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31 March 2025

Kevin Cooper
Regain Services Pty Limited
Regain SPL Processing Facility
Tomago Aluminium Smelter
Tomago Road, Tomago NSW 2322

Dear Kevin,

E1 Air Quality Verification Report

The following letter has been prepared to provide information on the verification of emissions from the Regain Services Pty Limited (Regain) facility. This has been prepared to meet the Environmental Protection Licence 13269 (EPL) condition E1.2 following the commissioning of the Rotary Kiln 2 and Fine Grinding Mill. This verification report is required following commissioning of the facility. This report also meets condition 15 of the Department of Planning conditions of consent, which also require the preparation of a Post Commissioning Air Emissions Verification Report.

1.0 Introduction

An Air Quality Verification study (AQVR) is required for the Regain facility as listed in the Regain Environmental Protection Licence (EPL13269) as conditions E1.2, which has been reproduced below.

> *Within 12 months of commissioning Points 6; 7; and 8, the licensee must submit a Post Commissioning Air Emissions Verification Report to the EPA. The Post Commissioning Air Emissions Verification Report must:*
>
> *(a) Include details of all air emissions monitoring and associated analytical results from monitoring required by the licence.*
>
> *(b) Provide information on the processing conditions during the time when monitoring was undertaken. This must include, but is not limited to, the SPL being processed and the smelter from which it originated.*
>
> *(c) With consideration of the processing conditions when monitoring was undertaken (as per (b) above), demonstrate the post commissioning emissions monitoring results adequately captures worse case emissions.*
>
> *(d) Compare the post commissioning monitoring against the relevant concentration limits provided in the licence and the Protection of the Environment Operations (Clean Air) Regulation 2010.*
>
> *(e) For Points 1 and 6, propose and justify oxygen corrections for the pollutants listed in condition L2.2 in respect of the respective concentration limits.*
>
> *(f) Detail action taken or proposed to be taken to achieve the concentration limits provided in the licence and the Protection of the Environment Operations (Clean Air) Regulation 2010, where the monitoring undertaken identifies any exceedances.*
>
> *The Post Commissioning Air Emissions Verification Report must be submitted to the EPA at PO Box 488G, Newcastle NSW 2300, or emailed to hunter.region@epa.nsw.gov.au.*

Note that as at the time of drafting, EPL Point 7 had not been commissioned and therefore is omitted from this report.

Condition 15 of the Department of Planning, Housing and Industry (DPHI) conditions of consent (CoC) has been reproduced as follows:

> ***Post Commissioning Air Emission Verification Report***
>
> *19. Within 12 months of commissioning Stage 1 operations and Stage 2 operations, the Proponent must submit a post commissioning air emission verification report (AEVR) to the satisfaction of the Planning Secretary (the report). The AEVR must:*
>
> *(a) must be prepared by a suitably qualified and experienced person(s);*

(b) include all emission test and analytical results from post commissioning emission monitoring required to be undertaken by the EPL;

(c) compare the results of the post commissioning monitoring against emission limits contained in the EPL for the relevant emission points where the comparison shows monitored discharge concentrations higher than the EPL limits;

(d) must identify mitigation measures to achieve the EPL emission limits; and

(e) include details of any amendments to the EPL as a result of the EPA's review of the AEVR.

The requirements of the EPL AQVR and the CoC AEVR have been provided in the following sections. Given the similarities between the two verification requirements, the following document refers to both the EPL AQVR and the CoC AEVR as "the AQVR".

2.0 Verification Data Analysis

A comparison has been undertaken between the recent post-commissioning stack emissions testing results, the POEO and data assumed for the air quality impact assessment (AQIA) prepared as part of the capacity increase Environmental Assessment (EA) dated 13 November 2018. Details of the analysis have been provided below.

2.1 Emissions Tests completed on the Rotary Kiln 2 stack

There have been two stack emissions sampling events of EPL Point 6 on the following dates:

- Post Commissioning Stack Test 1 – 24 May and 04 June 2024 (split event)
- Post Commissioning Stack Test 2 – 24 October and 6 November 2021 (split event)

The tests were carried out on the same stack sampling point (EPL Point 6) to meet the requirements of Condition E1.2 above and to understand the emissions from this point.

A summary of all the EPL Sampling points at the Regain facility is provided in **Table 1**. This AQVR is only relevant to EPL Point's 6 and 8, with testing for Point 7 to be undertaken at a later date following the completion of the commissioning activities associated with that emissions point.

Table 1 EPL Monitoring Points

EPA Identification No.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	"Rotary Kiln Discharge Stack" marked and shown on the Plan.
2	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	"Spent Pot Lining (SPL) Drying and Blending Plant Dust Collector Stack" - location to be advised and an updated premises plan provided to the EPA when commissioned.
3	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	"Spent Pot Lining (SPL) Preparation Facilities Stack" marked and shown on the Plan.
4	Temperature monitoring	-	"Rotary Kiln Temperature Control" marked and shown on the Plan.
5	Meteorological monitoring	-	Either the Tomago Aluminium weather monitoring station or a weather station on the premises as described in condition A2.1.
6	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	"Rotary Kiln 2 Discharge Stack" marked and shown on the Plan.

EPA Identification No.	Type of Monitoring Point	Type of Discharge Point	Location Description
7	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	"New Fine Grinding Mill Stack" - location to be advised and an updated premises plan provided to the EPA when commissioned.
8	Temperature monitoring	-	"Rotary Kiln 2 Temperature Control" marked and shown on the Plan.

2.2 Monitoring Required for EPL 13269 Point 6 and 8

Monitoring requirements for EPL Points 6 and 8 are defined in the EPL body which have been reproduced in **Table 2**. All pollutants were sampled in accordance with the requirements outlined in the Regain EPL. All test reports have been appended to this letter as attachments.

Table 2 EPL Point 6 Monitoring Requirements

Pollutant	Units of Measure	100 Percentile Concentration Limit	Reference Conditions	Oxygen Correction	Averaging Period
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	0.5	Dry, 273K, 101.3kPa	TBC	1 hour
Total Fluoride	milligrams per cubic metre	5	Dry, 273K, 101.3kPa	TBC	1 hour
Polycyclic aromatic hydrocarbons	milligrams per cubic metre	0.2	Dry, 273K, 101.3kPa	TBC	1 hour
Sulfur dioxide	milligrams per cubic metre	25	Dry, 273K, 101.3kPa	TBC	1 hour block
Dioxins & Furans	nanograms per cubic metre	0.1	Dry, 273K, 101.3kPa	TBC	1 hour
Total Solid Particles	milligrams per cubic metre	20	Dry, 273K, 101.3kPa	TBC	1 hour
Cyanide	milligrams per cubic metre	1	Dry, 273K, 101.3kPa	TBC	1 hour
Nitrogen Oxides	milligrams per cubic metre	25	Dry, 273K, 101.3kPa	TBC	1 hour block
Cadmium	milligrams per cubic metre	0.025	Dry, 273K, 101.3kPa	TBC	1 hour
Volatile organic compounds	milligrams per cubic metre	10	Dry, 273K, 101.3kPa	TBC	1 hour rolling
Fine Particulates (PM_{10})	milligrams per cubic metre	10	Dry, 273K, 101.3kPa	TBC	1 hour

Table 3 EPL Point 8 Monitoring Requirements

Pollutant	Units of Measure	100 Percentile Concentration Limit	Reference Conditions	Oxygen Correction	Averaging Period
Temperature	Degrees Celsius	850	NA	NA	NA

2.3 Comparison of Point 6 Monitoring with POEO, EPL and AQIA

2.3.1 Stack concentration

All of the post commissioning stack sampling and analysis has been carried out in accordance with the requirements of the POEO Clean Air Regulation 2021 and its subservient document "*Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales"*. Compliance with stack emissions testing requirements are detailed in attachments A-C.

