Northern Territory Government, Department of Planning and Infrastructure

Darwin City Waterfront
Multi-storey Car Park Area
Environmental Audit Report

Kitchener Drive, Darwin

November 2008
Statement of Environmental Audit

This Statement provides a summary of the findings of an Environmental Audit of the site located on Kitchener Drive, Darwin, Northern Territory in accordance with Section 47d of the Waste Management and Pollution Control Act (NT).

Note that this Statement of Environmental Audit has been compiled to meet the requirements of the development permit for the site and does not constitute a statutory Statement of Environmental Audit under the Victorian Environment Protection Act 1970.

Name of Auditor: Dr Peter Nadebaum of GHD Pty Ltd
Date Audit requested: September 2003
Owners of the Site: Northern Territory Government under the Administration of Department of Planning and Infrastructure.
Person requesting a Certificate: Terry O'Neill of the Northern Territory Government Department of Planning and Infrastructure.
Municipality: Town of Darwin
Title Information: Part Lot 7578 Town of Darwin Volume 700 Folio 461 and Future Lot 7767 as defined on Drawing No. LTO 2008/091 (attached in Appendix A) to be subdivided out of Lot 7578 Town of Darwin Volume 700 Folio 461
Area of the Site: 2640 m²
Zoning: Central Business under the Northern Territory Planning Scheme

The audit has had regard to, amongst other things:

- The Waste Management and Pollution Control Act (NT),
- The National Environment Protection (Assessment of Site Contamination) Measure (NEPM 1999),
- Water Act (NT),
- Advice provided by the Northern Territory Environment Heritage & Arts Division, Department of Natural Resources Environment & the Arts (EHA/DNRETA), and
- Guidance provided by the Victorian Environment Protection Authority.

Summary of Findings

The Site is historically a marine area reclaimed through uncontrolled and controlled filling and was previously utilised for industrial purposes. Pollution control measures have been implemented to make the Site suitable for its intended purpose, subject to certain conditions and a Site Management Plan (Environment) and Groundwater Management Plan, both attached to the Site Audit Statement, and the following information is relevant:
Underlying fill can include glass, concrete, metal and wood pieces in the fill material at some locations. Very little biodegradable material is present and the age of the fill makes it unlikely that methane and other gases would be generated at levels of concern or above concentrations that would occur naturally where marine sediments are present. The fill material may be judged to be aesthetically objectionable if it were to be uncovered and may also adversely affect the growth of plants; however, no unsealed open spaces or garden areas are proposed for the Site.

Methane gas testing was undertaken in the air space of eight groundwater bores across the Stage 1 area, and seven soil gas probe locations adjacent the Multi-Storey Car Park. Methane was detected in two groundwater bores. However results were less than the adopted trigger value of 20% of the Lower Explosive Limit (LEL) of methane in air. Methane was not detected in the soil gas bores. It is concluded that methane does not pose an explosion or asphyxiation risk to the users of the Site.

Sampling and analysis has not detected any significant concentrations of asbestos in the fill in the waterfront area; however, due to the nature of the fill such material (particularly pieces of asbestos cement sheet) may be present in some localised areas of the Site. If excavations take place in the future, the work will need to be managed in accordance with the Site Management Plan (Environment) and material disposed of off Site in accordance with regulatory requirements.

Heavy metal contamination has not been measured at concentrations that would be expected to adversely impact the health of persons working at the Site. Some metals concentrations were detected at depth exceeding the ecological criteria, but given the clayey nature of the soils on site would be unlikely to impact ecosystems in any garden areas. While there are no gardens proposed for this site, if the site use were to change in the future the potential for isolated hotspots of metal contaminated soils may need to be considered.

Hydrocarbon contamination can be present in the fill and natural soil and rock, particularly in the northern region of the Site. The contamination is generally several meters beneath the surface and in the vicinity of the groundwater, and can give rise to contamination of the groundwater. This contamination is odorous and may be judged to be objectionable particularly if exposed and may be hazardous to persons if they come into direct contact with the material. If excavated, it should be managed and disposed of off Site in accordance with regulatory requirements and the Site Management Plan (Environment).

