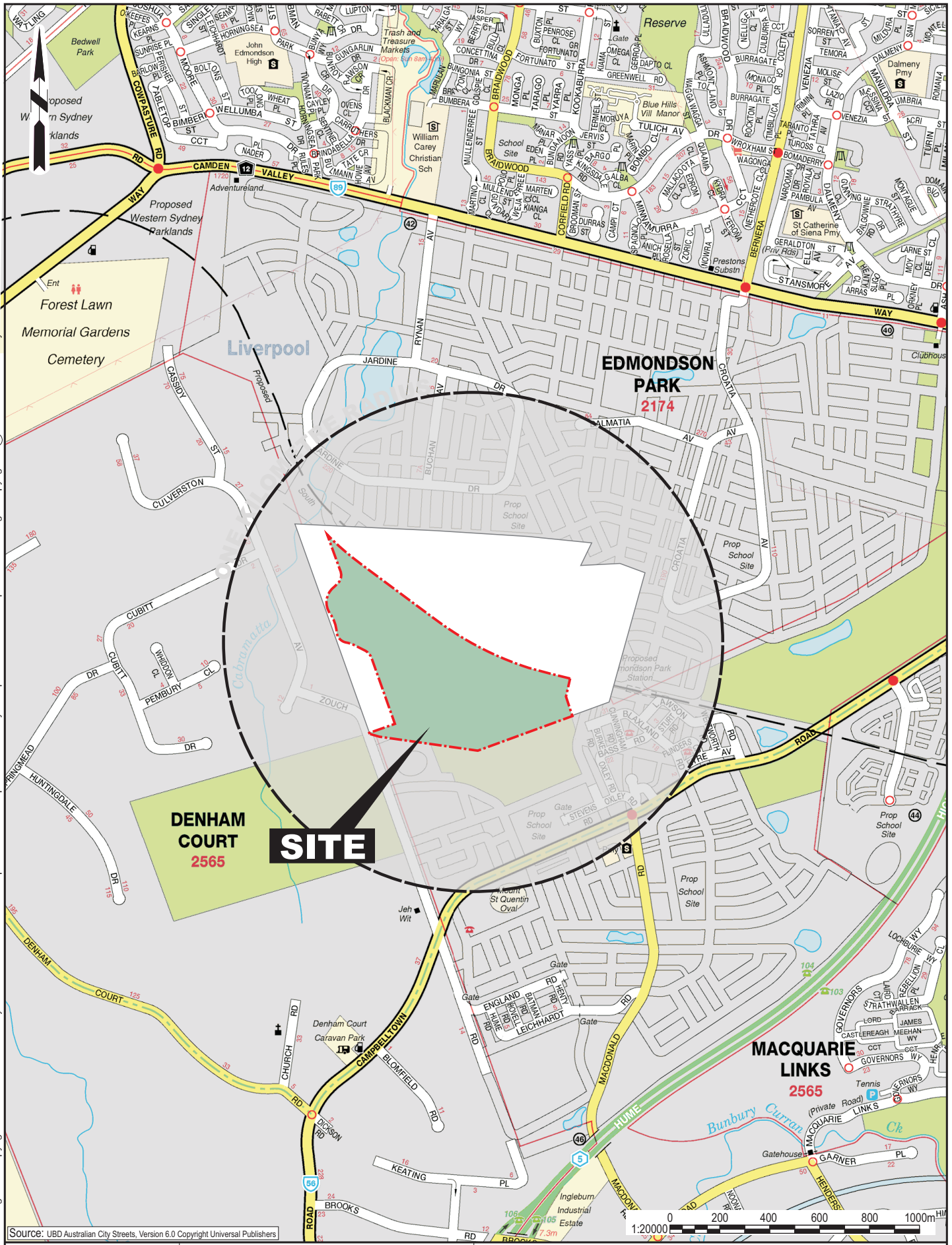
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APPENDIX A

