Annex F

Investigation Report

Investigation Report of CEMS Exceedances

Date	1 – 30 April 2023
Time	Continuous monitoring throughout April 2023
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Centralised Air Pollution Unit (CAPCS), Cogeneration Units (CHP) and 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: • VOCs (including methane) from CAPCS; • NOx and SO_2 from the CHP1; • Dust, NOx, SO_2, HCl and HF from the CHP2; and • NOx, SO_2 and NH_3 from ASP. 2. The Contractor is still investigating the cause of the exceedances of VOCs (including methane) from CAPCS 3. The Contractor has investigated the cause of the exceedance and identified that • The exceedances of SO_2 from the CHPs occurred due to tripping of the de-sulphurisation system resulted from the residue of sulphur accumulated at the exhaust heat exchangers. • The exceedances of dust, NO_x, HCl and HF from CHPs occurred due to system instability caused by prolonged usage of the CHPs. • The exceedances of NOx, SO_2 and NH_3 from ASP occurred due to ASP pump failure which caused equipment trip.
Action Taken / Action to be Taken	The sample on CAPCS stack for VOC testing was taken on 29 March 2023 for investigating the cause of the exceedances of VOCs (including methane) from CAPCS. The Contractor has arranged cleaning of the heat exchangers of all CHPs to remove potential sulphur residue from the exhaust gas system. The Contractor has also replaced all catalytic convertors with an aim to improve the CO removal efficiency of the system. The Contractor has replaced the ASP pump on 21 April 2023.
Remedial Works and Follow-up Actions	The Contractor has arranged a specialist to review the CEMS system performance and accuracy. The specialist will carry out in-depth investigation and propose any remediation needed.

	The reason for exceedance is still under investigation by the Contractor. This investigation report will be updated once available.

Prepared by:	Chris Ng, MT Representative
Date	22 May 2023

Investigation Report of Discharged Sample Exceedances

Date	Effluent Storage Tank: 13 April 2023 Petrol Interceptor 1: 20 April 2023
Monitoring Location	Outlet Chamber of the Effluent Storage Tank, Petrol Interceptor 1
Parameter	Effluent Storage Tank: Total Nitrogen Petrol Interceptor 1: Suspended Solids
Exceedance Description	1. According to EM&A Manual, the monitoring of the effluent discharge from the outlet chamber of the Effluent Storage Tank and Petrol Interceptors shall be carried out monthly and bi-monthly, respectively, under Section 21 of the Water Pollution Control Ordinance (WPCO) license. Exceedance is considered if the concentration of discharged effluent sample from the Effluent Storage Tank and Interceptors is higher than the discharge limits stated in Part B2 of the WPCO. Exceedances of discharge parameter was recorded during the monitoring of effluent discharge from the outlet chamber of the Effluent Storage Tank (Total Nitrogen) and Petrol Interceptor 1 (Suspended Solids). 2. The Contractor has investigated the cause of the exceedances and found that • The exceedance of Total Nitrogen from the effluent discharge from the outlet chamber of Effluent Storage Tank occurred due to an unexpected surge of Kjeldahl Nitrogen in Treated Effluent and leading to high Total Nitrogen in Treated Effluent sampled on 13 April 2023. • The exceedance of Suspended Solids from the effluent discharge from Petrol Interceptor 1 occurred due to small amount of leaves and branches in the sample, leading to high Suspended Solids in the sample taken on 20 April 2023.
Action Taken / Action to be Taken	The Contractor investigated the reason for the exceedance. New effluent sample has been taken on 28 April 2023.
Remedial Works and Follow-up Actions	The Contractors will further arrange a longer aeration in SBR and a monitoring of settlement, to prevent further high nitrogen content entering Treated Effluent Tank and discharge to DSD, to make sure the discharge effluents complies with the discharge limit.

Prepared by: Chris Ng, MT Representative
Date 22 May 2023