SITE CONDITION REPORT FOR MILTOWN COMPOSTING SYSTEM LTD. LICENCE REVIEW.

Prepared for:

MILTOWN COMPOSTING SYSTEMS LTD.,

MILTOWNMORE,

FETHARD,

CO. TIPPERARY

3377 - Miltown

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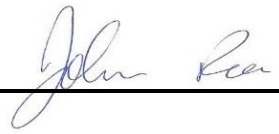
Prepared by;	*John Rea, B.Sc., MIEnv.Sc.*	

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1.0 INTRODUCTION

This Site Condition Report is being conducted as part of a review of Miltown's Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-02). The site is located in the townland of Miltownmore, approximately 6 km to the east of Fethard and 10 km south west of Cashel. The site is accessed by a laneway off the Rosegreen to Fethard L1409. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. It is occupied by a waste reception shed and process building (i.e., Shed 1), a covered yard area, sheds 2 and 3 for maturation of material and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, bio filter and agricultural sheds. The area to the southwest of the Sheds contains a series of constructed wetlands which are used to provide additional treatment of stormwater from the facility shed roofs and yard areas not associated with the process. Further south of the wetlands, to the east and to the west are all agricultural lands. The site has an area can be seen in Figure 1.

Figure 1. Site Area

The proposed site changes will be a continuation of the existing composting process at the facility albeit at an increased throughput. The proposed development will continue to operate as an aerobic composting plant with the capacity to accept and process a broad range of compostable organic materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal wastewater sludges and organic fines generated in the physical treatment of mixed municipal waste (MMW). The proposal is to increase the tonnage throughput in the plant from

50,000 tonnes per annum to up to 75,000 tonnes per annum. Due to the relatively short time period that the organic material spends in the composting bays during the process phase in Shed 1 and the waste reception shed it is considered that the existing process facility bays will be capable of processing the increased throughput. However, the capacity to mature the material following processing will require an increase in maturation area at the facility. It is proposed that the old agricultural sheds located to the west of the reception shed will be reconstructed as maturation sheds 2B and 3B and fitted with an under floor forced air system to allow for the maturation of organic material in static piles as an extension of the maturation process currently completed in Sheds 2 and 3.

As part of the new site layout it is proposed that the two reconstructed agricultural sheds (i.e., maturation sheds 2B and 3B) occupying a floor area of 3,560m^2 would be used for extended maturation capacity for sheds 2 and 3 to allow for the proposed increase in throughput. The site office, canteen/changing room and the container used to store lubricating/hydraulic oil and the power washer will remain in the same location as present. The existing biofilters south of Shed 1 and north of shed 3 will not change but there is a proposed third biofilter that would treat extracted air from maturation sheds 2B and 3B from the maturation of organic material and would be located to the south of maturation shed 2B.

2.0 SITE CONDITION

This section of the report will outline the condition of the Miltown site with regards to environmental receptors surrounding the site in Miltownmore, Fethard, Co. Tipperary. The environmental monitoring data related to ongoing monitoring completed at the site as part of the current EPA Licence conditions are included in the relevant chapters of the Environmental Impact Statement accompanying the licence review application, including; Chapter 7 (Hydrology), Chapter 8 (soils, geology and hydrogeology), Chapter 9 (noise) and Chapter 10 (air). However, for completeness they have been included in this report along with any updated monitoring information

2.1 Groundwater

Milltown Composting perform annual groundwater monitoring at three groundwater monitoring wells (i.e., GW1, GW2 and GW3) to comply with their EPA Waste Licence. The following parameters are outlined in the facility's Waste Licence for sampling and analysis;

- pH
- Nitrate
- Total Ammonia
- Total Nitrogen
- Conductivity
- Chloride
- Organic Compounds

The results of the groundwater monitoring programme for the facility between 2019 and 2021 are outlined in the following tables. The 2022 groundwater sampling had not been completed at the time of this report preparation:

Nitrate Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	DW Limit (mg/l)**
Nitrate	2019	2.2	0.79	7.2	50
	2020	1.6	0.094	4.5	50
	2021	2.9	<1	8.8	50

**- Limit set in S.I No. 122 of 2014

pH Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1	GW2	GW3	GW Limit (µS/cm)*	Drinking Water Limit (µS/cm)**
pH	2019	6.9	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**
	2020	6.6	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**
	2021	6.5	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**

*- Limit set in S.I No. 366 of 2016

**- Limit set in S.I No. 122 of 2014

The pH of all samples collected between 2019 and 2021 were within the range for groundwater protection and drinking water quality.

