

Appendix A14.2 Baseline Ambient Air Quality Report 2017





CONTENTS

1.0.	Scope	3
	·	
2.0.	Methodology	3
	•	
3.0.	Survey Results	4

Attachments

Figure 1 – 6 Maps showing Air Quality Monitoring Locations

Laboratory Analysis Reports

Field Observation Records for Odour Assessments







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 (NO_2) and sulphur dioxide (SO_2) 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 NO_2 and SO_2 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 NO_2 and SO_2 for 13 June 2017 to 27 June 2017

Monitoring Location	Monitoring dates	NO₂ μg/m ⁻³	SO₂ 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 NO_2 and SO_2 for 27 June 2017 to 11 July 2017

Monitoring Location	Monitoring dates	NO ₂ μg/m ⁻³	SO₂µg/m³
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 μg/m ⁻³	Toluene μg/m ⁻³	Ethylbenzene μg/m ⁻³	m-, p-xylene μg/m ⁻³	o-Xylene µg/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 µg/m³	Toluene μg/m ^{·3}	Ethylbenzene μg/m ^{·3}	m-, p-xylene µg/m ^{·3}	o-Xylene µg/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





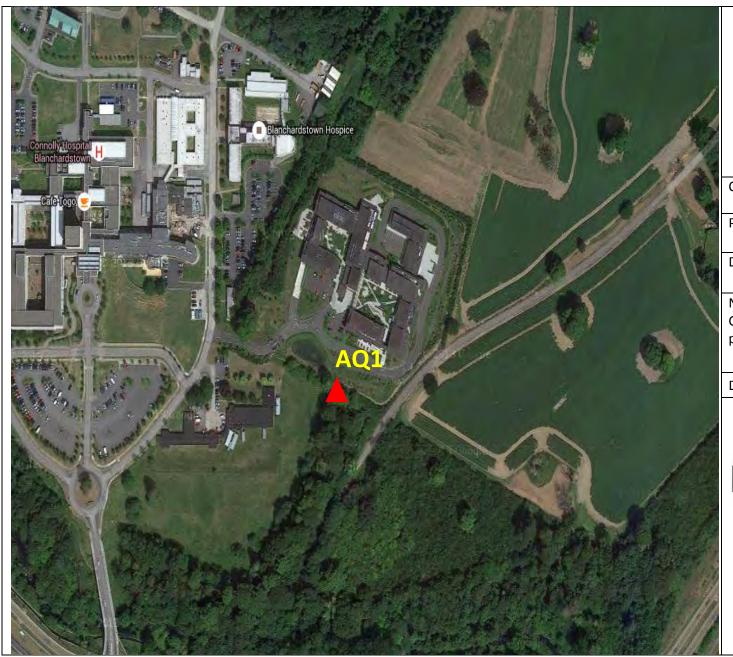


Table 14.2.6: Baseline Odour assessment – 11 July 2017

Monitoring Location	Odour peristence	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







Project Ref: 24396

Drawing Title: AQ1

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

Date: 02 Mar 2016

Drawn: MK

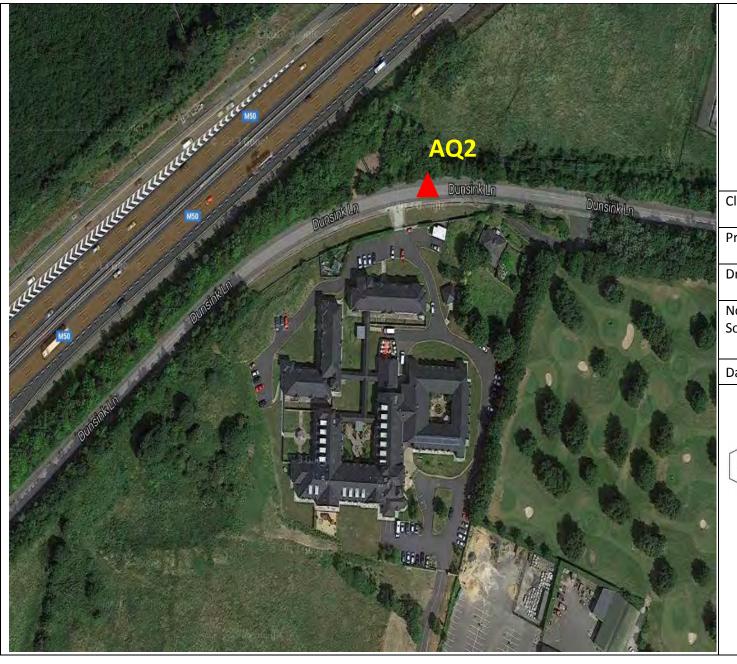


environment ltd

53 Broomhill Drive, Tallaght. Dublin 24

Tel: +353-1-4626710;

