EML AIR PTY LTD ABN 98 006 878 342
Melbourne (Head Office)
PO Box 466, Canterbury, Victoria 3126
427 Canterbury Road, Surrey Hills, Victoria 3127
T. +61 3 9836 1999 **F.** +61 3 9830 0670
E. emlair@emlair.com.au **W.** www.emlair.com.au

Our reference: **91146a**
Replaces Report: **91146**

26 July 2013

Sydney Harbour Federation Trust
PO Box 607
MOSMAN NSW 2088

Attention Mr Willem Clasie

HMAS PLATYPUS SITE – NORTH SYDNEY
AMBIENT AIR MONITORING REPORT - May 2013

Contents

INTRODUCTION

The Sydney Harbour Federation Trust has engaged EML Air Pty Ltd to undertake air quality monitoring during the excavation and treatment of contaminated materials at the Platypus site, located at 118 High Street, North Sydney. The monitoring undertaken includes;

- High Volume Air Sampling (HVAS). Samples are collected monthly from the western Platypus site boundary over a 24 hour period and analysed for particulate matter < 10um (PM_{10}), metals and benzo(a)pyrene
- SUMMA canisters. Samples are collected monthly from the top floor of the apartment block to the west of the Platypus site over a 24 hour period and analysed for benzene, toluene, ethyl benzene and xylenes (BTEX) as well as total volatile organic compounds (VOC's)

The results are compared to the project criteria, which have been provided for contaminants of concern on the Platypus site.

PROGRAM SUMMARY

The monitoring locations and pollutant parameters measured are summarised in the table below;

Program Summary

Location	Test Date	Test Parameters
Western boundary – High volume air sampling	28-29 May 2013	Particulate matter <10µm (PM_{10}), metals (Cd, Pb, Hg), benzo(a)pyrene
Apartment rooftop on western boundary – SUMMA canister sampling	28-29 May 2013	Benzene, toluene, ethyl benzene, xylenes, total volatile organic compounds

Please refer to the following pages for results, test methods, quality assurance / quality control information and definitions.

Melissa Reddan BAppSc
Compliance Manager
m doc:91146a.doc

Matthew Cook
Laboratory Manager

RESULTS

Site Sampling Details

Date	28-29/5/13	**Client**	Sydney Harbour Federation Trust		
Report	91146	**Site ID**	Platypus Site		
Licence No.	N/A	**Location**	North Sydney	**State**	NSW
EML Staff	ZX/MS				
Process Conditions	Normal				
Reason for testing:	For Harbour Trust				

Sampling site details			
Type of sampling location:		Neighbourhood	
Height above ground:		Criterion	Compliant
	Hi Volume sampler	1.0m - 1.5m	Yes
	Deposition gauge	1.8m - 2.2m	
	Directional dust gauge	1.0m - 1.5m	
Distance from supporting structures:			
	Vertical	>1m	Yes
	Horizontal	>2m	No
Clear sky angle:		>120º	No
Unrestricted airflow:		360º	No
Distance from trees:		>10m	No
No combustion sources nearby:			Yes
Distance from roads:			
	Peak station	>5m	
	Neighbourhood	>50m	No
	Background	>50m	

High Volume Air Sampling

Date	28-29/5/13	**Client**	Sydney Harbour Federation Trust		
Report	91146	**Site ID**	Platypus Site		
Licence No.	N/A	**Location**	North Sydney	**State**	NSW
EML Staff	ZX/MS				
Process Conditions	Normal				
Reason for testing:	For Harbour Trust				

High volume air sampling	Results	Project Criteria	Detection Limits
Date	28-29/5/13		
Start/End time	1445-1445		
Sample period (hours)	24.01 hours		
	Concentration mg/m³	$AQRL_{max}$ mg/m³	Concentration mg/m³
Particulate matter <10µm	0.02	5.0E-02	3.2 E-04
	Concentration mg/m³	$AQRL_{max}$ mg/m³	Concentration mg/m³
Cadmium	2.3 E-07	1.8E-05	<1.6 E-07
Lead	1.0 E-05	5.0E-04	<1.6 E-07
Mercury	<3.2 E-08	1.8E-03	<3.2 E-08

High volume air sampling	Results	Project Criteria	Detection Limits
Date	28-29/5/13		
Start/End time	1445-1445		
Sample period (hours)	24.01 hours		
	Concentration ng/m³	$AQRL_{max}$ ng/m³	Concentration ng/m³
Benzo(a)pyrene	0.42	0.3	<0.026

Summa Canister Sampling

Date	28-29/5/13	**Client**	Sydney Harbour Federation Trust		
Report	91146	**Site ID**	Platypus Site		
Licence No.	N/A	**Location**	North Sydney	**State**	NSW
EML Staff	ZX/MS				
Process Conditions	Normal				
Reason for testing:	For Harbour Trust				

