

ENVIRONMENTAL AUDIT REPORT
LOT 8897 (No.12) HARVEY STREET
DARWIN, NT

Prepared for
Tomazos Group

Date: 16 July 2015



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STATEMENT OF ENVIRONMENTAL AUDIT

This statement provides a summary of the findings of an environmental audit of the site known as Lot 8897 (No.12) Harvey Street, Darwin in accordance with Section 47 of the Waste Management and Pollution Control Act (NT).

Name of Auditor	Steven Kirsanovs
Term of appointment of Auditor	26 Nov 2013 to 25 Nov 2018
Date Audit requested	1 May 2013
Owners of the site	Tomazos Group Pty Ltd
Person requesting the audit	Mr Karl Hell of Tomazos Group Pty Ltd
Municipality	Town of Darwin
Site identification	Lot 8897 on Plan LTO 2013/097 CT Volume 789 Folio 617
Zoning	CB (Central Business)

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
- Advice provided by the Northern Territory Environment Protection Authority
- Guidance provided by the Victorian Environment Protection Authority

Summary of Findings

- The site was part of a former bulk fuel storage terminal / depot which was owned and operated by Shell from the 1940s to 1990s.
- The former fuel terminal site was decommissioned in the late 1990s.
- Investigations were conducted during the 1990s and 2000s which identified some historical contamination in soils and groundwater. The historical impacts were related to the past bulk fuel storage operations, and in the case of groundwater, may also have been associated with other bulk fuel storage sites that existed in the locality.
- The former fuel terminal site was subdivided into 3 separate lots in 2014, with lot 8897 being the most easterly of the newly created lots.
- Preparatory earthworks were conducted during 2013 and 2014 which removed soils to a depth of 6m to 8m below the original surface. Validation samples have been collected from the excavation and showed no indications of any residual contamination.
- The groundwater under the site and surrounding area has elevated concentrations (with respect to adopted screening criteria) of some metals (arsenic, nickel, zinc) which are considered likely to be representative of background levels in the area.

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The groundwater is also naturally acidic (pH between approximately 4.5 to 6). There is also historical hydrocarbon contamination in the groundwater under the site which is considered likely to be associated with historical fuel storage operations at the site (but also potentially with co-contributions from other nearby former fuel storage sites).

- The groundwater could be aesthetically objectionable if it were allowed to infiltrate into basement areas. It is understood some parts of the basement will be tanked and the remainder has been designed with drains to intercept any groundwater infiltration. This is considered sufficient to address this issue.
- There is no current groundwater use either on site or in the surrounding areas. Future use is also considered unlikely given the likely variable yield, the cost of installation of a bore in fractured rock, and also the natural acidic groundwater which would require pretreatment to be suitable for any use. The availability of a reliable reticulated supply of potable water in the Darwin area is also noted.
- As there is no current or future likely extractive use of groundwater, the level of protection that to be afforded to the groundwater should therefore be based on potential impacts on surface waters where groundwater could in theory discharge. The nearest potential receiving water body is Frances Bay marina, approximately 400m to the east. The marina and bay are located at the topographical low point of an east-west oriented gully that runs from north of the site, and it is considered likely that groundwater flow would follow this topography and eventually discharge to this section of coastline.
- The auditor commissioned some fate and transport modelling which indicates the impacts in groundwater are likely to have reached their maximum extent and steady state conditions within 25 years of the initial release. Given the dates the fuel terminal operated on this site (1940s to 1990s) the impacts in groundwater are unlikely to migrate any further than their current extent. The modelling also predicted the groundwater impacts were not likely to have migrated more than 40m from the original source zone. As a result, the risks to the marine ecosystems of Frances Bay are considered negligible.
- No other management measures are considered to be warranted in relation to the groundwater impacts, however a condition will be included in the audit statement reiterating that groundwater is not to be extracted or used with the exception of monitoring or remediation purposes. It is noted this is consistent with the outcomes of environmental audits completed for former fuel storage sites in this area. As the impacts in groundwater have only migrated offsite a limited distance (probably less than 40m), the impacts are unlikely to migrate further, and affected offsite area is Crown Land / reserve, then ongoing monitoring or management is not warranted on the proviso extraction of groundwater is prevented.

Suitability of the Site

The site is considered suitable for the intended future redevelopment as a multi level residential apartment building with basement car parking, subject to the following condition:-

- a. Groundwater at the site must not be extracted for any purpose other than for environmental monitoring or remediation purposes, without further assessment by a suitably qualified environmental consultant or hydrogeologist and confirmation it is suitable for the intended use.

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There are some related environmental issues that have arisen during the course of the environmental audit, but they do not affect the completion of the Statement. The following items have been noted in the Statement of Environmental Audit in the section entitled 'other related information':

- Groundwater at the site is naturally acidic, and contains naturally elevated concentrations of arsenic, nickel and zinc. The levels are considered typical of the regional groundwater quality in the area.
- The existing groundwater monitoring bores should either be decommissioned, or maintained, in accordance with the bore license requirements.

This Statement forms part of environmental audit report (*Environmental Audit Report, Lot 8897 (No.12) Harvey Street, Darwin, Kirsa Environmental Report Ref 6041, 16 July 2015*). Further details regarding the condition of the site may be found in the environmental audit report.

Dated:- 16 July 2015

Signed:- ... 

STEVEN KIRSANOVS

Environmental Auditor appointed pursuant to the Victorian Environment Protection Act 1970 and recognised in the Northern Territory under section 68 of the Waste Management and Pollution Control Act (NT)