The results of the post commissioning monitoring have been compared to:

- Stack concentration limits in the POEO for General activities and plant, Group 6
- EPL concentration limits for Point 6
- The AQIA emissions inventory, prepared as part of the capacity increase Environmental Assessment (EA) dated 13 November 2018.

Note there are two results in the "Monitoring Results" column of Table 4 due to there being two sampling events post commissioning.

The concentrations of all pollutants monitored are lower than the limits in the POEO and EPL, and lower than the data assumed for the AQIA. As no exceedances were monitored, there are no additional actions proposed to be taken to further mitigate air emissions.

Table 4 EPL Point 6 results comparison

Pollutant	Units of Measure	Monitoring Results	POEO	EPL	AQIA
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	0.012 0.027	1	0.5	1
Total Fluoride	milligrams per cubic metre	0.29 2.3	50	5	5
Polycyclic aromatic hydrocarbons	milligrams per cubic metre	0.000012 <0.00014	NA	0.2	0.5
Sulfur dioxide	milligrams per cubic metre	<3 <3	1,000	25	50
Dioxins & Furans (middle bound)	nanograms per cubic metre	0.0012 0.0024	0.1	0.1	0.1
Total Solid Particles	milligrams per cubic metre	0.50 0.09	20	20	20
Cyanide	milligrams per cubic metre	<0.014 <0.013	NA	1	1
Nitrogen Oxides (NO_2 equivalent)	milligrams per cubic metre	3 2	350	25	100
Cadmium	milligrams per cubic metre	<0.00025 <0.00034	0.2	0.025	0.025
Volatile organic compounds	milligrams per cubic metre	0.089 0.86	40	10	20
Fine Particulates (PM_{10})	milligrams per cubic metre	0.21 <0.11	NA	10	10

2.3.2 AQIA Assumptions

To verify the AQIA model performance, stack parameters also need to be compared between the monitored data and the assumptions of the AQIA.

The stack parameters assumed in the AQIA and the measured data from the recent stack emissions testing events are compared in **Table 5** below. Generally, the assumptions from the AQIA were close to the monitored data giving confidence in the predicted ground level concentrations of pollutants.

The monitored velocity (12m/s) was slightly lower than the AQIA assumed velocity (13.7 m/s). It should be noted however, that the average of the monitored volumetric flow rate was the same as the flow rate assumed for the AQIA. This difference in velocity is due to the AQIA assuming a 1,100 mm stack diameter whereas the stack was measured at 1,195 mm. This difference in velocities coupled with the low measured pollutant concentrations would not be expected to change the results significantly.

The monitored temperature values average 356 K, which is close to the AQIA assumption of 360 K. A difference of 4 K would not be expected to change the results significantly.

Table 5 Predicted and Measured Stack Parameter Results Comparison

Parameter	Source	Value
Velocity	EA Assumed Value	13.7 m/s
	May/Jun 2024 Result	12 m/s
	Oct/Nov 2024 Result	12 m/s
	Average Measured	**12 m/s**
Volumetric Flow Rate (VFR)	EA Assumed Value	9.9 Nm^3/s
	May/Jun 2024 Result	10.0 Nm^3/s
	Oct/Nov 2024 Result	9.8 Nm^3/s
	Average Measured	**9.9 Nm^3/s**
Temperature	EA Assumed Value	360 K
	May/Jun 2024 Result	351 K
	Oct/Nov 2024 Result	363 K
	Average Measured	**356 K**

2.4 Process conditions during emissions testing

The following section discusses the process conditions at the facility during the stack testing. The purpose of this comparison is to enable the demonstration that the sampling was occurring under worst-case conditions.

SPL Source

During the emissions testing, the SPL composition varied. A summary of the different material testing during the sampling periods has been summarised in **Table 6** below. These SPL sources represent SPL that is processed at the facility.

Table 6 SPL source composition

SPL source	Emission Test Period			
	24/5/24	4/6/24	24/10/24	6/11/24
Boyne Smelters Limited (BSL)	22%	5%	0%	16%
Portland Aluminium (PA) Smelter	32%	40%	32%	53%
New Zealand Aluminium Smelters Limited (NZAS)	46%	55%	68%	31%

SPL Throughput

The Regain facility typically runs at its design capacity of about five tonnes per hour (5tph), which is considered normal operations conditions and also would be considered the worst-case from an emissions perspective.

Kiln Temperature

As per EPL conditions for Point 8, kiln temperature is required to be monitored. **Figure 1** to **Figure 4** present the operating temperature of the kiln on the days of emissions testing. The normal operating temperature range is between 600 to 650 °C which ensures cyanide is destroyed, but that fluoride is not liberated from the SPL. This temperature range is generally maintained whilst there is an active input feed rate. The operating temperatures during testing were elevated at times to simulate worst case conditions.