Fax: +353-1-4626714





Project Ref: 24396

Drawing Title: AQ2

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

Date: 02 Mar 2016

Drawn: MK



environment ltd

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Tel: +353-1-4626710; Fax: +353-1-4626714





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



Drawn:MK





Project Ref: 24396

Drawing Title: AQ6

Notes: East of proposed WWTP

Date:02 Mar 2016

Drawn:MK



53 Broomhill Drive, Tallaght. Dublin 24

Tel: +353-1-4626710; Fax: +353-1-4626714





Project Ref: 24396

Drawing Title: AQ11 & AQ12

Notes: Grange

Date: 02 Mar 2016

Drawn:MK



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St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH tel.: 01962 860331 fax: 01962 841339 e-mail:diffusion@gradko.co.uk

LABORATORY ANALYSIS REPORT

NITROGEN DIOXIDE IN DIFFUSION TUBES BY U.V.SPECTROPHOTOMETRY

REPORT NUMBER L04575R

BOOKING IN REFERENCE L04575 DESPATCH NOTE 37616

CUSTOMED THE Envi

CUSTOMER TMS Environmental Attn: Graham Adams

53 Broomhill Drive

Tallaght Dublin 24

Ireland

DATE SAMPLES RECEIVED 30/06/2017

		Sample	Exposure Data		Time		nnh	TOTAL
Loca	ation	Number	Date On	Date Off	(hr.)	μ g/m³ *	ppb *	μg NO ₂
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 $0.010 \mu g NO_2$

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.

Form LQF32b Issue 7 – Oct 2016 Report Number L04575R Page 1 of 2









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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.

Form LQF32b Issue 7 – Oct 2016 Report Number L04575R Page 2 of 2









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LABORATORY ANALYSIS REPORT

NITROGEN DIOXIDE IN DIFFUSION TUBES BY U.V.SPECTROPHOTOMETRY

REPORT NUMBER L05087R
BOOKING IN REFERENCE L05087
DESPATCH NOTE 37616

PATCH NOTE 37616
CUSTOMER TMS E

TMS Environmental Attn: Graham Adams

53 Broomhill Drive

Tallaght Dublin 24

Ireland

DATE SAMPLES RECEIVED 18/07/2017

		Exposu	re Data				TOTAL
Location	Sample Number	Date On	Date Off	Time (hr.)	μg/m³ *	ppb *	μg NO ₂
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
Laborato	ry 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. $\pm 7.8\%$ Limit of Detection $0.010 \mu g NO_2$

Tube Preparation: 20% TEA / Water Analysed on UV 08 Camspec M550

Analyst Name Joanna Kowalewska Report Checked By Adam Robinson

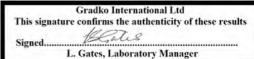
Date of Analysis 01/08/2017 **Date of Report** 01/08/2017

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.

Form LQF32b Issue 7 - Oct 2016 Report Number L05087R Page 1 of 1









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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

57 <u>22</u> 6 1120 2112	Sample	Date	Date	Exposure	μg S	μg S -	SO ₂	SO ₂
Location	Number	Exposed	Finished	Hours	Total	Blank	μg/m ³ *	ppb*
AOF	005045	10/00/0017	07/00/0017	000.05	0.00	.0.04	4.50	0.50
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 $<0.03\mu g$ S are below the reporting limit.

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

Overall M.U. $\pm 6.0\%$ Reporting Limit $0.03 \mu g S$

Analysed on Dionex ICS3000 ICU5

Analyst Name Zoe Munday Report Checked By J.Farbiszewska-Szulc

 Date of Analysis
 06/07/2017
 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.

Form LQF32b Issue 7 - Oct 2016 Report Number L04576R Page 1 of 1









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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

	Sample	Date	Date	Exposure	μg S	μg S -	SO ₂	SO ₂
Location	Number	Exposed	Finished	Hours	Total	Blank	μg/m ³ *	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			

Comment: Results are blank subtracted

Laboratory Blank

Tube 925328 was received without a filter. Result may be compromised. Results reported as $<0.03\mu g$ 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.

