

Woodlawn Eco-Precinct Independent Odour Audit (IOA) 2022 Recommendation Responses

Table 1: Mandatory Recommendations

No.	Recommendation	Action	Due Date	Status
1	<p><u>Odour Management Plan</u> Veolia should prepare a site-specific odour management plan for the Bioreactor and MBT operations, that documents the following features as a minimum:</p> <ul style="list-style-type: none"> • Accepted waste streams and description of process operations; • Standard operating procedures (SOP) that are employed in each key process area to anticipate the formation of emissions and minimise their potential impact on the local airshed (e.g., failure of pump equipment and/or high rainfall events); • An outline of how the production and migration of emissions is minimised at the Woodlawn Facility, including design (where applicable) and operating practices; • The monitoring and control protocols required to assist in the management of emissions; • Critical odour emissions risk and control points; • An outline of the key staff and responsibilities with respect to odour management; and • An outline of the reporting requirements with respect to emissions present. 	<p>Develop and implement a site specific Odour Management Plan with the key objective of the updated Odour Management Plan will be to find a balance between continuous improvement, operational excellence and the ability to control air emissions.</p> <p>A draft version of the Odour Management Plan was submitted to the EPA for review during the reporting period, however further amendments in accordance with the Audit's recommendations will be incorporated prior to finalising and submitting to the Department of Planning and Industry for approval.</p>	31 March 2023	Not yet completed

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2	<p><u>Odour Mitigation from the Void</u> Veolia should continue to manage fugitive landfill gas pathways from the surface using the existing toolkit such as biocover material. This continuation is apparent in the WIP 2020, which outlines a comprehensive plan that is being implemented to increase gas capture. As such, the Audit endorses this strategy as the primary measure to reduce odour emissions from the Void and recommends that Veolia continues the implementation of the gas systems detailed in the WIP 2020, including:</p> <ul style="list-style-type: none"> • The augmentation of additional pipework and booster/flare/engine to the current capacity at the Woodlawn Facility. In principle, the addition of the power station engines will increase landfill gas usage capacity, further facilitate the optimisation and minimisation of fugitive landfill gas release from the Void surface; • the planned infrastructure instalments within each waste lift; • the continuous improvement to leachate extraction, treatment performance, capacity, and efficiency. This is supported by the implementation of the long- term leachate solution in the form of the LTP that is the process-proving phase of operation; • the continuous improvement in the waste tipping profile, covering and expansion and optimisation of the landfill gas infrastructure; • the continuous monitoring of leachate and gas extraction; • remediation actions in the event of equipment failure and process upset in the Void; 	<p>Implement the gas systems described in WIP 2020 including:</p> <ul style="list-style-type: none"> • Expansion of the gas capture system to promote gas collection: <ul style="list-style-type: none"> ○ Install and commission a additional flare and blower in order to manage excess landfill gas extraction; and ○ Install additional wells and extend the existing gas capture pipework accordingly. • Improve leachate treatment capacity and efficiency; <ul style="list-style-type: none"> ○ Install an additional UF train at Leachate Treatment Plant; and ○ Hire a boiler unit to maintain heat during the winter; • Improve balancing of leachate quality in LTD prior to going to LTP; <ul style="list-style-type: none"> ○ Refurbish and install additional aerators; and ○ Reconfigure the delivery recirculation pipework. • Improve management and maintenance of intermediate cover: <ul style="list-style-type: none"> ○ Carry out maintenance of the interface between the waste and the rock face by compacting clay and maintaining biofilters; and ○ Modify the tipping slope grade for long exposure batter to achieve better intermediate cover. • Improve stormwater interception and reduced leachate production by redesigning the waste surface; 	<p>June 2022</p> <p>April 2022</p> <p>June 2022</p> <p>July 2022</p> <p>February 2023</p> <p>November 2022</p> <p>July 2022</p> <p>June 2023</p>	<p>Complete</p> <p>Complete</p> <p>Complete</p> <p>Ongoing</p> <p>Not yet completed</p> <p>Complete</p> <p>Ongoing</p> <p>Complete</p>