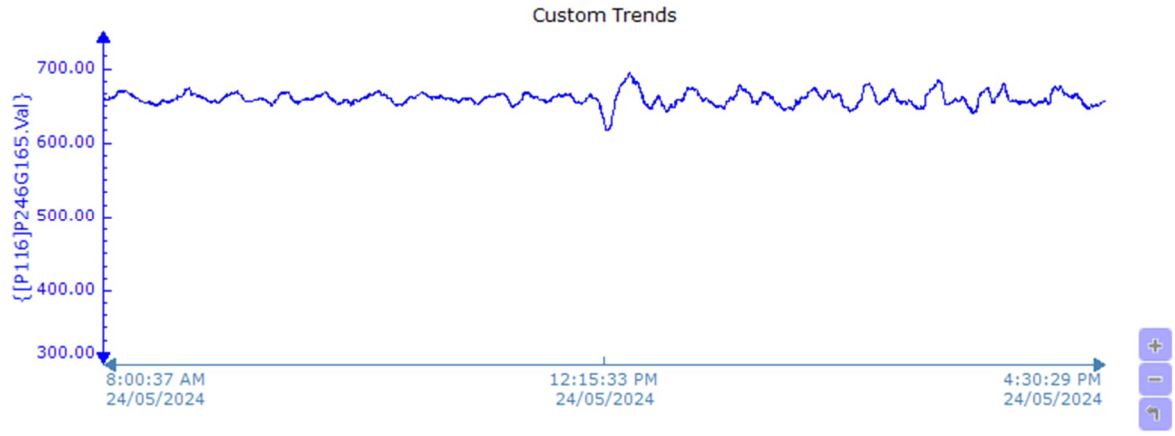

Figure 1 24 May 2024

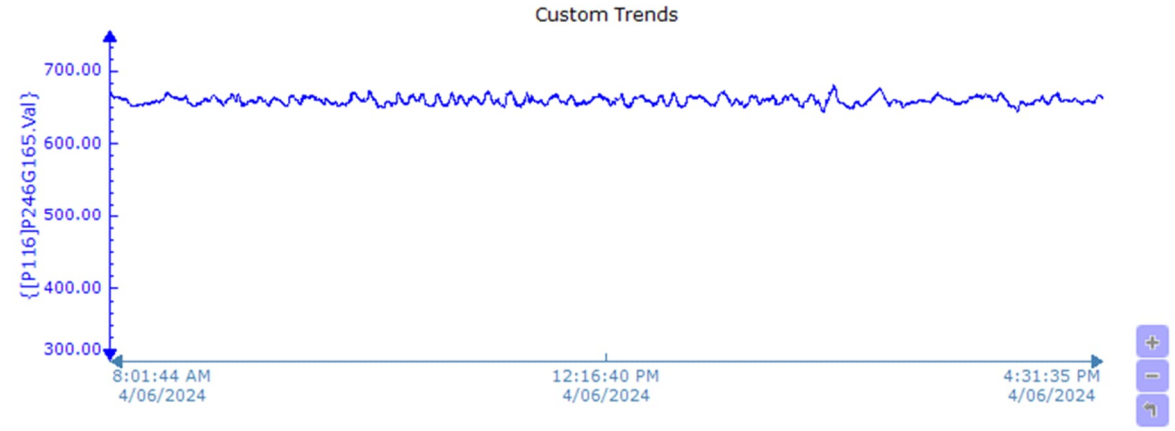

Figure 2 4 June 2024

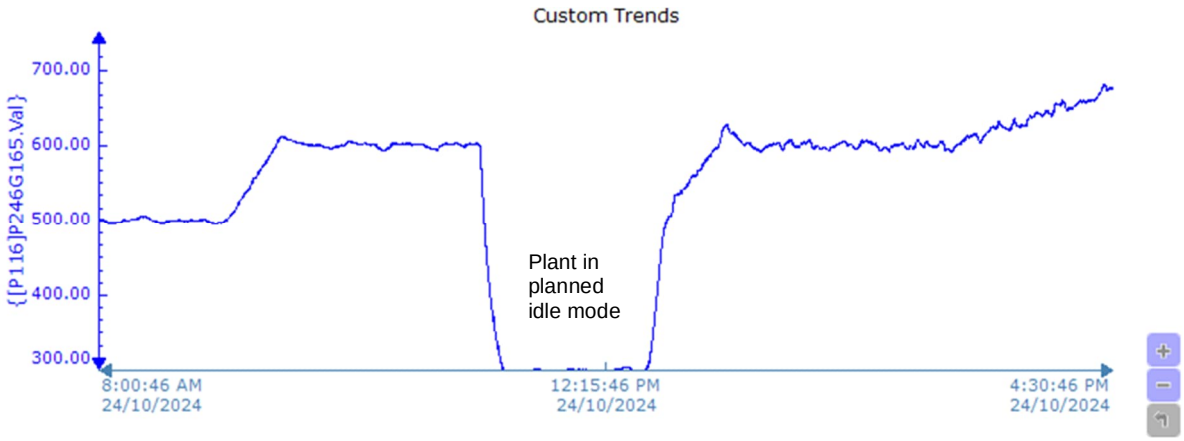

Figure 3 24 October 2024

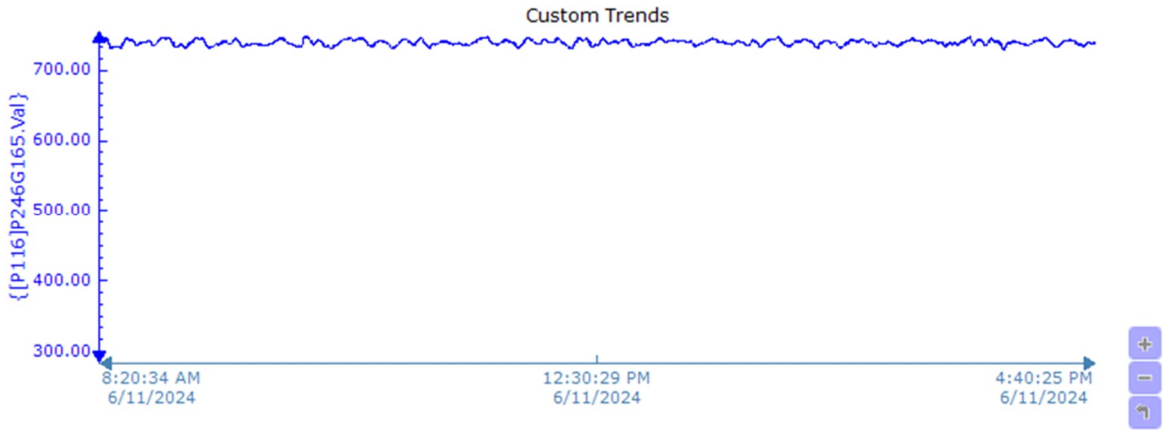

Figure 4 6 November 2024

2.5 Oxygen correction discussion

Background to Oxygen Correction

An oxygen correction factor can be applied to an emission concentration measurement to adjust the measured concentration to a common oxygen basis for reporting purposes.

The correction factor is typically calculated using the oxygen concentration of the gas stream at the time of the measurement, and an oxygen reference value for reporting (e.g. 3%, 15% etc) which is generally prescribed by an environmental authority (e.g. EPA) based on the expected combustion process.

The equation used to calculate the oxygen corrected concentration, C_b, is as follows:

$$C_b = C_a \times \frac{(21 - reference\ O_2\ concentration)}{(21 - measured\ O_2\ concentration)}$$

Where : C_a = measured pollutant concentration, at standard reference conditions.

The purpose of an oxygen correction is to enable comparison of emission concentrations between different sources by removing the effects of process air dilution (if any), which would generally raise the measured oxygen concentration. The POEO prescribes an oxygen reference concentration of 3% for gas fuelled combustion plant, and 7% for solid fuelled combustion plant. However, bespoke reference conditions are also possible if more detailed data are available for different part of the process.

As an example, if the measured gas stream was 3% oxygen and the reference condition was 3% oxygen:

$$C_b = C_a \times \frac{(21 - 3)}{(21 - 3)}$$

The correction factor would be 1, i.e. no effect on the measured concentration.

However, if the measured gas stream was 15% oxygen and the reference was 3% oxygen:

$$C_b = C_a \times \frac{(21 - 3)}{(21 - 15)}$$

The correction factor would be 3, i.e. an increase of 3x the measured concentration.

