

Appendix A14.2 Baseline Ambient Air Quality Report 2017

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Attachments

Figure 1 – 6 Maps showing Air Quality Monitoring Locations

Laboratory Analysis Reports

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1.0 Scope

This report presents the results of a survey of ambient air quality at various locations in Dublin associated with the Greater Dublin Drainage Orbital Sewer and Wastewater Treatment Plant Project.

2.0 Methodology

The survey was conducted by TMS Environment Ltd personnel during the period 13 June – 11 July 2017. The surveys included the following:

- Diffusion tube surveys for determination of ambient levels of nitrogen dioxide (NO₂) and sulphur dioxide (SO₂), benzene, toluene, ethylbenzene and xylenes (BTEX);
- Subjective assessments of odour at all monitoring locations where diffusion tube monitoring was undertaken.

Diffusion tubes were used for the determination of ambient levels of nitrogen dioxide (NO₂) and sulphur dioxide (SO₂), benzene, toluene, ethylbenzene and xylenes (BTEX) at 12 locations in accordance with standard methodologies including UK DEFRA Technical Guidance LAQM TG(09).

The levels of ambient BTEX, nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) were measured by positioning diffusion tubes at strategic locations for a period of approximately 28 days. The selection of sampling point locations was determined by the location of the proposed site taking in to account the surrounding area, with respect to the location of the samplers relative to buildings and other obstructions, height above ground and sample collection and analysis procedures. After the exposure period was complete, the diffusion tubes were removed from the site; the diffusion tubes were analysed using ultraviolet-visible spectrophotometry to determine the levels of NO₂ and SO₂ and gas chromatography (GC) with flame ionisation detection (FID) analysis for BTEX. The locations of the tubes are marked as AQ1 – AQ12 on the attached maps in Figures 1 - 6.

The monitoring personnel also carried out subjective olfactometric assessments at the same locations during the measurement events. The methodology conformed to the general guidance issued by the EPA in the Guidance Note “**Air Guidance Note 5 (AG5): Odour Impact Assessment Guidance for EPA Licensed Sites**”. This Guidance offers a systematic and consistent approach to the assessment of odours on and in the local area of facilities and installations that are licensed by the Agency. While the study is aimed at establishing baseline ambient air quality as opposed to examining the air quality impact of a licenced facility, the use of this best-practice Guidance demonstrates the robust assessment procedures adopted for the study.

3.0 Survey results

The measurement results are presented in Tables 1 - 6. The detailed laboratory analysis results are presented in the attached Laboratory Analysis Reports and the Field Record Sheets for the Odour Assessments.

Table 14.2.1: Monitoring results for NO₂ and SO₂ for 13 June 2017 to 27 June 2017

Monitoring Location	Monitoring dates	NO ₂ µg/m ⁻³	SO ₂ µg/m ⁻³
AQ1 St. Francis Hospice, Connolly Hospital. North of proposed pumping station	13/06/2017 to 27/06/2017	14.8	<1.5
AQ2 Elm Green Nursing Home, Southeast of proposed pumping station	13/06/2017 to 27/06/2017	14.1	<1.5
AQ3 St. Michael's House, south of proposed WwTP	13/06/2017 to 27/06/2017	15.2	<1.5
AQ4 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	13.2	3.7
AG5 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	10.6	<1.5
AQ6 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	9.1	<1.5
AQ7 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	11.6	<1.5
AQ8 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	14.5	<1.5
AQ9 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	12.4	<1.5
AQ10 In the vicinity of the proposed WwTP site	13/06/2017 to 27/06/2017	13.8	<1.5
AQ11 Grange	13/06/2017 to 27/06/2017	9.0	<1.5
AQ12 Grange	13/06/2017 to 27/06/2017	14.0	<1.5

Table 14.2.2: Monitoring results for NO₂ and SO₂ for 27 June 2017 to 11 July 2017

Monitoring Location	Monitoring dates	NO ₂ µg/m ³	SO ₂ µg/m ³
AQ1 St. Francis Hospice, Connolly Hospital. North of proposed pumping station	27/06/2017 to 11/07/2017	14.1	<2.66
AQ2 Elm Green Nursing Home, Southeast of proposed pumping station	27/06/2017 to 11/07/2017	12.7	<2.65
AQ3 St. Michael's House, south of proposed WwTP	27/06/2017 to 11/07/2017	19.4	<2.65
AQ4 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	15.3	<2.64
AG5 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	11.0	<2.64
AQ6 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	9.3	<2.64
AQ7 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	10.3	<2.64
AQ8 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	10.4	<2.64
AQ9 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	11.9	<2.64
AQ10 In the vicinity of the proposed WwTP site	27/06/2017 to 11/07/2017	13.7	<2.64
AQ11 Grange	27/06/2017 to 11/07/2017	11.6	<2.65
AQ12 Grange	27/06/2017 to 11/07/2017	16.9	<2.65

Table 14.2.3: Monitoring results for BTEX, 13 June 2017 to 27 June 2017

Monitoring Location	Benzene $\mu\text{g}/\text{m}^3$	Toluene $\mu\text{g}/\text{m}^3$	Ethylbenzene $\mu\text{g}/\text{m}^3$	m-, p-xylene $\mu\text{g}/\text{m}^3$	o-Xylene $\mu\text{g}/\text{m}^3$
AQ1	<0.38	2.03	<0.51	0.56	<0.51
AQ2	<0.38	1.23	2.75	2.53	1.02
AQ3	<0.38	1.56	1.56	1.55	0.58
AQ4	<0.38	0.72	<0.51	<0.51	<0.51
AG5	<0.38	0.56	0.80	0.94	<0.51
AQ6	0.77	3.98	<0.51	0.67	<0.51
AQ7	<0.38	2.85	2.14	2.02	0.83
AQ8	0.45	4.30	3.78	3.02	1.32
AQ9	<0.38	10.01	1.35	2.69	0.92
AQ10	<0.38	<0.43	<0.51	<0.51	<0.51
AQ11	<0.38	0.81	<0.51	<0.51	<0.51
AQ12	<0.38	4.10	<0.51	0.70	<0.51

