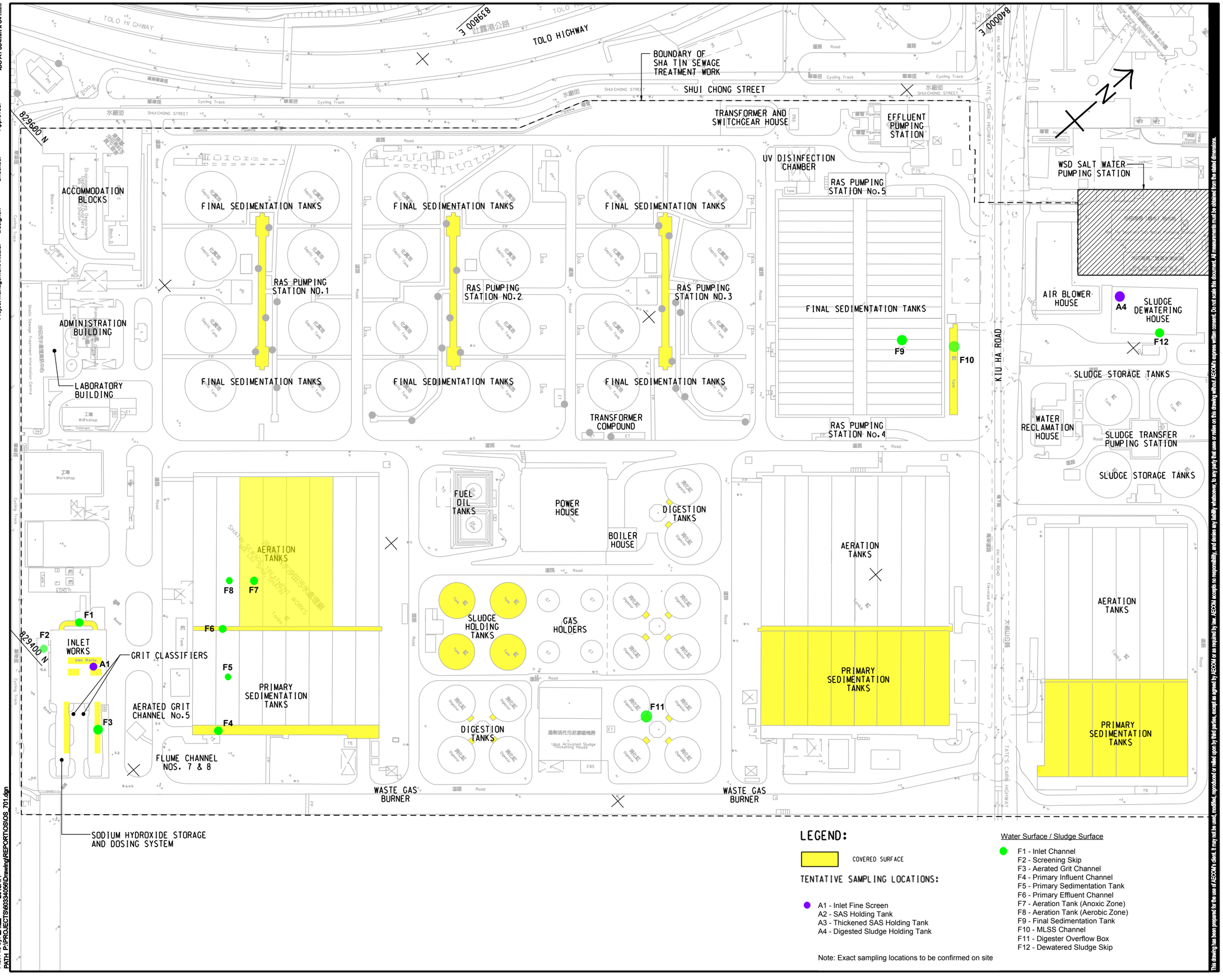
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



LEGEND:

COVERED SURFACE

TENTATIVE SAMPLING LOCATIONS:

- A1 - Inlet Fine Screen
- A2 - SAS Holding Tank
- A3 - Thickened SAS Holding Tank
- A4 - Digested Sludge Holding Tank

Water Surface / Sludge Surface

- F1 - Inlet Channel
- F2 - Screening Skip
- F3 - Aerated Grit Channel
- F4 - Primary Influent Channel
- F5 - Primary Sedimentation Tank
- F6 - Primary Effluent Channel
- F7 - Aeration Tank (Anoxic Zone)
- F8 - Aeration Tank (Aerobic Zone)
- F9 - Final Sedimentation Tank
- F10 - MLSS Channel
- F11 - Digester Overflow Box
- F12 - Dewatered Sludge Skip

Note: Exact sampling locations to be confirmed on site

Plot File by: ZIHLZ 2015/4/1
PATH: P:\PROJECTS\60334056\Drawing\REPORT\OSIOS_701.dgn

AECOM

PROJECT
項目

SAMPLING AND TESTING OF TOXIC AIR POLLUTANTS AT SHA TIN SEWAGE TREATMENT WORKS

CLIENT
業主

渠務署
Drainage Services Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

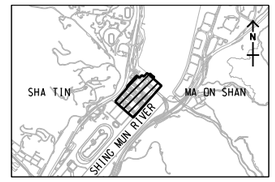
ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核查

STATUS
狀況

SCALE 比例: A1 1 : 1000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN 索引圖 A1 1 : 50000



PROJECT NO. 項目編號: 60334056
CONTRACT NO. 合約編號: SPW 08/2015

SHEET TITLE 圖紙名稱

LOCATION PLAN FOR THE TAP SAMPLING WITHIN STSTW

SHEET NUMBER 圖紙編號

Figure No. 60334056/SPW/001

DATE OF SAMPLING

Thirteen sampling events of air samples were conducted by ALS staff.