Conductivity Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (µS/cm)	GW2 (µS/cm)	GW3 (µS/cm)	GW Limit (µS/cm)*	Drinking Water Limit (µS/cm)**
Conductivity	2019	562	854	331	**1,875**	**2,500**
	2020	544	828	261	**1,875**	**2,500**
	2021	663	906	331	**1,875**	**2,500**

*- Limit set in S.I No. 366 of 2016

**- Limit set in S.I No. 122 of 2014

Ammonia Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	GW Regs ELV (mg/l)*	Drinking Water Limit (mg/l)**
Ammonia	2019	0.269	0.14	0.06	**0.175**	**0.3**
	2020	0.113	0.121	0.01	**0.175**	**0.3**
	2021	0.058	0.17	<0.05	**0.175**	**0.3**
	January 21, 2022	0.14	0.14	<0.02	**0.175**	**0.3**
	January 28, 2022	0.10	0.06	<0.02	**0.175**	**0.3**
	February 04, 2022	0.07	0.08	<0.02	**0.175**	**0.3**
	February 11, 2022	0.13	0.05	<0.02	**0.175**	**0.3**

*- Limit set in S.I No. 366 of 2016

**- Limit set in S.I No. 122 of 2014

Chloride Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	GW Regs ELV (mg/l)*	Drinking Water Limit (mg/l)**
Chloride	2019	52	120	35	**187.5**	**250**
	2020	65	130	36	**187.5**	**250**
	2021	75	115.6	44.02	**187.5**	**250**

*- Limit set in S.I No. 366 of 2016

**- Limit set in S.I No. 122 of 2014

BTEX Results in Monitoring Wells GW1, GW2 and GW3

Parameter	GW1			GW2			GW3			GW Regs ELV (µg /l)*	Drinking Water Limit (µg/l)**
	2019	**2020**	**2021**	**2019**	**2020**	**2021**	**2019**	**2020**	**2021**		
Benzene	<0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	<0.1	<1	**0.75**	**1**
Toluene	<0.5	<0.5	<1	<0.5	<0.5	<1	<0.5	<0.5	<1	**525**	**N/A**
Ethyl Benzene	<0.5	<0.5	<1	<0.5	<0.5	<1	<0.5	<0.5	<1	**N/A**	**N/A**
Xylene	<0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	<0.1	<1	**N/A**	**N/A**

*- Limit set in S.I No. 366 of 2016

**- Limit set in S.I No. 122 of 2014

VOC concentrations were less than the method detection limits (MDL) for all sampling events.

2.2 Sewer

There is no connection to a foul sewer mains system from the site and sanitary and sink wastewater from the site welfare facilities (i.e., toilets and canteen) is currently discharged to an on-site septic tank and percolation area. No waste water from the compost process is discharged to the septic tank system. All waste water/leachate is recirculated back through the process via a holding tank located south of Shed 1**.**

2.3 Stormwater/Surface Water

Historically, surface water from the site was discharged directly from the site via a surface water drainage pipe along the southern boundary that then linked to the surface water drain at the southwest corner of the site. The storm water drainage and abatement system was upgraded in 2021 when all storm water runoff from the facility roofs and clean yard areas were directed to the on-site ICW system. The ICW on the Miltown site comprises of 8 main interlinked vegetated ponds that are used for the treatment of storm water from the site prior to discharge to a surface ditch at the southwest of the site at SW1a.