Figures


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 <p>www.golder.com GOLDER ASSOCIATES PTY LTD</p>	CLIENT	LANDCOM		PROJECT	SITE MANAGEMENT PLAN - ZOUCH ROAD, EDMONDSON PARK					
	DRAWN	HC	DATE	20.04.2010	TITLE	SITE LOCALITY PLAN				
	CHECKED	GJF	DATE	27.08.2010						
	SCALE	1:20,000		A4	PROJECT No	DOC No	DOC TYPE	FIGURE No	REV No	FIGURE 1
				107623047	003	R	F0001	0		



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	DRAWN BY HC DATE 25.08.2010	CHECKED BY GJF DATE 27.08.2010
SCALE 1:5000	SHEET SIZE A3	PROJECT NO. 107623047
LEGEND - - - - - SITE BOUNDARY [Green Box] AREA REPRESENTED IN SITE MANAGEMENT PLAN (CONSERVATION ZONE)		DOC NO 003
KEY [Green Box] AREA REPRESENTED IN SITE MANAGEMENT PLAN (CONSERVATION ZONE)		DOC TYPE R
SOURCE: <ul style="list-style-type: none"> ZONING BASED ON MASTER PLAN FROM J WYNDHAM PRINCE 9015/SK 1 REVA SUPPLIED BY LANDCOM FOR NEW RESIDENTIAL SUB STAGE SEWERAGE CATCHMENT SUPPLIED BY LANDCOM, DWG TITLED "ZONING BOUNDARIES AT FORMER AUSTRALIAN DEFENCE FORCE SITE, EDMONDSON PARK" BY SPATIAL INSITE, DATED 07.04.2010, GIS REF. C246-G-001A.MXD, JOB REF. 03246 		FIGURE NO. F0002
ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 96 MGA COORDINATES		REVISION 0
Plot Date: 27 August 2010, Time: 9:18:38 AM By: Campbell Helen Path: I:\env\2010\107623047_Landcom_Edmondson Park\Technical Docs\CADD\FIGURES - File Name: 107623047_003_R_F0002_REV0.dwg Xref: GWP_LOGO-A3.dwg; 9015/SK23-A-Ed_Park_Par_3a_-_Draft_Masterplan_over_0309_aerial_.pdf;gwp; Aerial with zones showing RFP sub stage for zoning.jpg; zoning.jpg;		FIGURE 2



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	DRAWN BY HC DATE 25.08.2010	DRAWING TITLE LOCATION OF ENCAPSULATION STRUCTURE
CHECKED BY GJF DATE 28.08.2010	PROJECT No. 107623047	FIGURE No. F0003
SCALE 1:5000	DOC No. 003	REVISION 0
SHEET SIZE A3	DOC TYPE R	FIGURE 3

SOURCE:
 • ZONING BASED ON MASTER PLAN FROM J WYNDHAM PRINCE 9015/SK 1 REVA SUPPLIED BY LANDCOM
 • FOR NEW RESIDENTIAL SUB STAGE SEWERAGE CATCHMENT SUPPLIED BY LANDCOM, DWG TITLED "ZONING BOUNDARIES AT FORMER AUSTRALIAN DEFENCE FORCE SITE, EDMONDSON PARK" BY SPATIAL INSITE, DATED 07.04.2010, GIS REF. C246-G-001A.MXD, JOB REF. 03246

LEGEND
 - - - - - SITE BOUNDARY
 [Green Box] AREA REPRESENTED IN SITE MANAGEMENT PLAN (CONSERVATION ZONE)

KEY
 [Red Box] ENCAPSULATION STRUCTURE LOCATION

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Plot Date: 27 August 2010, Time: 9:19:14 AM By: Campbell Helen Path: I:\env\2010\107623047_Landcom_Edmondson Park\Technical Docs\ADD\FIGURES - File Name: 107623047_003_R_F0003_REY0.dwg Xref: GWP_LOGO-A3.dwg; 9015/SK24-Ed_Park_Par_3a_-_Draft_Masterplan_over_0309_aerial_.pdf.jpg; Aerial with zones showing RFP sub stage for zone.jpg; zoning.jpg;