Date	Sampling Event
25th September 2015	1st Sampling Event for Lump Sum Items (all test parameters)
30th September 2015	2nd Sampling Event for Lump Sum Items (except VOC test)
7th October 2015	2nd Sampling Event for Lump Sum Items (VOC test)

SAMPLING LOCATION

Lump Sum Items:
Samples were collected from the sixteen source locations:

Sample ID	Sampling Location
A1	Inlet Fine Screen
A2	SAS Holding Tank
A3	Thickened SAS Holding Tank
A4	Digested Sludge Holding Tank
F1	Inlet Channel
F2	Screening Skip
F3	Aerated Grit Channel
F4	Primary Influent Channel
F5	Primary Sedimentation Tank
F6	Primary Effluent Tank
F7	Aeration Tank (Anoxic Zone)
F8	Aeration Tank (Aerobic Zone)
F9	Final Sedimentation Tank
F10	MLSS Channel
F11	Digester Overflow Box
F12	Dewatered Sludge Skip

TEST PARAMETERS

Lump Sum Items and Provisional Items:

The laboratory used the method required in the tender document to conduct the testing to the required reporting limits as follow:

Item	Chemical Compound	ALS Test Method	ALS Laboratory Reporting Limit
1	Hydrogen Sulphide (H_2S)	H_2S Analyzer	3ppbv
2	Carbon Disulphide (CS_2)	USEPA TO-14A	1ppbv
3	Formaldehyde (CH_2O)	USEPA TO-11A	20ppbv
4	Acetaldehyde (C_2H_4O)		20ppbv
5	Ammonia (NH_3)	NIOSH 6015	10ppbv
6	Sulphur Dioxide (SO_2)	OSHA ID104	50ppbv
7	Carbon Monoxide (CO)	Testo 350 analyser	2ppmv
8	Nitrogen Dioxide (NO_2)	Ogawa Passive Sampler	16ppbv
		Testo 350 analyser (for inlet of the 6 Deodourisation Units and outlet of Deodourisation Unit 1 only)	2ppmv
9	Dimethyl Sulphide ($(CH_3)_2S$)	USEPA TO-14A	1ppbv
10	Diethyl Sulphide ($C_4H_{10}S$)		100ppbv (semi-quantitation)
11	Diallyl Sulfide ($C_6H_{10}S_2$)		100ppbv (semi-quantitation)
12	Dimethyl Disulphide (CH_3SSCH_3)		1ppbv
13	Methyl Mercaptan (CH_4S)		100ppbv (semi-quantitation)
14	Ethyl Mercaptan (C_2H_6S)		100ppbv (semi-quantitation)
15	Acetone (C_3H_6O)		100ppbv (semi-quantitation)
16	Butanone (C_4H_8O)		100ppbv (semi-quantitation)

METHOD STATEMENT

Lump Sum Items and Provisional Items:

- **Hydrogen Sulphide (H_2S)**

  Hydrogen Sulphide Analyzer

  Instantaneous measurement of H_2S in air was measured by Jerome J605/J631-X H_2S analyser for 5 minutes (1 minute per interval, total 6 readings). The trace level of H_2S in the air was determined electrochemically on the gold film sensor of the analyser and the concentration of H_2S in the air will be reported.

- **Ammonia**
  Method Ref: NIOSH6015

  Air pump was used to collect air sample through an acid-treated silica gel sorbent tube at each sampling location at 1 L/min for 60 minutes. The sampled silica gel was extracted in the laboratory with water and analysed by colorimetric method. The ammonia concentration in air was calculated and reported versus the volume of air collected.

- **Sulphur Dioxide**
  Method Ref: OSHA ID104

  Air pump was used to collect air sample through a glass bubbler containing 0.3 N hydrogen peroxide solution at each sampling location at 1 L/min for 60 minutes. The amount of sulphur dioxide in the air was determined by analyse the sulphate ion in the absorption solution by ion chromatography. Sample was delivered to ALS US laboratory for analysis.

- **Carbon Monoxide**

  Testo 350 Analyser

  Air sample was drawn into a portable Testo 350 analyser (Electrochemical Analyser) at each sampling location to measure the CO concentration directly for an instantaneous reading for 5 minutes (1 minute per interval, total 6 readings).

- **Nitrogen Dioxide**

  Ogawa Passive Sampler (16 ppbv detection)

  Passive sampling technique was used to determine the Nitrogen Dioxide (NO_2) in ambient air. Filter coated with triethanolamine (TEA) was used to absorb NO_2 in air. After the sampling, nitrite absorbed in the sampler was extracted by water and analysed colorimetrically. The concentration of NO_2 in air was calculated by the resulting Nitrite concentration in the solution versus the volume of air collected.

  Testo 350 Analyser (2 ppmv detection)

  Air sample was drawn into a portable Testo 350 analyser (Electrochemical Analyser) at each sampling location to measure the NO_2 concentration directly for an instantaneous reading for 5 minutes (1 minute per interval, total 6 readings).

- **Volatile Organic Compounds (VOCs)**
  (incl. Carbon Disulphide, Dimethyl Sulphide, Diethyl Sulphide, Diallyl Sulfide, Dimethyl Disulpide, Methyl Mercaptan, Ethyl Mercaptan, Acetone and Butanone)
  Method Ref: USEPA Method TO-14A

Canister was used to collect 6 litre of air sample from each sampling location for 1 hour.

In according to the GCMS testing approach as stated in USEPA Method TO-14A, a known volume of air sample was quantitatively transferred into a pre-concentrator when the sample was dehydrated and the VOCs was trapped. The pre-concentrator was then flushed with inert and heated up to introduce the VOCs into GCMS for analysis.