Form LQF32b Issue 7 - Oct 2016 Report Number L05086R Page 1 of 1



0.01







218

St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH tel.: 01962 860331 fax: 01962 841339 e-mail:diffusion@gradko.co.uk

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

							BTEX		
Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	Ethyl Benzene ng on Tube	<i>mp</i> - Xylene	<i>o</i> - Xylene
	004040	10/00/001=	0=/00/00/			a = 4	· ·		
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 Limit5ng on tubeAnalyst nameKatarzyna KotrychReport checked byGavin AikmanDate of analysis11/07/2017Date of report12/07/2017

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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Form LQF32b BTEX Issue 7 – Oct 2016

Report Number L04675R





St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH tel.: 01962 860331 fax: 01962 841339 e-mail:diffusion@gradko.co.uk

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

> TMS Environmental Customer

> > 53 Broomhill Drive, Tallaght

Dublin 24 Ireland

30/06/2017 Date samples received

							BTEX		
Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	Ethyl Benzene	<i>mp</i> - Xylene	o- Xylene
					Values R	eported in F	Parts per Bill	ion (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.

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

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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Report Number L04675R

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Page 2 of 3

1 Cates L. Gates, Laboratory Manager





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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 30/06/2017

Date samples received

							BTEX		
Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	Ethyl Benzene	<i>mp</i> - Xylene	<i>o</i> - Xylene
					•	Values Rep	orted in µgm	-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.

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

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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Report Number L04675R

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Page 3 of 3

L. Gates, Laboratory Manager

REPORT OFFICIALLY CHECKED







218

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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	Ethyl Benzene ng on Tube	<i>mp</i> - 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 Limit5ng on tubeAnalyst nameKatarzyna KotrychReport checked byK. PaldamovaDate of analysis25/07/2017Date of report26/07/2017

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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Report Number L05078R





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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 W0751 Booking in reference no 37616 Despatch note no

> TMS Environmental Customer

> > 53 Broomhill Drive, Tallaght

Dublin 24 Ireland

Date samples received 18/07/2017

Job Reference D-17-9253

							BTEX		
Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	Ethyl Benzene	<i>mp</i> - Xylene	<i>o</i> - Xylene
		-			Values R	eported in F	Parts per Bill	ion (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.

Uptake rates (ng.ppm⁻¹min⁻¹) 2.02 2.13 2.07 2.07 2.07 Weeks exposed Overall M.U. ±13.1% **Reporting Limit** 5ng on tube Katarzyna Kotrych K. Paldamova **Analyst name** Report checked by

25/07/2017 26/07/2017 Date of analysis Date of report

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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Page 2 of 3

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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

> TMS Environmental Customer

> > 53 Broomhill Drive, Tallaght

Dublin 24 Ireland

Date samples received

18/07/2017 Job Reference D-17-9253

								DIEA		
	Location	Tube no	Date exposed	Date finished	Exposure hours	Benzene	Toluene	Ethyl Benzene	<i>mp</i> - Xylene	<i>o</i> - Xylene
			-			,	Values Rep	orted in µgm	n ⁻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.

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

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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Report Number L05078R

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Page 3 of 3

L. Gates, Laboratory Manager

RTFX



Annex A: Odour Investigation Field Record Sheet

Odour Source Investigation Inv	Your Referen	ice	Site Licence	No.		Assessm	ent by			Date of Assessment	
	24398		NIA			Your nam (other In	ne: NICK OWE	ut): N/A		27 SUN 2017	
sessment	Observer is fr medical cond (cold, sore the sinus trouble)	d conditions min) from smoking, assessment verification with assessment asses					Map – Has a map showing assessm locations been at	ent	Weather Condit (record wind in		
Prep	Yes No Yes No PRANIMA RAPLICATION Note 1: Observation point Sensitivity (assuming detectable, if not then 0)						Yes.)	No	- ORY . WA	RM	
ations	1 Remote (no	ousing, com	mercial/industrial p	remises or public area wastrial premises or publi	c area within 100m or	ation point) f observation point)	Temperature - c	ry, rained rec	ently, drizzle, raining, fo	ggy	
Notes (the ranking systems in these notes mused when completing the field observed table overleaf)	 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) 						Note 4: Ode No Odour Intermittent	detected inte	stence rmittently during the per ghout the period of assess	od of assessment)	
	1 Light air 2 Light Breez 3 Gentle Bree 4 Moderate B 5 Fresh Breez 6 Strong Bree 7 Near Gale 8 Gale	Smo Dire Win ze Lea reeze Rais e Sma ze Larg Who Twi	oke rises vertically ection of wind show and felt on face; leave wes and small twigs sees dust and loose p all trees in leaf beging ge branches in motion; and trees in motion;	n by smoke drift, but no es rustle, ordinary vane in constant motion aper; small branches are n to sway on; umbrellas used with inconvenience felt when progress generally imper e occurs (chimney pots	moved by wind moved difficulty against the a walking against winded	wind d	2 Moderate O possibly off 3 Strong Odo	ole Odour (barely detection dour (easily depsive) our (bearable bur (bearable b	etable, need to stand still letectable while walking out offensive – might mal carable, difficult to remai	te clothes / hair smell?) n in area affected by odour)	
Source igation ur Survey)	Start Time:	Do any of	the odours experi rded during the o	enced on-site match	in character Lis	t areas Inspected	: A	What relevant activities were occurring of during the off-site odour assessment?			
Odour Investi (Post Odo	Finish Time:							JV JW			

