

1. ASSESSMENT OF ENVIRONMENTAL EFFECTS – USE OF EFFLUENT STORAGE FACILITIES

We seek an additional land use consent for the use of two effluent storage facilities (concrete one-day pond and sludge bed). We request that this application be processed alongside the other applications for consent that are currently processing (APP-20181018).

The application is a **discretionary activity** under Section 87B (1)(a) of the Resource Management Act (RMA) which states that if there is no applicable rule in a plan for an activity, then the activity shall be assessed as a discretionary activity. In this case, because the one-day pond and sludge beds have not had a drop down test and are therefore unable to meet the drop down test criteria in Appendix B, then that application does not fall into any provisions listed in Rule 32D and becomes governed by the relevant provision in the RMA.

The applicant recognises that existing use rights apply for the use of these structures under Section 20A of the Resource Management Act until the nature and scale of the activity changes. In this instance, the scale of the activity (storage of effluent) is likely to increase if the consents applied for in APP-20181018 are granted and exercised. If granted, these consents will not be exercised until August/September 2019 at the earliest.

Our application seeks land use consent for the continued use of these two effluent storage facilities as part of the on-site effluent management system. Proposed consent conditions require an initial drop test and structural assessment to be completed on these structures and the results provided to Council by 31 August 2019.

1.1 Description of effluent storage facilities

The applicant utilises a concrete one-day pond and double-sided sludge bed/weeping wall as part of their on-site effluent management system. This system was approved as appropriate and sufficient under the existing discharge permit (AUTH-300235), however the notification of the new Southland Water and Land Plan now means that the continuing use of these structures requires resource consent once the plan becomes fully operative. Upon delving deeper into Rule 32D it appears that there is no provision in the rule for a situation like the applicant finds themselves in, where they have not undertaken drop tests on these structures and are unable to do so until August 2019. The applicant has decided that the best approach is to legalise these structures for the storage of effluent with firm requirements for an initial drop test and structural assessment prior to the first exercise of the consent and ongoing testing requirements over the term of the consent.

Concrete one-day pond

The concrete one-day pond has an approximate volume of 80m³. The structure has an impermeable concrete liner which has no visible cracks or defects and the applicant considers the structure to be in "good" condition. The concrete saucer was constructed when the farm was converted in 2001 the applicant has no plans or drawings for the structure.

The one-day pond does not have a leak detection system as this was not part of the standard design of effluent structures at the time of construction. The requirement for a drop down test and structural

report is included in the attached proposed consent conditions with the first reports due by 31 August 2019 (at the time of the expiration of Section 20A rights) and thereafter on a three yearly basis.

Figure 1 and 2 below show the concrete one-day pond which is the first collection point for effluent from the dairy shed. The pond acts on a float switch on a ball cock where the pump kicks in and transfers effluent to the weeping wall. The pump continues until the pond is empty. The pond can hold effluent volumes from up to 3 milkings with a residual 600mm freeboard. The pond is regularly inspected by farm staff who are in and around the area frequently due to its proximity to the dairy shed. Staff check that the pump is working, the pond level and for any issues with the concrete liner.



Figure 1: Photo of concrete saucer



Figure 2: Concrete one-day pond



Figure 3: Location of one-day pond on the farm

Double sided sludge bed/weeping walls

The double sided sludge beds have an approximate volume of 448m³ based on on-site measurements of the pond banks. The dimensions recorded are 45m x 11m x 2.m with 2:1 batters. The structure is clay lined and has no visible cracks or defects and the applicant considers the structure to be in "good" condition. The sludge beds were constructed at the same time as the main effluent storage pond in 2013.

The sludge beds do not have a leak detection system as this is not standard practice for a sludge bed structure due to the fact that it holds solid effluent. A structure which contains solid effluent represents a very low risk of effluent leakage through the structure as solid effluent forms a seal. The sludge beds require very little day to day management as it has no moving parts or pumps. The farm staff check the weeping walls and clear them out every few months. The staff also keep an eye on when the sludge beds need to be emptied and/or effluent switched to the other side. Farm staff should have a continual handle on the sludge bed level because they travel past the sludge beds very frequently on the main cow lane to the shed.