In August 2021 two (2) surface water samples were collected from the ICW to assess the ammonia concentrations in surface water discharged from the site and to assess the effectiveness of the ICW to reduce ammonia concentrations in surface water. One sample (sample 1) was collected from the ICW discharge at SW1a (i.e., discharge from pond 8) and contained an ammonia concentration of 0.03 mg/l. The second sample (sample 2) was collected from the inlet to pond 6 and contained an ammonia concentration of 0.16 mg/l. The analysis results indicated that the ICW was providing appropriate treatment of the surface water prior to discharge. Monitoring of surface water discharge will continue as part of the site Industrial Emissions Licence compliance requirements. In February 2022 further assessment of the ICW was completed to determine its capacity to effectively treat surface water from the site and ensure that surface water discharged from the site is not negatively impacting on surface water receptors. The results of the analysis are outlined in the Table below.

Analysis Results for Water Samples from ICW

Year	Sample Location	Parameter	Result (mg/l)
August 2021	SW1a	Suspended Solids	19
		BOD	4
		Ammonia	0.03
February 2022	Pond 8	Ammonia	0.03
		Ammonia	0.15
		Ammonia	0.07
		Ammonia	0.12

The results for discharge at SW1a in 2021 (i.e., 95%ile ammonia concentration of 0.14 mg/l) in samples collected from the final treatment pond in February 2022 indicated that the quality of surface water from the ICW system will not negatively impact surface water quality in the Moyle River catchment area.

To further assess the surface water quality from the site and assess the potential for it to impact surface water receptors further downstream, sampling was completed in February 2022 and the sample analysis results are provided in Table 2-8.

Table 2-8 – Analysis Results for Surface Water samples Collected Downstream of SW1a

Sample Location	Parameter	Result (mg/l)
M1 – Surface Drainage Ditch Down Gradient from SW1a	COD	23
	BOD	3.0
	pH	7.0
	Ammonia	0.12
M2 – Moyle River Upstream of Site (Castleblake)	COD	9
	BOD	<2
	pH	
	Ammonia	0.16
M3 – Stillimity Stream before flowing to Moyle	COD	12
	BOD	2.0
	pH	8.0
	Ammonia	0.13
M4 – Moyle River – Mocklerstown Bridge	COD	9
	BOD	<2
	pH	7.9
	Ammonia	0.19

The analysis results indicated that surface water in the drainage ditch and in the Stillimity Stream immediately downgradient from the surface water outlet from the ICW at the Miltown Site (i.e., SW1a) was of good quality. The COD concentrations were less than the Surface Water Guideline limit of 40 mg/l and BOD in surface water prior to flowing to the Moyle River (i.e., M3) was less than the 2009 Surface Water Regulation limit of 2.6 mg/l. Ammonia concentrations were also less than the limit of 0.14 mg/l outlined in the 2009 Surface Water Regulation. The sampling results from the surface drain and Stillimity Stream located downgradient of SW1a indicated that concentrations of parameters that would indicated potential nutrient impacts on the receiving Moyle River were less than the Regulatory Limits and indicated that discharged surface water from the Miltown ICW at SW1a would not have any impact on water quality in the Moyle River.

2.4 Air Emissions

In order to meet the condition requirements of the site Waste Licence the Milltown Composting site completes the following monitoring at the facility to ensure that the operation is not impacting air quality in the area;

- Ammonia (NH_3)
- Hydrogen Sulphide (H_2S)
- Mercaptans
- Dust Deposition
- Particulate Matter (PM)
- Bioaersols (Total Fungi/Bacteria and Aspergillus fumigatus)
- Amines (Ammonia Derivatives)

The results for the relevant parameters outlined above are outlined in the following paragraphs;

2.4.1 Air Extraction

Miltown have odour control measures in place at the facility which consists of an air extraction and biofilter treatment system. The Miltown Composting biofilters are located to the south of Shed 1 (biofilter 1) and to the north of Shed 3 (Biofilter 2). Operational experience of the facility has found that it has not been necessary to continuously operate at maximum capacity, and an air change rate of 1.5 air changes per hour has been effective in controlling odour emissions from the facility. To assess the effectiveness of the control system a monitoring programme is completed as required by Waste Licence W0270-02. The results of the monitoring programme are outlined below.

