Annex F

Investigation Report

Annex F1

Investigation Report for December 2021

Investigation Report of CEMS Exceedances

Date	1 – 31 December 2021
Time	Continuous monitoring throughout December 2021
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHP) and the Ammonia Stripping Plant (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • SO_2 in CHP 3 • NO_x, SO_2, VOCs and NH_3 in the ASP 2. The Contractor has investigated the cause of the exceedance and identified that • SO_2 exceedances from CHP 3 and the ASP were due to blockage of the hot water system of the desulphurisation system. • NOx, VOCs and NH_3 exceedances from the ASP were due to system instability caused by blockage of the stripping columns of the ASP.
Action Taken / Action to be Taken	The Contractor cleaned the blockage of the hot water system of the desulphurisation system immediately to resolve the issue. To ensure stripping efficiency and stable operation of the ASP, the Contractor has arranged acid-cleaning of the column. The Contractor has also arranged packaging cleaning in the next reporting month. The Contractor plans to arrange packaging cleaning in the coming reporting periods.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification works and follow-up emission monitoring of the ASP to avoid exceedance. The Contractor should review the routine inspection and maintenance schedule of the ASP and conduct preventative maintenance to avoid similar re-occurrence of the equipment failure.

Prepared by: Angela Yung, MT Representative
Date 11 January 2022

Investigation Report of Effluent Discharge Exceedances

Date	9 December 2021
Monitoring Location	Petrol Interceptor 2 (Stream B)
Parameter	Various discharge parameters of the Petrol Interceptor 2
Exceedance Description	1. According to the EM&A Manual (Rev. F), the monitoring should be carried out in accordance with the Water Pollution Control Ordinance (WPCO) licence. The licence requires the Contactor to carry out bi-monthly sampling and monitoring at the Petrol Interceptors. Sampling is required for this reporting period. Sample collected from Petrol Interceptor 2 showed exceedance of various discharge limits: • Suspended Solid • Chemical Oxygen Demand 2. The Contractor has investigated the cause of the exceedance and identified that: • Ad-hoc unloading and unpacking of food waste (21 tonnes of egg, 10 tonnes of ginseng, etc.) arranged by EPD near the sampling point between mid-November and early December 2021. • During the period, cleaning water has washed food residue down to the petrol interceptor and might have contaminated the concerned sampling point. • The water level at the sampling point was low during sampling. There were limited water flow as the reporting period was a dry season.
Action Taken / Action to be Taken	The Contractor has arranged cleaning of the petrol interceptor in January 2022.
Remedial Works and Follow-up Actions	The Contractor will arrange routine cleaning right after ad-hoc works.

Prepared by: Angela Yung, MT Representative
Date 14 January 2022

Investigation Report of Foam Overflown and Leakage from the Anammox Pilot Plant

Date	23, 28 and 29 December 2021
Incident Description	Foam overflow from tanks to surface channel from the Anammox Pilot Plant was reported on 23 and 28 December 2021. The Contractor found no discharge to the nearby channel on 23 and 28 December 2021. Wastewater leakage from a loosen flexible pipe of the Anammox Pilot Plant was reported on 29 December 2021.
Action Taken / Action to be Taken	The leakage on 29 December 2021 was intercepted and wastewater was diverted to the wastewater treatment system.
Remedial Works and Follow-up Actions	A containment bund has been constructed around the pilot plant to contain any future spillages. Communication channel between site and plot operator has been established for immediate control actions in the case of spillage. 

Prepared by: Angela Yung, MT Representative
Date 22 August 2022

Annex F2

Investigation Report for January 2022

Investigation Report of CEMS Exceedances

Date	1 – 31 January 2022
Time	Continuous monitoring throughout January 2022
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHP) and the Ammonia Stripping Plant (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • NO_x in CHP 3 • CO, NO_x, VOCs and NH_3 in the ASP 2. The Contractor has investigated the cause of the exceedance and identified that • The exceedances of NOx from CHP 3 occurred due to insufficient feedstock. Two CHPs were under operation and CHP 3 received a low loading to consume biogas in the reporting period. • The exceedance of CO, NOx, VOCs and NH_3 from ASP occurred due to system instability caused by the malfunctioning of the steam generator of ASP.
Action Taken / Action to be Taken	Malfunctioning of the steam generator of ASP was found in early January 2022. An urgent maintenance was carried out and the ASP was shut down for about 16 days. Off-site discharge of wastewater to DSD was required in the reporting month. After resuming operation in late January 2022, the steam generator and remained unstable and further fine-tuning was carried out throughout the rest of the reporting period.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification works and follow-up emission monitoring of the ASP to avoid exceedance. The Contractor should review the routine inspection and maintenance schedule of the ASP and conduct preventative maintenance to avoid similar re-occurrence of the equipment failure.

Prepared by: Angela Yung, MT Representative
Date 18 February 2022

Annex F3

Investigation Report for February 2022

Investigation Report of CEMS Exceedances

Date	1 – 28 February 2022
Time	Continuous monitoring throughout February 2022
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHP) and the Ammonia Stripping Plant (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • SO_2 in CHP 3 • Dust, CO, NO_x, VOCs and NH_3 in the ASP 2. The Contractor has investigated the cause of the exceedance and identified that • The exceedances of SO_2 from CHP 3 occurred due to malfunctioning of the control instrument. • The exceedances from ASP occurred due to system instability caused by the blockage of the stripping column and unstable column and thermal oxidizer temperature of the ASP.
Action Taken / Action to be Taken	The Contractor arranged immediate maintenance work after the malfunctioning of the control instrument of the de-sulphurisation system was found and the issue was fixed on the same day. The Contractor arranged cleaning of the column packaging of the ASP during mid-February and further upgrading work in the next reporting month.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification works and follow-up emission monitoring of the ASP to avoid exceedance. The Contractor should review the routine inspection and maintenance schedule of the ASP and conduct preventative maintenance to avoid similar re-occurrence of the equipment failure.

Prepared by: Angela Yung, MT Representative
Date 14 March 2022