Table 14.2.4: Monitoring results for BTEX, 27 June 2017 to 11 July 2017

Monitoring Location	Benzene $\mu\text{g}/\text{m}^3$	Toluene $\mu\text{g}/\text{m}^3$	Ethylbenzene $\mu\text{g}/\text{m}^3$	m-, p-xylene $\mu\text{g}/\text{m}^3$	o-Xylene $\mu\text{g}/\text{m}^3$
AQ1	0.60	2.34	1.36	1.92	0.75
AQ2	<0.39	0.64	0.69	0.67	<0.51
AQ3	<0.39	<0.43	<0.51	<0.51	<0.51
AQ4	0.53	<0.43	<0.51	<0.51	<0.51
AG5	<0.38	0.93	1.23	1.11	<0.51
AQ6	0.59	1.70	<0.51	2.05	0.52
AQ7	<0.38	0.66	<0.51	<0.51	<0.51
AQ8	0.67	1.54	<0.51	<0.51	<0.51
AQ9	<0.38	<0.43	<0.51	<0.51	<0.51
AQ10	<0.38	2.10	3.61	3.27	1.26
AQ11	0.42	0.59	<0.51	<0.51	<0.51
AQ12	<0.39	0.68	<0.51	<0.51	<0.51

Table 14.2.5: Baseline Odour assessment – 27 June 2017

Monitoring Location	Odour persistence	Odour intensity	Description
AQ1 St. Francis Hospice, Connolly Hospital. North of proposed pumping station	0	0	None detected
AQ2 Elm Green Nursing Home, Southeast of proposed pumping station	0	0	None detected
AQ3 St. Michael's House, south of proposed WwTP	0	0	None detected
AQ4 In the vicinity of the proposed WwTP site	0	0	None detected
AG5 In the vicinity of the proposed WwTP site	0	0	None detected
AQ6 In the vicinity of the proposed WwTP site	0	0	None detected
AQ7 In the vicinity of the proposed WwTP site	0	0	None detected
AQ8 In the vicinity of the proposed WwTP site	0	0	None detected
AQ9 In the vicinity of the proposed WwTP site	0	0	None detected
AQ10 In the vicinity of the proposed WwTP site	0	0	None detected
AQ11 Grange	0	0	None detected
AQ12 Grange	0	0	None detected

NOTE 1 Odour rating: 0 = No odour, 1 = Faint odour, 2 = Moderate odour, 3 = Strong odour, 4 = Very strong odour

Table 14.2.6: Baseline Odour assessment – 11 July 2017

Monitoring Location	Odour persistence	Odour intensity	Description
AQ1 St. Francis Hospice, Connolly Hospital. North of proposed pumping station	0	0	None detected
AQ2 Elm Green Nursing Home, Southeast of proposed pumping station	0	0	None detected
AQ3 St. Michael's House, south of proposed WwTP	0	0	None detected
AQ4 In the vicinity of the proposed WwTP site	0	0	None detected
AG5 In the vicinity of the proposed WwTP site	0	0	None detected
AQ6 In the vicinity of the proposed WwTP site	0	0	None detected
AQ7 In the vicinity of the proposed WwTP site	0	0	None detected
AQ8 In the vicinity of the proposed WwTP site	0	0	None detected
AQ9 In the vicinity of the proposed WwTP site	0	0	None detected
AQ10 In the vicinity of the proposed WwTP site	0	0	None detected
AQ11 Grange	0	0	None detected
AQ12 Grange	1	2	Foul odour from adjacent building site

NOTE Odour rating: 0 = No odour, 1 = Faint odour, 2 = Moderate odour, 3 = Strong odour, 4 = Very strong odour



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ1

Notes: St. Francis's Hospice, Connolly Hospital. North of proposed pumping station

Date: 02 Mar 2016

Drawn: MK



53 Broomhill Drive,
Tallaght.
Dublin 24
Tel: +353-1-4626710;
Fax: +353-1-4626714



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ2

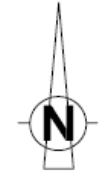
Notes: Elm Green Nursing Home,
South of proposed pumping station

Date: 02 Mar 2016

Drawn: MK



53 Broomhill Drive,
Tallaght.
Dublin 24
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Fax: +353-1-4626714



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ3

Notes: St. Michael's House, south of proposed WWTP

Date: 02 Mar 2016

Drawn: MK



53 Broomhill Drive,
Tallaght.
Dublin 24
Tel: +353-1-4626710;
Fax: +353-1-4626714



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ4, AQ5, AQ7, AQ8, AQ9, AQ10

Notes: Boundary of proposed WWTP site

Date: 02 Mar 2016

Drawn: MK



53 Broomhill Drive,
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Dublin 24
Tel: +353-1-4626710;
Fax: +353-1-4626714



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ6

Notes: East of proposed WWTP

Date: 02 Mar 2016

Drawn: MK



environment ltd

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Fax: +353-1-4626714



Client: Fingal Co. Co./Irish Water

Project Ref: 24396

Drawing Title: AQ11 & AQ12

Notes: Grange

Date: 02 Mar 2016

Drawn:MK



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LABORATORY ANALYSIS REPORT

NITROGEN DIOXIDE IN DIFFUSION TUBES BY U.V.SPECTROPHOTOMETRY

REPORT NUMBER L04575R

BOOKING IN REFERENCE L04575

DESPATCH NOTE 37616

CUSTOMER TMS Environmental Attn: Graham Adams

53 Broomhill Drive

Tallaght

Dublin 24

Ireland

DATE SAMPLES RECEIVED 30/06/2017

Location	Sample Number	Exposure Data		Time (hr.)	$\mu\text{g}/\text{m}^3$ *	ppb *	TOTAL $\mu\text{g NO}_2$
		Date On	Date Off				
AQ5	925343	13/06/2017	27/06/2017	336.25	10.64	5.55	0.26
AQ4	925345	13/06/2017	27/06/2017	335.83	13.24	6.91	0.32
AQ7	925346	13/06/2017	27/06/2017	335.83	11.60	6.05	0.28
AQ8	925344	13/06/2017	27/06/2017	335.83	14.50	7.57	0.35
AQ9	925348	13/06/2017	27/06/2017	335.92	12.45	6.50	0.30
AQ10	925347	13/06/2017	27/06/2017	335.92	13.81	7.21	0.34
AQ11	925350	13/06/2017	27/06/2017	336.83	8.99	4.69	0.22
AQ12	925351	13/06/2017	27/06/2017	336.67	14.05	7.34	0.34
AQ6	925349	13/06/2017	27/06/2017	334.75	9.15	4.78	0.22
AQ3	925352	13/06/2017	27/06/2017	335.92	15.19	7.93	0.37
AQ2	925353	13/06/2017	27/06/2017	335.67	14.13	7.38	0.34
AQ1	925363	13/06/2017	27/06/2017	335.58	14.80	7.72	0.36
Blank	925354			336.83	1.52	0.79	0.04
Laboratory Blank				336.83	0.37	0.19	0.009

