

# Contamination

## North Penrith Stages 2B, 2C, 2D, 3A & 3B

### Assessment Report

#### Summary

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##### Objectives

The objectives of this assessment are to determine the suitability of the site for the proposed land uses and to recommend measures to be taken during the design and construction phases.

##### Method

The method of assessment involved a review of:

- the Site Audit Reports and Site Audit Statements issued by the Site Auditor commissioned by the Department of Defence to certify that the site is suitable for residential use.
- the other reports listed in Section 6.

##### Conclusions

The Site Auditor has certified that the entire North Penrith site including the areas of Stages 2B, 2C, 2D, 3A and 3B, is suitable for the intended land uses.

Geotechnique has undertaken environmental supervision of the Stage 1 works underway on site and unexpected finds during these works have been entirely consistent with previous investigations and expectations.

Any unexpected finds that might be encountered during works on Stages 2B, 2C, 2D, 3A and 3B are expected to be minor and can be readily managed in accordance with standard industry practice.

##### Recommendations

The Site is suitable for the uses proposed in the development applications for Stages 2B, 2C, 2D, 3A and 3B.

The following measures are recommended to ensure best practice management of any contamination issues encountered during the construction phase:

1. **Continuation of Site Auditor involvement.** The Site Auditor (Mr Graeme Nyland of Environ), should be retained to oversee any unexpected finds and importation of fill. (This has occurred for Stage 1). It is expected the Site Auditor will issue a series of updated Site Audit Statements as each stage of the development is completed.

2. **Unexploded Ordnance Protocol.** The Construction Environmental Management Plan (CEMP) is to include a site-specific Unexploded Ordnance Protocol (UOP).

The UOP is to be implemented throughout the construction works under the responsibility of the Principal Contractor.

3. **Unexpected Finds Protocol.** The CEMP is to include a site-specific Unexpected Finds Protocol (UFP).

The UFP is to be implemented throughout the construction works under the responsibility of the Principal Contractor.

4. **Contamination assessment after removal of the existing roads & concrete slabs.** After removal of the existing roads and slabs a suitably qualified environmental engineer/scientist will inspect the exposed ground for indicators of contamination. Sampling and testing might be required.

5. **Remediation and validation pursuant to an unexpected find or contamination found after removal of roadway.** If remediation is required a specific Remediation Action Plan (RAP) will be prepared. The remediation works will be carried out in accordance with the RAP. Validation of the remediated area by the environmental engineer/scientist will be carried out after completion of remediation works.

6. **Any ash/coal materials.** Any identified ash/coal materials will be tested to confirm the contamination status. Ash/coal materials with concentrations of analytes within the assessment criteria can be re-used on-site. To mitigate the potential for site occupiers to have aesthetic-based concerns and/or because the materials might be unsuitable as a planting medium, ash/coal materials will not be placed near-surface at any location in the site.

7. **Beneficial re-use of crushed asphalt.** The crushed asphalt will be assessed according to "The Recovered aggregate exemption 2010" under the "Protection of the Environment Operation (Waste) Regulations 2005" prior to re-use.

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## 1. Objectives of assessment

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The Director-General Requirements for Stages 2B, 2C, 2D, 3A & 3B development contain specific key requirements relating to potential contamination matters.

The development will comprise residential, commercial & mixed use development, employment areas and a wetland and central water feature.

The primary objectives of the assessment are to determine the suitability of the site for the proposed land uses and to recommend any further assessments and investigations and/ or courses of action to be taken during construction.

### Director-General's Requirements

This report was prepared to respond to the Director-General's Requirements (DGR) regarding contamination matters and suitability of the site for the following stages at the North Penrith site:

- Stages 2B & 2B – SSD 5346
- Stage 2D – SSD 5347
- Stage 3A – SSD 5348
- Stage 3B – SSD 5349

As the contamination issues are generally consistent across all these stages it was considered appropriate to provide a consolidated contamination report addressing all stages.

Assessment for the remaining stages requires identification and detailing of any measures to be undertaken to appropriately remediate the site in accordance with State Environmental Planning Policy No 55 (SEPP 55).

This report addresses the contamination issues for both DGR.

### Proposed development

Stages 2B, 2C, 2D, 3A & 3B of the North Penrith development will comprise residential, commercial & mixed use development, employment areas, a wetland and central water feature.

The development for each stage incorporates excavation, site preparation, roads and utilities infrastructure and lot forming works. It does not extend to the construction of the built form on individual parcels of land.

