

H2 GAS MONITORING REPORT
FOR
MARLINSTOWN LANDFILL
2021
WASTE LICENCE NO. W0071-02

Prepared By: -

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1st February 2022

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1. INTRODUCTION

1.1 BRIEF

Westmeath County Council is required by the Environmental Protection Agency (EPA) under Waste Licence W0071-02 (reduced monitoring and reporting 2012) to carry out environmental monitoring at Marlinstown Landfill and to submit a half-yearly report to the EPA. This report presents the results of gas monitoring data obtained in the 2nd half of 2021.

1.2 SITE LOCATION AND DESCRIPTION

Marlinstown Landfill is located approximately 3 km east of Mullingar in the southwest corner of Marlinstown Bog, Mullingar, Co. Westmeath. The facility occupies an area of some 9 ha (22 acres) most of which has been used for landfill. The bog is directly adjacent to the site on its eastern side. A strip of coniferous plantation separates the site from the bog area to the north of the site. The land adjoining the site to the west comprises agricultural pastureland.

2. METHODOLOGY

The landfill gas monitoring network consists of a series of gas wells located on site, around the perimeter of the site and at the service station south of the site. The locations of the gas monitoring wells are provided in **Appendix A**.

Perimeter gas wells (G 8 , G9, G16, G17, G18, G26 and G61 – G70) and the service station are monitored daily. The remaining gas wells are monitored monthly.

Readings are measured using a GA5000 Landfill Gas Analyser, serviced annually.

3. RESULTS AND DISCUSSION

The daily, weekly and monthly gas results are presented in **Appendix B**.

3.1 EVALUATION OF RESULTS

A limit of 1% v/v Methane and 1.5% v/v Carbon Dioxide applies to any building on or adjacent to the facility and/or at any point located outside the body of the waste.

It was agreed with the EPA in December 2015 that the flare could be on a timer. The flare was set up to run for 8 hours each day.

After a number of weeks, that was reduced to 7 hours a day. The flare has operated satisfactorily since that time. The run time of the flare continues to be reviewed on an ongoing basis. In late 2020 the flaring time was reduced to 6hours 30minutes.

The levels for carbon dioxide are relatively high with a maximum of 21.7% recorded for G65 at the petrol filling station on the 27th July 2021. This is up from the maximum of 20.3% recorded for G17 in 2020.

CH₄ results for H2 2021 resulted in 13 exceedances of 1%. This was up on the same period in 2020 of 3 exceedances.

On the 9th August 2021 at G61 the maximum methane level of 7.4% was recorded. This is higher on lasts years H2 maximum level of 3.4% at G61.

APPENDIX A

Monitoring Locations at Marlinstown

APPENDIX B

Daily, Weekly and Monthly results.

