

Annex F

Investigation Reports

Annex F-1

Investigation Report for September 2023

Investigation Report of CEMS Exceedances

Date	1 - 30 September 2023
Time	Continuous monitoring throughout September 2023
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of Cogeneration Units (CHPs) and Ammonia Stripping Plant (ASP)
Exceedance Description	<p>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, CHPs and ASP respectively. The concentrations of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including:</p> <ul style="list-style-type: none"> • NO_x and SO₂ from CHP1; • NO_x, SO₂, and HCl from CHP2; • NO_x and SO₂ from CHP3; and • NO_x, SO₂, NH₃, and HCl from ASP. <p>2. The Contractor has investigated the cause of the exceedance and identified that:</p> <ul style="list-style-type: none"> • The exceedances of NO_x, SO₂, and HCl from the CHPs, as well as the exceedances of NO_x, SO₂, NH₃, and HCl from ASP occurred due to system instability.
Action Taken / Action to be Taken	The Contractor investigated the reason for the exceedances and arranged Remedial Works and Follow-up Actions (see below).
Remedial Works and Follow-up Actions	<ul style="list-style-type: none"> • The Contractor had arranged the CHP supplier to inspect, analyse and improve CHP performance in September 2023 based on final reports of the quality assurance level 2 test (QAL) for the CEMS calibration. This QAL2 evaluation is still ongoing, and improvement recommendation will be provided once the final report is received. • The Contractor has also arranged cleaning of the ASP in October 2023 to restore the treatment efficiency of the ASP.

Prepared by: Alex Khawaja Waheed, MT Representative

Date: 16 October 2023

Annex F-2

Investigation Report for October 2023

Investigation Report of CEMS Exceedances

Date	1 - 31 October 2023
Time	Continuous monitoring throughout October 2023
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of Cogeneration Units (CHPs) and Ammonia Stripping Plant (ASP)
Exceedance Description	<p>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, CHPs and ASP respectively. The concentrations of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including:</p> <ul style="list-style-type: none"> • NO_x, SO₂ and HCl from CHP1; • NO_x and SO₂ from CHP2; • NO_x and SO₂ from CHP3; and • NO_x, SO₂ and NH₃ from ASP. <p>2. The Contractor has investigated the cause of the exceedances and identified that:</p> <ul style="list-style-type: none"> • The exceedances of NO_x, SO₂, and HCl from the CHPs, as well as the exceedances of NO_x, SO₂ and NH₃, from ASP occurred due to system instability.
Action Taken / Action to be Taken	The Contractor investigated the reason for the exceedances and arranged Remedial Works and Follow-up Actions (see below).
Remedial Works and Follow-up Actions	The Contractor had arranged the CHP supplier to inspect, analyse and improve CHP and ASP performance in November 2023 based on final reports of the quality assurance level 2 test (QAL) for the CEMS calibration. This QAL2 evaluation is still ongoing, and improvement recommendation will be provided once the final report is received.

Prepared by: Alex Khawaja Waheed, MT Representative

Date: 10 November 2023

Investigation Report of Discharged Sample Exceedances

Date	12 October 2023
Monitoring Location	Petrol Interceptor 2
Parameter	Suspended Solids, Chemical Oxygen Demand, Oil & Grease
Exceedance Description	<p>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 were recorded during the monitoring of effluent discharge from the Petrol Interceptor 2 (Suspended Solids, Chemical Oxygen Demand, Oil & Grease).</p> <p>2. The Contractor has investigated the cause of the exceedances and found that:</p> <ul style="list-style-type: none"> • The exceedances of Suspended Solids, Chemical Oxygen Demand and Oil & Grease from the effluent discharge from Petrol Interceptor 2 occurred due to the increasing road cleaning frequency, leading to Suspended Solids, Chemical Oxygen Demand and Oil & Grease in the sample taken on 12 October 2023.
Action Taken / Action to be Taken	Proper cleaning of the petrol interceptor was arranged to maintain a better effluent water quality. Additionally, after measures implemented by the Contractor, a second Discharge Sample from the Petrol Interceptor 2 was collected on 31 October 2023 as a follow-up, with all parameters recorded to be in compliance with discharge limits.
Remedial Works and Follow-up Actions	The Contractors will review the efficiency of the Petrol Interceptor, to ensure the discharge effluents comply with the discharge limits.

Prepared by: Alex Khawaja Waheed, MT Representative

Date 3 January 2024

Annex F-3

Investigation Report for November 2023

Investigation Report of CEMS Exceedances

Date	1 - 30 November 2023
Time	Continuous monitoring throughout November 2023
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of Cogeneration Units (CHPs) and Ammonia Stripping Plant (ASP)
Exceedance Description	<p>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, CHPs and ASP respectively. The concentrations of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including:</p> <ul style="list-style-type: none"> • NO_x, SO₂, and HCl from CHP1; • NO_x, SO₂, and HCl from CHP2; • NO_x and SO₂ from CHP3; and • NO_x, SO₂, NH₃, and HCl from ASP. <p>2. The Contractor has investigated the cause of the exceedances and identified that:</p> <ul style="list-style-type: none"> • The exceedances of NO_x, SO₂, and HCl from the CHPs, as well as the exceedances of NO_x, SO₂, NH₃, and HCl from ASP occurred due to system instability.
Action Taken / Action to be Taken	The Contractor investigated the reason for the exceedances and arranged Remedial Works and Follow-up Actions (see below).
Remedial Works and Follow-up Actions	The Contractor had arranged the CHP supplier to inspect, analyse and improve CHP and ASP performance in December 2023 based on final reports of the quality assurance level 2 test (QAL) for the CEMS calibration. This QAL2 evaluation is still ongoing, and improvement recommendation will be provided once the final report is received.

Prepared by: Alex Khawaja Waheed, MT Representative

Date: 8 December 2023