The effect on concentration however can be significant if oxygen concentrations approach ambient conditions, such as 20.5% oxygen. In this case with a 3% reference concentration, the correction factor would be 56, which would likely result in apparent exceedance of many measured concentrations.

While this comparison may be useful when comparing different sites or stack results, it does little to aid in the understanding of whether there are likely to be exceedances of ground level pollution concentrations. These are governed by the mass flux of pollution coming from the stack.

Implications for the Regain Facility

When the Regain plant process is considered, the use of an oxygen correction methodology becomes difficult to justify. The Regain process is not a single stage combustion process for which the oxygen correction methodology is intended to be applied. The process utilises a gas burner to heat the SPL input material, which requires a certain amount of combustion air (oxygen) to ensure the stoichiometric combustion of the gas. The process requires the presence of free oxygen to enable the thermal decomposition of cyanide, a key objective of the process being the elimination of the cyanide hazard in SPL, e.g.:

$$2CN + 2O_2 \rightarrow N_2 + 2CO_2$$

As a result, the process introduces “excess air” beyond what the initial gas burner requires to ensure there is enough free oxygen for the cyanide destruction process.

As the oxygen correction aims to assess the gas burner flame in isolation, i.e. assuming any other introduced air is clean and doesn't get consumed, if any additional pollutants are evolved after the burner flame, they are being inappropriately scaled by the oxygen correction methodology, which does not consider a multi-stage combustion process.

Furthermore, once the process air exits the kiln (after both natural gas and evolved pollutant combustion), additional air is introduced to cool the process air before it reaches the baghouse (to prevent the baghouse catching on fire). This further complicates the proposed addition of the oxygen correction factor as this represents a further alteration of the process gas affecting the concentration of the pollutants in the stack.

Given the multi-stage nature of the process and the introduction of the cooling air to prevent baghouse fires, it is considered that the use of an oxygen correction factor is not appropriate in this situation. Provided the mass flux of pollution (in g/s) exiting the stack is below the mass emission rates assessed as part of the regulatory approvals process, this is considered sufficient evidence that the facility is not causing undue environmental harm and as a result, an oxygen correction factor should not be added to this process.

2.6 Conclusion

Stack Concentrations

The concentrations of all pollutants monitored are lower than the limits in the POEO and EPL, and lower than the data assumed for the AQIA. As no exceedances were monitored, there are no additional actions proposed to be taken to further mitigate air emissions.

Stack Parameters

Generally, the assumptions from the AQIA for velocity, volumetric flowrate and temperature were close to the monitored data. Velocity was slightly lower in the monitored data than the AQIA at 12 m/s vs 13.7 m/s in the AQIA, however the difference would not be expected to significantly change the results of the dispersion modelling or conclusions from the EIS.

Process Conditions

Process conditions showed that the testing was undertaken on typical SPL treated by the facility during representative worst-case periods of SPL feed and within normal temperature operating ranges for SPL treatment. Process conditions can therefore be considered worst case for the facilities stack emissions testing.

Oxygen Correction

Given the multi-stage nature of the process and the introduction of the cooling air to prevent baghouse fires, it is considered that the use of an oxygen correction factor is not appropriate in this situation. Provided the mass flux of pollution (in g/s) exiting the stack is below the mass emission rates assessed as part of the regulatory approvals process, this is considered sufficient evidence that the facility is not causing undue environmental harm and as a result, an oxygen correction factor should not be added to this process.

2.7 Recommendations

No changes to the stack particulate EPL limits are recommended. These limits are already significantly lower than the maximum concentrations listed in the Clear Air Regulation 2022 and are within the expected range of operation for a well-maintained baghouse.

While the performance of the EPL Point 6 stack to date is well below the existing limit, maintaining the concentration limit at its current level would provide operational flexibility for the facility, while maintaining a low pollution emission rate which would comply with ground level pollutant limits.

As the facility was assessed in the AQIA at the above conditions, this is considered sufficient evidence that the facility is not causing undue environmental harm and as a result, an oxygen correction factor should not be added to this process.

If there are any questions in relation to the above analysis, please contact the undersigned.

Yours faithfully

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Attachments:
A: Regain Tomago – Emissions Testing Report – June 2024
B: Regain Tomago – Emissions Testing Report – October 2024

Solutions Together

Regain Tomago – Emissions Testing Report June 2024

Report No.:	1203-2
Job No.:	1203
Date:	26 March 2025
Report To:	Regain Services Tomago
Attention Of:	John Cooper
Prepared By:	Port Hunter Environmental (pHE)
Approved By:	Nick Stanning

Port Hunter Environmental (pHE)

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Where site inspections, testing or fieldwork have taken place, the report is based on the information made available by the client or their nominees during the visit. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to pHE is both complete and accurate. It is further assumed that normal activities were being undertaken at the site on the day of the site visit(s), unless explicitly stated otherwise.

Contents

List of Tables

1.0 Introduction

pHE was appointed by Regain Services Pty Ltd to conduct a series of measurements to determine air emissions from the Dust Collector Discharge Stack (P246) at the Tomago Road, Tomago facility. Measurements were required for assessment as part of the licence requirements detailed in Environment Protection Licence 13269.

Testing was conducted on 24th May and 4th June 2024 to investigate emission concentrations for the following parameters:

- Carbon Monoxide;
- Cyanide;
- Dioxins & Furans;
- Dry Gas Density;
- Fine Particulates (PM_{10});
- Velocity;
- Moisture;
- Nitrogen Oxides;
- Oxygen;
- Polycyclic Aromatic Hydrocarbons;
- Volatile Organic Compounds
- Sulfur Dioxide;
- Temperature;
- Total Fluoride;
- Total Solid Particles (TP)
- Hazardous Substances (Metals).

Laboratory analysis was conducted by the following NATA accredited laboratories for the specified tests:

- pHE NATA accreditation number 21069, performed the following analysis:
  - Fine Particulates (PM10);
  - Total Particulates (TP); and
  - Moisture.

- ALS Environmental NATA accreditation number 825, performed the following analysis detailed in report number EN2405076:
  - Fluoride; and
  - VOC.

- Envirolab Services, laboratory NATA accreditation number 2901, performed the following analysis detailed in report number 352371:
  - Cyanide.

- SGS Australia Pty Ltd, NATA accreditation number 2562, performed the following analysis detailed in report number ME353268:
  - Hazardous Substances (Metals).

- National Measurements Institute, laboratory NATA accreditation number 198, performed the following analysis detailed in report number RN1434550:
  - Polycyclic Aromatic Hydrocarbons;
  - Dioxins & Furans.

2.0 Sampling Plane Requirements

The criteria for sampling planes are specified in AS 4323.1-2021.