- **Aldehydes (Formaldehyde and Acetaldehyde)**
  Method Ref: USEPA TO-11A

  Air pump was used to pump the air through DNPH-coated silica gel sorbent tube at each sampling location at a constant flow rate (1 L/min) and measured time (60 minutes). The sampled silica gel was extracted with organic solvent and make up the volume volumetrically. The amount of aldehyde was analysed by liquid chromatography with ultraviolet (UV) detection. The concentration in air was calculated by the resulting concentration in the solution and the volume of air collected.

RESULT:

1. LUMP SUM ITEMS

Hydrogen Sulphide (H_2S)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-001	A1-1	25-09-15	16:07 - 16:12	Hydrogen Sulphide (H_2S)	ppbv	3	8870	10120	9300
HK1536183-002	A2-1	25-09-15	12:37 - 12:42	Hydrogen Sulphide (H_2S)	ppbv	3	49	114	75
HK1536183-003	A3-1	25-09-15	13:12 - 13:17	Hydrogen Sulphide (H_2S)	ppbv	3	5	11	6
HK1536183-004	A4-1	25-09-15	10:40 - 10:45	Hydrogen Sulphide (H_2S)	ppbv	3	60	140	115
HK1536183-005	F1-1	25-09-15	16:01 - 16:06	Hydrogen Sulphide (H_2S)	ppbv	3	18994	19220	19100
HK1536183-006	F2-1	25-09-15	17:39 - 17:44	Hydrogen Sulphide (H_2S)	ppbv	3	23	32	27
HK1536183-007	F3-1	25-09-15	17:33 - 17:38	Hydrogen Sulphide (H_2S)	ppbv	3	2600	6500	4120
HK1536183-008	F4-1	25-09-15	14:26 - 14:31	Hydrogen Sulphide (H_2S)	ppbv	3	116	1077	709
HK1536183-009	F5-1	25-09-15	14:42 - 14:47	Hydrogen Sulphide (H_2S)	ppbv	3	464	1108	739
HK1536183-010	F6-1	25-09-15	14:49 - 14:54	Hydrogen Sulphide (H_2S)	ppbv	3	2791	7137	4440
HK1536183-011	F7-1	25-09-15	15:10 - 15:15	Hydrogen Sulphide (H_2S)	ppbv	3	6	21	12
HK1536183-012	F8-1	25-09-15	15:04 - 15:09	Hydrogen Sulphide (H_2S)	ppbv	3	6	7	6
HK1536183-013	F9-1	25-09-15	08:55 - 09:00	Hydrogen Sulphide (H_2S)	ppbv	3	0	3	<3
HK1536183-014	F10-1	25-09-15	09:05 - 09:10	Hydrogen Sulphide (H_2S)	ppbv	3	0	0	<3

1. LUMP SUM ITEMS

Hydrogen Sulphide (H_2S) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-015	F11-1	25-09-15	13:53 - 13:58	Hydrogen Sulphide (H_2S)	ppbv	3	203	242	223
HK1536183-016	F12-1	25-09-15	10:25 - 10:30	Hydrogen Sulphide (H_2S)	ppbv	3	6	8	7
HK1536183-017	Blk-1	25-09-15	08:45 - 08:50	Hydrogen Sulphide (H_2S)	ppbv	3	0	0	<3
HK1536183-018	A1-2	30-09-15	14:57 - 15:02	Hydrogen Sulphide (H_2S)	ppbv	3	9800	15000	11900
HK1536183-019	A2-2	30-09-15	11:13 - 11:18	Hydrogen Sulphide (H_2S)	ppbv	3	118	176	148
HK1536183-020	A3-2	30-09-15	10:49 - 10:54	Hydrogen Sulphide (H_2S)	ppbv	3	40	95	53
HK1536183-021	A4-2	30-09-15	09:43 - 09:48	Hydrogen Sulphide (H_2S)	ppbv	3	500	570	530
HK1536183-022	F1-2	30-09-15	15:12 - 15:17	Hydrogen Sulphide (H_2S)	ppbv	3	1500	5300	2650
HK1536183-023	F2-2	30-09-15	15:50 - 15:55	Hydrogen Sulphide (H_2S)	ppbv	3	599	902	765
HK1536183-024	F3-2	30-09-15	15:21 - 15:26	Hydrogen Sulphide (H_2S)	ppbv	3	7600	16000	11800
HK1536183-025	F4-2	30-09-15	13:03 - 13:08	Hydrogen Sulphide (H_2S)	ppbv	3	1060	2200	1490
HK1536183-026	F5-2	30-09-15	16:38 - 16:43	Hydrogen Sulphide (H_2S)	ppbv	3	350	1142	575
HK1536183-027	F6-2	30-09-15	16:49 - 17:04	Hydrogen Sulphide (H_2S)	ppbv	3	3100	16000	8980
HK1536183-028	F7-2	30-09-15	13:34 - 13:39	Hydrogen Sulphide (H_2S)	ppbv	3	111	206	163
HK1536183-029	F8-2	30-09-15	13:25 - 13:30	Hydrogen Sulphide (H_2S)	ppbv	3	105	369	227

1. LUMP SUM ITEMS

Hydrogen Sulphide (H_2S) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-030	F9-2	30-09-15	08:31 - 08:36	Hydrogen Sulphide (H_2S)	ppbv	3	0	5	<3
HK1536183-031	F10-2	30-09-15	08:43 - 08:48	Hydrogen Sulphide (H_2S)	ppbv	3	3	10	6
HK1536183-032	F11-2	30-09-15	12:20 - 12:25	Hydrogen Sulphide (H_2S)	ppbv	3	42	64	52
HK1536183-033	F12-2	30-09-15	09:33 - 09:38	Hydrogen Sulphide (H_2S)	ppbv	3	22	40	31
HK1536183-034	Blk-2	30-09-15	08:25 - 08:30	Hydrogen Sulphide (H_2S)	ppbv	3	0	0	<3

Remark:

1. H_2S result reported >10ppmv (10,000ppbv) has exceeded the maximum measurement range of the analyzer, the result should be used as reference only.