### Objectives

The objectives of this contamination assessment are to:

- assess the suitability of the site for the proposed land uses;
- recommend measures to be taken during the design and construction phases.

## 2. Site Analysis

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The combined area of Stages 2B, 2C, 2D, 3A & 3B is about 23.7 hectares (ha) of vacant land, located north of the Great Western Railway line at Penrith Station, comprising the bulk (60%) of the 40ha site former Defence site at North Penrith.

Stages 2B, 2C, 2D, 3A & 3B of the North Penrith site are generally underlain by clays, loams and sand of variable proportions, which are Quaternary fluvial deposits with very low potential for groundwater movement.

The North Penrith site is located in a 'Moderate Salinity Potential' area.

The development has no requirement for extraction of groundwater.

### Summary Site Description

The site comprises about 23.7 ha of vacant land and is located between:

- Coreen Avenue to the north;
- The Crescent & Great Western Railway line to the south;
- Stage 1 development and the existing Defence Training Depot to the east and south east;
- Existing industrial developments and access to Penrith railway Station to the west.

The different stages are shown in the attached Staging Plan. The site was previously part of a large Defence facility. On deeming the facility surplus to requirements, the Department of Defence demolished the majority of the structures, with the exception of some of the internal road network and concrete slabs.

### 3. Regulatory context

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The framework for management of contamination is established by:

- Office of the Environment and Heritage or the NSW Environment Protection Authority.
- Contaminated Land Management Act 1997 (CLM Act).
- Managing Land Contamination – Planning Guidelines.
- State Environmental Protection Policy No 55 (SEPP 55) – Remediation of Land.
- Site Auditor.

In broad terms, the management framework for contaminated land in NSW consists of two tiers:

- Office of the Environment and Heritage or the NSW Environment Protection Authority, which uses its powers under the Contaminated Land Management Act 1997 (CLM Act) to deal with site contamination that is significant enough to warrant regulation under the CLM Act given a site's current or approved use;
- State government and local councils deal with other contamination under the planning and development framework, including SEPP55 - Remediation of Land and the Managing Land Contamination - Planning Guidelines (the Guidelines).

SEPP 55 and the Guidelines aim to establish 'best practice' for managing land contamination through the planning and development control process.

The Guidelines provide advice to planning authorities on the early identification of contaminated sites, consideration of contamination in rezoning and development applications, recording and use of information and ways to prevent contamination and reduce the environmental impact of remediation activities.

Site auditors are highly experienced contaminated land consultants accredited by the NSW EPA under the *Contaminated Land Management Act 1997*, in order to improve access to competent technical advice and increase certainty in the 'sign-off' of contaminated site assessments and remediation.

## 4. Methods & Results

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A review of the existing Site Audit Statements and extensive site investigation reports has been undertaken to assess the suitability of the site for the intended uses.

Stages 2B, 2C, 2D, 3A & 3B of the North Penrith site are suitable for the proposed land uses.

The method of assessment was a review of the Site Audit Reports and Site Audit Statements issued by the Site Auditor commissioned by the Department of Defence to certify that the site is suitable for residential use, and the other reports listed in Section 6.

The same Site Auditor has issued two Site Audit Reports with accompanying Site Audit Statements that together cover the entire site at North Penrith.

The Site Audit Statements can be pertinently summarised as:

- purpose of the audit: to determine land use suitability for commercial/ residential mixed use;
- suitability of the site: the Site Auditor certifies the site is suitable for identified uses:
  - o Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry.
  - o Day care centre, preschool, primary school and secondary school.
  - o Residential with minimal opportunity for soil access, including units.
  - o Park, recreational open space and playing field.
  - o Commercial/industrial.
- accompanying 'overall comments': the Site Auditor provides the following comment that might be related to Stages 2B, 2C, 2D, 3A & 3B of the North Penrith site:
  - o If groundwater is to be extracted for use in the future, further assessment of the water quality is required to verify that the groundwater is suitable for the purposes being considered.

It is noted that it is not intended to extract groundwater from the North Penrith site and therefore this comment from the Site Auditor is not relevant.

## 5. Assessment

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The Site Auditor has certified that Stages 2B, 2C, 2D, 3A & 3B of the North Penrith site are suitable for the proposed land uses.

Further assessments are unnecessary; however it is appropriate to adopt a range of measures to manage any unexpected finds during construction.

### **Contamination assessment and remediation to date**

Numerous stages of contamination assessments were conducted for the North Penrith site between 1992 and 2000 followed by remediation and validation between 1998 and 2002. The Site Auditor's risk assessment indicates the likelihood of sufficient remnant contamination present that could significantly impact site development or use, is 'considered very low because of the comprehensive investigations conducted'.

