

25 September 2019

Chris Callaghan
Mirvac Construction Pty Ltd
Via email: chris.callaghan@mirvac.com

**Air Quality Assessment of Blacksmith Operations
South Eveleigh Locomotive Workshops, Sydney NSW**

Dear Chris,

1. Introduction

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Mirvac Projects Pty Ltd (Mircvac, the client) for the provision of environmental and occupational hygiene services associated with remediation and redevelopment of the Locomotive Workshops building located in South Eveleigh NSW. The existing blacksmith's workshop tenancy located in Bays 1 and 2 South will continue to remain operational both throughout the construction phase as well as during post redevelopment use of the building.

1.1 Background

As part of the redevelopment, Mirvac has been given approval for the urban regeneration of the Locomotive Workshops for ongoing commercial land uses. The development will largely involve internal remodelling of the building with the heritage structure to be retained. Development Application (DA 8517) proposes adaptive reuse of Bays 1 and 2 of the Locomotive Workshops, herein referred to as the site (**Figures 1 and 2, Attachment 2**). The proposed redevelopment of the site will comprise retail spaces in the northern half of Bays 1 and 2 on both the ground floor and level 1 (refer **Figure 2, Attachment 2**), including food and beverage handling areas, as well as retention of the existing blacksmith's workshop, currently occupying the southern half of Bays 1 and 2.

In April 2018, Mirvac requested JBS&G undertake testing to assess air quality whilst blacksmithing activities were being conducted. This assessment, as documented in JBS&G (2018¹) was completed to assess the potential for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and/or heavy metal emissions from the blacksmithing operations, and the potential for emissions to adversely affect air quality for current and future users of the building.

The results of JBS&G (2018) identified that based on the airborne sampling and analysis as undertaken during blacksmithing activities, that the blacksmithing was not considered to pose a potential health risk to co-occurring retail uses (including food handling and distribution) within the building. However, it is noted that the large oil fuelled furnace located within Bay 1 of the blacksmith's workshop (Big Major Oil Furnace), was not operational during this initial assessment. Furthermore, the process of quenching fired steel in oil baths was not captured at this time of sampling. Thus, it was requested that additional testing be conducted whilst the large furnace and quenching bath activities were in operation to further evaluate air quality conditions.

¹ *Blacksmith's Workshop Ambient Air Assessment, Locomotive Workshop Bays 1 – 2 – Australian Technology Park, Eveleigh, NSW. Dated 3 April 2018, ref. 51142/114652 (JBS&G 2018)*

1.2 Objectives

The objective of the investigation is to assess whether emissions from the Big Major Oil Furnace and oil bath quenching processes has an adverse effect on air quality, and to assess the risk to current and future workers and building users.

2. Scope of Assessment

Following on from the initial testing, Mirvac requested that additional air sampling be undertaken to specifically target air quality during operation of the large oil fuelled furnace and oil bath to assess risks to building users and workers.

JBS&G was advised that the fuel source for the large furnace comprises used heavy fuel oil. As such, the following combination of air quality parameters were assessed:

- Aesthetic conditions / visual emissions and odour (qualitative);
- Volatile organic compound (VOCs);
- Polycyclic aromatic hydrocarbons (PAHs);
- Elemental carbon, measured as diesel particulate matter (DPM);
- Heavy metals;
- Respirable particles measured as total suspended particulates (TSP); and
- Carbon monoxide (CO) and nitrous oxides (NOx) (real-time monitoring).

The primary furnace assessment was conducted on 02 May 2019, with supplementary CO monitoring undertaken on 12 August 2019. Assessment of air quality during oil bath quenching was conducted on 13 August 2019.

The scope of works completed for this assessment comprised:

- Collection of ambient air samples from seven locations (refer to **Figure 2**) from within Bay 1 of the Locomotive Workshops during oil furnace and quenching bath operations. Samples were collected in the immediate vicinity of the furnace and oil bath, at the midway point between Bay 1 north and south (the 'railway tracks') and from the approximate centre of Bay 1 north adjacent to the Davy Press (**Figure 2**). Given re-development works will be occurring throughout the vertical profile of the internal building space, samples were collected from a combination of heights including a nominal adult respiration height (1.5m) as well as at roof truss height (8m) to assess various working conditions;
- Recording spot CO and NOx levels in air at the aforementioned sample locations. Real-time instantaneous concentrations of CO and NOx were collected at sample locations during furnace and oil bath operations using calibrated multi-gas meter instruments;
- Laboratory analysis of collected air samples for contaminants of potential concern (COPC) including, VOCs, PAHs, elemental carbon, heavy metals and respirable particles; and
- Evaluation of field measurements and laboratory analysis data, and subsequent documentation of the activities, laboratory analysis results and assessment outcomes.

In June 2019, a separation wall constructed from scaffolding and fibre reinforced plastic was installed at the midway point between Bays 1-2 North and South. The purpose of this wall is to provide a level of isolation to blacksmithing operations from redevelopment activities and *vice versa* during the construction phase of the building. This wall will be deconstructed and removed at the conclusion of construction works. It is noted that the main furnace assessment was conducted prior

to construction of this wall and the supplementary furnace CO monitoring and oil bath testing was conducted post construction of the wall. Nonetheless, this was incorporated into the air testing strategy and it is considered that the presence of this wall has not significantly affected the overall outcome of this assessment.

3. Assessment Criteria

A range of assessment criteria have been derived to assess the potential for adverse effects to building occupants during operation of the large furnace and oil bath, and as such a range of sources of assessment criteria have been referred to. The assessment criterion for each constituent assessed are summarised in **Table 3.1** below. A brief description of the source, derivation and applicability of the criterion is further provided in **Table 3.1**.

Table 3.1: Summary of Adopted Assessment Criteria for Airborne Constituents

Constituent	Assessment Criteria (mg/m ³)	Source and Derivation
Heavy Metals		
Arsenic	0.005	Occupational criteria adopted with a safety factor of 10 incorporated for potential sensitive receptors whom may be present within proposed retail / speciality commercial use areas of the building. Occupational criteria have been preferred as the derivation of the criteria is specific to the form of each metal as would be anticipated in an industrial setting such as a Blacksmith’s workshop. Given the increased activity in the blacksmith’s workshop at the time of sampling and the sample duration, based on a commercial / industrial (i.e. occupational) exposure is also consistent with the worst case exposure scenario anticipated with the co-existing uses. <i>Workplace Exposure Standards for Airborne Contaminants</i> , 18 April 2013, Safe Work Australia (SWA 2013) Cr criterion as based on Cr(VI) as the lowest of available criterion
Cadmium	0.001	
Chromium (Cr)	0.005	
Copper	0.1	
Lead	0.015	
Manganese	0.1	
Nickel	0.1	
Tin	0.2	
Zinc	1.0	
PAHs		
Naphthalene	0.014	Reference concentration as nominated by <i>Vapour Intrusion: Technical Practice Note</i> , September 2010, NSW Department of Environment, Climate Change and Water (DECCW 2010). Increased by factor of (24/8) hours *(365/240) days to account for reduced exposure within a commercial / industrial setting.
Benzo(a)pyrene (carcinogenic PAHs)	0.02	Adopted as consistent with current ACGIH guidance as nominated in <i>Polycyclic Aromatic Hydrocarbons (PAHs) and Occupational Health Issues Position Paper</i> , June 2016, Australia Institute of Occupational Hygienists. This value has been reduced by an order of magnitude consistent with requirements for the protection of potentially sensitive receptors.
VOCs		
Benzene	0.008	DECCW (2010) adjusted for commercial / industrial duration
Toluene	1.2	DECCW (2010) adjusted for commercial / industrial duration
Ethylbenzene	5.9	DECCW (2010) adjusted for commercial / industrial duration
Xylenes	4.0	DECCW (2010) adjusted for commercial / industrial duration

Constituent	Assessment Criteria (mg/m ³)	Source and Derivation
Chloromethane	0.082	DECCW (2010) adjusted for commercial / industrial duration
Chloroform	0.64	DECCW (2010) adjusted for commercial / industrial duration
Vinyl chloride	0.005	DECCW (2010) adjusted for commercial / industrial duration
1,1-dichloroethene	0.91	DECCW (2010) adjusted for commercial / industrial duration
Cis-1,2-dichloroethene	0.14	DECCW (2010) adjusted for commercial / industrial duration
1,2-dichloroethane	3.2	DECCW (2010) adjusted for commercial / industrial duration
1,1,1-trichloroethane	23	DECCW (2010) adjusted for commercial / industrial duration
Trichloroethene	0.1	DECCW (2010) adjusted for commercial / industrial duration
Tetrachloroethene	0.91	DECCW (2010) adjusted for commercial / industrial duration
<i>Combustion Products</i>		
DPM as Elemental Carbon (soot)	0.1	The Australian Institute of Occupational Hygienists (AIOH, 2013) recommends that worker exposures to DPM, measured as submicron elemental carbon (EC), should be controlled to concentrations not exceeding 0.1 mg/m ³ for a time weighted average (TWA) 8 hour work shift.
Particulate Matter as TSP	1	An exposure limit of non-crystalline / not otherwise regulated respirable dust has been adopted based on recommendations made by the Australian Institute of Occupational Hygienists.
CO	50 ppm	US Occupational Safety and Health Administration permissible exposure limit (PEL).
NO	25 ppm	
NO ₂	5 ppm	

It is noted that the assessment criteria are not provided for the full suite of compounds as assessed. However, assessment criteria have been provided for the most common constituents that would be anticipated to occur in industrial emissions. Where constituents are present other than those nominated in **Table 3.1**, they would be reasonably considered to co-occur with the constituents as listed. To this extent, assessment of the constituents in **Table 3.1** will be appropriately protective of the potential co-occurrence of other constituents as may be present in air.