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	<ul style="list-style-type: none"> ● continuous awareness of condensate management; ● The implementation of operational management programs, including: <ul style="list-style-type: none"> ○ Leachate management; ○ Pumps and pumping solutions; and ○ The expansion of wells in the Void for improved/minimisation of leachate recirculation and landfill gas extraction. ● application of biocover material to manage fugitive landfill gas emissions, as outlined in the WIP 2020. 	<ul style="list-style-type: none"> ○ Design and implement a gable shape on the waste surface for easier collection and extraction of stormwater. ● Design and implement leachate infrastructure in a low lying area to maximise leachate extraction and increase gas capture; <ul style="list-style-type: none"> ○ Install subsurface drainage channels for leachate; and ○ Design and construct new leachate transfer infrastructure (Western Unity Area). ● Enhance maintenance and compaction of gas well and surface cover interfaces: <ul style="list-style-type: none"> ○ Using a wheel compactor attachment for excavators to compact around wells; and ○ Develop and implement a program to identify and address interface issues at wells as part of an ongoing routine maintenance program. ● Optimise gas well suction pressure to maximize gas capture rates; <ul style="list-style-type: none"> ○ Install double suction line for gas wells with high LFG production performance to assure sufficient collection capacity and minimise fugitive emission. ● Ensure timely identification and rectification of fugitive emissions using daily and monthly surface gas monitoring: <ul style="list-style-type: none"> ○ Conduct monthly landfill surface gas surveys using an independent expert; ○ Conduct daily inspections of the landfill void; and ○ Develop and implement a Trigger action response plan in consultation with the EPA, 	<p>January 2022</p> <p>N/A</p> <p>June 2022</p> <p>N/A</p> <p>July 2022</p> <p>January 2022</p> <p>N/A</p> <p>N/A</p> <p>July 2022</p>	<p>Complete</p> <p>Ongoing</p> <p>Complete</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>

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				Complete
3	<p><u>Management of High Rainfall Events</u> The Audit continues to support the development of a strategy and engineering design that focuses on reducing leachate generation by diverting and extracting stormwater. This is a more effective and achievable goal compared with increasing leachate extraction rates through the LMS, especially during high rainfall or frequency storm events. As outlined in the Leachate Assessment, a leachate management strategy comprising high flow extraction of stormwater/slightly impacted stormwater, flexible leachate extraction rates, and maximising extractions during summer months for evaporation dams will be beneficial for managing leachate levels in the Bioreactor.</p>	Implement a leachate management strategy comprising high flow extraction of stormwater/slightly impacted stormwater, flexible leachate extraction rates, and maximising extractions during summer months for evaporation dams.	June 2022	Complete
4	<p><u>Leachate Management System</u> Veolia should continue to adequately maintain, manage, monitor the upgraded LMS to ensure it is operating in an optimum state and meeting the leachate quality monitoring targets as outlined in the Leachate Treatment Operation Manual and recommended by Veolia Water. Moreover, the performance goals outlined in the Woodlawn Infrastructure Plan (WIP) 2020 should continue to be pursued and materialised.</p>	<p>Pursue and materialise the performance goals outlined in the Woodlawn Infrastructure Plan (WIP) 2020 and minimise leachate generation by:</p> <ul style="list-style-type: none"> ○ Maintaining the existing stormwater diversion program; ○ Establishing acceptable limits for the rapid diversion of contaminated but highly diluted stormwater to stormwater storage during high rainfall events and submitting to the EPA for approval. 	30 May 2022 September 2023	Ongoing Not yet completed
5	<p><u>Active Tipping Face</u> Veolia should continue to develop strategies for the minimising of the exposed active tipping face surface area. It should also proceed and continue with the details in the WIP 2020. The Audit notes that changes to the tipping profile to maximise stormwater</p>	Develop strategies for the minimising of the exposed active tipping face surface area, inclusive of details in the WIP 2020. Following the completion of the gable profile, consideration will be given to an east to west slope to allow stormwater removal.	N/A	Ongoing