Comment: Results are not blank subtracted

Results have been corrected to a temperature of 293 K (20°)

Overall M.U. $\pm 7.8\%$

Limit of Detection 0.010 μgNO_2

Analysed on UV05
Camspec M550

Tube Preparation : 20% TEA / Water

Analyst Name

James Crowley

Report Checked By

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk (*). Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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Report Number L04575R

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L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

Date of Analysis

12/07/2017

Date of Report

13/07/2017

**Analysis carried out in accordance with documented in-house Laboratory Method
GLM7**

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk (*). Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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Report Number L04575R

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L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

NITROGEN DIOXIDE IN DIFFUSION TUBES BY U.V.SPECTROPHOTOMETRY

REPORT NUMBER L05087R
BOOKING IN REFERENCE L05087
DESPATCH NOTE 37616
CUSTOMER TMS Environmental Attn: Graham Adams
53 Broomhill Drive
Tallaght
Dublin 24

Ireland

DATE SAMPLES RECEIVED 18/07/2017

Location	Sample Number	Exposure Data			Time (hr.)	µg/m ³ *	ppb *	TOTAL µg NO ₂
		Date On	Date Off					
AQ5	925355	27/06/2017	11/07/2017	335.33	11.00	5.74	0.27	
AQ4	925357	27/06/2017	11/07/2017	335.33	15.27	7.97	0.37	
AQ7	925359	27/06/2017	11/07/2017	335.33	10.28	5.36	0.25	
AQ8	925356	27/06/2017	11/07/2017	335.33	10.43	5.44	0.25	
AQ9	925360	27/06/2017	11/07/2017	335.33	11.94	6.23	0.29	
AQ10	925358	27/06/2017	11/07/2017	335.33	13.72	7.16	0.33	
AQ11	925362	27/06/2017	11/07/2017	334.17	11.61	6.06	0.28	
AQ12	925364	27/06/2017	11/07/2017	333.92	16.86	8.80	0.41	
AQ6	925361	27/06/2017	11/07/2017	335.25	9.33	4.87	0.23	
AQ3	925365	27/06/2017	11/07/2017	333.58	19.40	10.12	0.47	
AQ2	925366	27/06/2017	11/07/2017	333.33	12.71	6.64	0.31	
AQ1	925367	27/06/2017	11/07/2017	332.75	14.13	7.38	0.34	
Blank	925368			335.33	0.67	0.35	0.02	
Laboratory Blank					335.33	0.49	0.26	0.012

Comment: Results are not blank subtracted

Results have been corrected to a temperature of 293 K (20°)

Overall M.U. ±7.8%

Tube Preparation : 20% TEA / Water

Analyst Name Joanna Kowalewska

Date of Analysis 01/08/2017

Limit of Detection 0.010 µgNO₂

Analysed on UV 08 Camspec M550

Report Checked By Adam Robinson

Date of Report 01/08/2017

Analysis carried out in accordance with documented in-house Laboratory Method GLM7

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk (*). Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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Report Number L05087R

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L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

DETERMINATION OF SULPHUR DIOXIDE IN DIFFUSION TUBES BY ION CHROMATOGRAPHY

REPORT NUMBER L04576R
BOOKING IN REFERENCE No L04576
DESPATCH NOTE No 37616
CUSTOMER TMS Environmental Attn: Graham Adams
 53 Broomhill Drive
 Tallaght
 Dublin 24
 Ireland
DATE SAMPLES RECEIVED 30/06/2017

Location	Sample Number	Date Exposed	Date Finished	Exposure Hours	µg S Total	µg S - Blank	SO ₂ µg/m ³ *	SO ₂ ppb*
AQ5	925315	13/06/2017	27/06/2017	336.25	<0.03	<0.01	<1.50	<0.56
AQ4	925317	13/06/2017	27/06/2017	335.83	0.05	0.03	3.70	1.39
AQ7	925318	13/06/2017	27/06/2017	335.83	<0.03	<0.01	<1.50	<0.56
AQ8	925316	13/06/2017	27/06/2017	335.83	<0.03	<0.01	<1.50	<0.56
AQ9	925320	13/06/2017	27/06/2017	335.92	<0.03	<0.01	<1.50	<0.56
AQ10	925319	13/06/2017	27/06/2017	335.92	<0.03	<0.01	<1.50	<0.56
AQ11	925322	13/06/2017	27/06/2017	336.83	<0.03	<0.01	<1.49	<0.56
AQ12	925323	13/06/2017	27/06/2017	336.67	<0.03	<0.01	<1.49	<0.56
AQ6	925321	13/06/2017	27/06/2017	334.75	<0.03	<0.01	<1.50	<0.56
AQ3	925324	13/06/2017	27/06/2017	335.92	<0.03	<0.01	<1.50	<0.56
AQ1	925326	13/06/2017	27/06/2017	335.58	<0.03	<0.01	<1.50	<0.56
AQ2	925325	13/06/2017	27/06/2017	335.67	<0.03	<0.01	<1.50	<0.56
Blank	925327				0.01			
Laboratory Blank					0.01			

Comment: Results are blank subtracted

Results reported as <0.03µg S are below the reporting limit.

Tube 925315 was wet when received. Result may be compromised.