Table 1: Criteria for Selection of Sampling Planes (AS 4323.1)

Type of flow disturbance	Minimum distance upstream from disturbance, diameters (D)	Minimum distance downstream from disturbance, diameters (D)
Bend, connection, junction, direction change, stack silencer, flow straightener, stack exit	*>2D*	*>6D*
Louvre, butterfly damper (partially closed or closed)	*>3D*	*>6D*
Axial fan	*>3D*	*>8D (see Note)*
Centrifugal fan	*>3D*	*>6D*

NOTE: The plane should be selected as far as practicable from an axial fan. Flow straighteners may still be required to ensure that the selected position meets the criteria listed in Items (a) to (e) below:

An ideal sampling plane shall also meet criteria contained in items (a) to (e)

a. *The gas flow shall be in the same direction at all points along each sampling traverse;*
b. *The gas flow profile at the sampling plane shall be steady, evenly distributed and not have a cyclonic or swirl component which exceeds an angle of 15^{o} to the duct axis, when measured near the periphery of a circular sampling plane;*
c. *The temperature difference between adjacent points of the survey along each sampling traverse shall be less than 10% of the absolute temperature in kelvin, with the temperature at any point differing by less than 10% from the mean;*
d. *The ratio of the highest to lowest pitot tube differential pressure difference across the sampling plane shall not exceed 9:1. The ratio of highest to lowest gas velocities shall not exceed 3:1. For isokinetic testing with the use of impingers, the gas velocity ratio across the sampling plane should not exceed 1.6:1.*
e. *The differential pressure at all sampling points shall be greater than or equal to 5 Pa. Sampling planes with differential pressures less than 5 Pa do not conform with this document.*

In addition, the gas temperature at the sampling plane should be above the dewpoint.

The sampling plane meets the requirements of AS4323.1.

3.0 Methodology

3.1 Test Methods

pHE conducts stack emissions testing as per procedures outlined in the Australian Standards and NSW EPA approved methods (which are based off USEPA methods). The following methods are accredited with NATA (accreditation number 21069) and are approved for the sampling and analysis of gases. All sampling and analysis is conducted according to the methods in **Table 2**.

Table 2: pHE NATA Accredited Testing Methods and Measurement Uncertainty

NSW EPA Approved Methods	Method	Method Title	Measurement Uncertainty
TM-1	AS4323.1	Selection of sampling positions	N/A
TM-2	USEPA Method 2	Determination of stack gas velocity and volumetric flow rate (type s pitot tube)	9%
TM-4	USEPA Method 6C	Sulfur Dioxide (SO_2)	11%
TM-9	USEPA Method 13B	Fluorine (F_2)	11%
TM-11	USEPA Method 7E	Nitrogen dioxide (NO_2) or Nitric Oxide (NO)	11%
TM-12, 13 and 14	USEPA Method 29	Determination of metal emissions from stationary sources	16%
TM-15	AS4323.2	Determination of total particulate matter – isokinetic manual sampling – gravimetric method	14%
TM-18	USEPA Method 23	Dioxins & Furans	13%
TM-22	USEPA Method 4	Determination of moisture content in stack gases	18%
TM-23	USEPA Method 3	Gas analysis for the determination of dry molecular weight	11%
TM-24	USEPA Method 3A	Carbon Dioxide (CO_2) in stack gases	11%
TM-25	USEPA Method 3A	Oxygen (O_2) in stack gases	11%
TM-32	USEPA Method 10	Carbon Monoxide (CO) in stack gases	11%
TM-34	USEPA Method 18	Volatile Organic Compounds	15%
OM-5	USEPA Method 201 or 201A (as appropriate)	Determination of PM_{10} emissions	21%
OM-6	California EPA Air Resources Board Method 429	Polycyclic Aromatic Hydrocarbons (PAHs)	30%
-	USEPA OTM-29	Sampling and Analysis for Hydrogen Cyanide Emissions	19%

Note: Measurement Uncertainty has been calculated to two standard deviations or a confidence limit of 95% (coverage factor = 2)

3.2 Other NSW EPA Approved Methods

NSW EPA has approved in writing the use of the below listed method:

- Cyanide USEPA OTM-29

3.3 Equipment Calibrations

pHE has a calibration schedule to ensure the emission testing equipment is maintained in good order and with known calibration. Equipment used in this project was calibrated according to the procedures and frequency identified in the pHE calibration schedule. Details of the schedule and the calibration calculations are available on request.

4.0 Sample Location

4.1 Sampling Location Summary

Table 3 provides a summary of the location sampled by pHE on 24th May and 4th of June 2024.

Table 3: Sampling Location Summary

Discharge Description	Dust Collector Stack (EPL Point 6)
Duct Shape	Circular
Construction Material	Metal
Duct Diameter (mm)	1195
Minimum No. Sampling Points	12
Sampling Ports	2
Min. Points/Traverse	6
Distance from Upstream Disturbance	6.5D
Type of Disturbance	Centrifugal Fan
Distance from Downstream Disturbance	3.3D
Type of Disturbance	Stack Exit
Sampling Location Status	Ideal
Correction Factors Applied	No
Total No. Points Sampled	12
Points/Traverse	6
Sampling Performed to Standard *	Yes

* AS 4323.1 Stationary source emissions Method 1 – Selection of sampling positions

[1] AS 4323.1 Section 4.1

D = Diameters

4.2 Process Operating Conditions

On the days of testing, the plant operating conditions and production rate were considered typical by Regain personnel.

5.0 Results

A summary of results obtained from emissions testing performed on 24th May and 4th June 2024 is provided in **Table 4**. Calculated fine particulate aerodynamic cut sizes (D_{50}) for Fine Particulate (PM_{10}) are shown in **Table 5**.

Tables 6 & 7 show the calculated gas concentrations & mass emission rates respectively. **Tables 8-15** present detailed results along with gas stream properties during the testing period for:

- Fine Particulate (PM_{10}) and Total Particulate;
- Total Fluoride;
- Cyanide;
- Speciated Polycyclic Aromatic Hydrocarbons (PAH);
- Speciated Dioxins & Furans;
- Speciated Volatile Organic Compounds (VOC); and
- Speciated Hazardous Substances (Metals).

Emission concentrations are converted to standard conditions of 0°C, dry gas and 1 atmosphere pressure for comparison with appropriate guideline levels.

pHE has a calculated limit of uncertainty in regards to results. The estimation of measurement uncertainty in source testing is calculated to provide an indication of the precision of the measurement result and a degree of confidence in the range of values the reported result may represent. The measurement of uncertainty is shown in **Table 2**.

Field sheet data is provided in **Appendix 1** and analytical laboratory reports are provided in **Appendix 2. Appendix 3** presents the raw and calculated gas data recorded on site.