Summa Canister Sampling	Results	Project Criteria	Detection Limits
Date	28-29/5/13		
Start/End time	1356-1356		
	Concentration ppm	$AQRL_{max}$ ppm	Concentration ppm
Benzene	<5.0 E-04	5.0E-02	<5.0 E-04
m & p-Xylenes	7.3 E-04	0.25	<4.0 E-04
o-Xylene	2.4 E-04	0.25	<2.0 E-04
Toluene	1.6 E-03	1.0	<2.0 E-04
Total VOC's	0.034	5.0	<0.015

WEATHER CONDITIONS – SYDNEY HARBOUR

Date & time	Wind Direction	Azimuth	Wind Speed (kmh)	Wind Speed (m/s)
29/03:00pm	NNE	22.5	22	6.1
29/02:30pm	NNE	22.5	22	6.1
29/02:00pm	NNE	22.5	22	6.1
29/01:30pm	NNE	22.5	20	5.6
29/01:00pm	SSW	202.5	4	1.1
29/12:30pm	SSW	202.5	9	2.5
29/12:00pm	SSW	202.5	11	3.1
29/11:30am	SW	225	11	3.1
29/11:00am	SW	225	13	3.6
29/10:30am	SW	225	15	4.2
29/10:00am	WSW	247.5	13	3.6
29/09:30am	SSW	202.5	11	3.1
29/09:00am	SSW	202.5	11	3.1
29/08:30am	WSW	247.5	13	3.6
29/08:00am	WSW	247.5	11	3.1
29/07:30am	WSW	247.5	9	2.5
29/07:00am	W	270	9	2.5
29/06:30am	WSW	247.5	9	2.5
29/06:00am	WSW	247.5	13	3.6
29/05:30am	WSW	247.5	7	1.9
29/05:00am	W	270	2	0.6
29/04:30am	W	270	6	1.7
29/04:00am	W	270	11	3.1
29/03:30am	N	0	6	1.7
29/03:00am	N	0	7	1.9
29/02:30am	N	0	6	1.7
29/02:00am	N	0	7	1.9
29/01:30am	NW	315	6	1.7
29/01:00am	NW	315	11	3.1
29/12:30am	NNW	337.5	11	3.1
29/12:00am	NNW	337.5	9	2.5
28/11:30pm	NNW	337.5	9	2.5
28/11:00pm	NNW	337.5	11	3.1
28/10:30pm	N	0	11	3.1
28/10:00pm	NNW	337.5	9	2.5
28/09:30pm	CALM	0	0	0.0
28/09:00pm	CALM	0	0	0.0
28/08:30pm	CALM	0	0	0.0
28/08:00pm	WNW	292.5	6	1.7
28/07:30pm	CALM	0	0	0.0
28/07:00pm	WNW	247.5	4	1.1
28/06:30pm	WNW	247.5	9	2.5
28/06:00pm	W	270	7	1.9
28/05:30pm	CALM	0	0	0.0
28/05:00pm	NNE	22.5	7	1.9
28/04:30pm	NNE	22.5	6	1.7
28/04:00pm	NE	45	13	3.6
28/03:30pm	NNE	22.5	13	3.6
28/03:00pm	ENE	67.5	17	4.7
28/02:30pm	ENE	67.5	17	4.7
28/02:12pm	NNE	22.5	28	7.8
28/02:00pm	ENE	67.5	9	2.5
28/01:30pm	SE	135	6	1.7
28/01:00pm	SSW	202.5	2	0.6

PLANT OPERATING CONDITIONS

Unless otherwise stated, the remediation operations were normal at the time of testing. Please refer to Sydney Harbour Federation Trust's records.

TEST METHODS

Unless otherwise stated, the following methods meet the requirements of the NSW Office of Environment and Heritage (as specified in the Approved Methods *for the Sampling and Analysis of Air Pollutants in New South Wales, January 2007).* All sampling and analysis was performed by EML Air unless otherwise specified. Specific details of the methods are available upon request.

Parameter	NSW Method	Reference Method	NATA Accredited	
			Sampling	Analysis
Guide to siting air monitoring equipment	AM-1	AS 3580.1.1	✓[1]	✓[1]
Particulate matter <10µm (PM10)	AM-18	AS 3580.9.6	✓[1]	✓[1]
Metals (Pb, As, Cd, Cr, Cu, Hg, Ni, Zn)	AM-18	AS 3580.9.6	✓[1]	✓[1]
Polycyclic aromatic hydrocarbons (PAH's)	AM-18	AS 3580.9.6	✓[1]	✓[1]
Volatile organic compounds (VOC's)		USEPA TO-15	✓[1]	✓[1]

AS – Australian Standard
USEPA – United States Environmental Protection Agency

1. Analysis was performed by Australian Government National Measurement Institute, NATA accreditation number 198. Results were reported to EML Air in report number RN0981284 and VOC13_147

QUALITY ASSURANCE / QUALITY CONTROL INFORMATION

EML Air is accredited to Australian Standard 17025 – General Requirements for the Competence of Testing and Calibration Laboratories. Australian Standard 17025 requires that a laboratory have a quality system similar to ISO 9002. More importantly it also requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Assurance Manager.