1. LUMP SUM ITEMS

Carbon Monoxide (CO)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-001	A1-1	25-09-15	16:07 - 16:12	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-002	A2-1	25-09-15	12:37 - 12:42	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-003	A3-1	25-09-15	13:12 - 13:17	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-004	A4-1	25-09-15	10:40 - 10:45	Carbon Monoxide (CO)	ppmv	2	2	3	2
HK1536183-005	F1-1	25-09-15	16:01 - 16:06	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-006	F2-1	25-09-15	17:39 - 17:44	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-007	F3-1	25-09-15	17:33 - 17:38	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-008	F4-1	25-09-15	14:26 - 14:31	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-009	F5-1	25-09-15	14:42 - 14:47	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-010	F6-1	25-09-15	14:49 - 14:54	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-011	F7-1	25-09-15	15:10 - 15:15	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-012	F8-1	25-09-15	15:04 - 15:09	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-013	F9-1	25-09-15	08:55 - 09:00	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-014	F10-1	25-09-15	09:05 - 09:10	Carbon Monoxide (CO)	ppmv	2	0	0	<2

1. LUMP SUM ITEMS

Carbon Monoxide (CO) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-015	F11-1	25-09-15	13:53 - 13:58	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-016	F12-1	25-09-15	10:25 - 10:30	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-017	Blk-1	25-09-15	08:45 - 08:50	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-018	A1-2	30-09-15	14:57 - 15:02	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-019	A2-2	30-09-15	11:13 - 11:18	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-020	A3-2	30-09-15	10:49 - 10:54	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-021	A4-2	30-09-15	09:43 - 09:48	Carbon Monoxide (CO)	ppmv	2	2	2	2
HK1536183-022	F1-2	30-09-15	15:12 - 15:17	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-023	F2-2	30-09-15	15:50 - 15:55	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-024	F3-2	30-09-15	15:21 - 15:26	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-025	F4-2	30-09-15	13:03 - 13:08	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-026	F5-2	30-09-15	16:38 - 16:43	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-027	F6-2	30-09-15	16:49 - 17:04	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-028	F7-2	30-09-15	13:34 - 13:39	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-029	F8-2	30-09-15	13:25 - 13:30	Carbon Monoxide (CO)	ppmv	2	0	0	<2

1. LUMP SUM ITEMS

Carbon Monoxide (CO) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Instrument Reading		Reported Average Result
							Min.	Max.	
HK1536183-030	F9-2	30-09-15	08:31 - 08:36	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-031	F10-2	30-09-15	08:43 - 08:48	Carbon Monoxide (CO)	ppmv	2	0	0	<2
HK1536183-032	F11-2	30-09-15	12:20 - 12:25	Carbon Monoxide (CO)	ppmv	2	0	1	<2
HK1536183-033	F12-2	30-09-15	09:33 - 09:38	Carbon Monoxide (CO)	ppmv	2	0	2	<2
HK1536183-034	Blk-2	30-09-15	08:25 - 08:30	Carbon Monoxide (CO)	ppmv	2	0	0	<2

1. LUMP SUM ITEMS

Formaldehyde, Acetaldehyde, Ammonia and Sulphur Dioxide

Sample ID			HK1536183-001	HK1536183-002	HK1536183-003	HK1536183-004	HK1536183-005
Client ID			A1-1	A2-1	A3-1	A4-1	F1-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			17:20 - 18:20	11:27 - 12:27	11:47 - 12:47	10:00 - 11:00	17:25 - 18:25
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	24	<10	285	207	325
Sulphur Dioxide (SO_2)	ppbv	50	456	57	<50	93	225

Sample ID			HK1536183-006	HK1536183-007	HK1536183-008	HK1536183-009	HK1536183-010
Client ID			F2-1	F3-1	F4-1	F5-1	F6-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			18:30 - 19:30	18:23 - 19:23	13:50 - 14:50	15:50 - 16:50	16:05 - 17:05
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	28	19	49	40	31
Sulphur Dioxide (SO_2)	ppbv	50	244	213	175	781	269

1. LUMP SUM ITEMS

Formaldehyde, Acetaldehyde, Ammonia and Sulphur Dioxide (Con't)

Sample ID			HK1536183-011	HK1536183-012	HK1536183-013	HK1536183-014	HK1536183-015
Client ID			F7-1	F8-1	F9-1	F10-1	F11-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			13:55 - 14:55	14:41 - 15:41	08:42 - 09:42	08:40 - 09:40	13:05 - 14:05
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	<10	<10	<10	<10	346
Sulphur Dioxide (SO_2)	ppbv	50	88	51	53	55	72

Sample ID			HK1536183-016	HK1536183-017	HK1536183-018	HK1536183-019	HK1536183-020
Client ID			F12-1	Blk-1	A1-2	A2-2	A3-2
Sampling Date			25-09-15	25-09-15	30-09-15	30-09-15	30-09-15
Sampling Time			09:47 - 10:47	---	14:04 - 15:04	10:42 - 11:42	10:38 - 11:38
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	1160	<10	42	19	1210
Sulphur Dioxide (SO_2)	ppbv	50	51	<50	869	113	<50

1. LUMP SUM ITEMS

Formaldehyde, Acetaldehyde, Ammonia and Sulphur Dioxide (Con't)

Sample ID			HK1536183-021	HK1536183-022	HK1536183-023	HK1536183-024	HK1536183-025
Client ID			A4-2	F1-2	F2-2	F3-2	F4-2
Sampling Date			30-09-15	30-09-15	30-09-15	30-09-15	30-09-15
Sampling Time			09:30 - 10:30	14:01 - 15:01	15:20 - 16:20	15:15 - 16:15	11:57 - 12:57
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	513	94	26	73	56
Sulphur Dioxide (SO_2)	ppbv	50	114	1170	188	988	275