Table 4: Dust Collector Stack Results Summary, May and June 2024

Parameter	Units	Measured Result	Regulatory Limit
Cadmium	mg/m^3	<0.00025	-
Carbon Monoxide	mg/m^3	98	-
Cyanide	mg/m^3	<0.014	-
Dioxins & Furans – Lower Bound	ng/m^3	0.00043	-
Dioxins & Furans – Middle Bound	ng/m^3	0.0012	-
Dioxins & Furans – Upper Bound	ng/m^3	0.0021	-
Dry Gas Density #	kg/m^3	1.29	-
Fine Particulates (PM_{10})	mg/m^3	0.21	10
Flow #	m^3/s	10	-
Moisture #	%	1	-
Nitrogen Dioxide (Equivalent)	mg/m^3	3	-
Oxygen	%	20.4	-
Total Polycyclic Aromatic Hydrocarbons	mg/m^3	0.0027	-
Polycyclic Aromatic Hydrocarbons (BaP Equivalent)	mg/m^3	0.000012	-
Sulfur Dioxide	mg/m^3	<3	-
Temperature #	^oC	77.7	-
Total Fluoride	mg/m^3	0.29	-
Total Particulate (TP)	mg/m^3	0.50	20
Type 1 & Type 2 Substances	mg/m^3	0.012	-
Velocity #	m/s	12	-
Volatile Organic Compounds	mg/m^3	0.089	-

Parameters taken from Dioxins & Furans testing on 4th June

USEPA Method 201A, section 6.3.5 (Determination of combined PM2.5/PM10 Emissions) specifies that results are acceptable provided the calculated aerodynamic cut size (D_{50}) for the test lies between 9.0µm and 11.0µm.

Post sampling cut size calculations performed for the sampling conducted on the 4th of June 2024 are displayed in **Table 5**.

Table 5: Calculated Fine Particulate (PM10) Cut Sizes (D50), 4th June 2024

Parameter	Dust Collector
PM_{10} (D_{50})	9.8 µm

Table 6: Dust Collector - Calculated Gas Data, 4 June 2024

Parameter	Units	Measured Result	Regulatory Limit
Time Sampled	hh:mm	12:18– 13:20	-
Date Sampled	dd-mm-yyy	4-06-2024	-
Nitrogen Oxide	mg/m^3	1	-
Nitrogen Dioxide	mg/m^3	2	-
Oxides of Nitrogen	mg/m^3	2	-
Equivalent Nitrogen Dioxide	mg/m^3	3	-
Sulfur Dioxide	mg/m^3	<3	-
Carbon Monoxide	mg/m^3	98	-
Oxygen	%	20.4	-

Table 7: Dust Collector - Calculated Mass Emission Rates, 4 June 2024

Parameter	Units	Measured Result	Regulatory Limit
Time Sampled	hh:mm	12:18– 13:20	-
Date Sampled	dd-mm-yyy	4-06-2024	-
Stack Gas Flowrate (0°C, dry gas, 1 atm pressure)	m^3/s	10	-
Nitrogen Oxide	mg/s	10	-
Nitrogen Dioxide	mg/s	20	-
Oxides of Nitrogen	mg/s	20	-
Equivalent Nitrogen Dioxide	mg/s	30	
Sulfur Dioxide	mg/s	<30	-
Carbon Monoxide	mg/s	980	-

Table 8: Dust Collector - Fine Particulate (PM10) and Total Particulate, 4th June 2024

Sampling Conditions:				
Stack internal diameter at test location	1195	mm		
Stack gas temperature (average)	77.7	°C	350.9	K
Stack pressure (average)	1015	hPa		
Stack gas velocity (average, stack conditions)	12	m/s		
Stack gas flowrate (stack conditions)	14	m^3/s		
Stack gas flowrate (0°C, dry gas, 1 atm pressure)	10	m^3/s		
Fine Particulate (PM_{10}) Testing				
Test Period	10:23	-	11:37	
Fine Particulate (PM_{10}) Mass	0.2	mg		
Gas Volume Sampled	0.969	m^3		
Fine Particulate (PM_{10}) Emission*1	0.21	mg/m^3		
Fine Particulate (PM_{10}) Mass Emission Rate*2	2.2	mg/s		
Regulatory Limit	10	mg/m^3		
Total Particulate Testing				
Test Period	10:23	-	11:37	
Total Particulate Mass	0.6	mg		
Gas Volume Sampled	1.19	m^3		
Total Particulate Emission*1	0.50	mg/m^3		
Total Particulate Mass Emission Rate*2	5.2	mg/s		
Regulatory Limit	20	mg/m^3		
Moisture Content (%)	**1.1**			
Gas Density (dry at 1 atmosphere)	**1.29**	**kg/m^3**		
Dry Molecular Weight	**28.9**	**g/g-mole**		

Notes *1 Emission concentration at Standard conditions of 0°C, 1 atm, dry gas.
*2 Mass emission rate determined from pre and post sampling flow measurements and the respective test moisture content. See Q_{std} in field sheets and final calculations "Stack Analysis - Final Calculations" for each test.

Table 9: Dust Collector - Total Fluoride, Hazardous Substances (Metals) & Cadmium, 4 June 2024

Sampling Conditions:				
Stack internal diameter at test location	1195	mm		
Stack gas temperature (average)	78.6	°C	351.8	K
Stack pressure (average)	1014	hPa		
Stack gas velocity (average, stack conditions)	12	m/s		
Stack gas flowrate (stack conditions)	14	m^3/s		
Stack gas flowrate (0°C, dry gas, 1 atm pressure)	10	m^3/s		
Total Fluoride				
Test Period	12:15	-	13:35	
Total Fluoride Mass	0.27	mg		
Gas Volume Sampled	0.939	m^3		
Total Fluoride Emission*1	0.29	mg/m^3		
Total Fluoride Mass Emission Rate*2	3.0	mg/s		
Regulatory Limit	N/A			
Hazardous Substances (Metals)				
Test Period	12:15	-	13:35	
Hazardous Substances (Metals) Mass	0.014	mg		
Gas Volume Sampled	1.21	m^3		
Hazardous Substances (Metals) Emission*1	0.012	mg/m^3		
Hazardous Substances (Metals) Mass Emission Rate*2	0.13	mg/s		
Regulatory Limit	N/A			
Cadmium				
Test Period	12:15	-	13:35	
Cadmium Mass	<0.0003	mg		
Gas Volume Sampled	1.21	m^3		
Cadmium Emission*1	<0.00025	mg/m^3		
Cadmium Mass Emission Rate*2	<0.0026	mg/s		
Regulatory Limit	N/A	mg/m^3		
Moisture Content (%)	**1.4**			
Gas Density (dry at 1 atmosphere)	**1.29**	kg/m^3		
Dry Molecular Weight	**28.9**	g/g-mole		

Notes *1 Emission concentration at Standard conditions of 0°C, 1 atm, dry gas.
*2 Mass emission rate determined from pre and post sampling flow measurements and the respective test moisture content. See Q_{std} in field sheets and final calculations "Stack Analysis - Final Calculations" for each test.