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APPENDIX F

Contamination Management Plan



25 August 2010

CELEBRATING
50
YEARS
in 2010

PART 3A EDMONDSON PARK SOUTH - CONCEPT PLAN

CONTAMINATION MANAGEMENT PLAN

Submitted to:
Landcom
Level 2, 330 Church Street
Parramatta, NSW 2150

REPORT

Report Number. 107623113-006-R-Rev0



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1.0 INTRODUCTION

1.1 General Introduction

This Contamination Management Plan (CMP) has been prepared by Golder Associates Pty Ltd (Golder) to accompany a Concept Plan Application under Part 3A of the Environmental Planning & Assessment Act, 1979 (EP&A Act) and a proposal for State Significant Site listing under Schedule 3 of State Environmental Planning Policy Major Development 2005 (SEPP Major Development) in relation to the former Ingleburn Army Base and certain adjoining lands within the Edmondson Park Release Area of the South West Growth Centre (referred to herein as 'Edmondson Park South'). A CMP is considered an effective means of ensuring workers on the site are not exposed to residual contamination from unexpected finds which may be uncovered during the bulk earthworks phase of the site development:

Landcom is proposing to deliver a new diverse and sustainable urban community at Edmondson Park South. Once complete, Edmondson Park South will accommodate a mix of land uses, a diversity of housing (approximately 3,200 dwellings), a new town centre incorporating 35,000 – 45,000m² retail, business and commercial floor space with employment opportunities for 1,000 people, multi-purpose community and education facilities, a new 150 hectare Regional Park, a number of other local parks and environmental conservation areas.

The new urban community at Edmondson Park South will meet the State Government's objectives to increase housing supply, provide community benefits and create jobs.

The purpose of the Concept Plan is to secure statutory approval for the overall planning framework for the site and to further resolve a number of remaining site-wide infrastructure delivery and land use planning issues. The Project Application (submitted concurrently with the Concept Plan) for early works, infrastructure and subdivision relating to the initial phases of the development will enable site works to begin in 2010.

1.2 The Site

The subject site comprises an area of approximately 410 hectares and forms part of the larger Edmondson Park Release Area within the South West Growth Centre. It is located to the north-west of the M5 Motorway and lies approximately 40 km to the south west of Sydney CBD. Approximately 260 hectares of the site is located within the Liverpool LGA and approximately 150 hectares is located within the Campbelltown LGA. Refer to Location Plan, **Figure 1**.

The site is largely vacant. Remnants of military facilities (i.e. cottages, former building slabs, internal roads, training facilities etc) associated with the site's former Defence use are scattered through-out the site. There are a number of cottages / houses previously used by Defence personnel in an area of the site generally referred to as "Ingleburn and Bardia Villages". The Ingleburn North Public School (1.835 hectares) is located on the southern and the Bambi Preschool on the northern side of Campbelltown Road.

The site is undulating to steep. It slopes from its highest point (80 m AHD) at the intersection of Zouch and Campbelltown Roads to its lowest point (40 m AHD) at its eastern corner and to a similar elevation adjacent to the M5 Motorway in the south-west corner. The central portion of the site along Campbelltown Road forms a ridge with gentle falls to the north and south.

The condition of existing vegetation on the site varies from exotic pasture with negligible ecological value to areas of good condition vegetation with high recovery potential. The existing cleared portions of the site generally contain non native species.

The site is at the top of three catchments. Maxwell Creek, Bunbury Curran Creek and Cabramatta Creek pass through the site, with associated riparian zones and some woodland habitat (notably Cumberland Plain Woodland).



1.3 Proposed Development

Concept Plan

The Concept Plan establishes the overall planning framework for the site, including:

- land use type and distribution;
- a mix of housing types and densities (approximately 3,200 dwellings);
- concept location of and approximately 35,000 – 45,000 m² of retail / business / commercial floor space within the new Edmondson Park Town Centre;
- identification and location of open space and drainage corridors, environmental conservation lands (to form the new Regional Park), and local active and passive recreation facilities, including levels of embellishment;
- expanded Ingleburn North Primary School and new combined Primary/High School to the north of the site;
- road network layout;
- pedestrian and cycleway network layout;
- pedestrian bridge over the south western railway;
- Campbelltown Road corridor including the establishment of key intersection locations and configuration;
- utilities (including power, telecommunications and gas), infrastructure strategy, potable water strategy, sewer concept plan and water cycle management plan;
- location and dimensions of Bushfire Asset Protection Zones;
- appropriate interpretation of European and Aboriginal heritage located on the site;
- erection of signage and billboards;
- remediation works;
- decommissioning of the existing Sewerage Treatment Plant (STP); and
- demolition.