Overall M.U. ±6.0%

Analysed on Dionex ICS3000 ICU5

Analyst Name Zoe Munday

Date of Analysis 06/07/2017

Reporting Limit 0.03µg S

Report Checked By J.Farbiszewska-Szulc

Date of Report 10/07/2017

Analysis has been carried out in accordance with in-house method GLM1

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk (*). Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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 L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

DETERMINATION OF SULPHUR DIOXIDE IN DIFFUSION TUBES BY ION CHROMATOGRAPHY

REPORT NUMBER L05086R
BOOKING IN REFERENCE No L05086
DESPATCH NOTE No 37616

CUSTOMER TMS Environmental Attn: Graham Adams
 53 Broomhill Drive
 Tallaght
 Dublin 24
 Ireland

DATE SAMPLES RECEIVED 18/07/2017

Location	Sample Number	Date Exposed	Date Finished	Exposure Hours	µg S Total	µg S - Blank	SO ₂ µg/m ³ *	SO ₂ ppb*
AQ5	925328	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ4	925330	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ7	925332	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ8	925329	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ9	925333	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ10	925331	27/06/2017	11/07/2017	335.33	<0.03	<0.02	<2.64	<0.99
AQ11	925335	27/06/2017	11/07/2017	334.17	<0.03	<0.02	<2.65	<0.99
AQ12	925336	27/06/2017	11/07/2017	333.92	<0.03	<0.02	<2.65	<0.99
AQ6	925334	27/06/2017	11/07/2017	335.25	<0.03	<0.02	<2.64	<0.99
AQ3	925337	27/06/2017	11/07/2017	333.58	<0.03	<0.02	<2.65	<0.99
AQ2	925338	27/06/2017	11/07/2017	333.33	<0.03	<0.02	<2.65	<0.99
AQ1	925339	27/06/2017	11/07/2017	332.75	<0.03	<0.02	<2.66	<1.00
Blank	925340				0.002			
Laboratory Blank						0.01		

Comment: Results are blank subtracted
Tube 925328 was received without a filter. Result may be compromised.
Results reported as <0.03µg S on tube are below the reporting limit.

Overall M.U. ±6.0%	Reporting Limit 0.03µg S
Analysed on Dionex ICS3000 ICU5	
Analyst Name Zoe Munday	Report Checked By K. Paldamova
Date of Analysis 27/07/2017	Date of Report 31/07/2017

Analysis has been carried out in accordance with in-house method GLM1

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk (*). Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.
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 L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L04675R
Booking in reference no W0672
Despatch note no 37616
Customer TMS Environmental
53 Broomhill Drive, Tallaght
Dublin 24
Ireland
Date samples received 30/06/2017

Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	BTEX	mp-Xylene	o-Xylene
							Ethyl Benzene ng on Tube		
AQ5	GRA04077	13/06/2017	27/06/2017	336.25	<5.00	6.54	7.84	9.29	<5.00
AQ4	GRA11174	13/06/2017	27/06/2017	335.83	<5.00	8.40	<5.00	<5.00	<5.00
AQ7	GRA11156	13/06/2017	27/06/2017	335.83	<5.00	33.29	21.06	19.87	8.12
AQ8	GRA10873	13/06/2017	27/06/2017	335.83	5.81	50.09	37.20	29.69	12.95
AQ9	GRA08055	13/06/2017	27/06/2017	335.92	<5.00	116.73	13.31	26.48	9.06
AQ10	GRA11506	13/06/2017	27/06/2017	335.92	<5.00	<5.00	<5.00	<5.00	<5.00
AQ11	GRA10985	13/06/2017	27/06/2017	336.83	<5.00	9.42	<5.00	<5.00	<5.00
AQ12	GRA11077	13/06/2017	27/06/2017	336.67	<5.00	47.93	<5.00	6.94	<5.00
AQ6	GRA10991	13/06/2017	27/06/2017	334.75	10.06	46.30	<5.00	6.59	<5.00
AQ3	GRA02587	13/06/2017	27/06/2017	335.92	<5.00	18.21	15.30	15.26	5.68
AQ2	GRA10559	13/06/2017	27/06/2017	335.67	<5.00	14.38	27.07	24.92	10.05
AQ1	GRA11115	13/06/2017	27/06/2017	335.58	<5.00	23.69	<5.00	5.54	<5.00
Blank	GRA11555	13/06/2017	27/06/2017	336.00	<5.00	<5.00	<5.00	<5.00	<5.00
Blank					1.751	1.058	0.412	0.300	0.334

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

Results below 5.0ng on tube are below the reporting limit.

Overall M.U. ±13.1%

Reporting Limit 5ng on tube

Analyst name Katarzyna Kotrych

Report checked by Gavin Aikman

Date of analysis 11/07/2017

Date of report 12/07/2017

The analysis has been carried out in accordance with in-house method GLM4

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L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L04675R1
 Booking in reference no W0672
 Despatch note no 37616
 Customer TMS Environmental
 53 Broomhill Drive, Tallaght
 Dublin 24
 Ireland
 Date samples received 30/06/2017

Location	Tube no	Date exposed	Date finished	Exposure hours	BTEX				
					Benzene	Toluene	Ethyl Benzene	mp-Xylene	o-Xylene
Values Reported in Parts per Billion (p.p.b.) in Air *									
AQ5	GRA04077	13/06/2017	27/06/2017	336.25	<0.12	0.15	0.19	0.22	<0.12
AQ4	GRA11174	13/06/2017	27/06/2017	335.83	<0.12	0.20	<0.12	<0.12	<0.12
AQ7	GRA11156	13/06/2017	27/06/2017	335.83	<0.12	0.78	0.50	0.48	0.19
AQ8	GRA10873	13/06/2017	27/06/2017	335.83	0.14	1.17	0.89	0.71	0.31
AQ9	GRA08055	13/06/2017	27/06/2017	335.92	<0.12	2.72	0.32	0.63	0.22
AQ10	GRA11506	13/06/2017	27/06/2017	335.92	<0.12	<0.12	<0.12	<0.12	<0.12
AQ11	GRA10985	13/06/2017	27/06/2017	336.83	<0.12	0.22	<0.12	<0.12	<0.12
AQ12	GRA11077	13/06/2017	27/06/2017	336.67	<0.12	1.11	<0.12	0.17	<0.12
AQ6	GRA10991	13/06/2017	27/06/2017	334.75	0.25	1.08	<0.12	0.16	<0.12
AQ3	GRA02587	13/06/2017	27/06/2017	335.92	<0.12	0.42	0.37	0.37	0.14
AQ2	GRA10559	13/06/2017	27/06/2017	335.67	<0.12	0.34	0.65	0.60	0.24
AQ1	GRA11115	13/06/2017	27/06/2017	335.58	<0.12	0.55	<0.12	0.13	<0.12
Blank	GRA11555	13/06/2017	27/06/2017	336.00	<0.12	<0.12	<0.12	<0.12	<0.12
Blank				336.83	0.04	0.02	0.01	0.01	0.01

