5 April 2013

## DEFENCE SITE MARIBYRNONG

# Remediation Action Plan - Audit Area 1

**Submitted to:**
Department of Defence
Contamination and Remediation Program
Canberra ACT

REPORT

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**Distribution:**

Department of Defence
Golder Associates Pty Ltd

# Executive Summary

## Introduction and Scope

The Defence Site Maribyrnong (DSM) is currently owned by the Commonwealth Department of Defence (Defence). It is located on Cordite Avenue, Maribyrnong, approximately 10km north-west of central Melbourne and encompasses an area of approximately 127 hectares.

The DSM is surplus to Defence requirements and the Commonwealth intends to remediate and dispose of the site in accordance with Commonwealth legislation and policy and, where practical, meet the intent of Victorian State requirements. The site will be disposed to Places Victoria for redevelopment under a Priority Sale agreement, and will include a mix of residential, open space, commercial and ancillary uses. Decommissioning, demolition and remediation of the site will be undertaken with the objective of obtaining a Certificate, or more likely a Statement, of Environmental Audit pursuant to Section 53X of the Victorian Environment Protection Act 1970. The appointed Environmental Auditor ('the Auditor') for the DSM is Mr. Anthony Lane of Cardno LanePiper Pty Ltd.

DSM has been divided into the six Environmental Audit Areas. The history and contamination status of Audit Area 1 has been shown from past investigation to be different to the remainder of the site. As a consequence, the disposal strategy for Audit Area 1 is different from the remainder of DSM. At this stage it is proposed to accelerate the assessment, remediation, Environmental Audit and disposal of Audit Area 1 to occur within the Planning Phase and hence to occur prior to the commencement of the Delivery Phase for the remainder of the project. Hence this Remediation Action Plan (RAP) pertains to Audit Area 1. A second, subsequent Remediation Action Plan will be developed for Audit Areas 2 to 6.

In its role of Lead Remediation Manager, Golder Associates Pty Ltd (Golder) has been engaged by Defence to compile this RAP. While providing a single narrative for the site for communication with stakeholders, the RAP will:

- Consider site constraints, statutory requirements and practical functionality, and outline a program of implementation compatible with the Project objectives;
- Address issues such as criteria and their application, assessment densities, validation densities and QA/QC in accordance with the Framework Document;
- Include remediation goals developed through a risk assessment process, materials tracking and validation protocols to control the works;
- Identify key potential impacts (including dust, water quality, noise and traffic management) and appropriate control measures;
- Establish contingency plans to address project risks;
- Establish validation protocols for both the remediation works and the subsequent confirmation of the achievement of the remediation objectives.

## Background

Audit Area 1 covers an area of 13 hectares. Fisher Stables (B0248) on Remount Hill is the topographical high point of Audit Area 1 and the surrounding topography slopes in a radial pattern to the north, east and south.

The near surface geology in Audit Area 1 nominally comprises of fill or soil overlying Newer Volcanics Basalt in the north under Remount Hill and along the southern boundary. Quaternary Age alluvium or Brighton Group Sediments occur in the interval between the Basalt and approximately corresponds to the floor of the shallow valley in the south of the Audit Area. Fill generally comprises re-worked natural soil with localised areas of waste.

## Site History

Audit Area 1 included four general areas of DSM:

- Fisher Stables and surrounds;
- Land Engineering Agency;
- Army & Airforce Canteen Service; and
- Commonwealth Scientific and Industrial Research Organisation.

No record of the production or large scale storage of explosives or chemicals in Audit Area 1 was found during this site assessment. It is understood that buildings within Audit Area 1 were primarily used as stables, a residence and associated buildings, a firing range, for storage or as offices. Historical records indicate that 32 buildings were constructed within Audit Area 1 of which only 8 remain.

## Soil Assessment

A soil contamination assessment report has been prepared for Audit Area 1. The information has been presented within this RAP. The report found that the site has been assessed to the extent required by the assessment framework reviewed by the Auditor with the exception of some further low priority assessment which is proposed to be undertaken during the site remediation. In addition, resolution of a QA issue associated with some of the historic data requires resolution in accordance with the strategy put forward to the Auditor as set out in the Framework Document (Golder 2013). The soil assessment has found that the site can be made suitable for a range of landuses including residential land use subject to some assessment validation and remediation and validation as defined within this RAP.

## Groundwater Assessment

A groundwater assessment report has been prepared for Groundwater Assessment Area A which extends over the area of the site in which Audit Area 1 is located. The information has been presented within this RAP. The assessment has found that subject to addressing the gaps outlined below, it is considered unlikely that a Clean Up to the Extent Practicable (CUTEP) determination would be required for Assessment Area A (containing Audit Area 1) and as such no ongoing monitoring or management of groundwater would be required into the future.