Sample ID			HK1536183-026	HK1536183-027	HK1536183-028	HK1536183-029	HK1536183-030
Client ID			F5-2	F6-2	F7-2	F8-2	F9-2
Sampling Date			30-09-15	30-09-15	30-09-15	30-09-15	30-09-15
Sampling Time			16:30 - 17:30	16:30 - 17:30	12:58 - 13:58	12:49 - 13:49	08:22 - 09:22
Analyte	Units	LOR					
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	47	61	<10	14	<10
Sulphur Dioxide (SO_2)	ppbv	50	165	513	68	60	58

1. LUMP SUM ITEMS

Formaldehyde, Acetaldehyde, Ammonia and Sulphur Dioxide (Con't)

Sample ID			HK1536183-031	HK1536183-032	HK1536183-033	HK1536183-034
Client ID			F10-2	F11-2	F12-2	Blk-2
Sampling Date			30-09-15	30-09-15	30-09-15	30-09-15
Sampling Time			08:16 - 09:16	11:40 - 12:40	09:22 - 10:22	---
Analyte	Units	LOR				
Formaldehyde (CH_2O)	ppbv	20	<20	<20	<20	<20
Acetaldehyde (C_2H_4O)	ppbv	20	<20	<20	<20	<20
Ammonia (NH_3)	ppbv	10	<10	708	602	<10
Sulphur Dioxide (SO_2)	ppbv	50	<50	67	<50	<50

1. LUMP SUM ITEMS

Nitrogen Dioxide (Ogawa Passive Sampler)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Result
HK1536183-001	A1-1	25-09-15	10:22 – 18:22	Nitrogen Dioxide (NO_2)	ppbv	16	<16
HK1536183-002	A2-1	25-09-15	10:56 – 18:56	Nitrogen Dioxide (NO_2)	ppbv	16	35
HK1536183-003	A3-1	25-09-15	10:59 – 18:59	Nitrogen Dioxide (NO_2)	ppbv	16	49
HK1536183-004	A4-1	25-09-15	10:00 – 18:00	Nitrogen Dioxide (NO_2)	ppbv	16	1290
HK1536183-005	F1-1	25-09-15	10:19 – 18:19	Nitrogen Dioxide (NO_2)	ppbv	16	22
HK1536183-006	F2-1	25-09-15	11:24 – 19:24	Nitrogen Dioxide (NO_2)	ppbv	16	30
HK1536183-007	F3-1	25-09-15	10:27 – 18:27	Nitrogen Dioxide (NO_2)	ppbv	16	<16
HK1536183-008	F4-1	25-09-15	10:46 – 18:46	Nitrogen Dioxide (NO_2)	ppbv	16	44
HK1536183-009	F5-1	25-09-15	10:43 – 18:43	Nitrogen Dioxide (NO_2)	ppbv	16	48
HK1536183-010	F6-1	25-09-15	10:40 – 18:40	Nitrogen Dioxide (NO_2)	ppbv	16	44
HK1536183-011	F7-1	25-09-15	10:38 – 18:38	Nitrogen Dioxide (NO_2)	ppbv	16	52
HK1536183-012	F8-1	25-09-15	10:36 – 18:36	Nitrogen Dioxide (NO_2)	ppbv	16	50
HK1536183-013	F9-1	25-09-15	08:32 – 16:32	Nitrogen Dioxide (NO_2)	ppbv	16	44
HK1536183-014	F10-1	25-09-15	08:35 – 16:35	Nitrogen Dioxide (NO_2)	ppbv	16	48

1. LUMP SUM ITEMS

Nitrogen Dioxide (Ogawa Passive Sampler) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Result
HK1536183-015	F11-1	25-09-15	11:04 – 19:04	Nitrogen Dioxide (NO_2)	ppbv	16	101
HK1536183-016	F12-1	25-09-15	09:40 – 17:40	Nitrogen Dioxide (NO_2)	ppbv	16	75
HK1536183-017	Blk-1	25-09-15	---	Nitrogen Dioxide (NO_2)	ppbv	16	16
HK1536183-018	A1-2	30-09-15	08:46 – 16:46	Nitrogen Dioxide (NO_2)	ppbv	16	<16
HK1536183-019	A2-2	30-09-15	08:25 – 16:25	Nitrogen Dioxide (NO_2)	ppbv	16	21
HK1536183-020	A3-2	30-09-15	08:30 – 16:30	Nitrogen Dioxide (NO_2)	ppbv	16	37
HK1536183-021	A4-2	30-09-15	08:50 – 16:50	Nitrogen Dioxide (NO_2)	ppbv	16	1390
HK1536183-022	F1-2	30-09-15	08:42 – 16:42	Nitrogen Dioxide (NO_2)	ppbv	16	<16
HK1536183-023	F2-2	30-09-15	08:55 – 16:55	Nitrogen Dioxide (NO_2)	ppbv	16	21
HK1536183-024	F3-2	30-09-15	08:50 – 16:50	Nitrogen Dioxide (NO_2)	ppbv	16	19
HK1536183-025	F4-2	30-09-15	09:17 – 17:17	Nitrogen Dioxide (NO_2)	ppbv	16	23
HK1536183-026	F5-2	30-09-15	09:09 – 17:09	Nitrogen Dioxide (NO_2)	ppbv	16	19
HK1536183-027	F6-2	30-09-15	09:06 – 17:06	Nitrogen Dioxide (NO_2)	ppbv	16	26
HK1536183-028	F7-2	30-09-15	09:00 – 17:00	Nitrogen Dioxide (NO_2)	ppbv	16	23
HK1536183-029	F8-2	30-09-15	09:02 – 17:02	Nitrogen Dioxide (NO_2)	ppbv	16	37

1. LUMP SUM ITEMS

Nitrogen Dioxide (Ogawa Passive Sampler) (Con't)

