Peer Review of On-site Sewage Management Feasibility Report by Greg Alderson & Associates (19313_ww_Rev E) - Proposed Light Industrial Development "Federal Sheds"

Location:

Lot 10 DP 790360
467 Federal Drive
Federal NSW 2480

Byron Shire Council Ref. DA10.2021.114.1

Prepared for:

Byron Shire Council

Report No:

HMC2022.1162

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RE: Lot 10 DP 790360 No. 467 Federal Drive, Federal, NSW.
HMC Environmental Consulting Pty Ltd is pleased to present our peer review of the On-site Sewage Management Feasibility Report by Greg Alderson & Associates (GAA) for the abovementioned site.

We trust this report meets with your requirements. If you require further information, please contact HMC Environmental Consulting directly on the numbers provided.

Yours sincerely

Helen Tunks
(B.Env.Sc.)

Document Control Summary			
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1 Introduction

HMC Environmental Consulting (HMC) has been commissioned by Byron Shire Council to review an on-site sewage management (OSM) feasibility report by Greg Alderson & Associates (Rev E, 9/12/2021), submitted to Council in support of a proposed light industry development application. The proposed development is for 8 industrial sheds and associated carparking located at Lot 10 DP 790360 No. 467 Federal Drive, Federal, NSW.

The document under review is:

1. On-site Sewage Management Feasibility Report by Greg Alderson & Associates, Report No. 19313_ww Revision E, 9/12/2021 (GAA Rev E, 9/12/2021)

Other documents viewed:

2. Revision E Cover Letter to Byron Shire Council – 9/12/2021 – Greg Alderson & Associates (19313_22REV E COVER LETTER)
3. Proposed Site Layout and Carparking Plan – Federal Sheds(Dwg No. DA20.1 Rev B 18.08.2022, U+I Building Studio & Amitran P/L)
4. Review of Concept Design for On-site Sewage Management (IBL Solutions, Rev 1, 6/9/2022)
5. Peer Review of On-Site Sewage Management Report – Proposed light industrial development at Lot 10 DP 790360, Federal Drive, Federal NSW Report No. 19313_ww Revision E.docx – Whitehead & Associates, 10 January 2022 (WHA, 10/1/2022)
6. Submission to Byron Shire Council Re: "Fed Sheds" DA 10.2021.114.1 at 467 Federal Drive, Federal by Federal Community Centre Steering Group, September 2022 (FCCSG, Sep 2022)
7. Letter to Gavin Elterman Re: Fed Sheds DA – by the Federal Community Centre Steering Group, 23/8/2022
8. Letter to Byron Shire Council- Antony McCardell, 28/9/2022
9. Environmental Health Review for an On-site Sewage Management Feasibility Assessment – Taisha Baars, Byron Environmental Consulting, 16/9/2022

The technical references and guidelines used in this review are:

- AS/NZS 1547:2012
- On-site Sewage Management Strategy – Byron Shire Council 2001
- Design Guidelines for On-site Sewage Management for Singe Households - Byron Shire Council 2004
- OSMS Design Model- Byron Shire council

This review was carried out to provide a brief, independent and impartial review of the site assessment, design processes and conclusions contained with the subject report under review.

2 Hydraulic Loading/Wastewater Flow Allowance

The assumptions of 30L/p/day for staff and further calculation of 10.5L/p/day for WC flushing are sound and explained clearly and based correctly on AS1547:2012 and industry information. The estimation approach to staff numbers is acknowledged but does appear reasonable in terms of staff numbers and visitors access to public toilets provided in the village. Visitor restriction could be managed via appropriate signage upon entering the property/individual units.

3 Water Balance/Soil Loading

The soil investigation correctly includes permeability testing and soil chemistry. The removal of rainfall Based on secondary treatment and light clay soils, the calculated & assumed Long Term Acceptance Rates (LTARs) provide a sound basis to support the proposal's Design Loading Rate of 5mm/day as very conservative and the land. The compacted fill

below a portion of the cell is addressed The DLR is 50% less than recommended by AS154. The proposed greywater re-use of toilet flushing removes 35% of the expected load. The resulting DLR of 1mm/day is very conservative for secondary treated effluent applied to Light Clay soil. Byron OSMS Design Model.
The values used in the design model correctly assume nil plant uptake of hydraulic or TN or TP and include a 5% assumption of rainfall/stormwater load. As the effluent drainage cell and stormwater cell are sealed on the upper and side walls, this is a sound value to use.