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

NA Brief details of any meeting with local resider

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Site I	Site Licence No.	Assessment by Your name: Met owth	Date of Assessment
Obcommon obetin	Reason for odour	(other myesugator(s) present). When	Weather Conditions Note 3
Doserver absumence (50 min) from smoking, flavoured drinks, scented toiletries and deodorisers?	1g, assessment – Complaint scented verification; routine; other (specify).		(record wind info on page 2):
(W 29 7 700
No Yes	No prawnink Application	Xes	UK JIMA
Note 1: Observation point Sensitivity (assuming do 1 Remote (no housing, commercial/industrial premises or public area 2 Low sensitivity (no housing, commercial/industrial premises or pub	te 1: Observation point Sensitivity (assuming detectable, if not then 0) 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)	1 point)	Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot
using commercial/industrial pren commercial/industrial premises, arising from residents, busine	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 oint)	ZOHN	ote 4: Odour Persistence No Odour Intermittent (detected intermittently during the period of assessment) Persistent (detected throughout the period of assessment)
Note 2: Wind Strength		Note 5: Odour Intensity	ısity
Smoke rises verticany 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	, but not wind vanes v vane moved by wind on	0 No Detectable Odour 1 Faint Odour (barely detec 2 Moderate Odour (easily detect)	No Detectable Odour Fraint Odour (barely detectable, need to stand still and inhale facing into wind) Moderate Odour (easily detectable while walking and breathing normally,
Raises dust and loose paper; small branches are moved Small trees in leaf begin to sway Large branches in motion; unbrellas 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 (chinney pots and slates removed)	hes are moved d with difficulty against the wind It when walking against wind impeded y pots and slates removed)	possibly orensive) 3 Strong Odour (bearable b 4 Very Strong Odour (unbe	possioly outhistye) Strong Odour (bearable but offensive – might make clothes / hair smell?) Very Strong Odour (unbearable, difficult to remain in area affected by odour)
Do any of the odours experienced on-site match those recorded during the off-site survey?	natch in character List areas Inspected:	nspected:	What relevant activities were occurring on-site during the off-site odour assessment?
NAS		NA	
Potential on-site odour sources identified:		I'i	
RN		M	

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Odour Rating Odou		Рагатетег	Thresholds that could indicate nuisance			S	noits	pzerv	o bləi'	I		Brief deta
Odour Description Comment Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of	Observer Location	Name of household / commercial site (describe so that location can be easily identified again by a third party)	I	ARZ	AR2	ARI						ils of any meeting with local resident
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of			VI 8	4	3	5						ts/complai
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of	Wind (no detectabl	Direction from which swold blows	1	~	B	M						nts received o
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of	i = if not (e)	Orientation (Observer Vs	Approx DW or not	MAN	ANN	NIN						luring assessm
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of		Strength Note 2	1	1	1	1				2-1	-1	ent (includ
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of	Tim Tim		I	14,05	14.48	15,25			ç	1 1ml 20		e names/add
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of			1	S	S	5				1		dresses/te
Odour Description of any odours, othe odours etc, (Also note variable etc) Guide- A location where the score the threshold values may be nuisance/significant impairment, observations are supported by p impact, frequency and duration of impact, frequency and duration of	Odour Rat	Persistence (0-2)	1 or 2	0	0	0						elephone numb
secription of any odours, othe ours etc, (Also note variable ours etc, (Also note variable stance/significant impairment, servations are supported by pact, frequency and duration of pact, fr	ing	Odour Intensity (4-0)	7	0	0	0						
son t t to sall	Odour Description Comments	Description of any odours, other source(s) of odours etc, (Also note variable weather conditions etc)	or exceeds 1 subject ularly if omplaints									9~