4. Findings and Observations

JBS&G was advised by the head blacksmith that the fuel source for the large furnace comprises recycled (used and filtered) heavy fuel oil (branded Fuel Oil 500), which operates at an efficiency of approximately 20 litres / hour (120 litres / 6-hour operation shift). The oil furnace typically operates no more than twice a week for duration of 3 to 6 hours each fire-up (up to 12 hours a week in total). Oil quenching occurs as required depending on workload, typically 4-6 times a month for not longer than two hours each shift. The bath is filled with a specialised quenching oil of medium viscosity.

Sampling and assessment were conducted on 2 May and 12 – 13 August 2019 by Aaron Smith, one of JBS&G's experienced occupational hygienists. Sampling durations at each of the sampling locations were representative of a typical working shift for each activity. Photographs taken during the assessment are included as **Attachment 3**. Field notes documenting the sampling event are included in **Attachment 4**.

Two conditions were observed during oil furnace operation:

- The period noted as 'furnace start-up'. The furnace was observed to emit thick black smoke for approximately 20 to 30 minutes following start up, this smoke accumulated below the internal roof apex; and
- The period noted as 'post start-up'. After approximately 20-30 minutes of use, the furnace was observed to emit notably less visible smoke, resultant of the furnace running more efficiently once the internal refractory had heated to a high temperature. Black smoke accumulated below the roof apex was slowly released to atmosphere via the roof louvres.

A moderate 'fume' odour was evident in Bays 1 and 2 whilst the oil furnace was in operation. The fume odour was particularly evident higher in the roof structure, i.e. at truss height, as smoke and fumes accumulated below the roof apex. Whilst the roof louvres and southern double doors were open at the time of furnace operation, the practical rate of natural passive ventilation within the workshops building at the time of assessment was limited.

Quenching activities comprised dipping and swirling of forged and fired items, in this case jackhammer chisels, into a bath of oil to slowly cool the steel. A grinder is then used to detail the steel before it completely cools. An active extraction hood with small exhaust fan is installed approximately 1.5 metres above the oil bath to capture released smoke. The extraction hood did not have fabricated sides and appeared to be ineffective in capturing and ventilating the smoke generated during the quench activity, particularly when the grinder was used which spread the smoke laterally.

5. Results and Comparison to Assessment Criteria

5.1 Chemical Constituents

Laboratory analytical results and instantaneous gas measurements as derived from the sampling works are presented as **Attachment 5**. Apart from several insignificant excursions above the relevant detection limits, e.g. toluene, all reported chemical constituents were either below relevant detection limits and/or the adopted assessment criteria respectively. It is noted that the reported average concentration of toluene is an order of magnitude below the adopted assessment criteria.

A further comparison has been made of the laboratory detection limit achieved to the scale of the assessment criteria proposed. In general, the lowest laboratory detection achieved for the heavy metals was at least an order of magnitude below the adopted assessment criterion. The lowest of the detection limits for PAHs was below the adopted assessment criterion, and the lowest of the detection limits for VOCs was similarly below the relevant adopted assessment criterion. On this basis, suitable sensitivity has been achieved with regard to the sampling/laboratory analysis completed for this assessment.

5.2 Combustion Products

Combustion gas data is presented with laboratory reports in **Attachment 5**.

Nitrous oxide (NO_x) concentrations were reported below the instrument detection limits in all readings at all sampling locations. Levels of elemental carbon measured as DPM during all furnace and oil bath testing were well below the adopted criteria of 0.1 mg/m³. Whilst all levels of respirable particles (TSP) measured during furnace and oil bath testing were also below the adopted criteria of 1 mg/m³, it is noted that the sample collected during oil bath quenching was at a concentration of 0.95 mg/m³, only marginally below the adopted criteria. This sample was collected in the smoke stream immediately adjacent to the oil bath hood and is representative of a worst case exposure.

From the assessment of the combustion products, CO in air concentrations were reported at a maximum instantaneous concentration of 53 ppm at start-up and at one location (Location 1, 1.5m height, directly above mouth of furnace), exceeding the adopted assessment criteria of 50 ppm. Apart from other outlying readings of 50 ppm and 19 ppm, all other CO concentration readings were either very low or below the instrument detection limit. The adopted assessment criterion, as based on a PEL, is intended to be applied to an 8 hour duration. In consideration of the whole data set, CO concentrations are considered not to have exceeded the adopted criterion for the 8 hour duration.

As a result of the CO exceedance of 53 ppm at Location 1 on 2 May 2019, at the request of Mirvac additional CO monitoring was conducted on 12 August 2019 at three locations between the roof apex and ground height in Bay 1 North. This additional CO monitoring was conducted for the duration of a full furnace working shift following erection of the barrier wall dividing the north and south of Bays 1 and 2. The results of this supplementary CO monitoring for Bay 1 North is summarised in **Table 5.2.1** below.

Table 5.2.1: Carbon Monoxide Data Summary – Supplementary Furnace Monitoring

Maximum / Peak CO Detect (ppm)	Average CO Detect (ppm)	Maximum CO TWA (ppm)
Location 4 – Roof apex at central point between Bay 1 north and south (adjacent uppermost gap in separation wall)		
34	2.2	3.5
Location 6 – Roof truss height (bottom chord) to adjacent south of Davy Press		
1	0	0
Location 5 – Ground level (1.5m) to adjacent south of Davy Press		
0	0	0

As summarised in **Table 5.2.1** the results of all supplementary CO monitoring conducted were below the adopted assessment criteria of 50 ppm. Similarly CO monitoring data collected during oil quenching operations (Location 7, see **Photograph 10, Attachment 3**) did not exceed 1.0 ppm and was well below the adopted criteria of 50 ppm.

6. Summary and Conclusions

Based on the above, and in accordance with the limitations provided as **Attachment 1**, the conclusions of the air quality assessment are presented as follows:

- The quantitative results of the air quality assessment conducted for representative oil furnace and oil quenching operations in Bay 1-2 South, does not indicate a health risk to the construction workforce or future building occupants; and
- From an aesthetic perspective, a moderate smoke haze and ‘fume’ odour was evident in Bays 1 and 2 when the oil furnace was in operation. Whilst this does not present a health risk, such visual and olfactory conditions could potentially be perceived as unhealthy. Similarly, smoke generated during oil quenching could raise questions or concerns by building users (refer **Photographs, Attachment 3**).

6.1 Considerations

Whilst no further actions are necessary based on the results of the air testing conducted, the following considerations are provided:

- In attempt to improve aesthetic conditions (visible smoke and odour), a ventilation consultant could be engaged to design a system to more efficiently capture, direct and exhaust emissions and smoke generated during furnace and oil quenching operations. Additionally, converting the furnace to operate using a clearer burning fuel source, such as

LPG gas could also improve aesthetic conditions. Further assessment of air quality should be conducted following any ventilation or fuel source upgrades to confirm that changes have not adversely affected air conditions;

- Whilst all results for respirable particles (TSP) measured during furnace and oil bath testing were below the adopted criteria, it is noted that one sample collected during oil bath quenching was reported at a concentration of 0.95 mg/m³, only marginally below the adopted criteria of 1 mg/m³. This sample was collected in the direct smoke stream immediately adjacent to and above the oil bath and is considered representative of a worst case scenario. Although actual occupational exposures are likely to be significantly less, it is recommended that the blacksmith is informed of this outcome for the purpose of internal workplace risk assessment. Furthermore, to close this out and confirm that actual worker exposure is acceptable, the blacksmith could arrange for occupational (breathing zone) sampling for respirable particles during a representative oil quenching shift.

Should you require clarification, please contact the undersigned on 0402 058 230 or by email ajsmith@jbsg.com.au.

Yours sincerely:

Approved by:



Aaron Smith
Occupational Hygienist (LAA 001001)
JBS&G Australia Pty Ltd



Joanne Rosner
Principal, NSW Operations Manager
JBS&G Australia Pty Ltd

Attachments:

- 1) Limitations
- 2) Figures
- 3) Photographs
- 4) Sampling Notes
- 5) Laboratory Certificates of Analysis and Chain of Custody Documentation

