



**Minister for Environment; Disability Services
Deputy Leader of the Legislative Council**

Your Ref Petition No 14
Our Ref 62-03239

Hon Matthew Swinbourn MLC
Chair
Standing Committee on Environment and Public Affairs
Legislative Council Committee Office
Parliament House
4 Harvest Terrace
WEST PERTH WA 6005

Dear Mr ~~Swinbourn~~ *Matt*

Further to my letter dated 11 September 2017 relating to Petition No 14 for a proposed landfill in Esperance at Lot 12 Kirwan Road, Merivale (Lot 12), I have now been advised that the Department of Water and Environmental Regulation (DWER) has completed a review of information on the Shire of Esperance's public website for the Lot 12 proposal, including.

- Phase I Hydrogeological Risk Assessment; and
- Due Diligence and Landfill Capability Assessment

The DWER has also considered other available information, including:

- 'Contribution of geophysical methods to karst-system exploration' (Chalikakis et al 2011),
- 'Hydrogeology of the Esperance-Mondrain Island 1:250 000 sheet' (Johnson and Baddock 1998), and
- 'Assessment of Salinity Management Options for Lake Warden Catchments, Esperance, WA: Groundwater and Crop Balance Modelling' (Short et al. 2000).

Resulting from this review, the DWER has provided the attached advice (Attachment 1) on specific technical matters relating to the proposal as raised in your letter to me dated 17 August 2017

I understand that the status of the proposal submissions under Part V and Part IV of the *Environmental Protection Act 1986* (EP Act) is unchanged since my previous correspondence to you. This is, the DWER understands that the Shire of Esperance is intending to submit an application for works approval by November 2017 and is considering referring the proposal to the Environmental Protection Authority under Part IV of the EP Act, prior to submission of the works approval application

Please note that the DWER has advised that elements of the attached advice may change following the submission and assessment of more detailed proposal documentation which contains specifics of the proposed engineering and operational controls, and the Phase 2 Hydrogeological Assessment

Should your Office require further information, please contact Ms Ruth Dowd, Senior Manager, Industry Regulation (Waste), on 93337416 or ruth.dowd@dwer.wa.gov.au

Thank you for the opportunity to provide further advice on this Petition.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Stephen Dawson', written in a cursive style.

Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT

06 OCT 2017

Attachment 1: Advice on specific matters

1) *The proximity of Lot 12 to a series of Ramsar listed wetlands.*

The boundary of the Ramsar listed Lake Warden lakes system is approximately 3.8 kilometres from Lot 12; however proximity alone is not likely to be the determining factor in the outcome of a referral or application submitted under Part IV or Part V of the *Environmental Protection Act 1986* (EP Act)

As part of the DWER's assessment of any works approval application received under Part V of the EP Act, the proximity of Lot 12 to all environmentally sensitive receptors will be considered in accordance with the Department's *Guidance Statement: Risk Assessments* (February 2017). The DWER's assessment will be evidence-based and will consider risks to receptors where it is foreseeable that they could be exposed to an emission through an identified actual/likely pathway, and where potential adverse effects to the receptor are likely as a result of the exposure.

2) *Whether any potential contamination from Lot 12 could result in damage to the Ramsar wetlands as well as to surrounding agricultural and aquaculture properties*

A review of available information by the DWER's Principal Hydrogeologist indicates that groundwater from the site does not flow into or have connectivity with the Lake Warden wetland system. A hydrogeological map of the area and investigations undertaken on the site suggest that groundwater and surface water flow predominantly in a southerly direction towards the ocean, and not towards the Lake Warden wetland system.

Available information indicates that there are unlikely to be direct groundwater flow-paths between Lot 12 and Doombup Lake to the south. Instead, groundwater discharges to a seepage face on an escarpment near the site, where the majority is likely to be lost by evaporation. Notwithstanding this, periodic surface flows may carry some chemical constituents from the groundwater discharge area into Doombup Lake (with some degradation of the contaminants in the water by oxidation likely to have occurred before they reach the lake)

It is expected that an application for a works approval to the DWER will include a Phase 2 Hydrogeological Assessment containing more detailed information from on-ground investigations. This document will be considered in detail through the DWER's environmental risk assessment process, to verify whether the above preliminary information is accurate.

Potential impacts on nearby agricultural and aquaculture properties are highly dependent on the details of the proposed engineering controls in place for the containment of leachate, and proposed operational controls for the management of other risks such as odour and dust emissions.

In the absence of a detailed works approval application being submitted, specific details of the proposed controls are unknown; however the potential impacts to these receptors will be identified and explored in detail through the environmental assessment process. Some further comments are also made in point 4) below on the geology underlying the proposal site, which has some relevance to the potential impacts on nearby abstraction bores.

3) *Current status of the proposal, including with respect to its consideration by the Environmental Protection Authority;*

See cover letter.

4) *The proposed location of the waste facility on a sand plain overlying rocks that are porous to water*

In the absence of a works approval application specifying the proposed engineering controls for containment and stability, or the submission of the Phase 2 Hydrogeological Assessment, the DWER is not in a position to make a clear determination on the level of risk which may be posed by the location of Lot 12 over porous sediments, but its preliminary comments are provided below

At this stage, Lot 12 is understood to be underlain sediments of Tertiary age which comprise the Pallinup Siltstone and the Werillup Formation, and by granitic basement rocks of Proterozoic age at depth. A review of available information by the DWER's Principal Hydrogeologist concurs that the spongolite rock of the Pallinup siltstone contains a large number of void-containing features which are locally interconnected, and it is likely that these features locally produce karst-like groundwater flow conditions in this part of the Pallinup Siltstone (Johnson and Baddock, 1998). Consequently, localised rapid groundwater flow may occur near the water table near the site if a substantial number of interconnected cavities occur within spongolite in the area. However, drilling investigations have indicated that substantial amounts of clays occur in the weathered profile that immediately underlies the site which are likely to greatly retard the infiltration of contaminants from the land surface to the water table.

The DWER's Principal Hydrogeologist has calculated that under a scenario where there is an absence of interconnected karst-like features between the site and the groundwater discharge area (the escarpment), groundwater travel times are expected to lie in the range of about 66 to 347 years, assuming that groundwater discharge takes place 900 metres away from the site. However, under the worst-case scenario (if karst conduits extend from the proposed landfill site all the way to the discharge area and no landfill liner is present), it is estimated that it would take at least 16 years for leachate to infiltrate from the site to the water table before transport in karst conduits could take place. In such a scenario, it should be noted that many chemical constituents of the leachate would be degraded by oxidation in surface seeps before transport to surface receptors in surface water flows could take place.