Page 16 of 17

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Sites (
Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)	
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General	Your Reference Site Licence No.		Site Licence No.		Assessment by	by	Date of Assessment	te
	74396		AN		Your name: (other Invest	Your name: $MCK CWEN$ (other Investigator(s) present): NVE		11 Johnsont
sessment sration	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	e from ons at,	Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?	Reason for odour assessment – Complaint verification; routine; other (specify).	nplaint ine;	Map – Has a map showing assessment locations been attached?	Weather Conditions Note 3 (record wind info on page 2):	Note 3 page 2):
	((000	
d	(Yes)	N _o	Yes	PLANNING FOR	KOPU CAPTON Y	Yes	UK7 , HOT	
ed teu	Note 1: Observ 1 Remote (no hou: 2 Low sensitivity	vation po	Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 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)	ectable, if not the thin 500m of observation area within 100m of obs	n 0) r point) ervation point)	Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot	rditions ntly, drizzle, raining, foggy n, hot	
geld observ	3 Moderate sensiti 4 High sensitivity 5 Extra sensitive (point)	tivity (housin / (housing, cc (complaints a	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 oint)	c area within 100m of ob ea within area of observa of public areas within are	servation point) tion point) a of observation	Note 4: Odour Persistence 0 No Odour 1 Intermittent (detected intermittent) 2 Persistent (detected throughout the	ote 4: Odour Persistence No Odour Intermittent (detected intermittently during the period of assessment) Persistent (detected throughout the period of assessment)	sessment)
pt the	Note 2: Wind Strength	Strength				Note 5: Odour Intensity	sity	
Noto (the ranking systems in 1 gailelymoo nahw besu 1 galle ooe	1 Light air 2 Light Breeze 3 Gentle Breeze 4 Moderate Breeze 5 Fresh Breeze 6 Strong Breeze 7 Near Gale 8 Gentle Breeze 8 Gentle Breeze 7 Near Gale	Smoke Directi Wind 1 Leaves Ze Raises Small 1 Large t Whole Targe t Sticker	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 Twigs break off trees; progress generally impeded Sicht ernormal damage accure (Animean rote and slates removed)	ot wind vanes moved by wind e moved of difficulty against the wind ded and elstes removed)		O No Detectable Odour I Faint Odour (barely detect Moderate Odour (easily de possibly offensive) Strong Odour (barable bu Very Strong Odour (unbez	No Detectable Odour Faint Odour (barely detectable, need to stand still and inhale facing into wind) Moderate Odour (easily detectable while walking and breathing normally, possibly offensive) Strong Odour (bearable but offensive – might make clothes / hair smell?) Very Strong Odour (unbearable, difficult to remain in area affected by odour)	thing normally hair smell?)
(A)		to any of the	Do any of the odours experienced on-site match in those recorded during the off-site survey?	in character List are	List areas Inspected:		What relevant activities were occurring on-site during the off-site odour assessment?	ere occurring ssessment?
Source igation ur Surve	42		MA		NAN			
1səau	Finish Time: Po	otential on-	Potential on-site odour sources identified:				MAN	
I	85		MAN					

Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)

