TETRA TECH COFFEY

Level 1, Bishops See, 235 St Georges Terrace
Perth
WA 6000 Australia

t: +61 8 6218 2100
f: +61 8 6218 2222
tetratechcoffey.com

MEMORANDUM

Recipient name	Scott Carroll	**Recipient company**	Liberty Industrial
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Subject	Conceptual Site Model for Asbestos Monocell Gove		

1. INTRODUCTION

This memorandum presents the Conceptual Site Model (CSM) for the proposed asbestos monocell at Melville Bay Road, Nhulunbuy, Northern Territory (NT). This CSM was developed to assess the potential risks of exposure to contaminant, causing adverse impacts to human health and the environment. It outlines the likelihood of complete linkage between source of contamination, exposure pathway and receptors.

2. SITE IDENTIFICATION

Location: Melville Bay Road, Nhulunbuy, NT.

Site History: The site is designated for the disposal of asbestos waste. The site has been vacant and previous vegetation within the area has been cleared.

Monocell Design: The cell will be specifically designated for asbestos containing material (ACM) and steel structures (free of lead paint) generated from demolition of the Gove Refinery. The ACM is proposed to be double bagged prior placement at the landfill and intercalated with the steel.

3. CONCEPTUAL SITE MODEL

3.1 SOURCE OF CONTAMINATION

The primary contaminant source is asbestos waste from demolition of site structures, including bonded and friable asbestos.

3.2 MIGRATION PATHWAYS

Inhalation Pathway: Asbestos fibres can become airborne if disturbed.

Surface Water: Runoff could potentially carry asbestos debris (pieces) and fines to surrounding areas.

3.3 POTENTIAL RECEPTORS

Potential receptors include humans or ecological receptors that are, or may be, adversely affected on and off-site:

Onsite

- Waste placement workers
- Construction workers installing the cap and revegetation workers
- Maintenance workers and bushcare workers; and.
- Occasional users of the land (traditional owners)

Offsite

- Surrounding site users or workers (i.e. refinery workers).
- Ecological receptors (Fauna, flora and marine environment).

Taking into consideration the potential for source-pathway-receptor (SPR) linkages, a CSM was detailed in Table 1.

3.4 LIKELIHOOD OF EXPOSURE

Based on Table 1, there are no complete SPR linkages on the site upon completion of the asbestos cell program, the risk associated with the asbestos monocell is considered low, provided that construction and maintenance works follow the procedures documented under the Asbestos Control/Management Plan, Construction and Operation Manuals.

Table 1 - Conceptual Site Model

Source	Pathway	Receptor/s	SPR Linkage status	Comment on Risk
Asbestos contained in the Monocell	Inhalation	Occasional current and future land users. Construction / maintenance workers. Fauna and flora	Incomplete	A layer of compacted clay (approximately 1m) will cover the bagged asbestos waste. The disposal of asbestos into the cell will be a short-period exercise conducted by remediation contractor under Class A conditions. Once the monocell area is fully capped with the clay material, the likelihood of asbestos airborne is low and therefore SPR linkage is incomplete. It is expected that finished surface will be revegetated with endemic flora. It is noted that the risk of asbestos airborne during construction[1] and maintenance of the landfill must be managed via the Asbestos Control/Management Plans.
	Surface water runoff	Fauna and flora [2] Marine environment [2]	Incomplete	Once capped, asbestos waste within the monocell will not be exposed to surface water runoff and erosion. The design includes drainage systems, which will catch and divert stormwater to the south of the landfill (down-gradient) will minimise the risk of the erosion of the cap. Landfill batter designed by geotechnical engineer has typical inclination to avoid erosion. The likelihood of cap being eroded to an extent that bagged asbestos waste will be exposed to surface runoff is negligible. The likelihood of surface water runoff to carry asbestos contaminants that will impact ecological receptors is therefore considered negligible. As such, the SPR linkage is incomplete.

Note:

[1] The management of risks during construction phase may involve dust suppression, routine air quality monitoring, control of soil erosion and sediment and completing the asbestos disposal program in a short period of time.

[2] Marine environments and flora are not applicable in this case (asbestos contamination).

4. CONCLUSION

In conclusion, following the implementation of the monocell capping, the risk of exposure to asbestos contamination resulting in adverse human-health and ecological impacts is considered negligible. The capping effectively prevents the release of asbestos fibres into the environment, ensuring the safety of land users, workers and fauna.

The management of risks during the monocell construction phase will be guided by Asbestos Control Plans and may include the implementation of dust suppression measures, routine air quality monitoring, soil erosion and sediment control, as well as completing the asbestos disposal program within a short timeframe.