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Environmental remediation

Introduction

- 4.1 Scientific evidence submitted to the Committee as part of the Inquiry process indicated that the activities carried out on the site have resulted in numerous sources of potential and actual contamination. These contaminants pose a pollution threat to the surrounding environment and limit the future use of the site.

Remediation options

- 4.2 The Department of Defence (DoD), through its consultant Egis Consulting Australia Pty Limited, considered there to be five main options for remediating the site, namely:
- no action;
 - limit future use of the site;
 - treatment for off site disposal to landfill or re-use on-site;
 - cap and contain; or
 - off-site treatment and return to site.¹

¹ Exhibit 11, pp. 54-63.

- 4.3 The DoD, considered that most options were feasible for the site. However, in all cases the on-going liabilities and long term management and future uses of the site and surrounds were the limiting factors.² The DoD considered that due to the contaminants identified on site and the various limiting factors, it would be necessary to use a combined options approach to ensure that the remediation goals are met. As such, the DoD selected bio-remediation³ and thermal desorption⁴ as the primary treatment for highly contaminated soils and tarry wastes and the disposal of all contaminated materials to a licensed landfill facility. The DoD considers the advantages of this approach to be:
- all contamination is removed from the site in one set of works and hence contaminant risk to the surrounding environment is eliminated;
 - works can be conducted over the shortest possible time from to provide a 'no risk' outcome; and
 - the techniques and strategies in undertaking this type of remediation are well understood.⁵

Outline of proposed remediation

- 4.4 The remediation option proposed by the DoD requires the demolition of all structures on the site (apart from certain structures of heritage significance), excavation of contaminated materials and disposal of them off site. Primary treatment of highly contaminated materials will be required on site to reduce contaminant levels to concentrations which enable off site transport and disposal.
- 4.5 Prior to the commencement of works on the site, environmental and safety controls will be installed, including a silt barrier in Neutral Bay.
- 4.6 The proposed demolition works will result in the removal of all aboveground structures on the site, retaining certain structures of heritage

2 Exhibit 11, p. 59.

3 Bioremediation is a term used to describe a range of processes that rely on the biological degradation of organic compounds.

4 Thermal desorption is a term used to describe the use of heat to drive (boil) organic contaminants off solid materials. Once desorbed, the organic off-gas is usually incinerated through an after-burner, or condensed to allow subsequent treatment as a liquid waste.

5 Exhibit 11, pp. 59 and 60.

significance. Building rubble and building waste generated during the works will be transported off site for disposal at licensed facilities.⁶

- 4.7 The proposed remediation works will remove all contaminated soil, tar, sludges and groundwater from the site.⁷ The DoD advised the Committee that the proposed remediation works will result in the remediation of between approximately 26,710m³ and 79,130m³ of contaminated material.⁸ The remediation will be conducted within a purpose designed enclosure. The treatment of solid materials will be by thermal desorption and bioremediation, while disposal of liquids will involve licensed discharge to sewer or disposal at an off site treatment plant.⁹
- 4.8 The cliff to the west of the site is to be excavated to the boundary of the site to remove contamination.¹⁰ The DoD advised the Committee that some area of site bedrock will also be required to be excavated as a consequence, in part, because the rock in the cliff is contaminated with tar seeps.¹¹ The DoD estimates that up to 30, 000m³ of sandstone will be produced from excavating bedrock and sandstone within the cliff.
- 4.9 Uncontaminated sandstone from the cliff will be used as clean fill on the remainder of the site where contaminated materials have been excavated. Where the sandstone is malodorous it will be de-odorised prior to use.¹² At the completion of the remediation works the site will be graded and surface stabilised.¹³

Environmental benefits and impacts

- 4.10 The DoD advised the Committee that the proposed remediation works will have the following long term environmental benefits:
- improvement of the air quality of the area;
 - improvement in the quality of groundwater underlying and discharging from the site;

