Appendix A8.1 Noise Monitoring Survey Report

1. Scope

This report presents the results of a baseline environmental noise survey carried out at a number of different noise monitoring locations in the vicinity of the Kerdiffstown Landfill Remediation Project (hereafter referred to as "the proposed Project").

2. Regional Environmental Setting

Kerdiffstown Landfill is located in County Kildare and comprises a former quarry, landfill and waste processing facility. The site has been progressively backfilled with wastes since the 1950's until 2010. The site poses a number of risks due to large areas of uncapped waste, remnants of buildings and structures, over-steep slopes and absence of appropriate capping to the lined cell. The proposed Project comprises the remediation of the site to reduce the risks to public health and safety and the environment (the Remediation Phase), whilst developing the site to provide an amenity to the local community, comprising a public park with multi-use sports pitches (the Operational Phase).

The proposed Project site is located in a semi-rural area with significant population centres located within a few kilometres of the site. The site is located in County Kildare, approximately 3km north-east of central Naas, approximately 400m north-west of Johnstown village and in close proximity to the strategically important M7/N7 corridor. There are a number of one-off houses located along the L2005 Kerdiffstown Road which runs along the western and southern boundaries of the site. To the northeast is land associated with Kerdiffstown House, to the north is a golf course and to the south west and south east are a mixture of land uses including residential, agricultural and worked out quarries.

The surrounding road network, in particular the N7 dual carriage-way which runs less than 300m south of the site boundary and the M7 Motorway which runs approximately 500m west of the site boundary, carries high volumes of traffic travelling at significant speeds, typically greater than 90kph.

3. Noise Sensitive Receptors

The noise monitoring locations were chosen in order to best represent the current noise climate at the nearest noise sensitive receptor (NSR) locations in the vicinity of the former landfill site. Eight noise monitoring locations (N1 to N8) were selected at various locations and these are shown on Figure 8.1, an extract of which is provided below and summarised in Table 1 below.

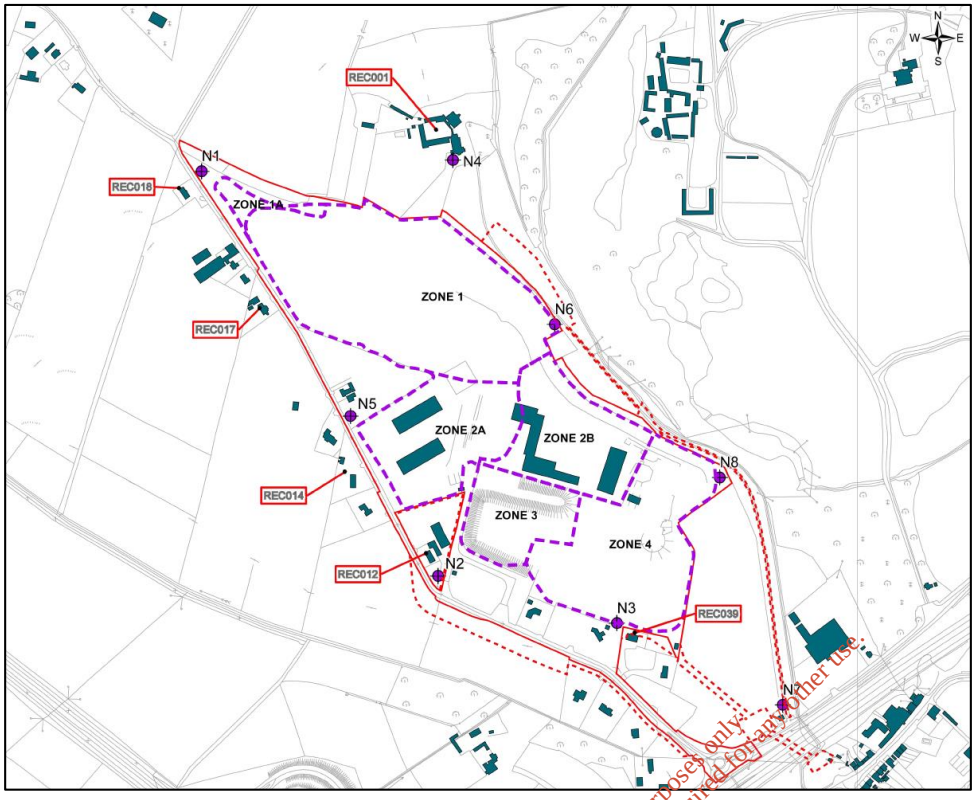

Diagram 1 Location of Noise Sensitive Receptor Locations

Table 1: Noise Monitoring Locations

Monitoring Location	Description
N1	North-western corner boundary adjacent golf course
N2	Outside private residence adjacent site entrance
N3	Elevated location along southern boundary
N4	On green area 25m from Kerdiffstown House
N5	On western site boundary close to private residence
N6	Elevated location on northern boundary overlooking golf club
N7	In field 30m from the L2005 road
N8	Elevated location on north eastern boundary overlooking golf club

Noise measurements were carried out at or near the boundaries of the NSRs where possible and this noise survey is an accurate representation of the current daytime, evening time and night-time noise levels in the vicinity of the proposed Project.