Table 10: Dust Collector - Cyanide, 24 May 2024

Sampling Conditions:				
Stack internal diameter at test location	1195	mm		
Stack gas temperature (average)	80.5	ºC	353.7	K
Stack pressure (average)	1026	hPa		
Stack gas velocity (average, stack conditions)	16	m/s		
Stack gas flowrate (stack conditions)	18	m^3/s		
Stack gas flowrate (0°C, dry gas, 1 atm pressure)	14	m^3/s		
Cyanide Testing				
Test Period	9:32	-	10:45	
Cyanide Mass	<0.01	mg		
Gas Volume Sampled	0.733	m^3		
Cyanide Emission*[1]	<0.014	mg/m^3		
Cyanide Mass Emission Rate*[2]	<0.19	mg/s		
Regulatory Limit	N/A	mg/m^3		
Moisture Content (%)	**1.9**			
Gas Density (dry at 1 atmosphere)	**1.29**	**kg/m^3**		
Dry Molecular Weight	**28.9**	**g/g-mole**		

Notes *1 Emission concentration at Standard conditions of 0°C, 1 atm, dry gas.
*2 Mass emission rate determined from pre and post sampling flow measurements and the respective test moisture content. See Q_{std} in field sheets and final calculations "Stack Analysis - Final Calculations" for each test.

Table 11: Dust Collector - Dioxins & Furans & PAH Results, 4 June 2024

Sampling Conditions:				
Stack internal diameter at test location	1195	mm		
Stack gas temperature (average)	77.7	°C	350.9	K
Stack pressure (average)	1015	hPa		
Stack gas velocity (average, stack conditions)	12	m/s		
Stack gas flowrate (stack conditions)	14	m^3/s		
Stack gas flowrate (0°C, dry gas, 1 atm pressure)	10	m^3/s		
Polycyclic Aromatic Hydrocarbon Testing *3				
Test Period	10:00	-	12:00	
Polycyclic Aromatic Hydrocarbon Mass	0.005	mg		
Gas Volume Sampled	1.85	m^3		
Polycyclic Aromatic Hydrocarbon Emission*1	0.0027	mg/m^3		
Polycyclic Aromatic Hydrocarbon Mass Emission Rate*2	0.028	mg/s		
Regulatory Limit	N/A	mg/m^3		
Dioxins & Furans Lower Bound Testing				
Test Period	10:00	-	12:00	
Dioxins & Furans Lower Bound Mass	0.00079	ng		
Gas Volume Sampled	1.85	m^3		
Dioxins & Furans Lower Bound Emission*1	0.00043	ng/m^3		
Dioxins & Furans Lower Bound Mass Emission Rate*2	0.0045	ng/s		
Regulatory Limit	N/A	ng/m^3		
Dioxins & Furans Middle Bound Testing				
Test Period	10:00	-	12:00	
Dioxins & Furans Middle Bound Mass	0.0023	ng		
Gas Volume Sampled	1.85	m^3		
Dioxins & Furans Middle Bound Emission*1	0.0012	ng/m^3		
Dioxins & Furans Middle Bound Mass Emission Rate*2	0.013	ng/s		
Regulatory Limit	N/A	ng/m^3		
Dioxins & Furans Upper Bound Testing				
Test Period	10:00	-	12:00	
Dioxins & Furans Upper Bound Mass	0.0038	ng		
Gas Volume Sampled	1.85	m^3		
Dioxins & Furans Upper Bound Emission*1	0.0021	ng/m^3		
Dioxins & Furans Upper Bound Mass Emission Rate*2	0.022	ng/s		
Regulatory Limit	N/A	ng/m^3		
Moisture Content (%)	**1.0**			
Gas Density (dry at 1 atmosphere)	**1.29**	**kg/m^3**		
Dry Molecular Weight	**28.9**	**g/g-mole**		

Notes *1 Emission concentration at Standard conditions of 0°C, 1 atm, dry gas.

*2 Mass emission rate determined from pre and post sampling flow measurements and the respective test moisture content. See Q_{std} in field sheets and final calculations "Stack Analysis - Final Calculations" for each test.

*3 Result reported as raw PAH. Please refer to speciated results in **Table 12** below for conversion to B(a)P equivalents.

Table 12: Dust Collector - Speciated Polycyclic Aromatic Hydrocarbon Results, 4 June 2024

	Sample Result		Emission		Mass Emission Rate		Toxic Equivalency Factors	Emission as B(a)P Equivalent (mg/m3)
	(µg)	(mg)	(µg/m3)	(mg/m3)	(µg/s)	(mg/s)		
Naphthalene	1.8	0.0018	0.97	0.00097	10	0.01	N/A	-
2 - Methylnapthalene	0.78	0.00078	0.42	0.00042	4.4	0.0044	N/A	-
Acenaphthylene	0.098	0.000098	0.053	0.000053	0.56	0.00056	N/A	-
Acenaphthene	0.14	0.00014	0.076	0.000076	0.79	0.00079	N/A	-
Fluorene	0.54	0.00054	0.29	0.00029	3.1	0.0031	N/A	-
Phenanthrene	0.85	0.00085	0.46	0.00046	4.8	0.0048	N/A	-
Anthracene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	N/A	-
Fluoranthene	0.46	0.00046	0.25	0.00025	2.6	0.0026	N/A	-
Pyrene	0.2	0.0002	0.11	0.00011	1.1	0.0011	N/A	-
Benz(a)anthracene	0.021	0.000021	0.011	0.000011	0.12	0.00012	0.1	0.0000011
Chrysene	0.062	0.000062	0.034	0.000034	0.35	0.00035	0.01	0.00000034
Benzo(b)fluoranthene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	0.1	<0.0000011
Benzo(k)fluoranthene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	0.1	<0.0000011
Benzo(e)pyrene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	N/A	-
Benzo(a)pyrene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	1.0	<0.000011
Perylene	<0.02	<0.00002	<0.011	<0.000011	<0.11	<0.00011	N/A	-
Indeno(123:cd)pyrene	<0.025	<0.000025	<0.014	<0.000014	<0.14	<0.00014	0.1	<0.0000014
Dibenzo(ah)anthracene	<0.025	<0.000025	<0.014	<0.000014	<0.14	<0.00014	0.4	<0.0000056
Benzo(ghi)perylene	<0.025	<0.000025	<0.014	<0.000014	<0.14	<0.00014	N/A	-
Sum of Reported PAH's	**5**	**0.005**	**2.7**	**0.0027**	**28**	**0.028**	**-**	**0.000012**

*Toxic equivalency factors have been adopted from the Approved Methods for the Modelling of Air Pollutants in New South Wales (EPA 2017).
N/A = No TEF available for these gas phase PAH's.
Sum of PAH's are Lower Bound results (excluding LOR Values).

