

Brompton Redevelopment Remediation – Use Of Post Remediation Site Management Plans As Integral Components of Site Remediation

Elmar Schaffeler, Director, Tierra Environment Pty Ltd
elmar@tierra.com.au

Summary

The paper explains how post remediation site management plans were developed and used to ensure that site remediation works for a very large urban redevelopment project delivered land which was suitable for future sensitive land uses.

The Brompton Redevelopment remediation required the preparation and implementation of post remediation site management plans. The remediation outcomes ensured that the sites were suitable for sensitive land uses assuming normal residential activities. The SMPs were necessary to ensure future site owners will be advised on subsurface conditions below a given depth which, if disturbed, could result in risks to human health and the environment. The SMPs were developed in conjunction with stakeholders, are concise and easy to administer. At the same time it will be possible for future owners of residential allotments to understand the provisions of the SMPs.

Project precis

The remediation project consisted of the redevelopment of former industrial sites (8ha) at Brompton, South Australia. The sites contained approximately 500,000m³ of uncontrolled fill with an average fill depth of 8m. Site contamination consisted of metals (lead, copper, zinc) and organics (PAH, TPH, BTEX, OCP, pentachlorophenol).

The sites were subject to redevelopment for medium density residential and open space uses. The development proposal identified over 300 new allotments allowing for a mixture of individual allotments and community titles.

The site was audited by an EPA accredited site contamination auditor. Audits for nine individual sites were completed between 2007 and 2009.

Project role

Tierra Environment was engaged as the project's principal environmental consultant and remediation contract superintendent. The general scope of services provided included:

- site investigations (soil, soil gas, groundwater)
- community liaison
- remediation planning
- remediation implementation
- post remediation reporting
- preparation of site management plans

Project challenges

The presence of non-engineered and contaminated fill to depths of 10m required the development of a remediation method which would allow both geotechnical and site contamination remediation. Existing fill was generally unsuitable for near surface applications due detected levels of metals and PAH. The removal of fill materials to off site locations and subsequent replacement with imported soil was considered cost prohibitive.

Project opportunities

Site investigations undertaken on behalf of the Developer determined that contaminants present at the site had an acceptably low leachability under predicted future site conditions and were non-volatile.

On this basis the following remediation method was selected:

- Reuse of fill as engineered materials below pre-determined depth
- Use of on site natural materials and imported natural materials as near surface soils
- Management of reused fill below 2m by means of SMPs
- Remediated cross section consisted of 0-2m natural soils, 2-3m fill with select contaminated fill, 3-8m fill with general contaminated fill, below 8m natural soils (clays and sands), groundwater is present at approximately 13m
- Provision of SMP information to future site owners to allow management of fill materials below 2m in perpetuity

Resolution of SMP issues

The following challenges needed to be resolved:

- 300 individual future land owners plus council for roads/reserves
- need for one perpetual authority to administer the SMPs
- the SMPs needed to ensure that the remediated land was suitable for the proposed sensitive use, i.e. no unacceptable risk to public health and the environment
- the SMPs needed to be comprehensive to identify pertinent issues and be easy to understand and implement by future allotment owners
- the SMPs needed to be easy to administer

The following solutions were adopted:

- all residential areas and roads/reserves would have similar SMPs respectively
- selection of SMP content to ensure all relevant data would be supplied while at the same time being concise and understandable to future site owners without prior knowledge of site contamination issues
- the Local Government authority would administer the SMPs by means of development approvals for site activities below a defined depth (as required by the SA Development Act 1993)

Consultation during SMP development

Project stakeholders (developer, auditor, Local Government authority, EPA) were regularly consulted during the development of SMP provisions. Of particular importance was the consent by the Local Government authority to accept responsibility to administer the SMPs, using the provisions of the Development Act 1993.

The EPA advised that notification on future titles may occur in accordance with Section 103P of the EP Act 1993.

Content of SMPs

The following information was selected to be contained in the SMPs:

- a plan showing the area subject to SMPs
- the SMP objectives
- soil and fill characteristics below residential allotments and suitability for (re)use
- soil and fill management measures, applicable in the event of excavations below a depth of 2m
- responsible parties
- expected requirements for handling and disposal of soil excavated below a depth of 2m

Conclusions

The Brompton Redevelopment remediation was based on the reuse of over 500,000m³ of industrial fill. The nature of contaminants (low leachability and volatility) allowed the placement of fill below a depth of 2m. Future excavations below 2m will be controlled by SMPs which will be administered by the Local Government authority using the provisions of the Development Act 1993.

The SMPs are concise (3 pages) and contains no obligations considered onerous on future land owners provided that site activities remain within the envelope of normal construction and site use activities, while at the same time providing sufficient information to future land owners to avoid risks to public health and the environment in the even of excavations below 2m.

Biography

Elmar Schaffeler has over 23 years experience in environmental engineering. He has been involved in over 400 environmental projects in Australia and overseas (including over 300 contaminated land projects and over 50 landfill projects) and has been guest lecturing in Environmental Impact Assessment (University of Adelaide) since 1999.

His key areas of expertise include contaminated land investigations, remediation and management; landfill design and construction; environmental management of infrastructure projects; environmental monitoring; risk communication and community liaison. Since 1991 Elmar Schaffeler has been playing a leading role in numerous large site remediation projects in South Australia with remediation cost per project of up to \$14million.

He is currently a Director of Tierra Environment, a South Australian based firm of environmental engineers and scientists.