6 Exhibit 12, p. ii.

7 Exhibit 12, p. ii.

8 Evidence, p. 10 and Briefing to the Parliamentary Standing Committee on Public Works, 25 October 2000.

9 Exhibit 12, p. ii.

10 Exhibit 12, p. ii.

11 Exhibit 12, p. ii.

12 Exhibit 12, p. ii.

13 Exhibit 12, p. ii.

- improvement in the water quality of Neutral Bay;
 - improvement in the site amenity by remediating to a standard that will allow future land uses;
 - retention and more effective presentation of heritage structures on the site; and
 - compliance with principles of ecologically sustainable development.¹⁴
- 4.11 The DoD also advised the Committee of certain of the environmental impacts of the proposed remediation works, including:
- generation of particulates from some stages of the demolition and remediation works;
 - generation of malodorous emissions during stages of the remediation works where highly contaminated materials are handled;
 - generation of observable noise impacts at surrounding residential locations;
 - generation of increased traffic levels; and
 - visual impacts of the works being undertaken.¹⁵
- 4.12 The potential for short term environmental impacts during some stages of the proposed works was an issue of major import for many of those who participated in the Inquiry process.¹⁶ Both prior and during the public hearing the Committee sought to determine what actions the DoD would be undertaking to minimise environmental impacts, in particularly air and noise impacts on surrounding residential locations.¹⁷
- 4.13 The DoD provided the Committee with a detailed description of what actions the contractor would be undertaking to minimise environmental impacts.¹⁸
- 4.14 In respect to environmental control measures, the measures are to include:
- the installation, operation and maintenance of groundwater control measures comprising dewatering systems, groundwater recovery and disposal systems;

14 Exhibit 12, p. iii.

15 Exhibit 12, pp. iii and iv.

16 Evidence, pp. 81 and 112.

17 Evidence, pp. 34-36.

18 Exhibit 13, pp. 64-150.

- the installation, operation and maintenance of equipment control measures comprising wheel wash and truck wash facilities;
- the installation of a silt curtain for the protection of off-site waters surrounding the site;
- should a condition occur where nuisance odours can be detected at the boundaries of the site or where the air quality fails to meet ambient air standards, odour generating work in the affected area will be ceased, if possible, until the necessary odour or air quality control measures have implemented and levels return to acceptable criteria;
- water sprays will be used for dust suppression across unsealed areas of the site, stockpiles and other dust generating areas;
- normal working hours will be as set out in approved working hours documented in the New South Wales Environment Protection Authority (EPA) (1993) Environmental Noise Control Manual;
- equipment operating out in the open areas of the site will be fitted with appropriate residential silencers;
- a designated heavy trucking route will be selected in consultation with North Sydney Council prior to the commencement of the project;
- a vibration monitoring program will be conducted throughout the works for the purpose of monitoring compliance with vibration standards at the boundaries of the site and to demonstrate that site works have not adversely impacted the surrounding communities; and
- the conducting of all potentially hazardous works within a Remediation Enclosure.

4.15 The Committee noted the comprehensive conditions imposed on the DoD in the consent granted by the LEC aimed at minimising environmental impacts, including:

- the site be remediated to the standards required by a Site Auditor accredited under the CLMA;
- the Site Auditor will certify to North Sydney Council and the LEC, that part of the site, which does not include the proposed public open space, is suitable for the residential development;
- the Site Auditor will certify to North Sydney Council and the LEC, that the proposed public open space on the site is suitable for use as a park, recreational open space or a playing field;

- materials or rubbish resulting from the land clearing, demolition and building work, will not be burnt on the site;
- except where approved by the North Sydney Council, demolition, earth works, building construction and landscaping works will be restricted to within the hours of 7.00 am to 5.00 pm Monday to Friday and Saturday to within 8.00 am to 1.00 pm, with no work on Sundays and Public Holidays; and
- excavation works will be restricted to within the hours of 8.00 am to 5.00 pm Monday to Friday only.¹⁹

Conclusion

- 4.16 The Committee is of the opinion that of the remediation options available to the DoD, the selected option offers the greater potential for the DoD to meet its objectives, that is, to mitigate Commonwealth liability for the contamination of the site and to maximise the revenue to the Commonwealth from the sale of the site.²⁰
- 4.17 The Committee acknowledges the arguments of witnesses who supported the 'cap and contain' option. It is also of the view that, while that strategy is attractive from a short term cost perspective, it does little to insure the Commonwealth against future legal exposure and will impact on future residents of the site.
- 4.18 The Committee acknowledges that the proposed remediation will impact on the amenity of nearby residences. However, the Committee is of the view that the conditions imposed by the LEC and actions the contractor would be undertaking, will, as far as is reasonably possible, minimise the impact of the proposed remediation on the amenity of nearby residences.

¹⁹ Exhibit 1, Attachment, pp. i-xvii.

²⁰ Evidence, pp. 9 and 26.