Sample ID	Client ID	Sampling Date	Sampling Time	Analyte	Units	LOR	Reported Average Result
HK1536183-030	F9-2	30-09-15	08:06 - 16:06	Nitrogen Dioxide (NO_2)	ppbv	16	38
HK1536183-031	F10-2	30-09-15	08:08 - 16:08	Nitrogen Dioxide (NO_2)	ppbv	16	33
HK1536183-032	F11-2	30-09-15	08:34 - 16:34	Nitrogen Dioxide (NO_2)	ppbv	16	45
HK1536183-033	F12-2	30-09-15	08:45 - 16:45	Nitrogen Dioxide (NO_2)	ppbv	16	24
HK1536183-034	Blk-2	30-09-15	---	Nitrogen Dioxide (NO_2)	ppbv	16	<16

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs)

Sample ID			HK1536183-001	HK1536183-002	HK1536183-003	HK1536183-004	HK1536183-005
Client ID			A1-1	A2-1	A3-1	A4-1	F1-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			17:20 - 18:20	11:27 - 12:27	11:47 - 12:47	10:00 - 11:00	17:25 - 18:25
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	4	1	40	4	23
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	10	35	28	2	42
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	<1	3	34	<1	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-006	HK1536183-007	HK1536183-008	HK1536183-009	HK1536183-010
Client ID			F2-1	F3-1	F4-1	F5-1	F6-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			18:30 - 19:30	18:23 - 19:23	13:50 - 14:50	15:50 - 16:50	16:05 - 17:05
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	7	22	<1	4	<1
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	7	36	2	6	<1
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	2	33	<1	<1	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-011	HK1536183-012	HK1536183-013	HK1536183-014	HK1536183-015
Client ID			F7-1	F8-1	F9-1	F10-1	F11-1
Sampling Date			25-09-15	25-09-15	25-09-15	25-09-15	25-09-15
Sampling Time			13:55 - 14:55	14:41 - 15:41	08:42 - 09:42	08:40 - 09:40	13:05 - 14:05
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	24	<1	<1	<1	17
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	40	<1	<1	2	1
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	144	1	<1	<1	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-016	HK1536183-017	HK1536183-018	HK1536183-019	HK1536183-020
Client ID			F12-1	Blk-1	A1-2	A2-2	A3-2
Sampling Date			25-09-15	25-09-15	07-10-15	07-10-15	07-10-15
Sampling Time			09:47 - 10:47	---	10:24 - 11:24	08:06 - 09:06	08:15 - 09:15
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	2	<1	8	3	<1
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	7	<1	16	15	3
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	1	<1	8	7	4
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

Work Order: HK1536183

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-021	HK1536183-022	HK1536183-023	HK1536183-024	HK1536183-025
Client ID			A4-2	F1-2	F2-2	F3-2	F4-2
Sampling Date			07-10-15	07-10-15	07-10-15	07-10-15	07-10-15
Sampling Time			08:38 - 09:38	10:17 - 11:17	13:02 - 14:02	10:30 - 11:30	12:44 - 13:44
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	16	15	5	6	<1
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	120	50	3	9	<1
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	9	<1	18	<1	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-026	HK1536183-027	HK1536183-028	HK1536183-029	HK1536183-030
Client ID			F5-2	F6-2	F7-2	F8-2	F9-2
Sampling Date			07-10-15	07-10-15	07-10-15	07-10-15	07-10-15
Sampling Time			12:40 - 13:40	12:31 - 13:31	11:03 - 12:03	11:06 - 12:06	08:53 - 09:53
Analyte	Units	LOR					
Carbon Disulphide (CS_2)	ppbv	1	<1	8	<1	6	<1
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	<1	24	2	6	<1
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	<1	9	<1	37	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100	<100

1. LUMP SUM ITEMS

Volatile Organic Compounds (VOCs) (Con't)

Sample ID			HK1536183-031	HK1536183-032	HK1536183-033	HK1536183-034
Client ID			F10-2	F11-2	F12-2	Blk-2
Sampling Date			07-10-15	07-10-15	07-10-15	07-10-15
Sampling Time			09:43 - 10:43	09:57 - 10:57	08:28 - 09:28	---
Analyte	Units	LOR				
Carbon Disulphide (CS_2)	ppbv	1	<1	<1	<1	<1
Dimethyl Sulphide ($(CH_3)_2S$)	ppbv	1	<1	1	<1	<1
Diethyl Sulphide ($C_4H_{10}S$) Note 1	ppbv	100	<100	<100	<100	<100
Diallyl Sulfide ($C_6H_{10}S_2$) Note 1	ppbv	100	<100	<100	<100	<100
Dimethyl Disulphide (CH_3SSCH_3)	ppbv	1	<1	<1	<1	<1
Methyl Mercaptan (CH_4S) Note 1	ppbv	100	<100	<100	<100	<100
Ethyl Mercaptan (C_2H_6S) Note 1	ppbv	100	<100	<100	<100	<100
Acetone (C_3H_6O) Note 1	ppbv	100	<100	<100	<100	<100
Butanone (C_4H_8O) Note 1	ppbv	100	<100	<100	<100	<100

Note:

1. The concentration of analytes was estimated by comparing against the concentration of the internal standards added to the sample during testing.