Attachment 1 – Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

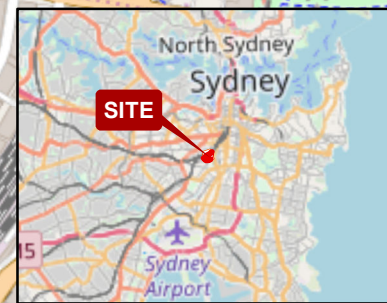
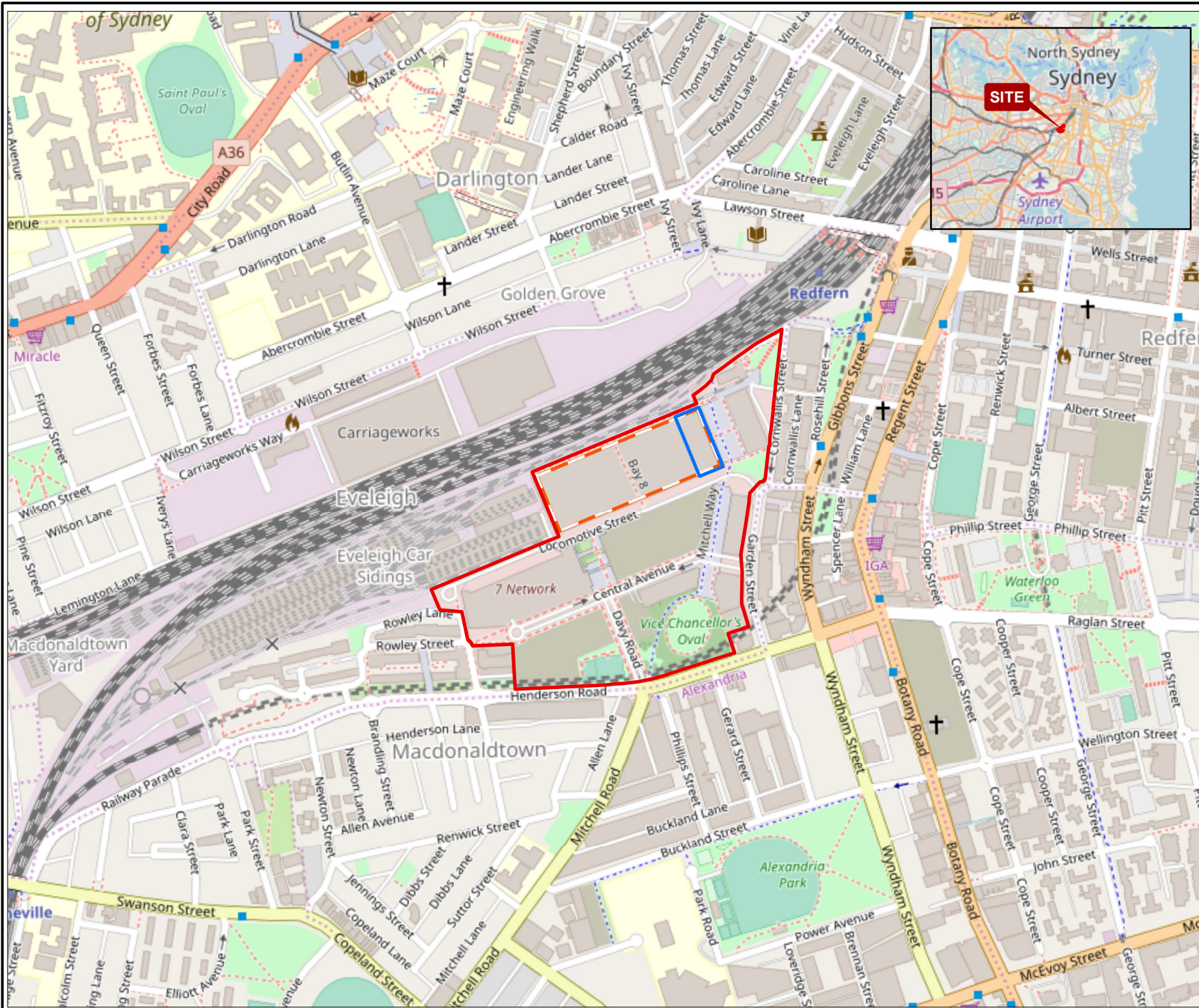
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Attachment 2 – Figures



- Legend:**
- Approximate ATP Boundary
 - Approximate Boundary - Locomotive Workshop
 - Site



Job No: 51142

Client: Mirvac

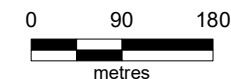
Version: L125 Rev 1

Date: 20/05/2019

Drawn By: RF/AV

Checked By: JL/AS

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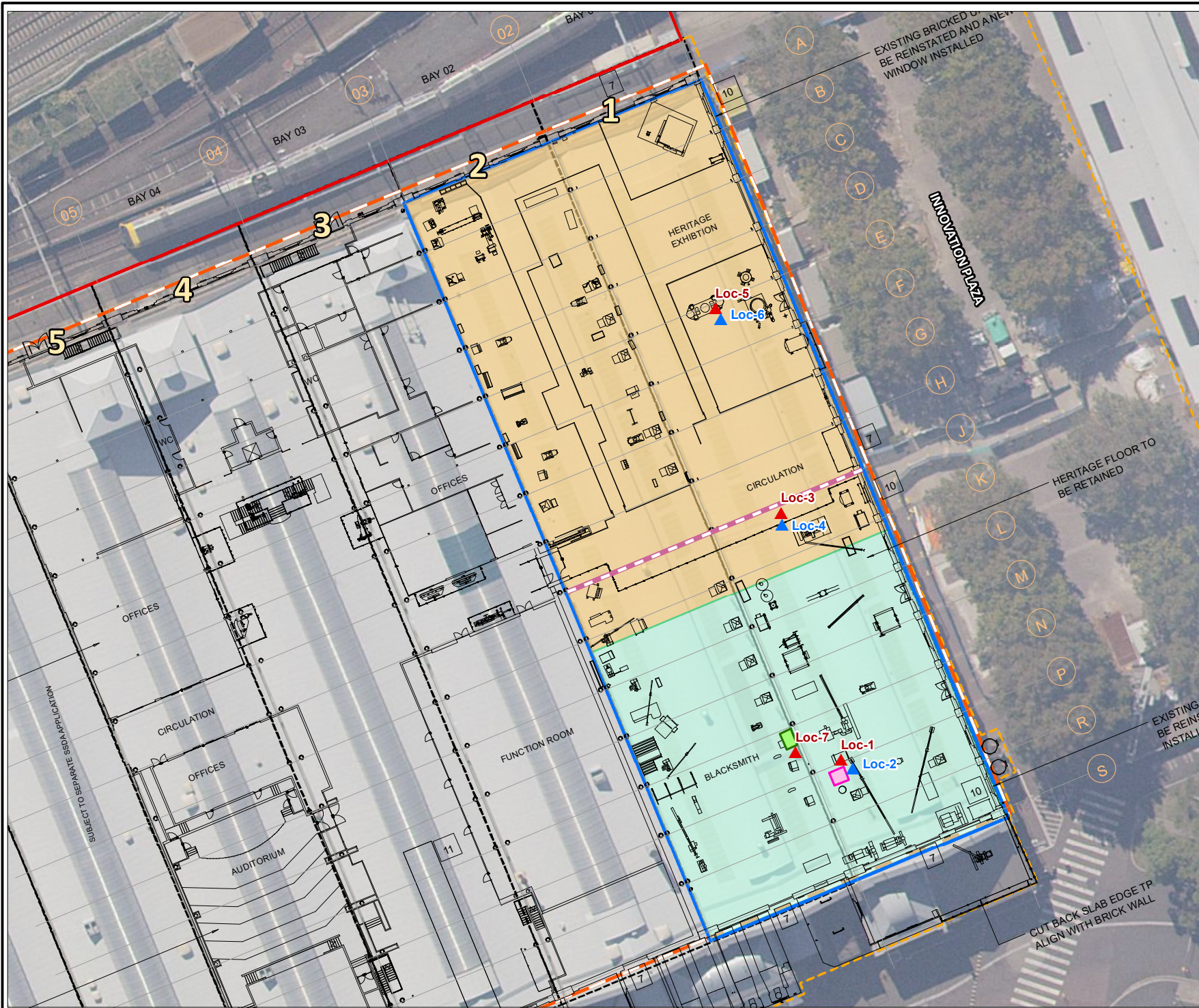


Coor. Sys. GDA 1994 MGA Zone 56

**Australia Technology Park
Eveleigh, NSW**

SITE LOCATION

FIGURE 1



- Legend:**
- Approximate ATP Boundary
 - Approximate Boundary - Locomotive Workshop
 - Cadastral Boundaries
 - Locomotive Workshop - Bay Number
 - Site
 - Mirvac Work Area
 - Blacksmiths Area
 - Oil Quenching Bath
 - Large Furnace Location
 - Separation Wall
- Sample Locations**
- ▲ Respirable Height (1.5m)
 - ▲ Roof Level



Job No: 51142

Client: Mirvac

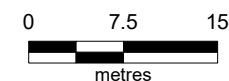
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Date: 10/09/2019