The following data gaps are required to be addressed to provide confirmation of the above findings for Groundwater Assessment Area A:

- Additional data is required for fluoride, zinc, aluminium and chromium (hexavalent) to further assess their potential impacts to protected beneficial uses.
- Further risk evaluations are required to confirm that the higher nitrate concentrations at the eastern edge of Area A have a low potential to preclude the beneficial use to the aquatic ecosystems of the Maribyrnong River. Additional review of potential other nutrient sources within Audit Area 1 (or offsite as appropriate) is also required.

These investigations are currently being undertaken.

## Beneficial Land Uses

Defence has indicated that the project aim is to remediate the DSM to achieve a Statement of Environmental Audit. There is currently no stated expectation of land use other than the recognition that the proposed land use would include a mix of uses including medium density residential use.

Identification of appropriate land use options is an iterative process and involves consideration of: the consolidated dataset for Audit Area 1, the results of additional investigations, and risk assessments versus land use options.

Golder has considered the development of a Target Audit Outcome Plan (TAOP) for Audit Area 1 by:

- Reviewing the site data against criteria considered protective of sensitive site uses to eliminate areas of the site that would appear from the existing information to be unlikely to be suitable for sensitive uses; and
- Reviewing the groundwater data and identifying groundwater issues that may restrict the ability for sensitive uses either due to potential vapour risk or due to the possible need for ongoing monitoring or management of groundwater.

The assessment to date has indicated that Audit Area 1 can be made suitable for all of the potential land uses indicated by Defence within the objectives of the DSM project including commercial, public open space and medium density residential subject to some remediation of soil. The amount of soil requiring remediation will be lowest should a commercial land use be selected and highest should a residential land use be selected. It is unlikely that the identified groundwater contamination will impact upon the consideration of potential land uses for Audit Area 1.

Defence confirmed that the Target Audit Outcome Plan for Audit Area 1 shall include low and medium density residential use.

## Remediation Requirements

Based on the soil analytical data and a consideration of aesthetics, the soil assessment has identified approximately 13 areas within Audit Area 1 requiring remediation for residential land use, with potential additional areas to be defined based on validation of the identified area. Apart from one currently identified water main containing asbestos, it is not proposed to remediate the underground utilities network or demolish any buildings, roads or car parks. All of these features have been found to present a low and acceptable risk to the potential beneficial uses of the land.

No groundwater remediation is expected to be required.

## Assessment of Soil Remediation Volumes

Estimates of the potential volumes of material requiring remediation have been undertaken by developing probabilistic estimates of the site contamination. The estimated volumes of the various soil types requiring remediation are summarised below:

**Soil Remediation Volumes**

| Material Type | Material Volume (m3) Probability of being Exceeded | | |
|---|---|---|---|
| | 95% | 50% | 5% |
| **Reusable Class 1 (Fill Material)** | 100 | 300 | 500 |
| **Solid Inert Waste** | 1,200 | 1,700 | 2,600 |
| **Category C Waste (including Asbestos)** | 1,300 | 1,900 | 3,000 |
| **Reusable Class 2/3 (Category C) (reuse in less sensitive areas)** | 600 | 900 | 1,200 |
| **Category A or B Waste** | 100 | 100 | 100 |
| **Remediation Material Totals*** | **3,900** | **4,900** | **6,500** |

**Note that the 95%ile of the sum of the soil types is not the same as the sum of 95%ile of the soil type volume because the distributions are calculated independently in the model.*

## Remediation Options Feasibility Assessment

A high level remediation options screening assessment was undertaken using two published remediation screening matrices to maintain a balanced and objective assessment in this preliminary, concept level screening.

This preliminary screening in combination with a high-level technical feasibility assessment found several remediation concepts to be applicable at the site to address the contaminants of interest in the soil matrix. These are as follows:

- Capping and Containment
- Off-site disposal/reuse on DSM in less sensitive areas
- Physical Separation

Stabilisation may also be used on site should leachable metals be identified during validation.

Following a more detailed evaluation, the proposed remediation option to be adopted is as follows:

a) Physical Separation of surface asbestos prior to site remediation via a site walkover by a licensed asbestos removalist.

b) Excavation of the areas of remediation;

c) Physical Separation of wastes and asbestos to maximise the amount of reusable soil and minimise the amount of material requiring further management. The Physical separation of the waste would be undertaken by selective stockpiling in the first instance and then using a mechanical sieve to process any remaining soils and comingled waste;

d) Reuse on DSM of all soil materials that meet the Class 3 criteria for reuse in commercial areas. This will entail stockpiling of the soil off Audit Area 1 and on to the wider DSM site and management of the stockpile prior to reuse as part of the wider site remediation;

e) Offsite disposal to landfill of all materials unsuitable to be reused on site following classification in accordance with Victorian waste classification requirements.

## Remediation Framework and Project Risks

A framework for the remediation procurement, management and validation of the AA1 remediation has been presented.

An analysis of the project risks and proposed mitigation has also been provided.

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