2.4.2 Biofilter Emission Sampling

Concentrations of identified air emissions from the process were determined using a colorimetric approach employing a Draeger tube and pump sampling system. Each analysis was carried out by placing the tube into the pump and pulling a known volume of air through the tube. The appearance of a discoloration indicates the presence of the chemical species of interest. The results are expressed in parts per million (ppm). The results for amines are described as positive or negative, Milltown Compost site personnel ensure that the biofilter is operating as normal on the days when sampling is conducted.

Concentrations of chemical species of interest were collected at the two Inlet pipes to the biofilter beds. To assess the efficiency of the biofilter systems, a sample is also collected and analysed from each biofilter from the biofilter bed surfaces. The results of the air sampling program completed at both site biofilters are outlined below;

2.4.3 Ammonia

Concentrations of ammonia were all less than the emission limit value of 50 ppm (v/v). The results for ammonia concentrations measured are included in the following tables.

Results of Ammonia Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	10	20	<5	50
	Feb – 2020	10	15	<5	50
	Mar -2020*	15	15	<5	50
	Apr-2020*	10	25	<5	50
	May-2020*	10	20	<5	50
	Jul-2020*	10	25	<5	50
	Aug-2020*	15	10	<5	50
	Sep – 2020	15	15	<5	50
	Oct – 2020*	15	10	<5	50
	Nov-2020*	10	15	<5	50
	Dec-2020*	20	20	<5	50
	Feb -2021*	10	15	<5	50
	Apr – 2021*	10	20	<5	50
	Oct – 2021*	10	20	<5	50
	Dec – 2021*	10	15	<5	50

Results of Ammonia Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	40	15	<5	50
	Feb – 2020	35	30	<5	50
	Mar -2020*	40	20	<5	50
	Apr-2020*	40	25	<5	50
	May-2020*	35	15	<5	50
	Jul-2020*	20	10	<5	50
	Aug-2020*	35	25	<5	50
	Sep – 2020	20	35	<5	50
	Oct – 2020*	35	25	<5	50
	Nov-2020*	40	20	<5	50
	Dec-2020*	30	35	<5	50
	Feb -2021*	25	35	<5	50
	Apr – 2021*	35	15	<5	50
	Oct – 2021*	35	15	<5	50
	Dec – 2021*	40	20	<5	50

2.4.4 *Hydrogen Sulphide*

All Concentrations of H_2S were all below the analysis method detection limit. Therefore, the concentrations were all below the emission limit value of 5 ppm for the Inlet Pipes to the biofilters and on the Biofilter beds surfaces.

Results of Hydrogen Sulphide Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	<0.2	<0.2	<0.2	5
	Feb – 2020	<0.2	<0.2	<0.2	5
	Mar -2020*	<0.2	<0.2	<0.2	5
	Apr-2020*	<0.2	<0.2	<0.2	5
	May-2020*	<0.2	<0.2	<0.2	5
	Jul-2020*	<0.2	<0.2	<0.2	5
	Aug-2020*	<0.2	<0.2	<0.2	5
	Sep – 2020	<0.2	<0.2	<0.2	5
	Oct – 2020*	<0.2	<0.2	<0.2	5
	Nov-2020*	<0.2	<0.2	<0.2	5
	Dec-2020*	<0.2	<0.2	<0.2	5
	Feb -2021*	<0.2	<0.2	<0.2	5
	Apr – 2021*	<0.2	<0.2	<0.2	5
	Oct – 2021*	<0.2	<0.2	<0.2	5
	Dec – 2021*	<0.2	<0.2	<0.2	5