2. LOR denotes limit of reporting

Appendix 1
Site Conditions and Observations

LUMP SUM ITEMS

1st Sampling Event (All Test Parameters)

Date: 25th September, 2015

Sample ID	Time	Ambient Temperature (°C)	Relative Humidity (%)	Wind Speed (m/s)	Wind Direction (degree)	Weather Condition
A1	16:07	36.2	54.0	0.4	281	Sunny
A2	12:30	33.6	63.7	0	NA	Sunny
A3	12:35	33.5	63.0	0	NA	Sunny
A4	10:04	32.9	71.1	0	NA	Sunny
F1	16:01	35.8	54.4	0.4	190	Sunny
F2	17:39	33.9	68.0	0.5	349	Sunny
F3	17:33	36.1	53.1	1.2	253	Sunny
F4	14:27	34.6	60.1	1.1	273	Sunny
F5	14:42	35.0	59.8	0.8	021	Sunny
F6	14:49	35.2	59.2	1.1	114	Sunny
F7	15:10	34.8	58.6	1.7	304	Sunny
F8	15:04	35.4	58.9	0.9	196	Sunny
F9	09:15	34.3	75.6	0	NA	Sunny
F10	09:15	34.3	75.6	0	NA	Sunny
F11	13:53	32.2	66.4	2.0	188	Sunny
F12	10:24	34.3	62.0	0	NA	Sunny

LUMP SUM ITEMS

2nd Sampling Event (Except VOC Test Parameters)

Date: 30th September, 2015

Sample ID	Time	Ambient Temperature (°C)	Relative Humidity (%)	Wind Speed (m/s)	Wind Direction (degree)	Weather Condition
A1	14:57	34.1	59.7	0.7	045	Sunny
A2	11:13	32.8	76.4	0	NA	Sunny
A3	10:49	32.1	77.9	0	NA	Sunny
A4	09:43	32.8	76.0	0.6	199	Sunny
F1	15:12	33.9	58.7	1.6	117	Sunny
F2	15:50	32.9	60.2	1.9	126	Sunny
F3	15:21	33.8	59.1	1.8	159	Sunny
F4	13:00	34.8	54.0	0.9	061	Sunny
F5	16:38	32.0	60.4	1.2	176	Sunny
F6	16:49	31.8	60.2	1.9	177	Sunny
F7	13:33	35.4	51.7	1.2	184	Sunny
F8	13:23	35.3	52.0	1.6	182	Sunny
F9	08:25	31.2	75.2	0.8	156	Sunny
F10	08:27	31.7	75.0	0.4	185	Sunny
F11	12:18	32.7	67.4	1.2	076	Sunny
F12	09:33	32.0	74.8	0.8	160	Sunny

LUMP SUM ITEMS

2nd Sampling Event (VOC Test Parameters)

Date: 7th October, 2015

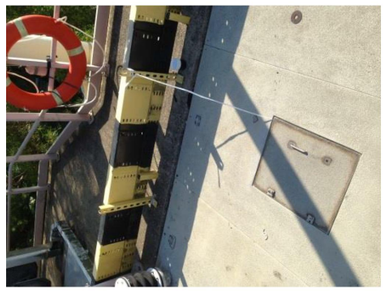
Sample ID	Time	Ambient Temperature (°C)	Relative Humidity (%)	Wind Speed (m/s)	Wind Direction (degree)	Weather Condition
A1	10:24	28.0	84.1	0.4	240	Cloudy
A2	08:06	27.6	85.1	0	NA	Cloudy
A3	08:15	28.1	83.0	0	NA	Cloudy
A4	08:38	27.9	84.6	0	NA	Cloudy
F1	10:17	27.7	84.5	0	NA	Cloudy
F2	13:02	28.7	90.1	0	NA	Cloudy
F3	10:30	29.6	84.2	0	NA	Cloudy
F4	12:44	27.1	91.6	1.3	220	Cloudy
F5	12:40	27.3	92.1	1.6	060	Cloudy
F6	12:31	27.3	92.0	1.7	062	Cloudy
F7	11:03	29.5	79.7	1.1	068	Cloudy
F8	11:06	29.5	80.1	1.0	069	Cloudy
F9	08:53	27.8	84.4	0	NA	Cloudy
F10	09:43	26.1	89.9	1.2	200	Cloudy
F11	09:57	26.4	86.6	1.7	126	Cloudy
F12	08:28	27.4	86.9	0	NA	Cloudy

Appendix 2
Sampling Activity (Photo) at
Different Sampling Locations

LUMP SUM ITEMS

1st Sampling Event (All Test Parameters)

Date: 25th September, 2015



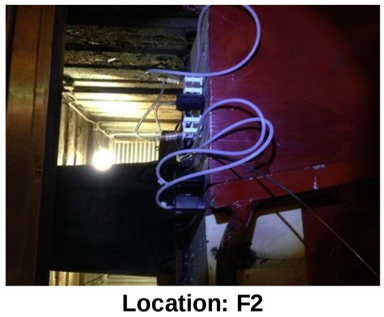
Location: A1

Location: A2

Location: A3

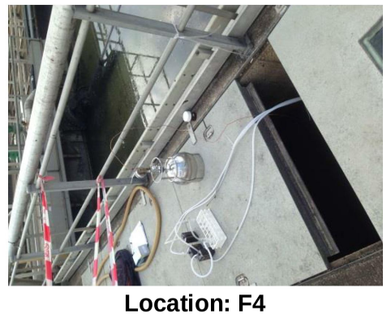
Location: A4

Location: F1



Location: F2

Location: F3



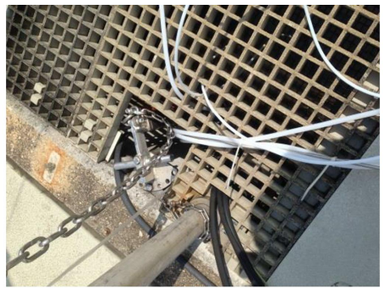
Location: F4

LUMP SUM ITEMS

1st Sampling Event (All Test Parameters) (Con't)