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	<p>capture and removal (refer to Section 10.2.3) has increased the footprint of the ATF.</p> <p>The target of leachate minimisation through stormwater diversion and management will have a larger material impact on odour compared to the minimisation of the active tipping area, given its impact on fugitive gas emission release and landfill gas capture.</p>			
6	<p><u>Refine Investigation of Odour Issues in the Community</u></p> <p>Veolia should continue with its community engagement and liaison process. Furthermore, in view of the limited efficacy of ambient H2S monitoring with existing sensory technology (as outlined in Section 9.2.1.3), the Audit recommends calibration and training of Veolia staff in the undertaking of field ambient odour assessment surveillance surveys to provide an additional tool in the TARP (refer to Section 9.2.1.2.1.2 for details) in lieu of the odour diary program (refer to Section 10.2.5.1).</p>	<p>Continue to progress with its community engagement and liaison process by way of:</p> <ul style="list-style-type: none"> • Quarterly CLC meetings; • Monthly Tarago Times articles; • Quarterly Newsletter; and • Veolia website updates. <p>Undertake the calibration and training of Veolia staff to conduct field ambient odour assessment surveillance surveys.</p>	<p>N/A</p> <p>April 2023</p>	<p>Ongoing</p> <p>Not yet completed</p>
7	<p><u>Status of Odour Diaries</u></p> <p>The Audit has reviewed the retrieved data from the collected diaries and it is not considered a suitable community feedback tool in its current form to provide valuable data.</p> <p>As such, the odour diary program should be discontinued unless participating community members are professionally trained on its use and data entry protocols.</p>	<p>Identify any community members who are professionally trained to implement and use the odour diary program. If no members are professionally trained to use the diary, remove the odour diary from use.</p>	<p>1 February 2023</p>	<p>Not yet completed</p>

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8	<p><u>Ambient Landfill Gas Composition Laboratory Analysis</u></p> <p>A landfill gas composition analysis should be completed to provide technical feedback on the gas analytes present of the landfill gas released to the ambient environment from uncontrolled gas emission release points from the surface of the Void at the Woodlawn Facility.</p> <p>The objective of the landfill gas composition analysis will be to identify the gas analytes present, with a focus on characterising those gas compounds that are known to be odorous including, but not limited to sulphur gases and volatile organic compounds.</p>	<p>Veolia has engaged a suitably qualified expert for the undertaking of this analysis and will utilise the gas composition data to refine its ambient monitoring objectives and targets.</p>	<p>December 2022</p>	<p>Not yet completed</p>
9	<p><u>NSW EPA H2S Monitoring Program Data Interpretation</u></p> <p>To extract further meaning and facilitate in sound data interpretation, the H2S data collected as part of the NSW EPA monitoring program should be contextualised with prevailing wind conditions, date and time of detection between different locations, and correlated with landfill gas extraction and leachate extraction rates to facilitate in the interpretation of this data.</p>	<p>Seek contextualisation of the EPA's H2S monitoring data as part of a separate study to the Audit, and completed by March 2023 and before the next IOA.</p>	<p>March 2023</p>	<p>Not yet completed</p>

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10	<p><u>Odour Mitigation from the MBT Facility</u></p> <p>The Audit recommends a heightened awareness of the operability and maintenance of the biofilter-based odour control system at the MBT Facility, which should be consistent with the Biofilter Manual to ensure optimal and sustained odour removal performance. It is recommended that the MBT Facility improve its overall management of biofilter bed moisture to ensure optimum odour removal performance. This can be achieved by an intensification of the surface drip irrigation system and/or optimisation of the current spray humidification system.</p>	Veolia will carry out a complete biofilter refurbishment at the MBT which will be completed in early 2023 and undertake scheduled maintenance to optimise the spray humidification system.	March 2023	Not yet completed

Table 2: Improvement Opportunities

No.	Recommendation	Action	Due Date	Status
1	<p><u>IMF and Waste Transport Activities</u></p> <p>Veolia should continue to review the following aspects relating to the use of the IMF and waste transport activities to further improve its odour performance as a minor and transient source of odour, namely:</p> <ul style="list-style-type: none"> • The washing practice associated with the sealed containers; and • The maintenance of the sealed containers. 	Continue to monitor the operation of the container and truck wheel washing practices on site and maintain the integrity of the container fleet on an automated maintenance schedule.	N/A	Complete

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