

Annex F6

Investigation Reports of  
Environmental Quality  
Limit Exceedance

## Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	8 July 2022
Time	10:45
Monitoring Location	DP4
Parameter	Surface Water (Suspended Solids (SS))
Limit Level	>20 mg/L
Measured Level	26.3 mg /L
Possible reason	<p>From the on-site rainfall record of July 2022, heavy rainfall events were recorded on 1, 2 and 6 July 2022 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 1 July 2022.</p> <p>No works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP4 on the sampling day based on on-site observations and construction activities described by the Contractor.</p> <p>Site surface runoff at DP4 channel was treated by the Wetsep prior to discharge. During the sampling event, no raining was recorded and no other sources (e.g. other project sites) was identified in the vicinity of surface water channel leading to DP4 which might cause the SS exceedance at DP4. Contaminated runoff from the unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP4 was therefore deemed to Project-related activities.</p> <p>It should be noted that although the measured SS level exceeded the limit level of the EM&amp;A programme, it is still within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP4 will not cause adverse water quality impact to the Junk Bay Water Control Zone.</p>
Action Taken / Action to be Taken	<p>Weekly surface water quality monitoring (SS) shall be continued at DP4 until no exceedance of Limit Level in accordance with Table 4.5b of the updated EM&amp;A Manual.</p> <p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&amp;A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>In addition, the Contractor shall review the efficiency of the Wetsep near sediment trap and monitor the Wetsep operation regularly to</p>

	ensure it is functioning properly at all times.
Remarks	-

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Designation: Environmental Team  
Date: 19 July 2022

## Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	12 August 2022 - 20 August 2022
Monitoring Location	Pump Station No. 4X (Cell 4X)
Parameter	Leachate level
Limit Levels	> 186 cm
Measured Level	<p><u>Average of Meter No. X-7 and No. X-8</u></p> <p>12 Aug 2022: 308 cm            13 Aug 2022: 330 cm            14 Aug 2022: 307 cm            15 Aug 2022: 307 cm            16 Aug 2022: 294 cm            17 Aug 2022: 278 cm            18 Aug 2022: 262 cm            19 Aug 2022: 244 cm            20 Aug 2022: 216 cm</p>
Possible reason	<p>As confirmed by the Contractor, the leachate collection system and leachate treatment plant were under normal operating conditions during the reporting period. From the on-site rainfall record of August 2022, heavy rainfall events (up to 63 mm per day) were recorded from 2 to 12 August 2022, before the commencement of Cell 4X operation. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 3, 5 and 12 August 2022. Light rainfall events (up to 7mm per day) were recorded from 13 August to 20 August 2022.</p> <p>Upon the commencement of Cell 4X operation (on 12 August 2022), the ET site representative observed the accumulation of surface water at Cell 4X basin, at a distance from the actual tipping area, which could contribute to the exceedances. Based on this observation, the leachate level exceedances at Pump Station No. 4X were deemed to Project-related activities.</p> <p>It is understood that the large volume of leachate (contaminated surface runoff) accumulated at Cell 4X has exceeded the leachate treatment capacity (average daily effluent discharge volume of 1,941 m<sup>3</sup> recorded from 12 to 20 August 2022, with daily effluent discharge limit of 2,000 m<sup>3</sup> as stipulated in the WPCO license).</p>
Action Taken / Action to be Taken	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The ET requested the Contractor to notify the ET, IEC, IC and the Employer immediately if there is an exceedance of the leachate level. The ET site representative will conduct more frequently inspections of the</p>

	leachate level meter during the routine inspection. The Contractor is reminded to closely monitor the operating conditions of the leachate collection system (e.g. set alarm when the leachate level reach about 80% of the Limit Level) and pump out the leachate for treatment to avoid any exceedance of the Limit Level.
Remarks	-

Prepared by: Abbey Lau  
 Designation: Environmental Team  
 Date: 19 September 2022

## Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	18 August 2022
Time	11:25
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>36 mg /L
Measured Level	43 mg /L
Possible reason	<p>Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring well MWX-7 (5.63 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 30 mg/L and MWX-8: 29 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-7 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination.</p> <p>In accordance with Table 4.5b of the updated EM&amp;A Manual, repeat measurement was conducted on 6 September 2022 to confirm findings. Exceedance of COD Limit Level was recorded at MWX-7 (42 mg/L) during the sampling event. MWX-7 showed consecutive exceedance of the groundwater quality limit.</p> <p>According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-7 (with detection of elevated levels of methane (up to 4.2% v/v)) on 18 August 2022 could be due to localised organic matters within or around the monitoring wells and background fluctuation.</p> <p>Due to the presence of influencing factor from non-project source and the COD levels at all other groundwater monitoring wells are within the respective limit level, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 18 August 2022 was deemed to Project-related activities.</p> <p>It should also be noted that although the COD level exceeded the limit level of the EM&amp;A programme, it is still well within the range</p>

	<p>of the groundwater baseline monitoring results (49 mg/L), WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 18 August 2022 will not cause adverse water quality impact to the Junk Bay Water Control Zone.</p>
<p>Action Taken / Action to be Taken</p>	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&amp;A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.</p>
<p>Remarks</p>	<p>-</p>

Prepared by: Abbey Lau  
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Date: 30 September 2022

## Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	6 September 2022
Time	13:32
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>36 mg /L
Measured Level	42 mg /L
Possible reason	<p>Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring well MWX-7 (5.04 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 44 mg/L and MWX-8: 27 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-7 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination.</p> <p>In accordance with Table 4.5b of the updated EM&amp;A Manual, repeat measurement was conducted on 11 October 2022 to confirm findings. COD concentration of 22 mg/L (below the Limit Level) was measured at MWX-7 during the sampling event, which demonstrate no consecutive groundwater quality impact at the monitoring location.</p> <p>According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-7 (with detection of elevated levels of methane (up to 4.2% v/v)) on 18 August 2022 could be due to localised organic matters within or around the monitoring wells and background fluctuation.</p> <p>Due to the presence of influencing factor from non-project source and the subsequent month monitoring result at MWX-7 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 6 September 2022 was deemed to Project-related activities.</p> <p>It should also be noted that although the COD level exceeded the</p>



	<p>limit level of the EM&amp;A programme, it is still well within the range of the groundwater baseline monitoring results (49 mg/L), WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 6 September 2022 will not cause adverse water quality impact to the Junk Bay Water Control Zone.</p>
Action Taken / Action to be Taken	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&amp;A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.</p>
Remarks	-

Prepared by: Abbey Lau  
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Date: 23 November 2022

## Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	30 September 2022 – 3 October 2022
Monitoring Location	Pump Station No. 4X (Cell 4X)
Parameter	Leachate level
Limit Levels	> 186 cm
Measured Level	<u>Average of Meter No. X-7 and No. X-8</u> 30 Sep 2022: 246 cm 1 Oct 2022: 254 cm 2 Oct 2022: 234 cm 3 Oct 2022: 212 cm
Possible reason	<p>As confirmed by the Contractor, the leachate collection system and leachate treatment plant were under normal operating conditions during the reporting period. From the on-site rainfall record of September and October 2022, heavy rainfall events (up to 98 mm per day) were recorded from 30 September to 3 October 2022. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 30 September 2022.</p> <p>Accumulation of surface water at Cell 4X basin was observed during the reporting period, which could contribute to the leachate level exceedances. Based on this observation, the leachate level exceedances at Pump Station No. 4X were deemed to Project-related activities.</p> <p>It is understood that the large volume of leachate (contaminated surface runoff) accumulated at Cell 4X has exceeded the leachate treatment capacity (daily maximum effluent discharge volume of 1,964 m<sup>3</sup> recorded from 30 September to 3 October 2022, with daily effluent discharge limit of 2,000 m<sup>3</sup> as stipulated in the WPCO license).</p>
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to closely monitor the operating conditions of the leachate collection system (e.g. set alarm when the leachate level reach about 80% of the Limit Level) and pump out the leachate for treatment to avoid any exceedance of the Limit Level.
Remarks	-

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 Designation: Environmental Team  
 Date: 23 November 2022