Drawn By: CA/RF/AV

Checked By: JL/AS

Scale 1:600



Coor. Sys. GDA 1994 MGA Zone 56

**Australia Technology Park
Eveleigh, NSW**

**SITE LAYOUT AND
SAMPLE LOCATIONS**

FIGURE 2

Attachment 3 – Photographs



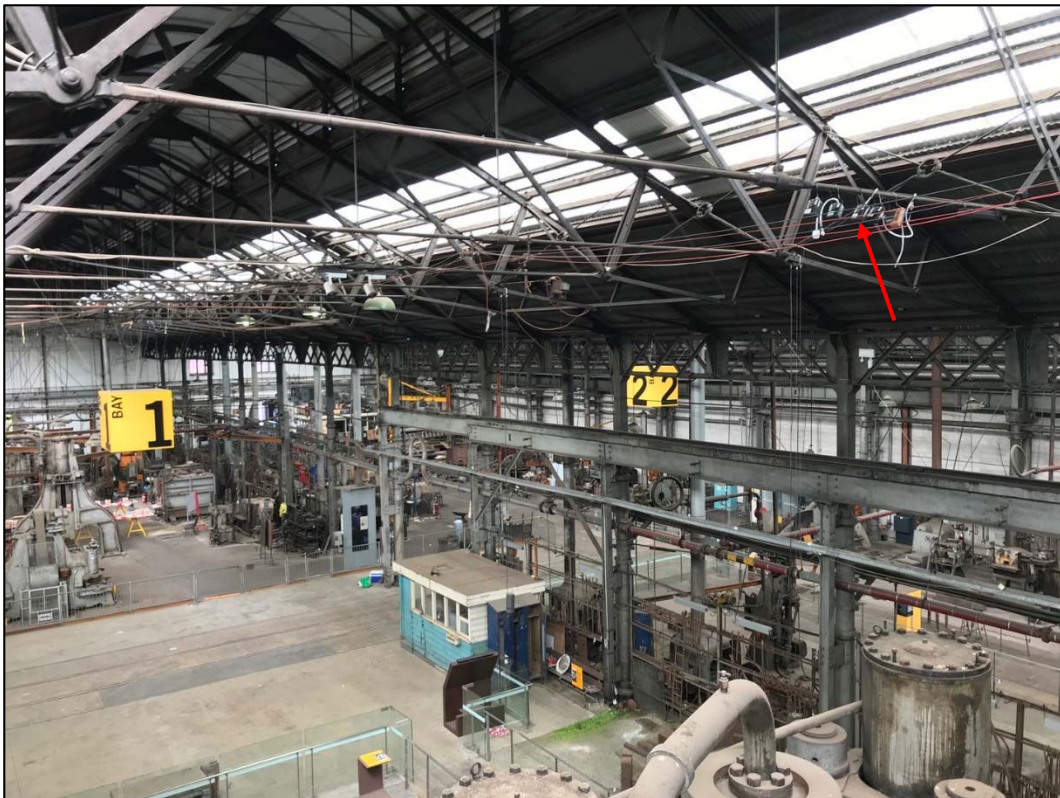
Photograph 1: Visible smoke and fume generation following start-up of the Big Major Oil Furnace, accumulates beneath the roof apex and slowly releases to atmosphere via the roof louvres.



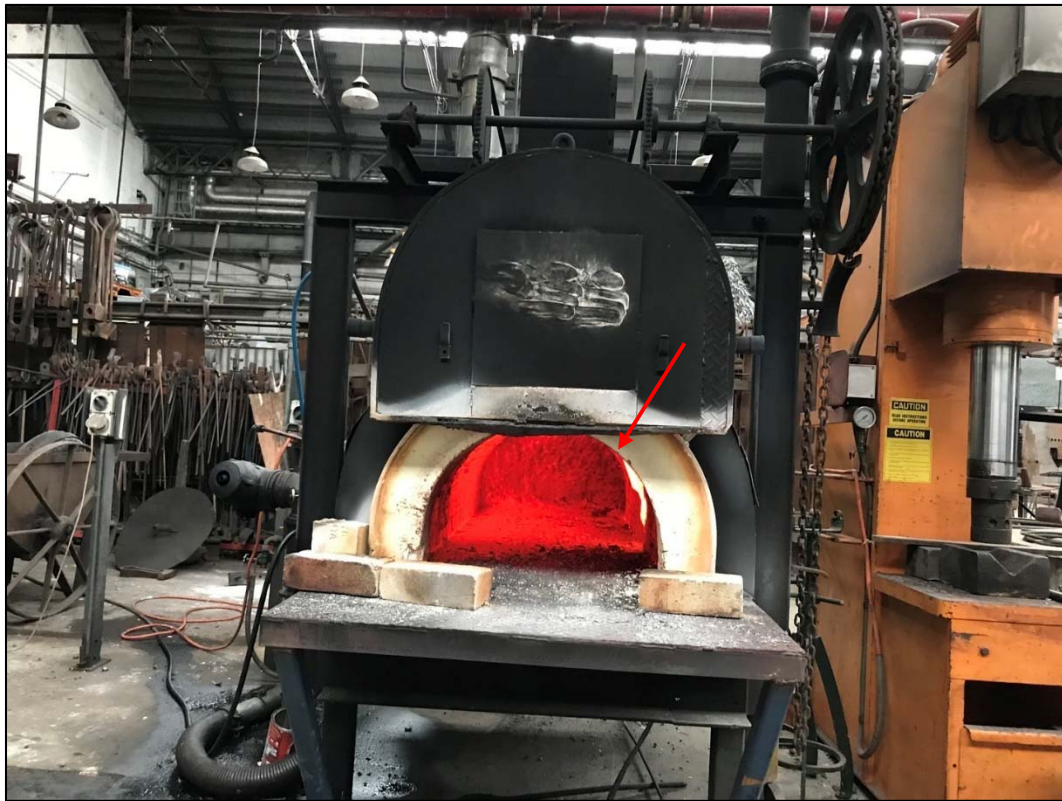
Photograph 2: As above



Photograph 3: Air sampling was conducted at 1.5 metres and truss height at each location.



Photograph 4: As above, air sampling pumps were set-up prior to firing-up the furnace.



Photograph 5: The Big Major Oil Furnace reaches efficient burn operation after 20 – 30 minutes as the refractory heats to optimum temperature.



Photograph 6: Additional carbon monoxide monitoring following construction of the separation wall.



Photograph 7: As above



Photograph 8: The oil quenching bath and extraction hood (no walls), located in Bay 2 South.



Photograph 9: Ineffective exhaust ventilation of smoke generated during oil quenching, particularly when smoke is laterally dispersed as cooling steel is grinded.



Photograph 10: Air monitoring equipment positioned in worst case exposure location during oil quenching.

Attachment 4 – Field Notes

ATP - Bay 1 Blacksmiths: Hygiene Monitoring during O.I. furnace operation

CLIENT/SITE: Mirvac S1142

DATE: 2/1/19

PARTICIPANTS: Aaron

PAGE: 1 OF: 1

- Aaron arrive @ 7am to load all filters, sampling head & pump cals.
- EWP operator arrived at 9:15
- Met with Chris (Mircac) & Matt (Blacksmith) @ 9:30
- Access issues to & through Bay 1 workshop due to equipment, construction etc
- All pumps set-up/on between 10:12 - 11am

Location 1 - just above/adjacent to furnace (Big Major Oil Furnace)

Location 2 - directly above furnace, cable tied to truss rod. (on furnace safety bar)

Location 3 - ~~North~~ Sth side of central railway tracks.

Location 4 - directly above " " " @ truss 1/1.

Location 5 - Central area of north Bay 1 - @ base of Davy Press

Location 6 - " " - directly above Davy Press on truss rod.

Matt - Blacksmith

- Furnace ignited @ 11:10 (Name: Big Major Oil Furnace)
- Efficiency approx 120L per 6 hours
- Fuel Oil Type (Name) - Fuel Oil 500 - used oil sourced from Vetherill Park & recycled (some filtered only), suitable for boilers, etc.
- Furnace only used for big planned jobs, usually once, occasionally twice a week & run for 5-6 hrs on that day.

Operation - Oil pump sprays oil into fire ~~open~~ heated furnace which atomises the oil & then it ignites.

- Plume of thick black smoke rises up to trusses/roof apex on start up, then slowly laterally migrates north & south @ roof level.
- After approx 15-20mins ~~the~~ burn efficiency increases as refractory bricks heat up & glow red & smoke from furnace significantly diminishes.
- 25-30mins - no visible black smoke emitted from furnace & furnace door is closed

- Matt states - furnace typically only ignited once per day & not multiple times as cheap to run. Second start up when they do happen there is very little smoke as refractory retains heat.

* Only rear sth door open on day of sampling. Usually ~~front~~ central east door also open to improve/draw cross ventilation (Matt)

- Odour: fume/combusting oil strong odour on start up. Odour lessened during running as the black smoke dissipated. Constant metal forging/machining

odour in Bay 1 & 2 during the day. * Furnace shut down at 15:10.

Attachment 5 – Laboratory Certificates of Analysis

GAS DATA - FURNACE START-UP

LOCATION 1

Period	Location	Time	Temperature	Reading (Nitrogen Dioxide)	TWA (Nitrogen Dioxide)	STEL (Nitrogen Dioxide)	Reading (Nitric Oxide)	TWA (Nitric Oxide)	STEL (Nitric Oxide)	Reading (Carbon Monoxide)	TWA (Carbon Monoxide)	STEL (Carbon Monoxide)
2	1	2/05/2019 10:31	14	0	0	0	0	0	0	53	0.1104167	3.533333
2		2/05/2019 10:32	14	0	0	0	0	0	0	18	0.1479167	4.733333
2		2/05/2019 10:33	15	0	0	0	0	0	0	5	0.1583333	5.066667
2		2/05/2019 10:34	15	0	0	0	0	0	0	3	0.1645833	5.266667
2		2/05/2019 10:35	15	0	0	0	0	0	0	0	0.1645833	5.266667
2		2/05/2019 10:36	15	0	0	0	0	0	0	1	0.1666667	5.333333

LOCATION 2

2	2	2/05/2019 10:37	15	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:38	15	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:39	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:40	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:41	16	0	0	0	0	0	0	0	0.1666667	5.333333

LOCATION 3

2	3	2/05/2019 10:42	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:43	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:44	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:45	16	0	0	0	0	0	0	0	0.1666667	5.333333
2		2/05/2019 10:46	16	0	0	0	0	0	0	0	0.1666667	1.8

LOCATION 4

2	4	2/05/2019 10:47	16	0	0	0	0	0	0	0	0.1666667	0.6
2		2/05/2019 10:48	16	0	0	0	0	0	0	0	0.1666667	0.2666667
2		2/05/2019 10:49	16	0	0	0	0	0	0	0	0.1666667	0.06666667
2		2/05/2019 10:50	16	0	0	0	0	0	0	0	0.1666667	0.06666667
2		2/05/2019 10:51	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:52	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:53	16	0	0	0	0	0	0	0	0.1666667	0

LOCATION 5

2	5	2/05/2019 10:54	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:55	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:56	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:57	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:58	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 10:59	16	0	0	0	0	0	0	0	0.1666667	0

