

Woodlawn Bioreactor Leachate and Water Management System Audit (LWMS) 2021 Recommendation Responses

Table 1: Mandatory Recommendations

Condition	Observation	Recommendation	Action	Timeline
18R	PA 10_0012			
b) i)	Actual inflows were higher in many of the dams (including ED3N2, ED3N3, ED3N4, ED3SS and ED1) due to the additional transfer of water / leachate around the site as a result of significant rainfall during the audit period.	¹ Seek to develop a contingency plan to empty the dams if the revised water balance report indicates that the Project Approval (MP 10_0012) requirements will likely not be achieved. Due the higher rainfall and lower evaporation in 2020 and 2021, the target dates for the emptying of certain dams will be reassessed and discussed with the relevant Regulators and extension shall be considered as a contingency.	Taking into consideration the high rainfall and low evaporation, Veolia will develop a contingency plan and apply for extension of the date for emptying ED3N and ED1 in consultation with the EPA, Water NSW and the Department.	21/12/2021
b) iv)	The assessment of water / leachate stored in the dams indicates that Veolia could have potential issues emptying the dams in accordance with their objectives. Clarification of whether the dams will be emptied in accordance with the objectives will be provided upon finalisation of the updated site water balance (in progress at the time of the audit).	¹ Seek to develop a contingency plan to empty the dams if the revised water balance report indicates that the Project Approval (MP 10_0012) requirements will likely not be achieved. Due the higher rainfall and lower evaporation in 2020 and 2021, the target dates for the emptying of certain dams shall be reassessed and discussed with the relevant Regulators and extension shall be considered as a contingency.	Veolia will develop a contingency plan and apply for extension of the date for emptying ED3N and ED1, in consultation with the EPA, Water NSW and the Department. Veolia will also continue to work on the improvement of the evaporation system for all the dams for volume reduction.	Ongoing
c) i)	Information contained within the monthly LTP reports indicates that the	³ Continue to improve and optimise the LTP operation with the assistance of suitably qualified experts (as required).	The ED1 coffer dam, where the LTP discharges treated effluent, is assessed as part of the annual odour audit. The 2020	Ongoing

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	majority of the effluent water quality parameter targets (detailed in the site Leachate Management Plan) have been achieved. Ammonia and BOD are the key odour parameters and these are generally undetectable. However, there have been regular exceedances of COD with some isolated exceedances of Total Phosphorous, Nitrates and pH. This primarily occurred due to the ongoing optimisation of the LTP system including the fluctuation in feed leachate quality.	⁴ Consider engaging a suitably qualified specialist to re-assess the LTP water quality targets as there appears to be a strong case to reduce some of these targets.	IOA reported the effluent from the LTP to be of a quality that contributes negligible levels of odour. Veolia will engage a third party to assess the odour potential of the effluent with higher (than the current target) COD concentration, re-assess and set more realistic effluent quality targets in consultation with the EPA, Water NSW and the Planning Secretary prior to the next Audit.	
c) ii)	The LTP started discharging treated effluent into the ED1 Cofferdam on 26th April 2019. Information contained within the monthly LTP reports indicates that during the annual audit period the average throughput has been 3.3 L/s. This throughput rate is less than the 4 L/s predicted in the Water Balance.	³ Continue to improve and optimise the LTP operation with the assistance of suitably qualified experts (as required).	Veolia is investing in an additional UF train to increase the throughput of the LTP and continues to utilise suitably qualified experts to improve and optimise its operation. Veolia has provided a schedule to the NSW EPA regarding the process improvements and timeframes. This is now formalised within the Sites Environmental Protection Licence.	1/07/2022

Table 2: Improvement Opportunities

Condition	Observation	Recommendation	Action	Timeline
18R	PA 10_0012			
b) ii)	The actual mechanical evaporation from each dam is not easily measurable. Veolia currently undertakes monthly monitoring of dams, which can be used to provide an approximate indication of dam evaporation. The operation of the floating evaporators and dam inflow spray locations are selected based on real time	² Continue to seek opportunities to optimise the dam evaporation systems to reduce the volume of the stored leachate and legacy mine drainage (e.g. positioning of mechanical evaporators, evaporator maintenance, evaporator operational time etc).	Additional evaporation systems have been installed in all dams since the 2019/20 audit. Veolia will continue to work on the improvement of the evaporation system for all the dams for volume reduction including evaporation system runtime logging.	Ongoing

	weather data including the wind direction, wind speed, temperature, humidity and the time of the day.			
d)	2/ In accordance with Condition 18S of the Project Approval (MP 10_0012), as modified, the volume of mine water stored in ED1 must be no more than 10 ML by 31 December 2023.	¹ Seek to develop a contingency plan to empty the dams if the revised water balance report indicates that the Project Approval (MP 10_0012) requirements will likely not be achieved. Due the higher rainfall and lower evaporation in 2020 and 2021, the target dates for the emptying of certain dams will be reassessed and discussed with the relevant Regulators and extension shall be considered as a contingency.	Over the past year, rainfall has exceeded our annual average by 245mm. Veolia will develop a contingency plan and apply for extension of the date for emptying ED1, and re-assess the target for volume to consider ED1 as empty based on the water balance study and in consultation with the EPA, Water NSW and the Department.	21/12/2021
	3/ In accordance with Condition 18T of the Project Approval (MP 10_0012), as modified, ED3N must be emptied of effluent from the existing leachate system by 31 December 2022.	¹ Seek to develop a contingency plan to empty the dams if the revised water balance report indicates that the Project Approval (MP 10_0012) requirements will likely not be achieved. Due the higher rainfall and lower evaporation in 2020 and 2021, the target dates for the emptying of certain dams will be reassessed and discussed with the relevant Regulators and extension shall be considered as a contingency.	Over the past year, rainfall has exceeded our annual average by 245mm. Veolia will develop a contingency plan and apply for extension of the date for emptying ED3N, in consultation with the EPA, Water NSW and the Department.	21/12/2021
	7/ Effectively separate all classes of water	⁵ Continue to seek opportunities for leachate minimisation as the operation progresses and changes in the future (e.g. improving the void seepage containment system to minimise overflows into the void).	Veolia will be seeking approval from the EPA to discharge contaminated stormwater directly to ED3N or ED3SS, to maintain the feed quality to LTP for a stable operation of LTP, and continue to work on the optimization of stormwater management to minimise leachate production. A third party consultant has already been engaged to assist in the development of a longterm leachate management solution.	31/07/2021

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