Groundwater at the Site is contaminated with petroleum hydrocarbons, and this may be evident by a thin film or sheen on the groundwater in some locations. This could have adverse impacts if it were to discharge into the lagoon. A drainage system is provided to avoid this occurring, and it is proposed that this system will remain in operation until monitoring shows that contamination has reduced to a level where the drainage system can safely cease operation. Groundwater should be managed in accordance with the Groundwater Management Plan.

Consideration has been given as to whether further clean up should take place. It has been determined that clean up has been carried out to the extent practicable, and EHADNRETA has been consulted to confirm that it is in agreement with the determination. Natural biodegradation of residual hydrocarbon contamination will continue to occur and the sub-soil drain will continue to remove hydrocarbons from the Site. It can be expected that at some time in the future that controls such as the subsurface drain will no longer be required to operate. The assessor infers that this might occur within a decade; however, the audit concluded that there is considerable uncertainty in such an estimate.
Potential Acid Sulphate Soil (PASS), which occurs naturally in coastal areas, was identified at the Site during friction pile augering in the natural marine sediments underlying the fill. Any works undertaken that may aerate or otherwise disturb these soils (such as via excavation or dewatering) must be undertaken in accordance with an Acid Sulphate Soil (ASS) management plan prepared by a qualified and experienced professional as specified in the Site Management Plan (Environment).

There is potential for unexploded ordnance to be present, and for this to pose a risk if detonation should occur. This is outside the scope of the audit, and the risk associated with UXO is managed through other means.

The Site Management Plan (Environment) provides information on the requirements for management of materials that may be encountered if sub-surface works are carried out at the Site. The Groundwater Management Plan provides information on the requirements for ongoing monitoring of groundwater in the Stage 1 area, which includes the Site.

The audit considers only contamination of the soil and groundwater by potentially hazardous substances, and does not consider or advise on the geotechnical conditions, the requirements for management of UXO or other aspects of the suitability of the land for development.

Suitability of the Site

On the basis of the work undertaken, the auditor is of the opinion that the Site is suitable for the intended purpose, that being:

A Multi-Storey Car Park with no exposed soil, in accordance with the site development plan (attached to the Statement of Environmental Audit as Attachment A) and used subject to the following conditions:

1. All future development and maintenance works at the Site involving excavation, and disposal of soil and fill shall be carried out in accordance with the Site Management Plan (Environment) attached to this summary.

2. Buildings shall be designed to prevent oily water from entering any occupied sub-surface structures, where there is a likelihood of oily water being present.

3. Buildings and structures shall be built to withstand acidic conditions potentially associated with Acid Sulphate Soil and Potential Acid Sulphate Soil.

4. Groundwater at the Site shall be managed in accordance with the Groundwater Management Plan attached to this summary to avoid contaminated groundwater discharging to the lagoon, and any sub-surface spaces such as lift overruns.

5. Groundwater at the Site shall not be used for any beneficial purpose other than environmental monitoring and for site remediation.

The reader should note that the SMP and GMP are subject to review and will be updated as appropriate. The reader should contact the Darwin Waterfront Corporation to obtain the current version of these documents.
This statement should be read in conjunction with the full audit report "Northern Territory Government, Department of Planning and Infrastructure, Darwin City Waterfront, Multi-Storey Car Park Area, Environmental Audit Report, Kitchener Drive, November 2008".

DATED: 12 November 2008

SIGNED:

PETER NADEBAUM
Environmental Auditor (Appointed Pursuant to the Victorian Environmental Protection Act 1970 and recognised in the Northern Territory under section 68 of the Waste Management and Pollution Control Act Northern Territory).

Statement Attachments:

Statement Attachment A: Site Development Plan
Statement Attachment B: Site Management Plan (Environment) – Current version as at 5/11/2008
Statement Attachment C: Groundwater Management Plan – Current version as at 30/07/2008
Statement Attachment A: Audit Site Development Plan
Statement Attachment B: Site Management Plan (Environment) – Current version as at 5/11/2008

(Current at the time of issue of the Statement of Environmental Audit. Contact the Darwin Waterfront Corporation to obtain the current version of this document)
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