Memorandum

To	Peter Dykes
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From	Albie Ford
Office	Invercargill Office
Date	13 June 2018
File	VQ422.53
Subject	Size of existing pond

1. Temporary Storage

Miraka Farms Ltd have been delayed starting the construction of their proposed earthen embankment Farm Dairy Effluent (FDE) Pond effluent storage pond. The following is an analysis of the farm milking up to 650 cows from 1 August 2018 to 1 December 2018. This is typically the time period where storage needs are greatest. It is expected that the earthen embankment FDE pond will be constructed by 1 December 2018. This analysis is based on an average year and careful management.

The existing 1,000m³ effluent pond has been used for the previous 10 years with maximum consented cow numbers of 599 cows.

A summary of the system details during the temporary measures;

- Up to 650 cows
- 37.3m³ produced daily (average 1 August 2018 – 1 December 2018)
- 4,584m³ effluent produced over the period (1 August 2018 – 1 December 2018)
- Irrigation via existing pods when soils suitable
- 68m³ effluent irrigated per day
- Average of 66 irrigation days out of 122 analysed
- 4,902m³ effluent irrigated (assuming average year with 1 effluent run/day)

The Massey University Dairy Effluent Storage Calculator which calculates the storage requirements is based on a water balance model analysed over the previous 33 years. The analysis is year on year with farms starting the milking season with effluent in the storage system that was unable to be irrigated in the previous season or over the winter period. The client will look to empty the existing storage pond over the winter period when conditions allow using a umbilical system. This will allow the client to start the season with an empty pond.

There is 27 days of proposed temporary storage in the existing effluent pond.

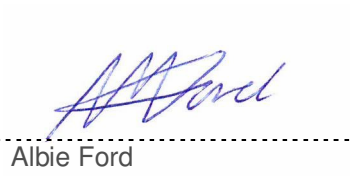
By moving the pods twice per day the client has the ability to 2 days' worth of effluent per day.

The wettest year under analysis was 1997/1998 where there was only 30 irrigation days over the period of analysis. Shifting the irrigator four times per day over those 30 days would allow the client to irrigate the majority of the effluent produced (136 m³ x 30 days = 4,080m³) with the existing effluent pond having the capacity for the remainder.

1.1. Conclusion

Given the client is starting the season with 27 days storage and the ability rapidly empty the pond when conditions allow the risk of irrigation occurring when conditions are not suitable is unlikely. Environment Southland will be notified if the pond reaches 80% capacity. If irrigation does occur effluent ponding and runoff will be kept to a minimum using low application depths and careful management.

Prepared By



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