The Concept Plan also sets out an approval framework that will enable the carrying out of the works necessary to remediate the site in accordance with a Remediation Strategy without the need for undertaking further environmental assessment.

A variety of housing types is proposed to be delivered. This will provide for a range of housing price points and will include moderate income housing and housing for seniors.

It is proposed to develop the Edmondson Park site progressively in stages over a 15-20 year period. The Concept Plan will address the staging and delivery of the overall development having regard to the progressive delivery of necessary infrastructure, services and facilities; and market demand.

The Concept Plan is accompanied by a proposal with respect to the future developer contributions framework for the provision of local facilities and services within the Liverpool and Campbelltown LGAs as well as State Infrastructure.



Project Application

The residential subdivision Project Application comprises:

- the creation of 207 residential lots, 8 super lots for future subdivision 15 Environmental Living lots and 3 lots for dedication to Campbelltown City Council as Public Reserve in 5 stages;
- the dedication of roads to Campbelltown City Council;
- On-site works comprising:
 - tree removal;
 - earthworks including excavation, cut and fill;
 - design and construction of physical infrastructure, including roads, stormwater drainage and utility reticulation, traffic management works, establishment of open space areas;
 - retaining walls as determined during detailed design;
 - design and construction of staged stormwater water quantity and quality infrastructure to achieve objectives required by the Water Cycle Management (WCM) strategy for the greater site;
 - demolition of all existing structures;
 - erosion and sediment control to areas of roadworks and bulk earthworks including provision of temporary sedimentation ponds and diversion drains;
 - Design and construction of an ornamental pond;
 - Landscaping of road reservations;
 - erection of signage and billboards; and;
 - Embellishment of open space.
- Off-site works comprising:
 - construction of the sewer lead in from the Sydney Water carrier main at Ash Road;
 - upgrade of overhead mains and construction of electrical lead-in feeders from the existing zone substation at Prestons;
 - connection to utility services, potable and recycled water, electricity, gas and telecommunications in Campbelltown and MacDonald Roads;
 - Connection to existing stormwater drainage;
 - tree removal;
 - earthworks including excavation, cut and fill;
 - design and construction of physical infrastructure, including roads, stormwater drainage and utility reticulation, traffic management works, including the connection to the existing MacDonald Road;
 - design and construction of staged stormwater water quantity and quality infrastructure to achieve objectives required by the Water Cycle Management (WCM) strategy for the greater site;
 - erection of an acoustic wall;
 - erection of signage and billboards;



- extension or relocation of existing services including potable and recycled water, gas, telecommunication, power;
- demolition of all existing structures; and;
- Proposed new intersection to existing Macdonald Road.

It is intended to seek staged Construction Certificates as necessary to facilitate the efficient delivery of each phase of, the development works.

The first stage residential Project Application will include the proposed construction of a gravity sewer line through the future Regional Park.

1.4 Planning Background

The Edmondson Park Release Area, including the site, has been the subject of broad strategic planning investigation and environmental assessment over a number of years by Liverpool and Campbelltown City Councils, the Department of Planning, the Department of Defence (the current landowner of the Ingleburn Army Camp) and Landcom (owner of certain lands).

The whole of the Edmondson Park Release Area has been released for urban development by the Minister for Planning. Part of the site, the Ingleburn Army Camp, is currently the subject of a 'delayed' rezoning for urban purposes under Liverpool Local Environmental Plan 2008 and Campbelltown (Urban Area) Local Environmental Plan 2002.

In June 2010 the Minister for Planning considered a Preliminary Assessment Report for the Edmondson Park South Project that provided justification for the planning, assessment and delivery of the project to occur under Part 3A of the EP&A Act, having regard to the demonstrated contribution that the project will have to achieving State and regional planning objectives.