The calculated TN/TP annual loads are sound and converting to one person for the model is a valid work around using annual nutrient loads calculated on per person basis and use of fixtures. It is my opinion the intensity of the development in terms of multiple households is not required or relevant for this industrial proposal.

4 Greywater Reuse

Based on the 30 persons generating greywater, the proposed reuse of the treated greywater results in a 35% reduced load to the effluent drainage cell and is a valid and sound approach. There are options for accredited domestic greywater treatment systems that would be suitable to treat the expected greywater loading of 585L/day and . The alternative options such as the use of waterless composting toilet would also achieve this same net reduction of flushing volume (315L/day) loading to the site. The reuse of greywater results in a reduced DLR for the drainage cell of 1mm/day and can be viewed as a conservative design safety factor.

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5 Installation/Components/Maintenance

As stated in the report, detailed design is expected at construction/installation approval stage Reference is correctly made to inspection access to the drainage cell being required, and vehicle access for tank pump outs was demonstrated. The use of the balance tank should include a flow meter & timer pump to cap the daily discharge volume to 900L/day. Pump out coupling connections will be necessary to enable use of the balance tank as contingency pump out storage.

The Aerated Wastewater Treatment Systems are typically serviced quarterly Domestic Greywater Treatment systems are typically based on membrane filtration and servicing ranges from four-monthly to annually. This is considered reasonable for a maintenance commitment.

6 Trade Waste

This is also separate issue to the OSSM report however it does contribute to site feasibility. If future industrial occupants are expected to generating trade waste, appropriate trade waste facilities need to be included in the infrastructure at construction stage on this constrained site.

I do have concerns on how this will be managed. Trade waste discharges differ widely in strength and volume. However, this can be included as a condition of consent & assessed at construction approval stage. Details of the Trade Waste Plan, including testing , quality discharge criteria and pump out arrangements need to be clear and reasonable. Drainage connections and warning signs are to be included in detail design and serve to minimise the risk of contamination of sanitary drainage with trade waste discharge.

The concept of individual of trade waste tanks and pump outs would have the potential to generate a significant negative impact on vehicle traffic and amenity because of the pump out frequency. One alternative to reduce the pump out frequency would be to install communal pump out system via bulk trade waste storage tanks, in addition to the individual tenancy holding tanks. It would be necessary to test/measure individual trade waste characteristics prior to discharge to any communal tank.

Suggested wording/concept for Development Consent condition:

- *A Trade Waste Management Plan is to be provided by the proponent prior to construction approval. The Plan is to include but not be limited to:*
  - *design detail for all trade waste holding tanks & pumps, flow meter and sampling points*
  - *detail on the method and timing for collection, storage and pump out of trade waste*

- *hydraulic design detail to demonstrate that each tenancy is provided with adequate trade waste drainage connection points to facilitate future tenancy fit outs*
- *a list of suitable and unsuitable tenancies/businesses, and*
- *maximum limits on trade waste generation volumes, and*
- *criteria for complying trade waste discharge quality, and*
- *tenancy trade waste agreement, and*
- *trade waste testing monitoring and reporting schedule.*

7 Stormwater

This is also a separate issue to on-site sewage management but does contribute to site feasibility. The sealing/separation of the stormwater cell and effluent drainage cell and ultimate discharge off site to dedicated stormwater easement is sound and sizing/design detail should be provided at construction stage.

8 Conclusion

Overall, the concept of the absorption based effluent drainage cell is sound with very conservative design factors and sufficient protection from trade waste and stormwater impacts. The site and soil assessment adequately addressed the relevant issues including impact on groundwater and surrounding properties.

Based on the information presented above, the OSSM report by Greg Alderson & Associates (Revision E, 9/12/2021) is supported. I concur with the findings of the peer review by Whitehead & Associates (10/1/2022).

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