LOCATION 6

2	6	2/05/2019 11:01	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 11:02	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 11:03	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 11:04	16	0	0	0	0	0	0	0	0.1666667	0
2		2/05/2019 11:05	16	0	0	0	0	0	0	19	0.20625	1.266667
2		2/05/2019 11:06	16	0	0	0	0	0	0	19	0.2458333	2.533333
2		2/05/2019 11:07	16	0	0	0	0	0	0	2	0.25	2.666667

GAS DATA - AFTER 30 MINUTES

Period	Location	Time	Temperature	Reading (Nitrogen Dioxide)	TWA (Nitrogen Dioxide)	STEL (Nitrogen Dioxide)	Reading (Nitric Oxide)	TWA (Nitric Oxide)	STEL (Nitric Oxide)	Reading (Carbon Monoxide)	TWA (Carbon Monoxide)	STEL (Carbon Monoxide)
Location 1												
2	1	2/05/2019 11:08	16	0	0	0	0	0	0	10	0.2708333	3.333333
2		2/05/2019 11:09	16	0	0	0	0	0	0	50	0.375	6.666667
2		2/05/2019 11:10	16	0	0	0	0	0	0	12	0.4	7.466667
2		2/05/2019 11:11	16	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:12	17	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:13	17	0	0	0	0	0	0	0	0.4	7.466667
Location 2												
2	2	2/05/2019 11:14	17	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:15	17	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:16	17	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:17	17	0	0	0	0	0	0	0	0.4	7.466667
2		2/05/2019 11:18	17	0	0	0	0	0	0	1	0.4020833	7.533333
2		2/05/2019 11:19	17	0	0	0	0	0	0	0	0.4020833	7.533333
2		2/05/2019 11:20	17	0	0	0	0	0	0	0	0.4020833	6.266667
2		2/05/2019 11:21	17	0	0	0	0	0	0	0	0.4020833	5
Location 3												
2	3	2/05/2019 11:22	17	0	0	0	0	0	0	0	0.4020833	4.866667
2		2/05/2019 11:23	17	0	0	0	0	0	0	0	0.4020833	4.2
2		2/05/2019 11:24	17	0	0	0	0	0	0	0	0.4020833	0.8666667
2		2/05/2019 11:25	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:26	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:27	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:28	17	0	0	0	0	0	0	0	0.4020833	0.06666667
Location 4												
2	4	2/05/2019 11:29	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:30	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:31	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:32	17	0	0	0	0	0	0	0	0.4020833	0.06666667
2		2/05/2019 11:33	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:34	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:35	17	0	0	0	0	0	0	0	0.4020833	0
Location 5												
2	5	2/05/2019 11:36	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:37	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:38	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:39	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:40	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:41	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:42	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:43	17	0	0	0	0	0	0	0	0.4020833	0
Location 6												
2	6	2/05/2019 11:44	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:45	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:46	17	0	0	0	0	0	0	0	0.4020833	0
2		2/05/2019 11:47	17	0	0	0	0	0	0	0	0.4020833	0

Certificate Of Analysis

33889

Date Received: 6-May-19
Date Reported: 10-May-19
Page: 1 of 2
Description: 51142

Client Name: JBS&G
Client Details: Level 2, 155 Queen Street
Melbourne VIC 3000

Tubes for PAH analysis

Attention: Aaron Smith

Method: NIOSH 5515 - Polyaromatic Hydrocarbons (PAH's) on XAD Tubes and Filters

Results: Micrograms (ug), Total Weight Present on Tube or Filter.

LOR: Level of Reporting. Samples Analysed as Received.

Laboratory No:		Q8235		Q8236		Q8237		Q8238	
Client ID:		PAH-1		PAH-2		PAH-3		PAH-4	
		Front	Back	Front	Back	Front	Back	Front	Back
PAH's	LOR								
Naphthalene	1.0	<1	<1	1.5	<1	<1	<1	1.3	<1
Acenaphthylene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Acenaphthene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Fluorene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Phenanthrene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Anthracene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Pyrene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
B(a)Anthracene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Chrysene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
B(b)Fluoranthene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
B(k)Fluoranthene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
B(a)Pyrene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Indeno(123cd)Pyrene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
Dib(ah)Anthracene	1.0	<1	<1	<1	<1	<1	<1	<1	<1
B(ghi)Perylene	1.0	<1	<1	<1	<1	<1	<1	<1	<1



S. Muhlnickel (BASc)
Laboratory Manager



Accreditation No. 2431

Accredited for compliance with ISO/IEC 17025

AMAL Analytical Pty Ltd

27 Shafton Street Huntingdale VIC 3166 Australia

Email: info@amalanalytical.com.au

Phone: (03) 9544 4111

Web: www.amalanalytical.com.au

Fax: (03) 9544 4122

ABN: 82 575 943 797

ACN: 006 870 186

Certificate Of Analysis

33889

Date Received: 6-May-19
Date Reported: 10-May-19
Page: 2 of 2
Description: 51142

Client Name: JBS&G
Client Details: Level 2, 155 Queen Street
Melbourne VIC 3000

Tubes for PAH analysis

Attention: Aaron Smith

Method: NIOSH 5515 - Polyaromatic Hydrocarbons (PAH's) on XAD Tubes and Filters

Results: Micrograms (ug), Total Weight Present on Tube or Filter.

LOR: Level of Reporting. Samples Analysed as Received.

Laboratory No:

Q8239

Q8240

Client ID:

PAH-5

PAH-6

Front

Back

Front

Back

PAH's	LOR				
Naphthalene	1.0	<1	<1	1.4	<1
Acenaphthylene	1.0	<1	<1	<1	<1
Acenaphthene	1.0	<1	<1	<1	<1
Fluorene	1.0	<1	<1	<1	<1
Phenanthrene	1.0	<1	<1	<1	<1
Anthracene	1.0	<1	<1	<1	<1
Fluoranthene	1.0	<1	<1	<1	<1
Pyrene	1.0	<1	<1	<1	<1
B(a)Anthracene	1.0	<1	<1	<1	<1
Chrysene	1.0	<1	<1	<1	<1
B(b)Fluoranthene	1.0	<1	<1	<1	<1
B(k)Fluoranthene	1.0	<1	<1	<1	<1
B(a)Pyrene	1.0	<1	<1	<1	<1
Indeno(123cd)Pyrene	1.0	<1	<1	<1	<1
Dib(ah)Anthracene	1.0	<1	<1	<1	<1
B(ghi)Perylene	1.0	<1	<1	<1	<1



S. Muhlnickel (BASc)
Laboratory Manager



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AMAL Analytical Pty Ltd

27 Shafton Street Huntingdale VIC 3166 Australia

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Fax: (03) 9544 4122

ABN: 82 575 943 797

ACN: 006 870 186

08991

CHAIN OF CUSTODY



PROJECT NO.: 51142					LABORATORY BATCH NO.:				
PROJECT NAME: ATP Bay 1 Air Quality					SAMPLERS: Aaron				
DATE NEEDED BY: Std TAT					QC LEVEL: NEPM (2013)				
PHONE: Sydney: 02 8245 0300 Perth: 08 9488 0100 Brisbane: 07 3112 2688									
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2)@jbsg.com.au; (3)@jbsg.com.au									
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:									

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Responsible Party	Dried Residue Matter (DPM)	TYPE OF ASBESTOS ANALYSIS		NOTES:
								IDENTIFICATION	NEPM/NA	
RD-1	1	filter				X				
" -2	2					X				
" -3	3					X				
" -4	4					X				
" -5	5					X				
" -6	6					X				
DPM-1	7					X				
" -2	8					X				
" -3	9					X				
" -4	10					X				
" -5	11					X				
" -6	12					X				

RELINQUISHED BY:		METHOD OF SHIPMENT:		RECEIVED BY:		FOR RECEIVING LAB USE ONLY:	
NAME: Aaron	DATE: 3/5/19	CONSIGNMENT NOTE NO.		NAME: ELS	DATE: 6.5.19	COOLER SEAL - Yes..... No Intact Broken	
OF: JBS&G		TRANSPORT CO.		OF: ELS		COOLER TEMP deg C	
NAME: Imogen Dherby	DATE: 6/5/19	CONSIGNMENT NOTE NO.		NAME:	DATE:	COOLER SEAL - Yes..... No Intact Broken	
OF: ELS		TRANSPORT CO.		OF:		COOLER TEMP deg C	

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

CERTIFICATE OF ANALYSIS 216826

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	Nathan Cussen, Jordan Lyons, Aaron Smith
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	<u>51142, ATP Bay 1 Air Quality</u>
Number of Samples	12 Filter
Date samples received	06/05/2019
Date completed instructions received	06/05/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	13/05/2019
Date of Issue	10/05/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Ken Nguyen, Reporting Supervisor
 Nick Sarlamis, Inorganics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Client Reference: 51142, ATP Bay 1 Air Quality

Total Suspended Particulates						
Our Reference		216826-1	216826-2	216826-3	216826-4	216826-5
Your Reference	UNITS	RD-1	RD-2	RD-3	RD-4	RD-5
Type of sample		Filter	Filter	Filter	Filter	Filter
Date prepared	-	15/04/2019	15/04/2019	15/04/2019	15/04/2019	15/04/2019
Date analysed	-	07/05/2019	07/05/2019	07/05/2019	07/05/2019	07/05/2019
Weight of Filter (before)	g	0.00493	0.00505	0.00540	0.00514	0.00522
Weight of Filter (after)	g	0.00539	0.00565	0.00553	0.00560	0.00535
Total Suspended Particulates	g	0.00046	0.00060	0.00013	0.00046	0.00013