Subsequently, on 23 July 2010, pursuant to Clause 6 of SEPP Major Development, the Minister for Planning formed the opinion that the Edmondson Park Project constitutes a Major Project to be assessed and determined under Part 3A of the EP&A Act, and also authorised the submission of a Concept Plan for the site. In doing so, the Minister also formed the opinion that a State Significant Site (SSS) study be undertaken to determine whether to list the site as a State Significant Site in Schedule 3 of SEPP Major Development.

The Part 3A process under the EP&A Act allows for the Edmondson Park South Project to be planned, assessed and delivered in a holistic manner, with a uniform set of planning provisions and determination by a single consent authority. Given the scale of the proposal, the Concept Plan and SSS listing provide the opportunity to identify and resolve key issues such as land use and urban form, development staging, infrastructure delivery and environmental management in an integrated and timely manner.

1.5 Contamination Management Plan Objectives

The objective of this CMP is to provide a framework for identifying and addressing any discovery of residual chemical contamination (including asbestos containing materials – ACM) or potentially explosive ordnance so as to ensure a safe working environment for workers during development and to avoid unacceptable impact on the natural environment. The plan also considers the occurrence and remediation of ordnance waste that, although may be harmless, can cause unnecessary alarm.

Unexpected finds may be encountered in areas which, although subject to an assessment, contain remnant materials which were obscured by the local topography, the type of surface cover (e.g. vegetative cover, building) or at a depth preventing detection.

The successful implementation of the CMP requires an appropriate Site Specific OHS Induction of Site Operatives who may uncover potential chemical contamination (including potential ACM) and/or explosive ordnance. The induction will include the review of this CMP and the associated flow chart (**Figure 1**), as well as basic environmental contamination awareness training.



PART 3A EDMONDSON PARK CONCEPT PLAN - CONTAMINATION MANAGEMENT PLAN

Key Site personnel (Site Manager and Site Foreman) should be subject to additional training with respect to basic identification of ordnance by the Ordnance Consultant/Contractor.

This CMP describes reporting procedures and lines of responsibility (See Section 2.2, Table 1). The roles include those with detailed knowledge of the remediation which has been undertaken at the site and details on the location of, and access to, the supporting documents related to the assessment and remediation of the Western Precinct.

Parts of Edmondson Park South have been remediated, subjected to interim site audits and considered suitable for its intended land uses, and residual contamination, if present, is most likely to be discovered during the development earthworks which will occur prior to subdivision.

The procedures included in this CMP are intended for use only during the site preparation phase of development, during which structures may be demolished and disposed off site, bulk earthworks which will alter existing surface levels and redundant infrastructure is removed and new infrastructure is installed.



2.0 CONTAMINATION MANAGEMENT PLAN

The objective of the CMP is to provide clear guidance on the safe and appropriate actions in the event of encountering potential chemical or explosive ordnance contamination during site development works. Where such material is uncovered the CMP prescribes the quarantining of the relevant area of concern, allowing other site works to proceed unhindered, while the area of concern is assessed and, if necessary, remediated and validated.

Two classes of potential contamination are discussed separately below: chemical (including potential ACM) and ordnance.

2.1 Contamination Management Plan Flow Chart

The operation of the CMP is described in the following flow-chart (**Figure 1**).



2.2 Roles and Responsibilities

Table 1 provides the key roles and responsibilities with respect to this CMP.