Table 13: Dust Collector - Speciated Dioxins & Furans Results, 4 June 2024

Analyte	Mass ng	Toxic Equivalency Factor (1 - TEFs)	Total Toxic Equivalence (1 - TEQs) ng	Concentration ng/m^3	Total Toxic Equivalence (1-TEQs) ng/m^3
2,3,7,8-TCDF	<0.002	0.1	0.0001	<0.0011	0.000054
Total TCDF isomers	0.052				
2,3,7,8-TCDD	<0.002	1	0.001	<0.0011	0.00054
Total TCDD isomers	0.0072				
1,2,3,7,8-PeCDF	0.0019	0.05	0.000095	0.001	0.000051
2,3,4,7,8-PeCDF	0.00092	0.5	0.00046	0.0005	0.00025
Total PeCDF isomers	0.014				
1,2,3,7,8-PeCDD	<0.001	0.5	0.00025	<0.00054	0.00014
Total PeCDD isomers	0.0075				
1,2,3,4,7,8-HxCDF	<0.0007	0.1	0.000035	<0.00038	0.000019
1,2,3,6,7,8-HxCDF	0.0011	0.1	0.00011	0.00059	0.000059
2,3,4,6,7,8-HxCDF	0.00063	0.1	0.000063	0.00034	0.000034
1,2,3,7,8,9-HxCDF	<0.0008	0.1	0.00004	<0.00043	0.000022
Total HxCDF isomers	0.0096				
1,2,3,4,7,8-HxCDD	<0.0006	0.1	0.00003	<0.00032	0.000016
1,2,3,6,7,8-HxCDD	<0.0006	0.1	0.00003	<0.00032	0.000016
1,2,3,7,8,9-HxCDD	<0.0006	0.1	0.00003	<0.00032	0.000016
Total HxCDD isomers	0.0083				
1,2,3,4,6,7,8-HpCDF	0.0026	0.01	0.000026	0.0014	0.000014
1,2,3,4,7,8,9-Hp CDF	<0.0005	0.01	0.0000025	<0.00027	0.0000014
Total HpCDF isomers	0.0031				
1,2,3,4,6,7,8-HpCDD	0.003	0.01	0.00003	0.0016	0.000016
Total HpCDD isomers	0.0063				
OCDF	0.0013	0.001	0.0000013	0.0007	0.0000007
OCDD	0.0077	0.001	0.0000077	0.0042	0.0000042
I-TEQ$_{DF}$					
Lower Bound (excluding LOD Values)			**0.00079 ng**		
Middle Bound (including half LOD Values)			**0.0023 ng**		
Upper Bound (including LOD Values)			**0.0038 ng**		

Table 14: Dust Collector - Speciated Volatile Organic Carbon Results, 4 June 2024

Analyte	Sample µg	Blank µg	Sample Blank Corrected µg	(mg/m^3)	mg/s
Acetone	<2.0	<2.0	<2.0	<0.18	<1.8
1,1-dichloroethane	<1.0	<1.0	<1.0	<0.089	<0.89
2-Butanone	<1.0	<1.0	<1.0	<0.089	<0.89
Chloroform	<1.0	<1.0	<1.0	<0.089	<0.89
Benzene	<1.0	<1.0	<1.0	<0.089	<0.89
1-heptene	<1.0	<1.0	<1.0	<0.089	<0.89
n-heptane	<1.0	<1.0	<1.0	<0.089	<0.89
Trichloroethene	<1.0	<1.0	<1.0	<0.089	<0.89
MIBK	<1.0	<1.0	<1.0	<0.089	<0.89
Toluene	1.5	<1.0	1.0	0.089	0.89
2-hexanone	<1.0	<1.0	<1.0	<0.089	<0.89
Chlorobenzene	<1.0	<1.0	<1.0	<0.089	<0.89
Ethyl Benzene	<1.0	<1.0	<1.0	<0.089	<0.89
m- & p-xylene	<2.0	<2.0	<2.0	<0.18	<1.8
o-xylene	<1.0	<1.0	<1.0	<0.089	<0.89
Styrene	<1.0	<1.0	<1.0	<0.089	<0.89
Isopropylbenzene	<1.0	<1.0	<1.0	<0.089	<0.89
2-chlorotoluene	<1.0	<1.0	<1.0	<0.089	<0.89
4-chlorotoluene	<1.0	<1.0	<1.0	<0.089	<0.89
1,3,5-trimethylbenzene	<1.0	<1.0	<1.0	<0.089	<0.89
n-decane	<1.0	<1.0	<1.0	<0.089	<0.89
1,2,4-trimethylbenzene	<1.0	<1.0	<1.0	<0.089	<0.89
1,3-dichlorobenzene	<1.0	<1.0	<1.0	<0.089	<0.89
1,4-dichlorobenzene	<1.0	<1.0	<1.0	<0.089	<0.89
1,2-dichlorobenzne	<1.0	<1.0	<1.0	<0.089	<0.89
n-butylbenzene	<1.0	<1.0	<1.0	<0.089	<0.89
Hexachlorobutadiene	<1.0	<1.0	<1.0	<0.089	<0.89
Total	**1.5**		**1.0**	**0.089**	**0.89**

Note: Where the blank has returned a less than value, the analysed value has been corrected for half of that blank value. i.e. a blank value of <0.5 has had 0.25 subtracted from the analysed value.
Total VOC are Lower Bound results (excluding LOR Values).

Table 15: Dust Collector - Hazardous Substances (Metals) Elemental Analysis Results, 4 June 2024

Sample	Total Particulate Metals (mg)	Total Particulate Metals (mg/m^3)	Total Gaseous Metals (mg)	Total Gaseous Metals (mg/m^3)	Total Oxidisable Mercury (mg)	Total Oxidisable Mercury (mg/m^3)	Total (mg)	Total (mg/m^3)	Mass Emission Rate (mg/s)
Antimony	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Arsenic	0.0003	0.00025	<0.0015	<0.0012			0.00030	0.00025	0.0026
Beryllium	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Cadmium	<0.0003	<0.00025	<0.0003	<0.00025			<0.0003	<0.00025	<0.0026
Chromium	0.0013	0.0011	<0.0015	<0.0012			0.0013	0.0011	0.012
Cobalt	<0.0006	<0.0005	<0.0006	<0.0005			<0.0006	<0.0005	<0.0052
Copper	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Lead	0.0011	0.00091	<0.0006	<0.0005			0.0011	0.00091	0.0095
Magnesium	0.09	0.074	<0.03	<0.025			0.090	0.074	0.77
Manganese	0.0047	0.0039	0.0048	0.004			0.0095	0.0078	0.082
Mercury	<0.0005	<0.00041	<0.0005	<0.00041	<0.0005	<0.00041	<0.0005	<0.00041	<0.0043
Nickel	0.0015	0.0012	<0.0015	<0.0012			0.0015	0.0012	0.013
Selenium	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Thallium	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Tin	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Vanadium	<0.003	<0.0025	<0.003	<0.0025			<0.003	<0.0025	<0.026
Zinc	1.5	1.2	0.002	0.0017			1.5	1.2	13
Total Hazardous Metals*	**0.0089**	**0.0074**	**0.0048**	**0.004**	**<0.0005**	**<0.00041**	**0.014**	**0.012**	**0.13**
Total Metals	**1.6**	**1.3**	**0.0068**	**0.0057**			**1.6**	**1.3**	**14**

*Total does not include Copper, Magnesium, Zinc and Thallium as they are not classed as a Type 1 or Type 2 Substance.

6.0 Conclusion

This concludes the stack emissions testing report. If there are any questions relating to this sampling event, please do not hesitate to contact either Nick Stanning or Dylan Flannery of pHE.

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