Total Suspended Particulates		
Our Reference		216826-6
Your Reference	UNITS	RD-6
Type of sample		Filter
Date prepared	-	15/04/2019
Date analysed	-	07/05/2019
Weight of Filter (before)	g	0.00504
Weight of Filter (after)	g	0.00534
Total Suspended Particulates	g	0.00030

Diesel Particulate Matter						
Our Reference		216826-7	216826-8	216826-9	216826-10	216826-11
Your Reference	UNITS	DPM-1	DPM-2	DPM-3	DPM-4	DPM-5
Type of sample		Filter	Filter	Filter	Filter	Filter
Date prepared	-	09/05/2019	09/05/2019	09/05/2019	09/05/2019	09/05/2019
Date analysed	-	09/05/2019	09/05/2019	09/05/2019	09/05/2019	09/05/2019
DPM as EC on filter	µg/filter	6	18	7	17	6
DPM as OC on filter*	µg/filter	37	36	17	30	18
DPM as TC on filter*	µg/filter	43	53	24	47	24

Diesel Particulate Matter		
Our Reference		216826-12
Your Reference	UNITS	DPM-6
Type of sample		Filter
Date prepared	-	09/05/2019
Date analysed	-	09/05/2019
DPM as EC on filter	µg/filter	12
DPM as OC on filter*	µg/filter	21
DPM as TC on filter*	µg/filter	33

Method ID	Methodology Summary
Ext-054	Analysed by MPL Envirolab
Inorg-100	Filter/Media Mass - determined gravimetrically.

Client Reference: 51142, ATP Bay 1 Air Quality

QUALITY CONTROL: Diesel Particulate Matter					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			09/05/2019	[NT]	[NT]	[NT]	[NT]	09/05/2019	[NT]
Date analysed	-			09/05/2019	[NT]	[NT]	[NT]	[NT]	09/05/2019	[NT]
DPM as EC on filter	µg/filter	3	Ext-054	<3	[NT]	[NT]	[NT]	[NT]	101	[NT]
DPM as OC on filter*	µg/filter	10	Ext-054	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
DPM as TC on filter*	µg/filter	10	Ext-054	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

TSP Filters 216826-1,4,6 were observed to be damaged.

DPM analysed by MPL. Report no. 226207

08989

CHAIN OF CUSTODY

[illegible]

Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**
Contact name: **Jordan Lyons**
Project name: **ATP BAY 1**
Project ID: **51142**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 3, 2019 10:12 AM**
Eurofins | mgt reference: **653667**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt
Sample Receipt : 22 degrees Celsius.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- N/A Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Jordan Lyons - jlyons@jbsg.com.au.

Note: A copy of these results will also be delivered to the general JBS & G Australia (NSW) P/L email address.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Jordan Lyons**

Report **653667-A**
Project name ATP BAY 1
Project ID 51142
Received Date May 03, 2019

Client Sample ID			M-1 Filter paper S19-My04256 Not Provided	M-2 Filter paper S19-My04257 Not Provided	M-3 Filter paper S19-My04258 Not Provided	M-4 Filter paper S19-My04259 Not Provided
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	1	Total ug	< 1	< 1	< 1	< 1
Cadmium	0.1	Total ug	< 0.1	< 0.1	< 0.1	< 0.1
Chromium	1	Total ug	< 1	< 1	< 1	< 1
Copper	1	Total ug	1.2	< 1	< 1	< 1
Lead	1	Total ug	1.1	< 1	< 1	< 1
Mercury	0.1	Total ug	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	1	Total ug	< 1	< 1	< 1	< 1
Zinc	5	Total ug	45	10	6.7	26

Client Sample ID			M-5 Filter paper S19-My04260 Not Provided	M-6 Filter paper S19-My04261 Not Provided	VOC-1 (FRONT) Air S19-My04262 Not Provided	VOC-1 (BACK) Air S19-My04263 Not Provided
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.1-Dichloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	-	-	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	-	-	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	-	-	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	-	-	2.9	< 0.5
1.3-Dichloropropane	0.5	Total ug	-	-	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	-	-	1.0	< 0.5
2-Chlorotoluene	0.5	Total ug	-	-	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	-	-	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	-	-	< 0.5	< 0.5

Client Sample ID			M-5 Filter paper S19-My04260 Not Provided	M-6 Filter paper S19-My04261 Not Provided	VOC-1 (FRONT) Air S19-My04262 Not Provided	VOC-1 (BACK) Air S19-My04263 Not Provided
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
Benzene	0.5	Total ug	-	-	0.8	< 0.5
Bromochloromethane	0.5	Total ug	-	-	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	-	-	< 0.5	< 0.5
Bromoform	0.5	Total ug	-	-	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	-	-	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
Chloroform	0.5	Total ug	-	-	< 0.5	< 0.5
cis-1,2-Dichloroethene	0.5	Total ug	-	-	< 0.5	< 0.5
cis-1,3-Dichloropropene	0.5	Total ug	-	-	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	-	-	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	-	-	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	-	-	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	-	-	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	-	-	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	-	-	0.5	< 0.5
Naphthalene	0.5	Total ug	-	-	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	-	-	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	-	-	< 0.5	< 0.5
Styrene	5	Total ug	-	-	< 5	< 5
tert-Butylbenzene	0.5	Total ug	-	-	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	-	-	< 0.5	< 0.5
Toluene	0.5	Total ug	-	-	0.9	< 0.5
trans-1,3-Dichloropropene	0.5	Total ug	-	-	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	-	-	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	-	-	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	-	-	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	-	-	2.1	< 1.5
Fluorobenzene (surr.)	1	%	-	-	98	98
4-Bromofluorobenzene (surr.)	1	%	-	-	111	107
Dibromofluoromethane (surr.)	1	%	-	-	107	102
1,2-Dichlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
1,2,3-Trichlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
1,2,4-Trichlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
1,3-Dichlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
1,4-Dichlorobenzene	0.5	Total ug	-	-	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	-	-	< 0.5	< 0.5
Heavy Metals						
Arsenic	1	Total ug	< 1	< 1	-	-
Cadmium	0.1	Total ug	< 0.1	< 0.1	-	-
Chromium	1	Total ug	< 1	< 1	-	-
Copper	1	Total ug	< 1	< 1	-	-
Lead	1	Total ug	< 1	< 1	-	-
Mercury	0.1	Total ug	< 0.1	< 0.1	-	-
Nickel	1	Total ug	< 1	< 1	-	-
Zinc	5	Total ug	7.7	21	-	-

Client Sample ID			VOC-2 (FRONT)	VOC-2 (BACK)	VOC-3 (FRONT)	VOC-3 (BACK)
Sample Matrix			Air	Air	Air	Air
Eurofins mgt Sample No.			S19-My04264	S19-My04265	S19-My04266	S19-My04267
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	1.8	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	0.6	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	2.2	< 0.5	0.5	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	1.2	< 0.5	0.6	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	1	%	100	102	102	105
4-Bromofluorobenzene (surr.)	1	%	108	110	113	112
Dibromofluoromethane (surr.)	1	%	108	108	109	110
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			VOC-2 (FRONT)	VOC-2 (BACK)	VOC-3 (FRONT)	VOC-3 (BACK)
Sample Matrix			Air	Air	Air	Air
Eurofins mgt Sample No.			S19-My04264	S19-My04265	S19-My04266	S19-My04267
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			VOC-4 (FRONT)	VOC-4 (BACK)	VOC-5 (FRONT)	VOC-5 (BACK)
Sample Matrix			Air	Air	Air	Air
Eurofins mgt Sample No.			S19-My04268	S19-My04269	S19-My04270	S19-My04271
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	1.0	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.5	Total ug	2.7	< 0.5	0.6	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			VOC-4 (FRONT)	VOC-4 (BACK)	VOC-5 (FRONT)	VOC-5 (BACK)
Sample Matrix			Air	Air	Air	Air
Eurofins mgt Sample No.			S19-My04268	S19-My04269	S19-My04270	S19-My04271
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
VOCs in Ambient Air by GC/MS						
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	Total ug	0.7	< 0.5	0.6	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5	< 1.5	< 1.5
Fluorobenzene (surr.)	1	%	104	101	102	103
4-Bromofluorobenzene (surr.)	1	%	112	120	112	106
Dibromofluoromethane (surr.)	1	%	113	107	109	109
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			VOC-6 (FRONT)	VOC-6 (BACK)
Sample Matrix			Air	Air
Eurofins mgt Sample No.			S19-My04272	S19-My04273
Date Sampled			Not Provided	Not Provided
Test/Reference	LOR	Unit		
VOCs in Ambient Air by GC/MS				
1.1-Dichloroethane	0.5	Total ug	< 0.5	< 0.5
1.1-Dichloroethene	0.5	Total ug	< 0.5	< 0.5
1.1-Dichloropropene	0.5	Total ug	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	Total ug	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	Total ug	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	Total ug	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	Total ug	< 0.5	< 0.5
1.2-Dibromoethane	0.5	Total ug	< 0.5	< 0.5
1.2-Dichloroethane	0.5	Total ug	< 0.5	< 0.5
1.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	Total ug	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	Total ug	0.8	< 0.5
1.3-Dichloropropane	0.5	Total ug	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	Total ug	< 0.5	< 0.5
2-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5
2.2-Dichloropropane	0.5	Total ug	< 0.5	< 0.5
4-Chlorotoluene	0.5	Total ug	< 0.5	< 0.5
Benzene	0.5	Total ug	1.7	< 0.5
Bromochloromethane	0.5	Total ug	< 0.5	< 0.5
Bromodichloromethane	0.5	Total ug	< 0.5	< 0.5