Table 1: Summary of Roles and Responsibilities

Role	Responsibility
Site Manager	<p>The Site Manager is responsible for:</p> <ul style="list-style-type: none">■ Ensuring the induction of Site Personnel;■ Initial assessment of potential contamination and/or ordnance materials identified, and assessing whether further action is required;■ Review adequacy of quarantine measures and contacting the relevant Consultants and/or Contractors, as well as the Site Auditor (where appropriate); and■ Once an area is declared free of the contamination, the Site Manager's role will be to remove the quarantine and allow site works to proceed.
Site Personnel	<p>Site Personnel (e.g. excavator and grader operators, underground services contractors) will be required to:</p> <ul style="list-style-type: none">■ Be inducted to the site, inclusive of environmental contamination awareness training prior to commencing work at the site;■ During the works, the Site Personnel will be vigilant for potential contamination and/or ordnance; and■ Where potential contamination and/or ordnance is identified, Site Personnel will cease work and quarantine the identified area and inform the Site Manager.
Environmental Consultant	<p>Environmental Consultants will be responsible for:</p> <ul style="list-style-type: none">■ Attend Site within a reasonable time after notification of find;■ Assessing the potential chemical contamination find;■ Carry out any necessary sampling and delineation, if required, developing a remedial scope and validating remediation to render the site suitable for residential development;■ As appropriate, have expertise in environmental risk assessment and/or asbestos assessment; and■ Reporting all findings and conclusions, as appropriate and to the satisfaction of the Site Manager and/or the Site Auditor or Asbestos Consultant if a Site Audit is not required.
Asbestos Consultant	<p>The Asbestos Consultant will be responsible for:</p> <ul style="list-style-type: none">■ Reviewing assessments carried out by the Environmental Consultant of areas potentially contaminated by asbestos containing materials;■ Monitoring of site works during remediation works where required; and■ Provide a brief report which certifies the subject area is suitable for residential development.



PART 3A EDMONDSON PARK CONCEPT PLAN - CONTAMINATION MANAGEMENT PLAN

Ordnance Consultant/ Contractor	<p>The Ordnance Consultant/Contractor should be a Department of Defence approved UXO consultant/contractor and will be responsible for:</p> <ul style="list-style-type: none">■ Attend Site as requested to assess finds;■ If find is confirmed to be an ordnance of concern, review adequacy of quarantine measures in place and modify as appropriate;■ Assessing the ordnance find, undertaking any surveying sampling and delineation, developing any necessary remedial scope and validating any remediation necessary to render the site suitable for residential development.■ Complete clearance reports on each area investigated and/or remediated and provide a copy for review by the Site Auditor and/or Independent Ordnance Consultant/Contractor.
Site Auditor	<p>The independent NSW DECCW accredited Site Auditor will be responsible for:</p> <ul style="list-style-type: none">■ Reviewing the assessment and remediation of areas as a consequence of discovery of unexpected finds.■ When satisfied by the information provided by the Environmental and Ordnance Consultants, review the wrks in context of previous Site Audits and issue further Site Audit Statements and Reports as warranted.
Asbestos or Environmental Contractor	<p>Responsible for removal or treatment of contaminated material in accordance with this procedure and direction by the Environmental Consultant and the Site Manager.</p>
Independent Ordnance Consultant /Contractor	<p>As necessary (significant ordnance find and as requested by SA), an Independent Ordnance Consultant/Contractor will conduct a review of completed reports where significant ordnance are discovered.</p>

2.3 Potential Chemical Contamination

Contamination which could be encountered during the development will typically be associated with the historical land use activities identified as:

- Petroleum hydrocarbons associated with former fuel storage areas;
- Near surface and buried demolition waste (typically ACM); and
- Pesticides associated with the management of weeds.

Potential chemical contamination may be indicated in the field by:

- Distressed vegetation;
- Odorous soils;
- Discoloured soils;
- Potentially asbestos containing sheeting, fragments or insulation materials; or
- The presence of other foreign materials, such as drums, waste dumps or building rubble which could harbour contamination.



Should suspect chemical contamination be encountered, the works in the immediate area will cease, access restricted and the Site Manager informed. If the Site Manager considers material to be potential chemical contamination the area will be quarantined and a suitably qualified Environmental Consultant will be commissioned to assess the find. The Environmental Consultant will be responsible for characterising and delineating the extent of the potential contamination and defining appropriate remedial actions, if required.

Suspected ACM will be managed in accordance with relevant WorkCover requirements and a site specific Asbestos Management Plan.

If deemed necessary by the Environmental Consultant, the contamination will be removed for disposal at a suitably licensed facility in accordance with *Waste Classification Guidelines* (NSW DECC, April 2008). The resultant excavation will be validated by the Environmental Consultant and a report on the remediation and subsequent validation will be completed and, if appropriate, be reviewed and approved by an independent NSW EPA accredited Site Auditor. The quarantine barriers can be removed and the earthworks continued upon receipt of advice from the Environmental Consultant, or preliminary advice from the Site Auditor.

