

**Environmental Mitigation Implementation Schedule  
WENT Landfill Extension**

**Appendix C1 – Air Quality**

EIA Ref	EM&A Log Ref	Recommended Precautionary / Mitigation Measures (to be implemented when the trigger level is exceeded, where necessary)	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
<b>Air Quality</b>							
S3.8.1	A1	<p>The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation.</p> <ul style="list-style-type: none"> <li>• Dust emission from construction vehicle movement is confined within the worksites area.</li> <li>• Watering facilities will be provided at every designated vehicular exit point.</li> <li>• Watering will be carried out 8 times per day during construction phase.</li> </ul>	<p>Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.</p>	<p>DBO Contractor</p>	<p>Entire WENT Landfill Extension site</p>	<p>Construction and Restoration phases</p>	<ul style="list-style-type: none"> <li>• To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1-hr and 24hr TSP levels are <math>500 \mu\text{g m}^{-3}</math> and <math>260 \mu\text{g m}^{-3}</math>, respectively)</li> </ul>
S3.8.2	A2	<p>The following measures shall be exercised for stack discharge from Ammonia Stripping Plant (ASP), Flare and LFG Power Generator:</p> <ul style="list-style-type: none"> <li>• The maximum allowable discharge limit and pollutant removal efficiency for ASP, flare and LFG power generator should be specified in the design specification.</li> <li>• Owing to the requirement for the installation of stack, the design requirement shall be submitted to IEC and IC for vetting by the DBO Contractor.</li> <li>• Subject to the subsequent EPD's requirement on chimney installation, regular stack monitoring of air pollutants, including <math>\text{NO}_x</math>, <math>\text{SO}_2</math>, RSP, NMOCs, vinyl chloride, and benzene shall be carried out at a quarterly interval (i.e. once every 3 months), and the operating conditions, including exhaust gas temperature and velocity shall be monitored continuously in order to demonstrate compliance during the operations.</li> <li>• A monthly monitoring report should be prepared by ET and submitted to IEC and IC for approval.</li> </ul>	<p>Minimize the release of harmful air pollutant to the atmosphere</p>	<p>DBO Contractor</p>	<p>Flare, ASP and LFG Power Generator of WENT Landfill Extension</p>	<p>Operation and Restoration phases</p>	<ul style="list-style-type: none"> <li>• TM-EIA, Annex 4</li> </ul>

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S3.8.2	A3	<p>The following measures shall be exercised for the VOC surface emission:</p> <ul style="list-style-type: none"> <li>The arrangement of the landfill gas collection system and surface covering material for inactive tipping area shall be reviewed by DBO Contractor every 5 years to identify any modern technology/arrangement (covering material, LFG well spacing and locations). A working team shall be formulated to review all processes, control practice and extraction system in order to maximize the efficiency of the system. A review report should be prepared by the DBO Contractor for the submission to IC and IEC on the implementation/arrangement of LFG extraction system. The first review report should be submitted to IC and IEC for agreement before commencement. With a good system to collect LFG (high extraction efficiency), surface release of VOC to the nearby environment can be much reduced or utilised.</li> <li>Maintain a slightly negative pressure within the entire tipping area (by suction). Minimise any potential leakage of LFG to the surrounding by increase the number of gas-extraction wells. Improve the extraction efficiency by checking/reinstate gas wells with abnormally low extraction rate due to blockage/soil movement or sedimentation.</li> <li>Increase the coverage of inactive tipping phases with HDPE/plastic sheet which can enhance the anaerobic decomposition (reduce air getting in and VOC leaking out).</li> <li>EM&amp;A will be conducted at ASR to establish the future VOC ambient level. This monitoring work should be carried out in a frequency once every 3 months. By comparing the monitoring data at the boundary and at ASR, the cause of VOC and the general downwind dispersion effect (dilution effect) from the boundary to the ASR can be identified. The findings of the monitoring should be incorporated into the landfill gas collection system review report as mentioned above.</li> </ul>	Minimize the release of harmful VOC to the environment	DBO Contractor	Active, Inactive and Restored Tipping areas	Operation, Restoration and Aftercare phases	<ul style="list-style-type: none"> <li>TM-EIA, Annex 4</li> </ul>

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S3.8.2	A4	<p>The following design options shall be considered in the future leachate treatment plants:</p> <ul style="list-style-type: none"> <li>• Adopted updated treatment method such as Sequencing Batch Reactor for future leachate treatment. Provision of ventilated cover for the leachate storage lagoons / tanks and emissions extracted to suitable odour removal filters with odour removal efficiency of 99%.</li> <li>• Ferric nitrate or sodium hypochlorite can be added to oxidise the odourous chemical in the leachate. The pH value of leachate can be controlled to a suitable value from future on-site experiment such that the generation of any odourous H<sub>2</sub>S and ammonia can be optimised.</li> <li>• The locations of discharge points and discharge heights should be in accordance with the assumptions adopted in the EIA Report. If the future locations / heights of the stacks deviate from the assumptions adopted in the EIA Study, reassessment of the air quality impact should be conducted.</li> <li>• The overall arrangement should be investigated in details by the DBO Contractor and agreed with IEC and EPD.</li> </ul>	Environmental Enhancement to improve the air quality and visual impact to nearby sensitive receivers	DBO Contractor	Leachate treatment plants	Operation and Restoration phases	<ul style="list-style-type: none"> <li>• Environmental Enhancement</li> </ul>