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

Results indicated with < are below the reporting limit calculated for time exposed.

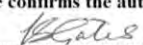
Weeks exposed	2	Uptake rates (ng.ppm ⁻¹ min ⁻¹)	2.02	2.13	2.07	2.07	2.07
Overall M.U.	±13.1%				Reporting Limit	5ng on tube	
Analyst name	Katarzyna Kotrych				Report checked by	Gavin Aikman	
Date of analysis	11/07/2017				Date of report	12/07/2017	

The analysis has been carried out in accordance with in-house method GLM4

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures. Calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS Accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L04675R2
Booking in reference no W0672
Despatch note no 37616
Customer TMS Environmental
53 Broomhill Drive, Tallaght
Dublin 24
Ireland
Date samples received 30/06/2017

Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	BTEX		
							Ethyl Benzene	mp-Xylene	o-Xylene
Values Reported in $\mu\text{g m}^{-3}$ in Air *									
AQ5	GRA04077	13/06/2017	27/06/2017	336.25	<0.38	0.56	0.80	0.94	<0.51
AQ4	GRA11174	13/06/2017	27/06/2017	335.83	<0.38	0.72	<0.51	<0.51	<0.51
AQ7	GRA11156	13/06/2017	27/06/2017	335.83	<0.38	2.85	2.14	2.02	0.83
AQ8	GRA10873	13/06/2017	27/06/2017	335.83	0.45	4.30	3.78	3.02	1.32
AQ9	GRA08055	13/06/2017	27/06/2017	335.92	<0.38	10.01	1.35	2.69	0.92
AQ10	GRA11506	13/06/2017	27/06/2017	335.92	<0.38	<0.43	<0.51	<0.51	<0.51
AQ11	GRA10985	13/06/2017	27/06/2017	336.83	<0.38	0.81	<0.51	<0.51	<0.51
AQ12	GRA11077	13/06/2017	27/06/2017	336.67	<0.38	4.10	<0.51	0.70	<0.51
AQ6	GRA10991	13/06/2017	27/06/2017	334.75	0.77	3.98	<0.51	0.67	<0.51
AQ3	GRA02587	13/06/2017	27/06/2017	335.92	<0.38	1.56	1.56	1.55	0.58
AQ2	GRA10559	13/06/2017	27/06/2017	335.67	<0.38	1.23	2.75	2.53	1.02
AQ1	GRA11115	13/06/2017	27/06/2017	335.58	<0.38	2.03	<0.51	0.56	<0.51
Blank	GRA11555	13/06/2017	27/06/2017	336.00	<0.38	<0.43	<0.51	<0.51	<0.51
Blank				336.83	0.13	0.09	0.04	0.03	0.03

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

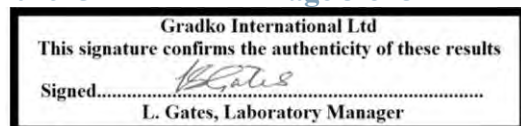
Results indicated with < are below the reporting limit calculated for time exposed.

Weeks exposed	2	Uptake rates (ng.ppm ⁻¹ min ⁻¹)	2.02	2.13	2.07	2.07	2.07
Overall M.U.	±13.1%			Reporting Limit	5ng on tube		
Analyst name	Katarzyna Kotrych			Report checked by	Gavin Aikman		
Date of analysis	11/07/2017			Date of report	12/07/2017		

The analysis has been carried out in accordance with in-house method GLM4

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures. Calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS Accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L05078R
Booking in reference no W0751
Despatch note no 37616
Customer TMS Environmental
53 Broomhill Drive, Tallaght
Dublin 24
Ireland
Date samples received 18-Jul
Job Reference D-17-9253

Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	BTEX Ethyl Benzene ng on Tube	mp- Xylene	o- Xylene
AQ5	GRA11574	27/06/2017	11/07/2017	335.33	<5.00	10.78	12.08	10.93	<5.00
AQ4	GRA04905	27/06/2017	11/07/2017	335.33	6.96	<5.00	<5.00	<5.00	<5.00
AQ7	GRA11929	27/06/2017	11/07/2017	335.33	<5.00	7.71	<5.00	<5.00	<5.00
AQ8	GRA07536	27/06/2017	11/07/2017	335.33	8.73	17.91	<5.00	<5.00	<5.00
AQ9	GRA11198	27/06/2017	11/07/2017	335.33	<5.00	<5.00	<5.00	<5.00	<5.00
AQ10	GRA09507	27/06/2017	11/07/2017	335.33	<5.00	24.44	35.44	32.14	12.39
AQ11	GRA11931	27/06/2017	11/07/2017	334.17	5.49	6.79	<5.00	<5.00	<5.00
AQ12	GRA11042	27/06/2017	11/07/2017	333.92	<5.00	7.90	<5.00	<5.00	<5.00
AQ6	GRA10693	27/06/2017	11/07/2017	335.25	7.73	19.79	<5.00	20.11	5.15
AQ3	GRA11264	27/06/2017	11/07/2017	333.58	<5.00	<5.00	<5.00	<5.00	<5.00
AQ2	GRA11411	27/06/2017	11/07/2017	333.33	<5.00	7.46	6.74	6.50	<5.00
AQ1	GRA11609	27/06/2017	11/07/2017	332.75	7.75	27.08	13.29	18.72	7.28
Blank	Mi028050				1.158	0.942	0.858	1.763	1.218

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

Results below 5.0ng on tube are below the reporting limit.