Client Sample ID			VOC-6 (FRONT)	VOC-6 (BACK)
Sample Matrix			Air	Air
Eurofins mgt Sample No.			S19-My04272	S19-My04273
Date Sampled			Not Provided	Not Provided
Test/Reference	LOR	Unit		
VOCs in Ambient Air by GC/MS				
Bromoform	0.5	Total ug	< 0.5	< 0.5
Carbon Tetrachloride	0.5	Total ug	< 0.5	< 0.5
Chlorobenzene	0.5	Total ug	< 0.5	< 0.5
Chloroform	0.5	Total ug	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	Total ug	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5
Dibromochloromethane	0.5	Total ug	< 0.5	< 0.5
Dibromomethane	0.5	Total ug	< 0.5	< 0.5
Ethylbenzene	0.5	Total ug	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	Total ug	< 0.5	< 0.5
n-Butylbenzene	0.5	Total ug	< 0.5	< 0.5
n-Propylbenzene	0.5	Total ug	< 0.5	< 0.5
Naphthalene	0.5	Total ug	< 0.5	< 0.5
p-Isopropyltoluene	0.5	Total ug	< 0.5	< 0.5
sec-Butylbenzene	0.5	Total ug	< 0.5	< 0.5
Styrene	5	Total ug	< 5	< 5
tert-Butylbenzene	0.5	Total ug	< 0.5	< 0.5
Tetrachloroethene	0.5	Total ug	< 0.5	< 0.5
Toluene	0.5	Total ug	0.5	< 0.5
trans-1.3-Dichloropropene	0.5	Total ug	< 0.5	< 0.5
Trichloroethene	0.5	Total ug	< 0.5	< 0.5
Trichlorofluoromethane	0.5	Total ug	< 0.5	< 0.5
Vinyl chloride	0.5	Total ug	< 0.5	< 0.5
Xylenes - Total	1.5	Total ug	< 1.5	< 1.5
Fluorobenzene (surr.)	1	%	96	103
4-Bromofluorobenzene (surr.)	1	%	105	111
Dibromofluoromethane (surr.)	1	%	103	109
1.2-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	Total ug	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	Total ug	< 0.5	< 0.5
Hexachlorobutadiene	0.5	Total ug	< 0.5	< 0.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description

VOCs in Ambient Air by GC/MS

- Method: LTM-ORG-2030 VOCs in Ambient Air by GC/MS

Metals M8

- Method:

Testing Site

Melbourne

Sydney

Extracted

May 03, 2019

May 03, 2019

Holding Time

14 Day

28 Day

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000
Project Name: ATP BAY 1
Project ID: 51142

Order No.:
Report #: 653667
Phone: 02 8245 0300
Fax:

Received: May 3, 2019 10:12 AM
Due: May 10, 2019
Priority: 5 Day
Contact Name: Jordan Lyons

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Metals M8	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	M-1	Not Provided		Filter paper	S19-My04256	X	
2	M-2	Not Provided		Filter paper	S19-My04257	X	
3	M-3	Not Provided		Filter paper	S19-My04258	X	
4	M-4	Not Provided		Filter paper	S19-My04259	X	
5	M-5	Not Provided		Filter paper	S19-My04260	X	
6	M-6	Not Provided		Filter paper	S19-My04261	X	
7	VOC-1 (FRONT)	Not Provided		Air	S19-My04262		X
8	VOC-1 (BACK)	Not Provided		Air	S19-My04263		X
9	VOC-2	Not Provided		Air	S19-My04264		X

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000
Project Name: ATP BAY 1
Project ID: 51142

Order No.:
Report #: 653667
Phone: 02 8245 0300
Fax:

Received: May 3, 2019 10:12 AM
Due: May 10, 2019
Priority: 5 Day
Contact Name: Jordan Lyons

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Metals M8	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
	(FRONT)						
10	VOC-2 (BACK)	Not Provided		Air	S19-My04265		X
11	VOC-3 (FRONT)	Not Provided		Air	S19-My04266		X
12	VOC-3 (BACK)	Not Provided		Air	S19-My04267		X
13	VOC-4 (FRONT)	Not Provided		Air	S19-My04268		X
14	VOC-4 (BACK)	Not Provided		Air	S19-My04269		X
15	VOC-5 (FRONT)	Not Provided		Air	S19-My04270		X
16	VOC-5 (BACK)	Not Provided		Air	S19-My04271		X
17	VOC-6 (FRONT)	Not Provided		Air	S19-My04272		X

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000
Project Name: ATP BAY 1
Project ID: 51142

Order No.:
Report #: 653667
Phone: 02 8245 0300
Fax:

Received: May 3, 2019 10:12 AM
Due: May 10, 2019
Priority: 5 Day
Contact Name: Jordan Lyons

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Metals M8	VOCs in Ambient Air by GC/MS
							X
						X	
18	VOC-6 (BACK)	Not Provided		Air	S19-My04273		X
Test Counts						6	12

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
VOCs in Ambient Air by GC/MS							
1.1-Dichloroethane	Total ug	< 0.5			0.5	Pass	
1.1-Dichloroethene	Total ug	< 0.5			0.5	Pass	
1.1-Dichloropropene	Total ug	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	Total ug	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	Total ug	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	Total ug	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	Total ug	< 0.5			0.5	Pass	
1.2-Dibromo-3-chloropropane	Total ug	< 0.5			0.5	Pass	
1.2-Dibromoethane	Total ug	< 0.5			0.5	Pass	
1.2-Dichloroethane	Total ug	< 0.5			0.5	Pass	
1.2-Dichloropropane	Total ug	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	Total ug	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	Total ug	< 0.5			0.5	Pass	
1.3-Dichloropropane	Total ug	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	Total ug	< 0.5			0.5	Pass	
2-Chlorotoluene	Total ug	< 0.5			0.5	Pass	
2.2-Dichloropropane	Total ug	< 0.5			0.5	Pass	
4-Chlorotoluene	Total ug	< 0.5			0.5	Pass	
Benzene	Total ug	< 0.5			0.5	Pass	
Bromochloromethane	Total ug	< 0.5			0.5	Pass	
Bromodichloromethane	Total ug	< 0.5			0.5	Pass	
Bromoform	Total ug	< 0.5			0.5	Pass	
Carbon Tetrachloride	Total ug	< 0.5			0.5	Pass	
Chlorobenzene	Total ug	< 0.5			0.5	Pass	
Chloroform	Total ug	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	Total ug	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	Total ug	< 0.5			0.5	Pass	
Dibromochloromethane	Total ug	< 0.5			0.5	Pass	
Dibromomethane	Total ug	< 0.5			0.5	Pass	
Ethylbenzene	Total ug	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	Total ug	< 0.5			0.5	Pass	
n-Butylbenzene	Total ug	< 0.5			0.5	Pass	
n-Propylbenzene	Total ug	< 0.5			0.5	Pass	
Naphthalene	Total ug	< 0.5			0.5	Pass	
p-Isopropyltoluene	Total ug	< 0.5			0.5	Pass	
sec-Butylbenzene	Total ug	< 0.5			0.5	Pass	
Styrene	Total ug	< 5			5	Pass	
tert-Butylbenzene	Total ug	< 0.5			0.5	Pass	
Tetrachloroethene	Total ug	< 0.5			0.5	Pass	
Toluene	Total ug	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	Total ug	< 0.5			0.5	Pass	
Trichloroethene	Total ug	< 0.5			0.5	Pass	
Trichlorofluoromethane	Total ug	< 0.5			0.5	Pass	
Vinyl chloride	Total ug	< 0.5			0.5	Pass	
Xylenes - Total	Total ug	< 1.5			1.5	Pass	
1.2-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.2.3-Trichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	Total ug	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Hexachlorobutadiene	Total ug	< 0.5			0.5	Pass	
LCS - % Recovery							
VOCs in Ambient Air by GC/MS							
1.1-Dichloroethene	%	104			70-130	Pass	
1.1-Dichloropropene	%	100			70-130	Pass	
1.1.1-Trichloroethane	%	96			70-130	Pass	
1.2-Dibromo-3-chloropropane	%	93			75-125	Pass	
1.2-Dichloroethane	%	96			70-130	Pass	
Benzene	%	94			70-130	Pass	
Ethylbenzene	%	96			70-130	Pass	
Naphthalene	%	89			70-130	Pass	
Toluene	%	99			70-130	Pass	
Trichloroethene	%	97			70-130	Pass	
Xylenes - Total	%	97			70-130	Pass	
1.2-Dichlorobenzene	%	96			70-130	Pass	
1.2.3-Trichlorobenzene	%	90			70-130	Pass	
1.2.4-Trichlorobenzene	%	88			70-130	Pass	
1.4-Dichlorobenzene	%	99			70-130	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	N/A
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Nibha Vaidya	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Metal (NSW)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000
Project Name: ATP BAY 1
Project ID: 51142

Order No.:
Report #: 653667
Phone: 02 8245 0300
Fax:

Received: May 3, 2019 10:12 AM
Due: May 10, 2019
Priority: 5 Day
Contact Name: Jordan Lyons

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Metals M8	VOCs in Ambient Air by GC/MS
Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	M-1	Not Provided		Filter paper	S19-My04256	X	
2	M-2	Not Provided		Filter paper	S19-My04257	X	
3	M-3	Not Provided		Filter paper	S19-My04258	X	
4	M-4	Not Provided		Filter paper	S19-My04259	X	
5	M-5	Not Provided		Filter paper	S19-My04260	X	
6	M-6	Not Provided		Filter paper	S19-My04261	X	
7	VOC-1 (FRONT)	Not Provided		Air	S19-My04262		X
8	VOC-1 (BACK)	Not Provided		Air	S19-My04263		X
9	VOC-2	Not Provided		Air	S19-My04264		X