The Unexpected Finds Protocol described below will detail the procedures for dealing with any potential waste and fill materials discovered in the course of construction.

### **Ash materials**

Ash materials were found in parts of the North Penrith site during previous assessments and site works for Stage 1. The materials were sampled and analysed. The contaminated materials were classified and were able to be re-used on the site.

Any ash materials encountered during works on Stages 2B, 2C, 2D, 3A and 3B should be analysed to confirm whether the material is suitable for re-use on site.

### **Soils beneath existing roads/concrete slabs**

There is a possibility of contaminated fill materials being present beneath roads and/or existing concrete slabs that remain within the areas of Stage 2B, 2C, 2D, 3A and 3B.

Therefore, it is recommended to inspect the exposed ground for indicators of contamination after removal of the existing roads and/or concrete slabs. Inspection should be carried out by a suitably qualified environmental engineer/scientist. Sampling and testing might be required. Remediation will be required for any identified contamination.

### **Groundwater**

Investigation for groundwater in the proximity of the existing Mobil Site was undertaken during site works for Stage 1. Standing groundwater levels are about 6m – 7m below existing surface levels. Groundwater was not encountered during site works for Stage 1.

Site works for Stages 2B, 2C, 2D, 3A & 3B are not expected to encounter any groundwater and it is not proposed to extract any groundwater.

## **Unexploded ordnance**

The Department of Defence considers there to be a low possibility of unexploded ordnance (UXO) on the North Penrith site. The Stage 1 site works covered a significant portion of the site that was intensively used by Defence in the past and did not encounter any UXO. This supports the previous assessments that the possibility of the presence of UXO in the remainder of the stages is very low.

## **Unexpected finds**

There is the possibility of encountering an unexpected find in the course of construction on any part of the site. By way of examples, a find could be:

- underground storage tanks;
- filled pits or gullies;
- rubbish pits or buried building rubble;
- unusual soil staining or discolouration;
- odour emanating from the ground during excavation;
- fragments of asbestos-cement products on the surface or unearthed during excavation. There is potential for asbestos cement conduits and pits throughout the site;
- ash, coal and coal dust.

An Unexpected Finds Protocol (UFP) is to be part of the Construction Environmental Management Plan (CEMP). Typically, the UFP will direct that when there is an unexpected find:

- work immediately ceases in the area;
- the area is cordoned off;
- a suitably qualified environmental engineer/scientist undertakes sampling and testing, a detailed assessment and prepares a Remediation Action Plan (RAP) to direct the remediation works;
- the report of the assessment and the RAP is reviewed and endorsed by the Site Auditor;
- the remediation works are undertaken and the environmental engineer/scientist validates the area(s) on completion of remediation to the satisfaction of the Site Auditor.

Responsibility for implementing and managing the UFP is primarily with the Principal Contractor, however, Landcom, the environmental engineer/scientist and the Site Auditor also have key roles. Construction workers are informed of the UFP and trained in identification of unexpected finds as part of site induction and the likes of regular 'tool box' refresher sessions.

## 6. References

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### Site Audit Reports and Site Audit Statements:

- Site Audit Report and Site Audit Statement (GN-5), Lot 1 DP532379, Lot 1 DP33753 and Part Lot 1 DP33754, Thornton Park, North Penrith, prepared for Department of Defence by Graeme Nyland of Environ, May 2009.
- Summary Site Audit Report and Site Audit Statement (GN-22), Lot 11 in DP862420 plus Lots 1 to 4 in DP1017480, Castlereagh Site, Thornton Park, prepared for Department of Defence by Graeme Nyland of URS, 2 February 2001.
- Draft summary Site Audit Report and Site Audit Statement (GN-5-B), Lot 11 in DP862420 plus Lots 1 to 4 in Draft Proposed Commonwealth Plan of Acquisition, Thornton Park prepared for Department of Defence, Sydney Property Disposal Unit, by Graeme Nyland of Dames & Moore, 5 July 2000.

### Associated reports:

- Geotechnical & Contamination Advice, Report 11984/1-AA, prepared for Landcom by Geotechnique Pty Ltd, 15 April 2009.
- Classification of Stockpiled Soils, Ref. 4027/3-AA, 2231 Castlereagh Road, Penrith, prepared for Total Construction Pty Ltd by Geotechnique Pty Ltd, 26 November 2007.
- Contamination Assessment, Lot 1, 2, 3 & 4 DP1017480, Castlereagh Road, Penrith, prepared for Department of Defence by Fitzwalter Group, June 2003.