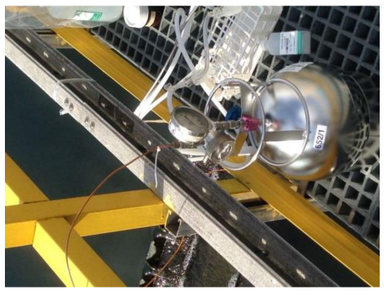
Location: F5

Location: F6



Location: F7

Location: F8



Location: F9

Location: F10

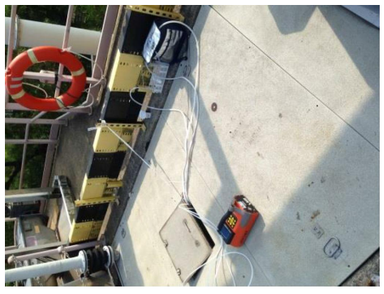
Location: F11

Location: F12

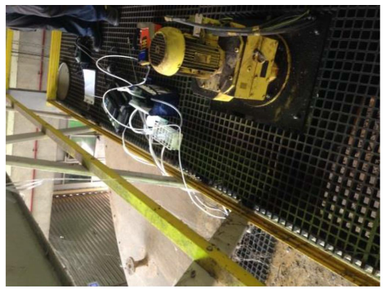
LUMP SUM ITEMS

2nd Sampling Event (Except VOC Test Parameters)

Date: 30th September, 2015



Location: A1

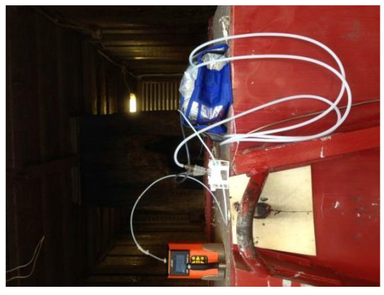


Location: A2

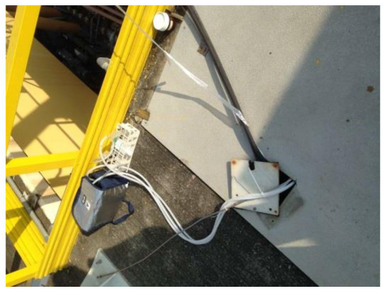
Location: A3

Location: A4

Location: F1



Location: F2



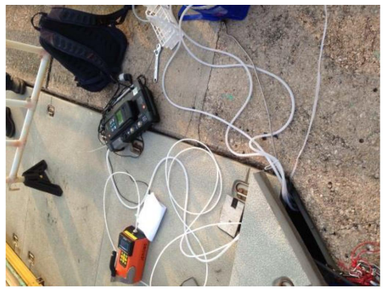
Location: F3

Location: F4

LUMP SUM ITEMS

2nd Sampling Event (Except VOC Test Parameters) (Con't)

Location: F5



Location: F6

Location: F7

Location: F8

Location: F9

Location: F10

Location: F11

Location: F12

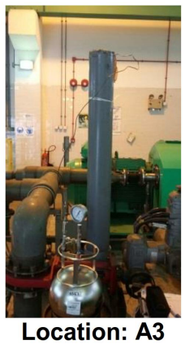
LUMP SUM ITEMS

2nd Sampling Event (VOC Test Parameters)

Date: 7th October, 2015

Location: A1

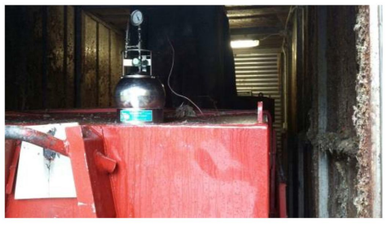
Location: A2



Location: A3

Location: A4

Location: F1



Location: F2

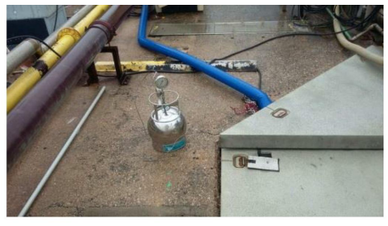
Location: F3

Location: F4

LUMP SUM ITEMS

2nd Sampling Event (VOC Test Parameters) (Con't)

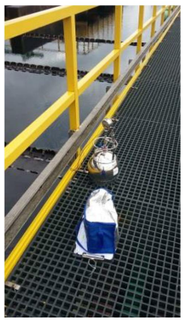
Location: F5



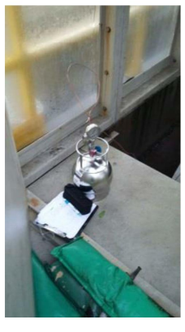
Location: F6

Location: F7

Location: F8

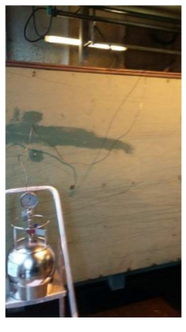


Location: F9



Location: F10

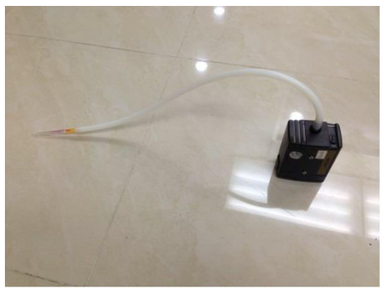
Location: F11



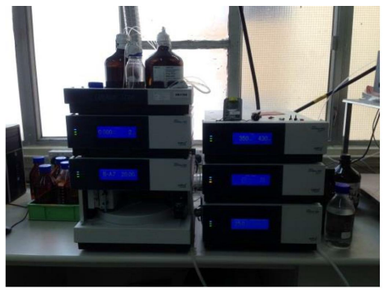
Location: F12

Appendix 3

Sampling and Analysis Equipment (Photo)



Aldehyde (Formaldehyde & Acetaldehyde) Sampler



Analysis Equipment for Aldehyde

Ammonia Sampler

Analysis Equipment for Ammonia

Carbon Monoxide and Nitrogen Dioxide Analyser

Hydrogen Sulphide (H_2S) Analyser

Nitrogen Dioxide Passive Sampler

Analysis Equipment for Nitrogen Dioxide (Passive Sampler)

Sulphur Dioxide Sampler

Analysis Equipment for Sulphur Dioxide