

Woodlawn Bioreactor Leachate and Water Management System Audit (LWMS) 2023 Recommendation Responses

Table 1: Mandatory Recommendations

Non-Compliance	Condition 18R	Consent Condition PA 10_0012	Observation	Action	Timeline
NC1(a)	(b) i)	Assess actual performance against the assumptions and predictions made in the project water balance prepared by WSP dated September 2017. This must include: actual versus predicted inputs and outputs into and out of each dam.	A liner tear in ED1 Coffe Dam 1 occurred on 10th May 2022 which prompted Veolia to implement the emergency syphoning of treated leachate to the unlined section of ED1. As a result, the storage level in ED1 has increased by 582 ML while the storage in ED1 Coffe Dam 1 was reduced to ensure the leachate level remained below the liner tear which occurred near the top of the liner.	Continuing wet weather periods and lower than predicted rates of evaporation has resulted in storage levels in dams exceeding predictions. As a priority, Veolia will explore weather-independent methods for evaporating leachate from storage dams and continue to lower the level of leachate in ED1 Coffe Dam 1 to the target level (which is approximately 80% capacity) so that repairs can be made to the liner.	23/12/2023
NC1(b)	(b) ii)	Assess actual performance against the assumptions and predictions made in the project water balance prepared by WSP dated September 2017. This must include: actual versus predicted mechanical evaporation from each dam.	Actual mechanical evaporation losses from each dam are substantially less than predicted in the 2017 water balance model due in part to overestimation of mechanical evaporation in combination with continuing unfavorable climatic conditions during the audit period 16 March 2022 to 15 March 2023.	Veolia installed and commissioned 14 new mechanical aeration units across the storages during the audit period and has completed construction of ED1 Coffe Dam 2. This will provide much needed additional storage. As mentioned above, Veolia is also investigating weather-independent methods of evaporating leachate from storage dams.	23/12/2023

NC1(c)	(b) iii)	Assess actual performance against the assumptions and predictions made in the project water balance prepared by WSP dated September 2017. This must include: actual versus predicted rainfall and evaporation.	Actual rainfall was substantially higher and evaporation was substantially lower than the wettest year predictions in the 2017 water balance model, due to continuing unfavourable climatic conditions during the audit period 16 March 2022 to 15 March 2023.	A revised water balance model has been developed by a third party engineering services provider approved for the task by the Department of Environment and Planning, taking into consideration worst case scenarios rainfall and evaporatory conditions based on recent weather events, and together with the leachate and water management strategy (Which the same third party has also developed) have been submitted to the Department seeking to implement the required changes to the site's overall water management system.	23/12/2023
NC1(d)	(b) iv)	Assess actual performance against the assumptions and predictions made in the project water balance prepared by WSP dated September 2017. This must include: the actual versus predicted volume of water or treated leachate stored in each dam.	Actual inputs into the treated leachate dams have been substantially more than predicted in the 2017 water balance model due to excessive wet conditions during the audit period 16 March 2022 to 15 March 2023..	In addition to the above mentioned actions, Veolia will seek to amend the Consent to include revised and practical target dates for emptying of ED3N lagoons and replacing their liners based on an updated water balance model.	23/12/2023
NC2	(c) i)	Assess actual versus predicted performance of the LTP. This must include: actual versus target effluent quality	Effluent quality is considered to generally meet target effluent quality. However, on two occasions during the audit period ammonia exceeded its target. On both occasions levels were compliant the next day. It is possible these are sampling errors. Despite the two days on which ammonia did not comply the LTP is consistently exceeding its water quality objectives.	The LTP performance surpassed its minimum water quality objectives on average during the audit period however if the lab detects an Ammonia exceedance in future, Veolia will immediately request a resample or retest to confirm the exceedance.	31/08/2023

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NC3	(c) ii)	Assess actual versus predicted performance of the LTP. This must include: actual versus target throughput.	<p>The average annual LTP throughput during the Audit period was 4.2 L/sec, which exceeded the target throughput. However, the LTP throughput rate was found to be less than 4 L/sec for 81 days during the Audit period.</p> <p>The LTP experienced sudden drops in temperature which resulted in the loss of heat exchange capacity as the outgoing effluent does not have enough heat to exchange to warm the influent.</p> <p>Leachate treatment rates in the LTP, which are to be 4 L/sec, had some minor drops below 4 L/sec in April, with a greater number of drops in May and then a consistent nonconformance in June until the start of August.</p>	<p>The average annual LTP throughput during the Audit period was 4.2 L/sec, which exceeded the target throughput.</p> <p>Veolia will carefully monitor the LTP this coming winter to monitor for, and control, thermal shocks (which the third membrane installation is expected to overcome). To suitably manage the risk of reoccurrence, a plan will be developed by the LTP and engineering team to prevent thermal shock and drops in treatable flow rates.</p>	31/08/2023
NC4(a)	(d)	<p>Determine whether the leachate and water management system is achieving its intended objectives.</p> <p>1. Construction of a suitably sized and lined coffer dam (referred to as ED1 Coffe Dam) to store and evaporate treated leachate from its leachate treatment plant from September 2018 for a 4-year period without filling.</p>	<p>The system is not achieving its objectives. The volume of water stored within the unlined ED3N dams has grown significantly instead of being drawn down. At the same time ED1 Coffe Dam is also nearly full. This will substantially delay the installation of any new liners with ED3N dams. Dams are being operated above the 80% freeboard limit set. In addition, the tear in the liner of ED1 Coffe Dam 1 means that ED1 Coffe Dam 1 must have its operational headroom reduced to a level below the tear which is about 80% of its storage capacity.</p>	<p>ED1 Coffe Dam 1 will be repaired as a priority by Veolia. This is partly contingent on being able to transfer into the newly constructed Coffe Dam #2 which will commence as soon as final approval of the drawings and associated plans is granted. Planning for additional storage dams has also commenced in accordance with the updated water balance model, delivered by a third party engineering services provider approved for the task by the Department of Environment and Planning.</p>	31/08/2023

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NC4(b)	(d)	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.	This condition requires ED3N to be emptied of effluent from the existing leachate system by 31 December 2022. This was not achieved and is therefore not compliant.	Three consecutive years of La Nina weather patterns has prevented Veolia from achieving this objective. Veolia will seek to modify the Consent to include revised and practical target dates for emptying of ED3N lagoons and replace their liners based on the aforementioned updated water balance model.	23/12/2023
NC4(c)	(d)	7. Effectively separate all classes of water.	This condition requires the separation of all classes of water. Acid mine drainage (AMD) water has now been mixed with leachate in ED1.	As treated leachate storage levels are reduced and additional capacity is achieved, mixing of treated leachate and AMD in ED1 will cease. Corrective measures for the management of this, including the monitoring of any impact of this activity on groundwater, have been included in the revised long-term Leachate and water management strategy for the site which has been developed and delivered by a third party engineering services provider approved for the task by the Department of Environment and Planning..	23/12/2023
NC5	(e)	Outline all reasonable and feasible measures that may be required to improve water and leachate management at the site.	The revised water balance has not been completed within the Audit period, though the Auditors understand that additional time was required to appoint a specialist to conduct this work that was acceptable to the Department of Planning and Environment.	Veolia will finalise the revised water balance and further implement alternative strategies for improving water and leachate management within six months.	23/12/2023

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