### Report for the adjoining commuter car park

- David Lane Associates, Addendum Phase 2 Detailed Environmental Site Assessment, Coreen Avenue Commuter Car Park, Coreen Avenue Penrith, Lot 1 DP 1095946, May 2010.

## **Appendix 1: Staging Plan**

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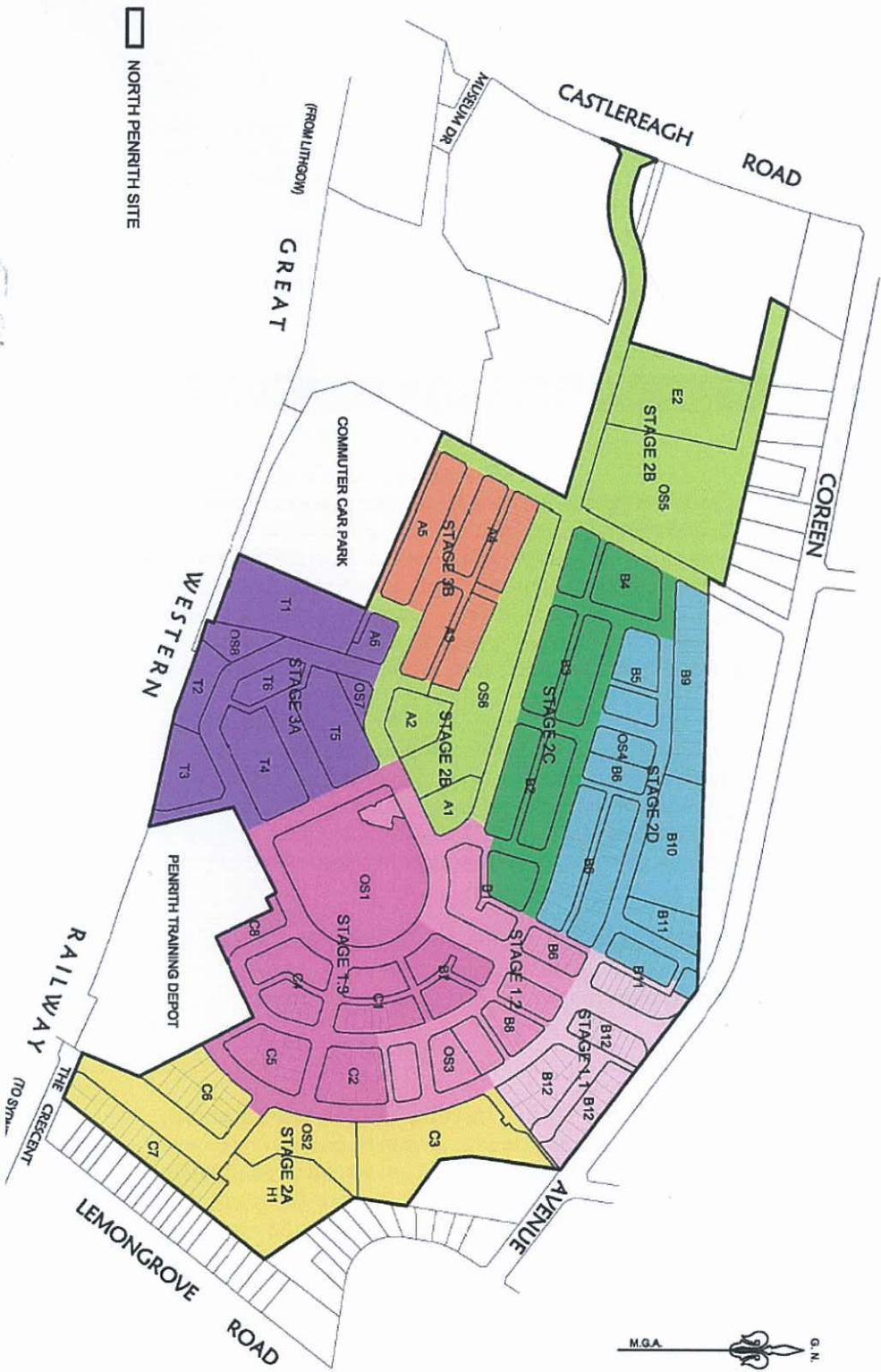


Figure 5 – North Penrith Revised Staging Plan