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
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Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
	(FRONT)						
10	VOC-2 (BACK)	Not Provided		Air	S19-My04265		X
11	VOC-3 (FRONT)	Not Provided		Air	S19-My04266		X
12	VOC-3 (BACK)	Not Provided		Air	S19-My04267		X
13	VOC-4 (FRONT)	Not Provided		Air	S19-My04268		X
14	VOC-4 (BACK)	Not Provided		Air	S19-My04269		X
15	VOC-5 (FRONT)	Not Provided		Air	S19-My04270		X
16	VOC-5 (BACK)	Not Provided		Air	S19-My04271		X
17	VOC-6 (FRONT)	Not Provided		Air	S19-My04272		X

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ATP BAY 1
Project ID: 51142

Order No.:
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Sample Detail						Metals M8	VOCs in Ambient Air by GC/MS
							X
						X	
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
18	VOC-6 (BACK)	Not Provided		Air	S19-My04273		X
Test Counts						6	12

CERTIFICATE OF ANALYSIS 223779

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	Aaron Smith
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	<u>51142, Eveleigh Quenching Bath</u>
Number of Samples	4 TUBE
Date samples received	13/08/2019
Date completed instructions received	13/08/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	20/08/2019
Date of Issue	20/08/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Ken Nguyen, Reporting Supervisor
 Nancy Zhang, Laboratory Manager, Sydney
 Nick Sarlamis, Inorganics Supervisor
 Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

VOC in Carbon tubes		
Our Reference		223779-1
Your Reference	UNITS	VOC1
Type of sample		TUBE
Date extracted	-	15/08/2019
Date analysed	-	15/08/2019
Acetone	µg/tube	<5
Acrylonitrile	µg/tube	<5
Methylethylketone (MEK)	µg/tube	<5
Hexane	µg/tube	<5
Ethylacetate	µg/tube	<5
1,2-Dichloroethane	µg/tube	<5
Benzene	µg/tube	<2
Carbon Tetrachloride	µg/tube	<5
Cyclohexane	µg/tube	<5
Ethylacrylate	µg/tube	<5
Trichloroethene	µg/tube	<5
1,4-Dioxane	µg/tube	<5
Propylene Oxide	µg/tube	<10
Epichlorohydrin	µg/tube	<5
Methylisobutylketone (MIBK)	µg/tube	<5
Toluene	µg/tube	<5
Tetrachloroethene	µg/tube	<5
n-Butylacetate	µg/tube	<5
Chlorobenzene	µg/tube	<5
Ethylbenzene	µg/tube	<5
m+p-Xylene	µg/tube	<10
Styrene	µg/tube	<5
o-Xylene	µg/tube	<5
Cyclohexanone	µg/tube	<5
Nonane	µg/tube	<5
Isopropylbenzene	µg/tube	<5
Diisobutylketone (DIBK)	µg/tube	<5
a-Methylstyrene	µg/tube	<5
Decane	µg/tube	<5
Benzylchloride	µg/tube	<5
Naphthalene	µg/tube	<5
Dodecane	µg/tube	<5
TVOC's as hexane in tubes*	µg/tube	<50
Surrogate Toluene-d8	%	70
Surrogate 4-Bromofluorobenzene	%	67

PAH in tubes (front)		
Our Reference		223779-2
Your Reference	UNITS	PAH1
Type of sample		TUBE
Date prepared	-	16/08/2019
Date analysed	-	16/08/2019
Naphthalene	µg/sample	<0.5
Acenaphthylene	µg/sample	<0.5
Acenaphthene	µg/sample	<0.5
Fluorene	µg/sample	<0.5
Phenanthrene	µg/sample	<0.5
Anthracene	µg/sample	<0.5
Fluoranthene	µg/sample	<0.5
Pyrene	µg/sample	<0.5
Benzo(a)anthracene	µg/sample	<0.5
Chrysene	µg/sample	<0.5
Benzo(b,j,k)fluoranthene	µg/sample	<1
Benzo(a)pyrene	µg/sample	<0.5
Indeno(123-cd)pyrene	µg/sample	<0.5
Dibenzo(ah)anthracene	µg/sample	<0.5
Benzo(ghi)perylene	µg/sample	<0.5

PAH in tubes (back)		
Our Reference		223779-2
Your Reference	UNITS	PAH1
Type of sample		TUBE
Date prepared	-	16/08/2019
Date analysed	-	16/08/2019
Naphthalene	µg/sample	<0.5
Acenaphthylene	µg/sample	<0.5
Acenaphthene	µg/sample	<0.5
Fluorene	µg/sample	<0.5
Phenanthrene	µg/sample	<0.5
Anthracene	µg/sample	<0.5
Fluoranthene	µg/sample	<0.5
Pyrene	µg/sample	<0.5
Benzo(a)anthracene	µg/sample	<0.5
Chrysene	µg/sample	<0.5
Benzo(b,j,k)fluoranthene	µg/sample	<1
Benzo(a)pyrene	µg/sample	<0.5
Indeno(123-cd)pyrene	µg/sample	<0.5
Dibenzo(ah)anthracene	µg/sample	<0.5
Benzo(ghi)perylene	µg/sample	<0.5

Total Suspended Particulates		
Our Reference		223779-4
Your Reference	UNITS	RP1
Type of sample		TUBE
Date prepared	-	15/04/2019
Date analysed	-	20/08/2019
Weight of Filter (before)	g	0.00648
Weight of Filter (after)	g	0.00703
Total Suspended Particulates	g	0.00055

Diesel Particulate Matter		
Our Reference		223779-3
Your Reference	UNITS	EC1
Type of sample		TUBE
Date prepared	-	15/08/2019
Date analysed	-	15/08/2019
DPM as EC on filter	µg/filter	8
DPM as OC on filter*	µg/filter	200
DPM as TC on filter*	µg/filter	210

Client Reference: 51142, Eveleigh Quenching Bath

Method ID	Methodology Summary
AT-008	Determination of volatile organic compounds in charcoal tubes/badges/sorbents using CS2 extraction, based on NIOSH methods. Desorption efficiencies are not applied to results in ug/tube. Note where $\mu\text{g}/\text{m}^3$ results are supplied for SKC badges, the factors used are for 575-001, if 575-001 data is unavailable for an analyte then use 575-002 then 575-003 (exposure time must be supplied).
Ext-054	Analysed by MPL Envirolab
Inorg-100	Filter/Media Mass - determined gravimetrically.
Org-033	Sorbents are extracted with ethyl acetate or methanol to desorb SVOCs and then analysed by GC-MS and/or GC-MSMS.

Client Reference: 51142, Eveleigh Quenching Bath

QUALITY CONTROL: VOC in Carbon tubes					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
Date analysed	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
Acetone	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	105	[NT]
Acrylonitrile	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Methylethylketone (MEK)	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Hexane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	85	[NT]
Ethylacetate	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	105	[NT]
1,2-Dichloroethane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	107	[NT]
Benzene	µg/tube	2	AT-008	<2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Carbon Tetrachloride	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Cyclohexane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	121	[NT]
Ethylacrylate	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	115	[NT]
Trichloroethene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	104	[NT]
1,4-Dioxane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Propylene Oxide	µg/tube	10	AT-008	<10	[NT]	[NT]	[NT]	[NT]	94	[NT]
Epichlorohydrin	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Methylisobutylketone (MIBK)	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Toluene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Tetrachloroethene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	89	[NT]
n-Butylacetate	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	89	[NT]
Chlorobenzene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	93	[NT]
m+p-Xylene	µg/tube	10	AT-008	<10	[NT]	[NT]	[NT]	[NT]	95	[NT]
Styrene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
o-Xylene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Cyclohexanone	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	99	[NT]
Nonane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Isopropylbenzene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Diisobutylketone (DIBK)	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	91	[NT]
a-Methylstyrene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	81	[NT]
Decane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzylchloride	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	82	[NT]
Naphthalene	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Dodecane	µg/tube	5	AT-008	<5	[NT]	[NT]	[NT]	[NT]	93	[NT]
TVOC's as hexane in tubes*	µg/tube	50	AT-008	<50	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Toluene-d8	%		AT-008	116	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate 4-Bromofluorobenzene	%		AT-008	106	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: PAH in tubes (front)					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Naphthalene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
Acenaphthylene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	111	[NT]
Phenanthrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzo(a)anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	122	[NT]
Benzo(b,j,k)fluoranthene	µg/sample	1	Org-033	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	114	[NT]
Indeno(123-cd)pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(ah)anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(ghi)perylene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Client Reference: 51142, Eveleigh Quenching Bath

QUALITY CONTROL: PAH in tubes (back)						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Naphthalene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
Acenaphthylene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	111	[NT]
Phenanthrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzo(a)anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	122	[NT]
Benzo(b,j,k)fluoranthene	µg/sample	1	Org-033	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	114	[NT]
Indeno(123-cd)pyrene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(ah)anthracene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(ghi)perylene	µg/sample	0.5	Org-033	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Client Reference: 51142, Eveleigh Quenching Bath

QUALITY CONTROL: Diesel Particulate Matter					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
Date analysed	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
DPM as EC on filter	µg/filter	3	Ext-054	<3	[NT]	[NT]	[NT]	[NT]	93	[NT]
DPM as OC on filter*	µg/filter	10	Ext-054	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
DPM as TC on filter*	µg/filter	10	Ext-054	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

DPM analysed by MPL. Report no. 231330

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