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S3.8.2	A5	<p>The following are some odour precautionary measures that shall be considered by EPD and FEHD:</p> <ul style="list-style-type: none"> <li>As an improvement measure to enhance to environmental standard for waste transfer, EPD could take the initiative to recommend others to use enclosed type RCV in the long run (dominantly government and sludge types).</li> <li>Clearing / watering of the surface and clearing of the waste water receptor of government RCV is recommended before leaving refuse transfer station or government Refuse Collection Point (FEHD).</li> </ul>	Environmental Enhancement to improve the odour impact during the transit of waste	EPD, FEHD	Government RCV from RTS and RCP	Operation phase	<ul style="list-style-type: none"> <li>Environmental Initiative</li> </ul>
S3.8.2	A6	<p>The Contract shall exercise adequate precautionary measures to minimize any potential odor nuisance from tipping activities:</p> <ul style="list-style-type: none"> <li>The use of alternative daily cover (less permeable layer) instead of inert material should be considered.</li> <li>The use of immediate daily cover for odorous waste such as animal waste etc. under critical condition should also be considered.</li> <li>During very hot and stable weather condition, thicker daily cover can be arranged in case odour patrol identify potential odour nuisance,</li> <li>During stable and calm weather, tipping could be arranged to further increase the setback distance.</li> </ul>	Minimize the potential odour impact for tipping area to nearby sensitive receivers	DBO Contractor	Tipping areas	Operation and Restoration phases	<ul style="list-style-type: none"> <li>TM-EIA, Annex 4</li> <li>Odour patrol with 2 Odour Level or below at ASR without causing potential odour nuisance</li> </ul>

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S3.8.2	A6 (Con't)	<ul style="list-style-type: none"> <li>• Planting rows of trees along the northern side of WENT Landfill Extension (ie slope toe) and along realigned Nim Wan Road.</li> <li>• Providing a vehicle washing facility before the exit of the landfill and providing sufficient signage to remind RCV drivers to pass through the facility before leaving the landfill.</li> <li>• Reminding the RCV drivers to empty the liquor collection sump and close the valve before leaving the tipping face.</li> <li>• Washing down the area where spillage of RCV liquor is discovered promptly.</li> <li>• Reminding operators to properly maintain their RCVs properly and that liquor does not leak from the vehicles.</li> <li>• Installation of vertical and/or horizontal LFG extraction system to enhance extraction of LFG from the waste mass and hence minimise odour associated with fugitive LFG emissions.</li> <li>• Progressive / temporary restoration of the areas which reach the finished profile (a final capping system including an impermeable liner will be put in place) and installation of a permanent LFG extraction system.</li> <li>• Maintaining the size of the active tipping face not greater than 2 x 60 m x 30 m. Only one tipping face within 1100m from ASR A1-3, 1200m from ASR A2-1 &amp; 1200m from ASR A4-1 is allowed.</li> <li>• Daily cover the compacted waste with 150mm of soil.</li> <li>• Covering the non-active phase with 300mm to 600mm of soil / an impermeable liner (on top of the intermediate cover), which will not only prevent odour emissions from landfilled waste but also enhance LFG extraction by the LFG extraction system.</li> <li>• Providing deodoriser for the LTP.</li> <li>• Enclosing all the leachate storage and treatment tanks and diverting the exhaust air from these tanks to a deodoriser to avoid potential odour emissions from the LTP.</li> <li>• The trench for special waste shall be covered with soil immediately upon the disposal of special waste to reduce the odour emission.</li> </ul>	Minimize the potential odour impact for tipping area to nearby sensitive receivers	DBO Contractor	Entire WENT Landfill Extension Site	Operation and Restoration phases	<ul style="list-style-type: none"> <li>• TM-EIA, Annex 4</li> <li>• Odour patrol with 2 Odour Level or below at ASR without causing potential odour nuisance</li> </ul>

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S3.8.2	A6 (Con't)	<ul style="list-style-type: none"> <li>• Continue to maintain the integrity of the capping system.</li> <li>• Provision of vertical and/or horizontal LFG extraction system to enhance extraction of LFG from the waste mass and hence minimise odour associated with fugitive LFG emissions.</li> <li>• Enclosing all the leachate storage and treatment tanks and diverting the exhaust air from these tanks to a deodoriser to avoid potential odour emissions from the LTP.</li> </ul>	Minimize the potential odour impact to nearby sensitive receivers	DBO Contractor	Entire WENT Landfill Extension Site	Aftercare phase	<ul style="list-style-type: none"> <li>• TM-EIA, Annex 4</li> <li>• Odour patrol with 2 Odour Level or below at ASR without causing potential odour nuisance</li> </ul>

Notes :

Entire WENT Landfill Extension site includes Office, Waste Reception Area, Leachate Treatment Works, LFG Treatment Works, Active, Inactive and Restored Tipping Areas.