If the area is determined by the Environmental Consultant to not be contaminated or the analyses meet the relevant site validation criteria, the Environmental Consultant should notify the Site Manager that the quarantine restrictions on the area can be lifted and the works in that area may resume. The Environmental Consultant will prepare a report on the investigation and the conclusions drawn.

2.4 Potential Ordnance Materials

Potential ordnance which may be encountered during development of the site could include:

- Small arms ammunition (SAA), plastic blanks and metal jacket;
- Training ordnance, 81mm mortars, grenades and rocket propelled grenades; and
- Remnants of the above (i.e. fragmented pieces)

Potential explosive ordnance material may be indicated in the field by:

- Lead Particulate;
- Ammunition packaging;
- Grenade components; or
- Metal debris of uncertain origin.

Should potential ordnance material be uncovered, earthworks shall cease immediately and the Site Manager informed. The find and immediate area should be quarantined, by means of some appropriate barrier to prevent access to the area to protect site personnel and visitors to the site from potential injury.

The Site Manager will make a preliminary assessment of the find and determine whether it is some miscellaneous debris, a fragment of ordnance or a potentially explosive device.

Where the Site Manager can identify the item as non-ordnance debris or a minor harmless fragment of ordnance debris, the material should be removed from the excavation and disposed of appropriately.

Where it is considered to be a potentially explosive device, the Site Manager shall contact an appropriately qualified Ordnance Consultant/Contractor, to assess the item and the area.

Should the Ordnance Contractor consider the object(s) to be non-ordnance or harmless fragments of ordnance, the object(s) can be removed and disposed of appropriately. The quarantine restrictions can be lifted and the earthworks continued.



If the Ordnance Contractor identifies the object(s) as potential explosive ordnance, the Ordnance Contractor shall inform the Site Manager, and arrange disposal by the Department of Defence.

Based on the nature of the find, it may be recommended that a geophysical survey of the area be undertaken to establish whether the item was an individual piece, one of a number of pieces or a disposal pit. Such surveys may, as appropriate, utilise magnetic, electromagnetic or other relevant diagnostic techniques.

The survey would be undertaken by the Ordnance Consultant/Contractor. Further surveys are mandatory if the explosive ordnance is considered a Group A item or more than three readily identifiable Group B items are found at one location.

- **Group A** - An item clearly of a military nature and which might readily be recognized by a member of the public as such (e.g. in effect complete in appearance as a projectile of 20 mm calibre or greater, hand grenade, mortar, bomb, etc) and containing explosive filling, but excluding small arms ammunition.
- **Group B** - An item clearly of a military nature and which might readily be recognized by a member of the public as such (e.g. in effect complete in appearance as a projectile of 20 mm calibre or greater, hand grenade, mortar, bomb, etc) and not containing explosive filling, and excluding small arms ammunition.

Additional ordnance surveys required will be designed to assess the extent and nature of the ordnance contamination and then (or concurrently) remove the item so that the area is safe for development activities to resume.

In the event that further explosive ordnance is discovered the search area may need to be extended to ensure a suitable buffer zone is searched. A remediation and sampling strategy for the area is to be developed in consultation with the Environmental Consultant and Site Auditor.

All additional finds should be logged and disposed of appropriately. Once the investigation is complete a report on the scope of the investigation, remedial work and results should be produced by the Ordnance Consultant/Contractor, and provided to the independent Site Auditor. The quarantine restrictions on the area can be removed and the earthworks resumed.

2.5 Significant Find

In the event that assessment by the Environmental and or Ordnance Consultants identifies that the chemical or ordnance contamination is extensive in its lateral and/or vertical extent, then a sampling and analysis plan will be prepared to delineate the contamination and assess the extent of any remediation required. The sampling and analysis plan will be reviewed by the independent Site Auditor, who would be engaged to review the assessment works, and any associated remediation.

If in the opinion of the independent Site Auditor the extent of contamination materially affects the validity or appropriateness of the conclusions in the Site Audit Statement or Report, DECCW guidance requires the Auditor to notify DECCW and Planning Authority. A revised site audit report and/or statement (as appropriate) may be required to take account of the find.



3.0 LIMITATIONS

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