Marlinstown Landfill - Licence No. W71-02

Daily Gas 2021 H2

	Methane (CH4)														Carbon Dioxide (CO2)														Oxygen (O2)																
	G8	G9	G16	G17	G18	G26	G61	G62	G64	G65	G67	G68	G69	G70	Shop	G8	G9	G16	G17	G18	G26	G61	G62	G64	G65	G67	G68	G69	G70	Shop	G8	G9	G16	G17	G18	G26	G61	G62	G64	G65	G67	G68	G69	G70	Shop
Jul-21																																													
05/07/2021	0.1	3.7		0.10	0.10	0.60	0.70	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.0	3.9	14.9		17.9	0.10	13.2	12.6	7.1	2.6	15.4	0.00	3.10	0.90	1.50	0.0	18.1	0.1		3.7	20.3	4.3	0.2	3.1	17.5	3.5	20.3	15.9	19.4	18.4	20.8
09/07/2021	0.1	1.2		0.10	0.10	0.10	0.30	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.0	3.7	4.3		17.3	0.10	7.40	13.7	4.9	2.4	12.4	0.00	1.80	0.40	2.20	0.0	17.8	0.2		3.8	20.6	11.4	1.2	10.1	18.1	6.8	20.7	18.6	20.4	18.1	20.8
12/07/2021	0.1	0.5		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	4.1	14.2		16.8	0.10	12.7	10.9	8.3	2.2	14.4	0.00	1.30	0.40	2.10	0.0	17.4	0.2		4.1	20.4	6.3	2.3	3.1	17.9	4.2	20.5	19.1	20.1	17.8	20.8
16/07/2021	0.0	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	4.4	14.0	2.80	16.2	0.00	12.8	9.8	8.2	1.9	17.0	0.30	1.30	1.20	2.1	0.0	16.4	0.2	17.3	4.1	19.8	7.0	7.3	6.8	17.7	1.4	19.3	18.5	18.8	17.3	20.9
19/07/2021	0.0	0.2	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.0	4.9	14.6	2.50	16.2	0.10	13.5	14.3	12.9	2.5	17.8	0.70	2.50	1.30	1.90	0.0	15.6	0.2	17.5	4.0	19.6	6.7	0.8	0.4	16.5	0.3	18.4	16.7	18.5	17.3	20.8
21/07/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.0	4.6	14.5	2.60	16.0	0.10	13.6	14.6	12.1	2.4	18.3	0.70	2.60	1.20	2.20	0.0	16.0	0.4	17.4	4.2	19.5	7.4	0.2	1.8	16.7	0.2	18.5	16.4	18.5	17.3	20.9
27/07/2021	0.0	0.0	0.00	0.00	0.00	0.10	1.70	0.00	0.00	3.50	0.00	0.00	0.00	0.90	0.0	3.7	14.6	1.60	16.8	0.20	5.8	17.1	10.7	3.1	21.7	2.40	2.30	1.00	5.10	0.0	18.1	0.9	20.2	4.3	20.9	15.8	0.1	8.0	18.2	0.2	16.9	19.1	20.8	17.0	20.8
Aug-21																																													
04/08/2021	0.0	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.0	3.7	15.5	1.90	17.4	0.10	4.8	17.1	10.4	4.2	20.1	0.70	2.60	1.50	6.10	0.0	17.6	0.1	18.7	3.5	20.2	16.0	0.4	5.3	15.7	1.0	19.2	17.2	19.1	14.6	20.7	
06/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	5.80	6.20	0.00	0.50	0.00	0.00	0.00	0.20	0.0	3.3	15.6	3.10	17.6	0.10	9.0	14.3	12.6	4.6	18.3	0.00	2.00	1.60	3.30	0.0	18.4	0.4	17.6	3.7	20.7	11.0	0.4	0.2	15.7	2.6	20.9	18.9	19.6	16.9	20.7
09/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	7.40	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.0	2.4	14.6	0.30	16.6	0.10	3.5	12.2	3.5	4.0	14.4	0.00	3.00	0.3	2.90	0.0	19.1	0.8	20.8	3.0	20.6	13.3	1.1	11.0	16.1	5.9	20.6	18.9	20.5	16.9	20.7
13/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.7	12.6	0.40	15.7	0.10	2.6	12.5	4.8	2.8	11.4	0.00	2.50	0.9	1.7	0.0	18.8	3.0	20.6	1.9	20.8	19.2	4.9	13.9	17.8	8.9	20.9	19.2	20.1	18.6	20.8
17/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.5	10.7	1.00	15.9	0.10	2.8	13.2	4.9	2.9	9.60	0.00	1.30	0.2	1.50	0.0	19.1	6.0	19.7	1.6	21.0	19.2	5.9	14.6	18.1	10.9	21.2	20.4	21.0	19.3	20.8
20/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	3.1	9.6	1.20	16.4	0.10	4.4	13.3	0.1	3.5	8.60	0.40	3.30	1.2	2.50	0.0	18.2	7.9	19.5	1.7	20.8	17.1	4.1	20.9	17.2	12.1	20.3	18.9	20.0	18.1	20.9