Overall M.U.	±13.1%	Reporting Limit	5ng on tube
Analyst name	Katarzyna Kotrych	Report checked by	K. Paldamova
Date of analysis	25/07/2017	Date of report	26/07/2017

The analysis has been carried out in accordance with in-house method GLM4

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures. Calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS Accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L05078R1
 Booking in reference no W0751
 Despatch note no 37616
 Customer TMS Environmental
 53 Broomhill Drive, Tallaght
 Dublin 24
 Ireland
 Date samples received 18/07/2017
 Job Reference D-17-9253

Location	Tube no	Date exposed	Date finished	Exposure hours	BTEX				
					Benzene	Toluene	Ethyl Benzene	mp-Xylene	o-Xylene
Values Reported in Parts per Billion (p.p.b.) in Air *									
AQ5	GRA11574	27/06/2017	11/07/2017	335.33	<0.12	0.25	0.29	0.26	<0.12
AQ4	GRA04905	27/06/2017	11/07/2017	335.33	0.17	<0.12	<0.12	<0.12	<0.12
AQ7	GRA11929	27/06/2017	11/07/2017	335.33	<0.12	0.18	<0.12	<0.12	<0.12
AQ8	GRA07536	27/06/2017	11/07/2017	335.33	0.21	0.42	<0.12	<0.12	<0.12
AQ9	GRA11198	27/06/2017	11/07/2017	335.33	<0.12	<0.12	<0.12	<0.12	<0.12
AQ10	GRA09507	27/06/2017	11/07/2017	335.33	<0.12	0.57	0.85	0.77	0.30
AQ11	GRA11931	27/06/2017	11/07/2017	334.17	0.14	0.16	<0.12	<0.12	<0.12
AQ12	GRA11042	27/06/2017	11/07/2017	333.92	<0.12	0.19	<0.12	<0.12	<0.12
AQ6	GRA10693	27/06/2017	11/07/2017	335.25	0.19	0.46	<0.12	0.48	0.12
AQ3	GRA11264	27/06/2017	11/07/2017	333.58	<0.12	<0.12	<0.12	<0.12	<0.12
AQ2	GRA11411	27/06/2017	11/07/2017	333.33	<0.12	0.18	0.16	0.16	<0.12
AQ1	GRA11609	27/06/2017	11/07/2017	332.75	0.19	0.64	0.32	0.45	0.18
Blank	Mi028050			335.33	0.03	0.02	0.02	0.05	0.03

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

Results indicated with < are below the reporting limit calculated for time exposed.

Weeks exposed	2	Uptake rates (ng.ppm ⁻¹ min ⁻¹)	2.02	2.13	2.07	2.07	2.07	
Overall M.U.	±13.1%				Reporting Limit	5ng on tube		
Analyst name	Katarzyna Kotrych				Report checked by	K. Paldamova		
Date of analysis	25/07/2017				Date of report	26/07/2017		

The analysis has been carried out in accordance with in-house method GLM4

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LABORATORY ANALYSIS REPORT

DETERMINATION OF AMBIENT AIR VOLATILE ORGANIC COMPOUNDS IN DIFFUSION TUBES BY THERMAL DESORPTION / GAS CHROMATOGRAPHY

Report number L05078R2
 Booking in reference no W0751
 Despatch note no 37616
 Customer TMS Environmental
 53 Broomhill Drive, Tallaght
 Dublin 24
 Ireland
 Date samples received 18/07/2017
 Job Reference D-17-9253

Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	BTEX		
							Ethyl Benzene	mp-Xylene	o-Xylene
Values Reported in μgm^{-3} in Air *									
AQ5	GRA11574	27/06/2017	11/07/2017	335.33	<0.38	0.93	1.23	1.11	<0.51
AQ4	GRA04905	27/06/2017	11/07/2017	335.33	0.53	<0.43	<0.51	<0.51	<0.51
AQ7	GRA11929	27/06/2017	11/07/2017	335.33	<0.38	0.66	<0.51	<0.51	<0.51
AQ8	GRA07536	27/06/2017	11/07/2017	335.33	0.67	1.54	<0.51	<0.51	<0.51
AQ9	GRA11198	27/06/2017	11/07/2017	335.33	<0.38	<0.43	<0.51	<0.51	<0.51
AQ10	GRA09507	27/06/2017	11/07/2017	335.33	<0.38	2.10	3.61	3.27	1.26
AQ11	GRA11931	27/06/2017	11/07/2017	334.17	0.42	0.59	<0.51	<0.51	<0.51
AQ12	GRA11042	27/06/2017	11/07/2017	333.92	<0.39	0.68	<0.51	<0.51	<0.51
AQ6	GRA10693	27/06/2017	11/07/2017	335.25	0.59	1.70	<0.51	2.05	0.52
AQ3	GRA11264	27/06/2017	11/07/2017	333.58	<0.39	<0.43	<0.51	<0.51	<0.51
AQ2	GRA11411	27/06/2017	11/07/2017	333.33	<0.39	0.64	0.69	0.67	<0.51
AQ1	GRA11609	27/06/2017	11/07/2017	332.75	0.60	2.34	1.36	1.92	0.75
Blank	Mi028050			335.33	0.10	0.08	0.09	0.19	0.13

(RESULTS ARE BLANK CORRECTED)

Tube Type Carbograph 1TD

COMMENTS:

Results indicated with < are below the reporting limit calculated for time exposed.