Figure 4 below shows the current state of the sludge beds.



Figure 4: Double clay lined sludge beds with weeping walls

1.2 Risks to Water Quality

The risks to water quality from the use of both effluent storage structures are dependent upon two factors:

1. The structural integrity and risk of leakage, spillage and collapse of the structures
2. The siting and separation distance from the structures to waterways, tile drains, abstraction points and other sensitive receptors

Structural integrity of the structures

The two effluent storage structures do not have leak detection facilities, nor have they been drop tested or assessed structurally at the time of this land use consent application. The applicant proposes to undertake a drop test and structural assessment on both structures prior to the exercise of the consent as per the proposed consent conditions attached to this assessment. The timing of the proposed testing co-incides with the loss of Section 20A rights and also the cessation of milking for the season. The proposed consent conditions require ongoing testing of the integrity of the structures and to ascertain

whether they are leaking. Current visual inspections indicate that there are no evident cracks or defects in either structure and they are not believed to be leaking.

Assessment of effects – structural integrity of the structures

Currently the structural integrity and leakage probability of these structures is unknown. We recognise that this gives the Council uncertainty of effects. To mitigate this uncertainty, the applicant has proposed a drop test and structural assessment prior to the exercise of the consent. This means that the structures cannot be used to store effluent outside of existing use rights without the submission of these reports to Council. The nature of the effluent system also means that these structures can only be tested outside of the milking season as there is no other collection point. In the interim period potential effects of effluent leakage through these structures will be mitigated by regular visual inspections and maintenance. The one-day pond is concrete lined and there are no cracks or defects evident which severely limits the risk of effluent leakage from the structure itself. The sludge bed is clay lined which forms an effective seal to prevent leakage through the structure to groundwater. Leakage through the structures into groundwater therefore has low probability of occurring and also effects on groundwater are therefore unlikely. If leakage was occurring, then this would potentially cause contamination of groundwater which would need to be remedied under urgency. The proposed consent conditions provide for remediation actions. Surface water quality should not be adversely affected by the proposal as both structures are below ground and adequately maintained and not allowed to overflow.

Siting of the structures

The siting of the effluent storage facilities is shown below in Figure 5. The map shows a separation distance of 50m from the concrete one-day pond to the nearest waterway. The sludge beds are sited 200m to the nearest waterway. There are mapped tile drains which flow towards the waterway from the adjacent paddocks which have been approximately placed on the map below, based on available knowledge. There are no other sensitive receptors such as bores or dwellings within 600m from the structures. Bore E46/1069 is 800m from the sludge bed and is used by the applicant to abstract their water for shed washdown and stockwater. This bore is 23m deep and does not draw from shallow groundwater.



Figure 5: Effluent structure layout on farm (approximate tile drains in red)

Assessment of effects – siting of the structures

The siting of the effluent storage structures is appropriate to protect effects on surface water quality and groundwater quality because suitable separation distances occur between the structures and waterways, bores, tile drains and any other sensitive receptors. The structures are designed and maintained to not overflow or fail. If they do, then this is considered to be a rare but catastrophic event in terms of effects and emergency containment would be the only way to prevent effluent from reaching the adjacent surface waterway if it was flowing over the surface. Apart from an emergency situation, day to day effects on the environment are low because the storage of effluent is sited well away from sensitive receptors. Effects on the adjacent bore will be less than minor. The bore is sited 800m from the structures and does not draw from shallow groundwater. Neither shallow nor deep groundwater quality should not be adversely affected from the activity and therefore, effects on the bore should be less than minor.

Summary

Overall adverse effects on the environment from the use of these structures for the storage of effluent should be less than minor. This is because the structures will be regularly tested for leakage and structural integrity throughout the duration of the consent which will give certainty that they are not leaking and fit for purpose. Effects on the environment from an effluent storage facility overflow or failure are deemed to be extremely low probability but high potential effect on water quality and overall, result in less than minor effects on the environment.