23/08/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.7	8.9	1.20	16.4	0.10	3.3	12.1	5.8	4.0	6.70	0.00	2.40	1.6	1.40	0.0	19.0	8.8	19.3	1.9	20.5	18.3	2.0	8.1	15.8	13.6	20.5	18.9	19.0	18.8	20.7
26/08/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	8.7	1.5	16.8	0.1	4.6	13.6	8.9	3.8	8.4	0.0	2.5	1.0	1.4	0.0	18	9.6	19	1.9	20	16	0.7	3.8	15.5	10.5	19.9	18.4	18.9	18.4	20.7
Sep-21																																													
03/09/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	11.2	1.3	17.9	0.1	6.5	15.2	12.3	3.7	18.5	1.4	2.6	1.2	1.7	0.0	18.0	5.5	19.4	2.2	20.5	15.2	0.0	3.4	16.6	0.4	17.3	17.9	19.6	18.9	20.8
06/09/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	3.7	11.7	1.5	17.9	0.4	4.3	13.2	8.9	3.5	18.1	1.0	2.8	1.2	3.0	0.0	17.3	4.3	19.1	1.9	19.4	17.3	1.8	8.5	16.1	1.5	18.0	16.5	18.7	17.2	20.7
10/09/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	3.9	12.4	1.8	18.3	0.3	6.1	15.1	9.6	3.7	18.9	3.4	4.7	1.2	1.4	0.0	17.5	3.1	19.2	2.1	20.1	15.6	0.5	6.4	16.5	0.4	12.0	14.0	19.4	19.3	20.8
20/09/2021	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	13.6	1.9	18.5		7.9	15.4	5.8	3.7	17.5	0.6	3.4	1.1	2.8	0.0	18.3	0.1	18.7	2.00		13.1	1.20	11.2	16.7	3.2	19.9	16.7	19.5	17.9	20.8
24/09/2021	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	13.4	2.3	18.9	0.1	8.4	8.9	3.3	16.8	0.5	2.7	1.2	3.4	0.0	17.6	0.6	18.7	2.00	20.6	12.4	8.3	8.6	17.1	3.2	20.2	18.2	19.6	17.6	20.8	
27/09/2021	0.0	0.0	0.1	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	3.1	12.9	0.4	18.7	0.3	16.1	13.1	3.6	3.4	14.9	0.0	2.1	1.3	2.7	0.0	18.7	1.6	21.4	2.50	20.9	3.6	3.6	11.0	18.1	4.0	21.5	20.1	20.7	19.1	20.8
Oct-21																																													
05/10/2021	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.0	2.3	12.5	0.30	19.2	0.60	10.5	11.4	1.6	2.8	11.7	0.00	5.20	3.40	1.00	0.0	19.3	2.9	21.0	2.00	20.2	10.4	4.80	16.4	18.4	9.0	21.4	18.8	19.2	20.3	20.8
08/10/2021	0.0	0.1	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.0	2.1	10.9	0.6	18.8	0.1	4.0	11.8	4.3	2.4	10.0	0.00	4.40	0.20	0.80	0.0	19.1	5.5	20.3	2.3	20.4	18.2	5.00	8.1	18.2	10.3	20.8	18.1	20.6	19.7	20.9
11/10/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.8	9.9	0.4	18.4	0.1	2.2	11.2	5.1	2.3	8.5	0.00	3.70	0.30	1.00	0.0	19.7	7.1	20.7	2.2	20.7	19.9	6.90	10.3	18.6	12.1	21.0	18.8	20.7	19.9	20.7
15/10/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.2	9.1	1.0	18.4	0.1	1.4	11.9	5.5	2.2	7.8	0.00	4.30	0.90	1.20	0.0	19.4	8.4	20.3	2.8	20.8	20.6	4.10	11.2	18.9	13.2	21.0	18.8	20.6	19.8	20.7
18/10/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.6	8.5	1.5	18.5	0.2	1.5	11.8	6.5	2.0	10.3	0.00	4.50	2.30	1.40	0.0	18.9	9.7	19.4	2.7	20.4	20.2	3.2	5.4	18.8	8.7	20.8	18.5	19.4	19.2	20.7
22/10/2021	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.0	2.1	7.9	1.0	18.6	0.2	2.1	12.5	3.1	2.0	8.7	0.10	4.80	1.00	1.20	0.0	19.7	10.4	20.4	2.1	20.9	19.8	4.7	18.1	19.4	11.3	21.3	18.9	20.7	19.9	20.7
26/10/2021	0.2	0.2	0.2	0.1	0.1	0.2	0.00	0.00	0.00	0.00	0.1	0.4	0.1	0.1	0.0	2.0	7.9	0.7	18.4	0.1	3.6	9.9	3.2	1.7	12.4	0.0	6.3	3.0	1.1	0.0	19.7	10.1	20.4	2.3	21.0	17.8	5.0	11.8	19.2	7.1	20.9	17.4	19.3	19.8	20.7
Nov-21																																													
02/11/2021	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	7.5	0.2	17.2	0.0	3.3	10.2	2.3	2.1	6.2	0.0	3.3	1.0	0.7	0.0	19.9	9.5	21.5	2.6	21.4	19.8	1.1								

Comment _____

Signature Patrick Tighe

Date 1-2-2022