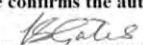
Weeks exposed	2	Uptake rates (ng.ppm ⁻¹ min ⁻¹)	2.02	2.13	2.07	2.07	2.07
Overall M.U.	±13.1%			Reporting Limit		5ng on tube	
Analyst name	Katarzyna Kotrych			Report checked by		K. Paldamova	
Date of analysis	25/07/2017			Date of report		26/07/2017	

The analysis has been carried out in accordance with in-house method GLM4

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Annex A: Odour Investigation Field Record Sheet

General		Your Reference	Site Licence No.	Assessment by		Date of Assessment
		24396	N/A	Your name: NICK OWEN (other Investigator(s) present): N/A		27 JUN 2017
Pre-Assessment Preparation	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?	Reason for odour assessment – Complaint verification; routine; other (specify).	Map – Has a map showing assessment locations been attached?	Weather Conditions Note 3 (record wind info on page 2):	
	Yes No	Yes No	PLANNING REGULATION	Yes No	DRY & WARM	
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)	Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 1 Remote (no housing, commercial/industrial premises or public area within 500m of observation point) 2 Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) 3 Moderate sensitivity (housing commercial/industrial premises or public area within 100m of observation point) 4 High sensitivity (housing, commercial/industrial premises or public area within area of observation point) 5 Extra sensitive (complaints arising from residents, business and users of public areas within area of observation point)			Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot		
	Note 2: Wind Strength 0 Calm Smoke rises vertically 1 Light air Direction of wind shown by smoke drift, but not wind vanes 2 Light Breeze Wind felt on face; leaves rustle, ordinary vane moved by wind 3 Gentle Breeze Leaves and small twigs in constant motion 4 Moderate Breeze Raises dust and loose paper; small branches are moved 5 Fresh Breeze Small trees in leaf begin to sway 6 Strong Breeze Large branches in motion; umbrellas used with difficulty against the wind 7 Near Gale Whole trees in motion; inconvenience felt when walking against wind 8 Gale Twigs break off trees; progress generally impeded 9 Strong Gale Slight structural damage occurs (chimney pots and slates removed)			Note 4: Odour Persistence 0 No Odour 1 Intermittent (detected intermittently during the period of assessment) 2 Persistent (detected throughout the period of assessment)		
Odour Source Investigation (Post Odour Survey)	Start Time:	Do any of the odours experienced on-site match in character those recorded during the off-site survey?	List areas Inspected:		What relevant activities were occurring on-site during the off-site odour assessment?	
	N/A	N/A	N/A		N/A	
	Finish Time:	Potential on-site odour sources identified:				
	N/A	N/A				

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Parameter	Observer Location		Wind (nd = if not detectable)			Time		Odour Rating		Odour Description Comments	
	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs Facility)	Down-Wind Approx DW or not detectable etc	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4		Odour Intensity (0-4) Note 5
Thresholds that could indicate nuisance	---	≥ 3	--	--	--	--	--	--	1 or 2	≥ 2	<p>Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.</p>
Field observations	AR5	1	W	N/A	1	11.00	5	0	0	0	
	AR4	3	W	N/A	1	11.10	5	0	0	0	
	AR7	2	W	N/A	1	11.20	5	0	0	0	
	AR8	2	W	N/A	1	11.25	5	0	0	0	
	AR9	2	W	N/A	1	11.35	5	0	0	0	
	AR10	2	W	N/A	1	11.40	5	0	0	0	
	AR11	2	W	N/A	1	13.05	5	0	0	0	
	AR12	3	W	N/A	1	13.25	5	0	0	0	
	AR6	3	W	N/A	1	12.20	5	0	0	0	
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc): N/A											

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Annex A: Odour Investigation Field Record Sheet

General		Site Licence No.		Assessment by		Date of Assessment		
Your Reference		24396		Your name: <i>Nick Owen</i> (other Investigator(s) present): <i>N/A</i>		29 Jun 2019		
Pre-Assessment Preparation	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Reason for odour assessment – Complaint verification; routine; other (specify).	Map – Has a map showing assessment locations been attached?	Weather Conditions Note 3 (record wind info on page 2):		
		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<i>PLANNING APPLICATION</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>DRY, warm</i>		
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)	Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 1 Remote (no housing, commercial/industrial premises or public area within 500m of observation point) 2 Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) 3 Moderate sensitivity (housing commercial/industrial premises or public area within 100m of observation point) 4 High sensitivity (housing, commercial/industrial premises or public area within area of observation point) 5 Extra sensitive (complaints arising from residents, business and users of public areas within area of observation point)							Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot
	Note 2: Wind Strength 0 Calm 1 Smoke rises vertically 2 Direction of wind shown by smoke drift, but not wind vanes 3 Wind felt on face; leaves rustle, ordinary vane moved by wind 4 Leaves and small twigs in constant motion 5 Raises dust and loose paper; small branches are moved 6 Small trees in leaf begin to sway 7 Large branches in motion; umbrellas used with difficulty against the wind 8 Whole trees in motion; inconvenience felt when walking against wind 9 Twigs break off trees; progress generally impeded Slight structural damage occurs (chimney pots and slates removed)							Note 4: Odour Persistence 0 No Odour 1 Intermittent (detected intermittently during the period of assessment) 2 Persistent (detected throughout the period of assessment)
Odour Source Investigation (Post Odour Survey)	Note 5: Odour Intensity 0 No Detectable Odour 1 Faint Odour (barely detectable, need to stand still and inhale facing into wind) 2 Moderate Odour (easily detectable while walking and breathing normally, possibly offensive) 3 Strong Odour (bearable but offensive – might make clothes / hair smell?) 4 Very Strong Odour (unbearable, difficult to remain in area affected by odour)							What relevant activities were occurring on-site during the off-site odour assessment? <i>N/A</i>
	Start Time:	<i>N/A</i>		Do any of the odours experienced on-site match in character those recorded during the off-site survey?	List areas Inspected:			
Finish Time:	<i>N/A</i>			<i>N/A</i>				
Potential on-site odour sources identified:		<i>N/A</i>		<i>N</i>				

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Parameter	Observer Location		Wind (nd = if not detectable)			Time		Odour Rating		Odour Description Comments	
	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5		
Thresholds that could indicate nuisance	---	≥ 3	---	Down-Wind (Approx DW or not detectable etc)	---	---	---	1 or 2	≥ 2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.	
Field observations	AR3	4	W	N/A	1	14:05	S	0	0		
	AR2	3	W	N/A	1	14:40	S	0	0		
	AR1	5	W	N/A	1	15:25	S	0	0		
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc):											
MBMB											