Wind blows Sensitivity Sen	Wind Sensitivity Carection Orientation Direction Approx DW or not wind blows Approx DW or not detectable etc Strength Approx DW or not detectable etc Approx DW or not detectable etc Strength Approx DW or not detectable etc Approx DW or not detectable et	Wind Sensitivity Wind Get able 1 Wind	Wind Sensitivity Sensitivity (1-5) Note 1 Wind Geterable of from which wind blows wind blows (2-1) Wind Laboratory (1-5) Note 1 Start Time (1-5) Note 2 Contentation (1-5) Note 3 Contentation (1-5)	Wind Caractivity Sensitivity S	A Sensitivity Sens	Observer Location	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Thresholds that could indicate nuisance	A95	A84		moits w	A R R S	Sield o	10V	A812	
Direction defection from which wind blows by the Down-Wind Orientation or not of Approx DW or not of Observer Vs	Wind Wind (1-5) Note I Pirection detectable etc Strength St	Wind Direction from which wind blows Direction from which wind blows Down-Wind Down-Wind Orientation orientation detectable etc facility) Approx DW or not detectable etc facility) Approx DW or not detectable etc facility) Strength Approx DW or not orientation or detectable etc facility) Strength Approx DW or not or detectable etc facility)	Wind Wind Approx DW or not Strength Approx DW or not Start Time The Manual Manual Approx DW or not Strength Approx DW or not Start Time Start Time The Manual Manua	Wind August 1	Wind detection from which wind blows from which wind blows from which wind blows from which wind blows fraction from which wind blows fractions from which wind blows fractions	Location					. ()	7	7	2	7	121	
Down-Wind hows with the factorial of the	Strength A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Strength Compared to the content of the content	Strength Strength Ote 2	Strength Strength Mote 2	Time Strength Note 2 1		[5) Note [3			7		7	7		2	
Down-Wind Orientation Fr. Approx DW or not detectable etc detectable etc (Observer Vs	Strength A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Strength Compared to the content of the content	Strength Strength Ote 2	Strength Strength Mote 2	Time Strength Note 2 1	Wind (nd	from which	i l	794N	W. C.	WAY.	MAN	#KE	MATI	344	MA	101
	Note 2	Start Time Start Time	Note 2 Note 2 Note 2 Note 2 Note 2 Start Time	Note 2 Note 2 Note 2 Note 2 Note 2 Start Time	Mote 2 Mote 3 Mote 4 Mote 5 Mote 4 Mote 5 Mote 6 M	l = if not e)	(Observer Vs	Approx DW or not	MA	NAR	WIA	MIA	MA	MA	NJA	WA	

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)

General	Your Reference		Site Licence No.	Assess	Assessment by		Date of Assessment
	14396		ANN	Your n (other	Your name: NICK ONTH (other Investigator(s) present): NIA		11 Jul 2017
sessment aration	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	ee from itions coat,	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):	ions Note 3 fo on page 2):
	Yes	No	Yes	PRANNING APPLICATION	Yes	DRY , HOT	HOT
	Note 1: Obsel 1 Remote (no h 2 Low sensitivi 3 Moderate sen 4 High sensitivi	ervation p nousing, commity (no housin istivity (house	Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 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)	ectable, if not then (1) thin 500m of observation point) area within 100m of observation poi c area within 100m of observation poer within area of observation point)	Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy int) Temperature – cold, cool, warm, hot Note 4: Odour Persistence	ditions naty, drizzle, raining, fog n, hot fence	.gs
tield ob	5 Extra sensitive point)	ve (complaint	ringal sensativity (novaings, commercial industrial premises of puone area within area of coses variou point). Extra sensitive (complaints arising from residents, business and users of public areas within area of observation toint)	ea within area of coservation found) of public areas within area of observ		mittently during the peric hout the period of assessr	od of assessment) ment)
	Note 2: Wind Strength O Calm Smoke I Light air Direct	d Strengtl Smok	ngth Smoke rises vertically Direction of wind shown by smoke drift, but not wind vanes	wind vanes	Note 5: Odour Intensity O No Detectable Odour	sity	
the ranking syste sed when comple tab	2 Light Breeze 3 Gentle Breeze 4 Moderate Breeze 5 Fresh Breeze 6 Strong Breeze 7 Near Gale 8 Gale	To personal and a	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 Thirs break of fi trees; propress generally impoded	ioved by wind moved ifficulty against the wind walking against wind		able, need to stand still a stectable while walking a rt offensive – might make trable, difficult to remain	Faint Odour (barely detectable, need to stand still and inhale facing into wind) Moderate Odour (easily detectable while walking and breathing normally, possibly offensive) Strong Odour (bearable but offensive – might make clothes / hair smell?) Very Strong Odour (unbearable, difficult to remain in area affected by odour)
n (Æ	9 Strong Gale Start Time:	Do any those r	Slight structural damage occurs (chimney pots and slates removed) Do any of the odours experienced on-site match in character Li those recorded during the off-site survey?	e and slates removed) in character List areas Inspected:	ed:	What relevant activities were occurring during the off-site odour assessment?	What relevant activities were occurring on-site during the off-site odour assessment?
r Source tigation our Surve	NA		MIA	M	NA		
səvnl bO t	Finish Time:	Potential or	Potential on-site odour sources identified:			XX	
(Pos	82		MA				

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Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc):