Mitigation measures for this activity include the proposed consent conditions setting out a regular testing regime combined with regular inspection and monitoring of the structures. The proposed consent conditions provide clear steps should the structures fail or overflow.

In summary, provided the proposed conditions are imposed the potential adverse effects will be less than minor.

1. This consent authorises the maintenance and use of a concrete one-day pond and double clay lined sludge beds and any incidental discharge of agricultural effluent directly onto or into land from these structures which is within the pond drop test criteria set out in Appendix 2 to this consent.
2. The concrete one-day pond and clay lined sludge beds shall be operated and maintained in accordance with the application for resource consent (APP-20181018) dated November 2018.
3. The consent holder shall have and maintain the following volume of storage in each structure:
 - (a) For the concrete one-day pond a volume of 80m³; and
 - (b) For the sludge beds a combined total volume of 448m³
4. (a) The Consent Holder shall ensure that no overflow, discharge or leakage of contaminants to water, or onto or into land in circumstances where it may enter water occurs during the use and maintenance of the structures.
(b) If effluent is detected as leaking or overflowing from the structures, the consent holder shall advise the Consent Authority (0800 768 845) without undue delay.
5. Prior to the first exercise of this consent, the consent holder shall demonstrate that the concrete one-day pond and sludge beds are structurally sound and fit for purpose by:
 - (a) obtaining written certification regarding the ongoing performance of the pond from a suitably qualified person; and/or
 - (b) engaging a suitably qualified person to undertake the necessary testing to demonstrate the ongoing performance of the pond; and
 - (c) providing the confirmation or a report of the test results to the Consent Authority within one month of receiving the results.
6. (a) By the 30 of August each year in 2021, 2024 and 2027 the consent holder shall:
 - i. Obtain written certification from a Suitably Qualified person, in accordance with Appendix 2 of this consent that the structures meet the relevant pond drop test criteria of Appendix 2; and
 - ii. Confirmation from the Suitably Qualified person that the structures have no visible cracks, holes or defects that would allow effluent to leak from the structures.
(b) The certification required by conditions 5 and 6(a) shall be accompanied by photographs of the structures (date and time stamped) and be supplied to the Consent Authority within one month of receiving the certification.
(c) The confirmation required by condition 5(a) and (b) shall be undertaken within the same month each year in 2021, 2024 and 2027.
7. If the certification required by conditions 5 and 6 show, or a recommendation is made by the Suitably Qualified person that the structures are:
 - (a) not structurally sound; or
 - (b) the incidental discharge is not within the drop test criteria of Appendix 2; or
 - (c) the structures have visible cracks, holes or defects that would allow effluent to leak from the structures

the Consent Holder shall notify the Consent Authority within one week of receiving the information of:

- i. any remediation or repair work proposed including an outline of the proposed works, the timeframe for completion, and how the discharge of effluent to land authorised under AUTH-2018XXXX-01 and any subsequent permits will be managed.
8. (a) The Consent Holder shall have and maintain a written record of any maintenance work undertaken on the concrete one-day pond and sludge beds
(b) This record required by Condition B(a) must be supplied to the Consent Authority upon request.
9. If an event (such as effluent and/or sludge overflow to water or collapse of the structure) occurs that may have significant adverse effect on water quality, particularly at the abstraction point of a registered drinking-water supply, the consent holder shall notify, as soon as reasonably practicable, the following:
 - (a) the Consent Authority (ph 03 2115115 or 03 211 5225 after hours).
10. In the event of a discovery, or suspected discovery, of a site of cultural importance (Waahi Taonga/Tapu) during the maintenance or use, the consent holder shall immediately cease operations in that location and inform the local iwi authority (Te Ao Marama Inc, phone 03 9311242). Operations may recommence at a time as agreed upon in writing with the Consent Authority. The discovery of Koiwi (human skeletal remains) or Taonga or artefact material (e.g. pounamu/greenstone) would indicate a site of cultural importance. Appendix 1 to this consent outlines the process that is to be followed in the event of such a discovery.