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Annex A: Odour Investigation Field Record Sheet

General		Site Licence No.		Assessment by		Date of Assessment	
Your Reference		24396		Your name: MICK OWEN (other Investigator(s) present): N/A		11 JUL 2017	
Pre-Assessment Preparation	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?	Reason for odour assessment – Complaint verification; routine; other (specify).	Map – Has a map showing assessment locations been attached?		Weather Conditions Note 3 (record wind info on page 2):	
	Yes	No	FLAUNTING APPLICATION	Yes	No	DRY, HOT	
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)	<p>Note 1: Observation point Sensitivity (assuming detectable, if not then 0)</p> <ol style="list-style-type: none"> Remote (no housing, commercial/industrial premises or public area within 500m of observation point) Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) Moderate sensitivity (housing commercial/industrial premises or public area within 100m of observation point) High sensitivity (housing, commercial/industrial premises or public area within area of observation point) Extra sensitive (complaints arising from residents, business and users of public areas within area of observation point) 						
	<p>Note 2: Wind Strength</p> <ol style="list-style-type: none"> Calm Smoke rises vertically Direction of wind shown by smoke drift, but not wind vanes Wind felt on face; leaves rustle, ordinary vane moved by wind Gentle Breeze Leaves and small twigs in constant motion Moderate Breeze Raises dust and loose paper; small branches are moved Fresh Breeze Small trees in leaf begin to sway Strong Breeze Large branches in motion; umbrellas used with difficulty against the wind Near Gale Whole trees in motion; inconvenience felt when walking against wind Gale Twigs break off trees; progress generally impeded Strong Gale Slight structural damage occurs (chimney pots and slates removed) 						
Odour Source Investigation (Post Odour Survey)	Start Time:		Do any of the odours experienced on-site match in character those recorded during the off-site survey?		List areas Inspected:		What relevant activities were occurring on-site during the off-site odour assessment?
	N/A		N/A		N/A		
Finish Time:		Potential on-site odour sources identified:				N/A	
N/A		N/A					

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Parameter	Observer Location		Wind (nd = if not detectable)			Time		Odour Rating		Odour Description Comments
	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5	
Thresholds that could indicate nuisance	---	≥ 3	---	Down-Wind Approx DW or not detectable etc	---	---	---	1 or 2	≥ 2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field observations	A85	1	NNE ^W	N/A	2	10.20	S	0	0	
	A84	3	ENE ^W	N/A	2	10.30	S	0	0	
	A87	2	ENE ^W	N/A	2	10.40	S	0	0	
	A88	2	ENE ^W	N/A	2	10.45	S	0	0	
	A89	2	ENE ^W	N/A	2	10.55	S	0	0	
	A810	2	ENE ^W	N/A	2	11.00	S	0	0	
	A811	2	ENE ^W	N/A	1	11.15	S	0	0	
	A812	3	ENE ^W	N/A	1	11.20	S	1	2	ODOUR FROM ADJACENT DEVELOPING SITE
	A86	3	ENE ^W	N/A	1	11.35	S	0	0	
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc):										

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Annex A: Odour Investigation Field Record Sheet

General		Your Reference		Site Licence No.		Assessment by		Date of Assessment	
		24396		N/A		Your name: NICK OWEN (other Investigator(s) present): N/A		11 JUL 2017	
Pre-Assessment Preparation		Observer is free from medical conditions (cold, sore throat, sinus trouble)?		Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?		Reason for odour assessment – Complaint verification; routine; other (specify).		Map – Has a map showing assessment locations been attached?	
		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		DRAINING APPLICATION		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)		<p>Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 1 Remote (no housing, commercial/industrial premises or public area within 500m of observation point) 2 Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) 3 Moderate sensitivity (housing commercial/industrial premises or public area within 100m of observation point) 4 High sensitivity (housing, commercial/industrial premises or public area within area of observation point) 5 Extra sensitive (complaints arising from residents, business and users of public areas within area of observation point)</p> <p>Note 2: Wind Strength 0 Calm 1 Light air 2 Light Breeze 3 Gentle Breeze 4 Moderate Breeze 5 Fresh Breeze 6 Strong Breeze 7 Near Gale 8 Gale 9 Strong Gale</p> <p>Smoke rises vertically Direction of wind shown by smoke drift, but not wind vanes Wind felt on face; leaves rustle, ordinary vane moved by wind Leaves and small twigs in constant motion Raises dust and loose paper; small branches are moved Small trees in leaf begin to sway Large branches in motion; umbrellas used with difficulty against the wind Whole trees in motion; inconvenience felt when walking against wind Twigs break off trees; progress generally impeded Slight structural damage occurs (chimney pots and slates removed)</p>							
Odour Source Investigation (Post Odour Survey)		Start Time: N/A		Do any of the odours experienced on-site match in character those recorded during the off-site survey? N/A		List areas Inspected: N/A		What relevant activities were occurring on-site during the off-site odour assessment? N/A	
		Finish Time: N/A		Potential on-site odour sources identified: N/A					
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)		<p>Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot</p> <p>Note 4: Odour Persistence 0 No Odour 1 Intermittent (detected intermittently during the period of assessment) 2 Persistent (detected throughout the period of assessment)</p> <p>Note 5: Odour Intensity 0 No Detectable Odour 1 Faint Odour (barely detectable, need to stand still and inhale facing into wind) 2 Moderate Odour (easily detectable while walking and breathing normally, possibly offensive) 3 Strong Odour (bearable but offensive – might make clothes / hair smell?) 4 Very Strong Odour (unbearable, difficult to remain in area affected by odour)</p>							

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Parameter	Observer Location		Wind (nd = if not detectable)			Time		Odour Rating		Odour Description Comments	
	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs Down-Wind or not detectable etc facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5		
Thresholds that could indicate nuisance	---	≥ 3	---	---	---	---	---	1 or 2	≥ 2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.	
Field observations	AG3	4	W	N/A	1	11.45	5	0	0		
	AG2	3	W	N/A	1	12.00	5	0	0		
	AG1	5	W	N/A	1	12.10	5	0	0		
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc):											

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