4. Survey Protocol

4.1 Monitoring Locations

The monitoring locations were selected in accordance with the *ISO 1996 Acoustics - Description and Measurement of Environmental Noise* guidelines. Monitoring was carried out in accordance with the above-mentioned document and in all cases; the instrument was positioned in the location most sensitive to noise from

the proposed site. Due care was taken to minimise potential interference from wind generated noises from trees etc. during the course of the measurement programme.

4.2 Instrumentation and Methodology

Noise measurements were made according to the requirements of *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the EPA publication; *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), 2016.* The measurements were made using a Bruel & Kjaer (B&K) 2250 Light meter fitted with a 1:1 and 1:3 octave band filter. The instrument was calibrated *in situ* at 94 dB prior to use and the calibration was cross-checked after the measurements using a B&K acoustic calibrator. The sound level meter was orientated towards the noise source and mounted on a tripod at 1.5m above ground level. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was Fast and the Frequency Weighting was A-weighted as per IEC 651.

4.3 Survey Implementation

TMS Environment Ltd personnel (Johnnie Armstrong, Enda Flood and Tim Hurley) conducted the noise monitoring survey on the 8th, 13th and 14th of September 2016 and also on the 15th and 16th of March 2017. All monitoring was carried out in accordance with the methodology set out above.

The measurement parameters included meteorological observations of prevailing conditions at the time of the survey. The main measurement parameter was the equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$. Monitoring periods for the noise survey were 30 minute intervals for the daytime measurements and 15-minute intervals for the evening time and night-time measurements. A statistical analysis of the measurement results was also completed so that the percentile levels, $L_{AN, T}$, for N = 90% and 10% over the measurement intervals were also recorded. The percentile levels represent the noise level in dB(A) exceeded for N% of the measurement time.

5. Weather Conditions

The weather conditions were generally dry with a light or no breeze blowing. There was a little drizzle during the evening on the 8th of September but was dry otherwise.

6. Survey Results

The results of the baseline environmental noise survey are presented in Tables 2 to 9 below.

Table 2: Results for Monitoring Location N1

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	14.09.2016	12.38-13.08	55	47	55	90	55
	14.09.2016	13.10-13.40	54	49	56	77	54
	14.09.2016	13.41-14.11	56	48	57	76	56
	Average		**55**	**48**	**56**		**55**
Evening time 19.00-23.00	08.09.2016	19.53-20.07	52	48	54	78	52
Night-time 23.00–07.00	16.03.2017	01.04-01.19	42	40	44	57	42
	16.03.2017	01.19-01.34	42	39	43	52	42
	Average		**42**	**40**	**44**		**42**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Maximum noise levels associated with vehicle movement on the L2005 close to noise meter.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Maximum noise levels associated with vehicle movement on the L2005 close to noise meter.

Night-time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 3: Results for Monitoring Location N2

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	13.09.2016	10.36-11.06	52	44	53	87	52
	13.09.2016	11.09-11.39	50	43	52	79	50
	13.09.2016	11.40-12.10	51	45	52	63	51
	Average		**51**	**44**	**52**		**51**
Evening time 19.00-23.00	08.09.2016	20.13-20.28	56	54	57	65	56
Night-time 23.00–07.00	15.03.2017	23.00-23.15	55	52	57	65	55
	15.03.2017	23.15-23.30	54	52	56	61	54
	Average		**55**	**52**	**57**		**55**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Maximum noise levels associated with vehicle movement on the L2005 close to noise meter.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway.

Night-time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road

Table 4: Results for Monitoring Location N3

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	12.09.2016	15.22-15.52	55	52	58	71	55
	12.09.2016	15.52-16.22	54	51	54	80	54
	12.09.2016	16.22-16.52	54	50	54	85	54
	Average		**54**	**51**	**55**		**54**
Evening time 19.00-23.00	08.09.2016	21.28-21.43	57	55	59	57	57
Night-time 23.00–07.00	16.03.2017	01.48-02.03	49	44	52	61	49
	16.03.2017	02.03-02.18	51	47	54	60	51
	Average		**50**	**46**	**53**		**50**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Birdsong noted.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 5: Results for Monitoring Location N4

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	14.09.2016	10.59-11.29	49	45	49	82	49
	14.09.2016	11.29-11.59	50	47	52	70	50
	14.09.2016	11.59-12.29	50	48	52	64	50
	Average		**50**	**47**	**51**		**50**
Evening time 19.00-23.00	08.09.2016	19.15-19.30	50	49	51	72	50
Night-time 23.00–07.00	15.03.2017	23.47-00.02	45	43	46	65	45
	16.03.2017	00.02-00.17	45	42	46	71	45
	Average		**45**	**43**	**46**		**45**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Birdsong noted.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Birdsong noted.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 6: Results for Monitoring Location N5