A formal Quality Control program is in place at EML Air to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

DEFINITIONS

The following symbols and abbreviations may be used in this test report:

NTP	Normal temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
VOC	Any chemical compound based on carbon with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the particular conditions of use. These compounds may contain oxygen, nitrogen and other elements, but specifically excluded are carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
PM_{10}	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm).
NT	Not tested or results not required
NA	Not applicable
D_{50}	'Cut size' of a cyclone defined as the particle diameter at which the cyclone achieves a 50% collection efficiency ie. half of the particles are retained by the cyclone and half are not and pass through it to the next stage. The D_{50} method basically simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
<	Less than
>	Greater than
≥	Greater than or equal to
~	Approximately

Environmental Risk Sciences Pty Ltd
6 Wilshire Ave
Carlingford NSW 2118

Phone: +61 2 9614 0297
Fax: +61 2 8215 0657
Email: jackie@enrisks.com

www.enrisks.com

26 July 2013

Sydney Harbour Federation Trust
Building 28
Best Ave
Mosman NSW 2088

Attention: Willem Classie

Re: Detection of PAHs in Ambient Air

The monthly analysis of ambient air samples conducted by the Sydney Harbour Federation Trust (SHFT) by EML, which is undertaken in parallel with monitoring undertaken by Thiess, reported detections of a number of polycyclic aromatic hydrocarbons (PAHs) in air during the May 2013 sampling round, including benzo(a)pyrene (BaP) that exceeded the adopted Air Quality Response Levels (AQRL). Review of sampling conducted by Thiess in May and June 2013 also indicated lower level detections of some PAHs. The detected PAHs have been further reviewed in relation to the adopted AQRL adopted by Thiess for the sampling program and human health risks.

In relation to PAHs the only AQRL that has been established is for BaP. This is a key carcinogenic PAH that is commonly used as an indicator or marker for exposure to PAHs. The AQRL adopted in the ambient air sampling program is derived from the air investigation goal established by the National Environment Protection Measure (Air Toxics) (NEPM). The goal for BaP is 0.3 ng/m^3 based on an annual average (taken as an arithmetic mean of 24-hour monitoring results) and is designed to be protective of human health. There are no 24-hour goals for the presence of BaP in ambient air as the health effects associated with exposure to this compound relate to long-term exposures to low levels (i.e. chronic exposures). The maximum AQRL (AQRLmax) adopted by Thiess is the same as the NEPM goal, however the initial goal for screening, AQRL1, has adopted the same goal concentration but over a 24-hour period. This is intended to trigger further assessment of the concentrations detected rather than be indicative of a long-term health risk.

The concentration of BaP detected in ambient air in May 2013 (reported by EML) of 0.42 ng/m^3, measured over a 24 hour period, exceeds the adopted AQRL1 level of 0.3 ng/m^3. The concentration of BaP reported by Thiess in May and June 2013 was lower at <0.123 ng/m^3 and 0.148 ng/m^3 respectively, both below the adopted AQRL1 and consistent with the background air sample collected prior to any works commencing. As the BaP health based guideline is based on an annual average (not one 24-hour period), fluctuations in short-term air concentrations (i.e. small exceedances and concentrations lower than the guideline) are allowable. For the assessment of potential risks to human health it is more relevant to consider the long-term average concentration.

Since commencement of the project an average (of all 24-hour ambient air samples collected adjacent to the site) can be calculated (based on data reported by Thiess and EML, adopting the analytical limit of reporting where not detected). The remediation project commenced in July 2012 (with the OCE completed in January 2013 and excavations started in February 2013). Ambient air monitoring conducted by Thiess commenced in July 2012 and hence there is a full 12 months of monitoring data available since the project started. Ambient air monitoring has been conducted by EML since February 2013 (when excavations commenced) and 3 months of data is available.

An average 24-hour concentration of BaP reported from all the ambient air monitoring events conducted from July 2012 to June 2013 is 0.17 ng/m^3, which is below the AQRLmax and NEPM goal of 0.3 ng/m^3.

On this basis, while a detection of BaP in excess of the initial screening criteria, AQRL1, was reported in May 2013 at one location, the annual average concentration of BaP in ambient air is below the health based criteria and hence the fluctuation in concentration reported in May is not considered to be of concern.

Limitations

Environmental Risk Sciences has prepared this letter for the use of SHFT in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this letter.

The methodology adopted and sources of information used are outlined in this letter. Environmental Risk Sciences has made no independent verification of this information beyond the agreed scope of works and assumes no responsibility for any inaccuracies or omissions. No indications were found that information contained in the information provided by SHFT for use in this assessment was false.

This letter was prepared in July 2013 and is based on the information provided and reviewed at that time. Environmental Risk Sciences disclaims responsibility for any changes that may have occurred after this time.

This letter should be read in full. No responsibility is accepted for use of any part of this letter in any other context or for any other purpose or by third parties. This letter does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

If you require any additional information please do not hesitate to contact me on (02) 9614 0297 or 0425 206 295.

Yours sincerely,

Jackie Wright (Fellow ACTRA)
Principal/Director
Environmental Risk Sciences (enRiskS)