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	08.09.2016	13.04-13.34	53	51	54	70	53
	08.09.2016	13.48-14.18	53	51	54	69	53
	08.09.2016	14.45-15.15	53	51	54	66	53
	Average		**53**	**51**	**54**		**53**
Evening time 19.00-23.00	08.09.2016	20.31-20.46	53	52	55	73	53
Night-time 23.00–07.00	16.03.2017	02.25-02.40	45	42	48	56	45
	16.03.2017	02.40-02.55	44	40	46	54	44
	Average		**45**	**41**	**47**		**45**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Birdsong noted. Maximum noise levels associated with vehicle movement on the L2005.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road. Maximum noise levels associated with vehicle movement on the L2005.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 7: Results for Monitoring Location N6

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	08.09.2016	15.17-15.47	53	51	54	79	53
	08.09.2016	15.48-16.18	54	52	55	65	54
	08.09.2016	16.18-16.48	52	51	53	72	52
	Average		**53**	**51**	**54**		**53**
Evening time 19.00-23.00	08.09.2016	20.50-21.05	53	51	54	69	53
Night-time 23.00–07.00	16.03.2017	03.03-03.18	45	42	47	53	45
	16.03.2017	03.18-03.33	46	43	47	71	46
	Average		**46**	**43**	**47**		**46**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some noise from players on golf course. Birdsong noted. Maximum noise levels associated with nearby golf players.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 8: Results for Monitoring Location N7

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	14.09.2016	09.19-09.49	59	57	61	81	59
	14.09.2016	09.52-10.22	58	56	60	70	58
	14.09.2016	10.23-10.53	58	56	60	82	58
	Average		**58**	**56**	**60**		**58**
Evening time 19.00-23.00	08.09.2016	19.36-19.51	63	61	65	70	63
Night-time 23.00–07.00	16.03.2017	00.27-00.42	57	51	60	66	57
	16.03.2017	00.42-00.57	58	51	61	68	58
	Average		**58**	**51**	**61**		**58**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway. Some traffic passing on the L2005 Kerdiffstown Road.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

Table 9: Results for Monitoring Location N8

Period	Date	Time	Measured Noise Levels / dB(A)				
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}	L_{ArT}
Daytime 07.00 - 19.00	12.09.2016	13.35-14.05	60	58	61	69	60
	12.09.2016	14.16-14.46	58	57	60	67	58
	12.09.2016	14.47-15.17	57	55	59	73	57
	Average		**58**	**57**	**60**		**58**
Evening time 19.00-23.00	08.09.2016	21.10-21.25	52	50	53	66	52
Night-time 23.00–07.00	16.03.2017	03.43-03.58	47	43	49	56	47
	16.03.2017	04.01-04.16	46	43	48	64	46
	Average		**47**	**43**	**49**		**47**

Daytime Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway.

Evening time Comments: Main noise source is the continuous passing traffic on the N7 dual carriage-way and the M7 motorway.

Night-time Comments: Main noise source is the passing traffic on the N7 dual carriage-way and the M7 motorway.

7. Evaluation of Results

7.1 Daytime Noise Survey

This survey was completed in order to assess the existing baseline noise environment in the vicinity of the project site, the former Kerdiffstown landfill. The baseline data collected can be used to identify the potential for impact that activities associated with the proposed Project could have on the local noise environment.

The daytime noise measurements were carried out between the hours of 07.00 and 19.00 and ranged in value from 49dB $L_{Aeq,15mins}$ at monitoring location N4 to 60dB $L_{Aeq,15mins}$ at monitoring location N8. The background noise characterised by the L_{A90} measurements ranged from 43dB L_{A90} at monitoring location N2 to 58dB L_{A90} at monitoring location N8.

It was generally observed that the main source of noise at all noise monitoring locations was anthropogenic in nature and was predominantly passing traffic on the N7 dual carriageway and on the M7 motorway. Non anthropogenic noise sources including birdsong and the breeze blowing through trees etc. had only a minor impact on the noise environment at the noise monitoring locations.

7.2 Evening Time Noise Survey

The evening time noise measurements were carried out between the hours of 19.00 and 23.00 and ranged in value from 42dB $L_{Aeq,15mins}$ at monitoring location N9 to 69dB $L_{Aeq,15mins}$ at monitoring location N2. The background noise characterised by the L_{A90} measurements ranged from 48dB L_{A90} at monitoring location N1 to 61dB L_{A90} at monitoring location N7.

Again, the main source of noise at all noise monitoring locations during the evening time period was anthropogenic in nature and was predominantly passing traffic on the N7 dual carriageway and on the M7. Non anthropogenic noise sources such as birdsong and the breeze blowing through trees etc had only a minor impact on the noise environment at the noise monitoring locations.

7.3 Night-time Noise Survey

The night-time noise measurements were carried out between the hours of 23.00 and 07.00 and ranged in value from 42dB $L_{Aeq,15mins}$ at monitoring location N1 to 58dB $L_{Aeq,15mins}$ at monitoring location N7. The background noise characterised by the L_{A90} measurements ranged from 39dB L_{A90} at monitoring location N1 to 52dB L_{A90} at monitoring location N2.

Again, the main source of noise at all noise monitoring locations during the night-time period was anthropogenic in nature and was predominantly passing traffic on the N7 dual carriageway and on the M7. Non anthropogenic noise sources such as breeze blowing through trees etc had only a minor impact on the noise environment at the noise monitoring locations.