Results of Hydrogen Sulphide Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	<0.2	<0.2	<0.2	5
	Feb – 2020	<0.2	<0.2	<0.2	5
	Mar -2020*	<0.2	<0.2	<0.2	5
	Apr-2020*	<0.2	<0.2	<0.2	5
	May-2020*	<0.2	<0.2	<0.2	5
	Jul-2020*	<0.2	<0.2	<0.2	5
	Aug-2020*	<0.2	<0.2	<0.2	5
	Sep – 2020	<0.2	<0.2	<0.2	5
	Oct – 2020*	<0.2	<0.2	<0.2	5
	Nov-2020*	<0.2	<0.2	<0.2	5
	Dec-2020*	<0.2	<0.2	<0.2	5
	Feb -2021*	<0.2	<0.2	<0.2	5
	Apr – 2021*	<0.2	<0.2	<0.2	5
	Oct – 2021*	<0.2	<0.2	<0.2	5
	Dec – 2021*	<0.2	<0.2	<0.2	5

2.4.5 *Mercaptans*

All concentrations of mercaptans were less than the analysis method detection limit. Therefore, all of the concertations were below the emission limit value of 5ppm at the inlets to the biofilters and on the Biofilter beds surfaces.

Results of Mercaptans Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	<0.5	<0.5	<0.5	5
	Feb – 2020	0.5	<0.5	<0.5	5
	Mar -2020*	<0.5	<0.5	<0.5	5
	Apr-2020*	<0.5	<0.5	<0.5	5
	May-2020*	<0.5	<0.5	<0.5	5
	Jul-2020*	<0.5	<0.5	<0.5	5
	Aug-2020*	<0.5	<0.5	<0.5	5
	Sep – 2020	0.5	<0.5	<0.5	5
	Oct – 2020*	<0.5	<0.5	<0.5	5
	Nov-2020*	<0.5	<0.5	<0.5	5
	Dec-2020*	<0.5	<0.5	<0.5	5
	Feb -2021*	<0.5	<0.5	<0.5	5
	Apr – 2021*	<0.5	<0.5	<0.5	5
	Oct – 2021*	<0.5	<0.5	<0.5	5
	Dec – 2021*	<0.5	<0.5	<0.5	5

Results of Mercaptans Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	<0.5	<0.5	<0.5	5
	Feb – 2020	0.5	<0.5	<0.5	5
	Mar -2020*	<0.5	<0.5	<0.5	5
	Apr-2020*	<0.5	<0.5	<0.5	5
	May-2020*	<0.5	<0.5	<0.5	5
	Jul-2020*	<0.5	<0.5	<0.5	5
	Aug-2020*	<0.5	<0.5	<0.5	5
	Sep – 2020	0.5	<0.5	<0.5	5
	Oct – 2020*	<0.5	<0.5	<0.5	5
	Nov-2020*	<0.5	<0.5	<0.5	5
	Dec-2020*	<0.5	<0.5	<0.5	5
	Feb -2021*	<0.5	<0.5	<0.5	5
	Apr – 2021*	<0.5	<0.5	<0.5	5
	Oct – 2021*	<0.5	<0.5	<0.5	5
	Dec – 2021*	<0.5	<0.5	<0.5	5

2.4.6 *Dust Deposition*

Dust monitoring was conducted using dust gauges conforming to the Standard Method VD12119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Engineering Institute). Dust monitoring was carried out at three on site locations which can be seen in the following Tables.

Results for Dust Deposition 2018 - 2021

Parameter	Month & Year	D1 -Opposite Office	D2* – Southeast Boundary	D3 – Northeast Boundary	Licence Limit (mg/m²/day)
Dust Deposition	May 2018	205	264	59	350
Dust Deposition	August 2018	249	126	305	350
Dust Deposition	September 2018	75	176	50	350
Dust Deposition	June 2019	118	40	65	350
Dust Deposition	September 2019	51	39	175	350
Dust Deposition	December 2019	25	40	176	350
Dust Deposition	March 2020	6	22	47	350
Dust Deposition	June 2020	52	152	25	350
Dust Deposition	September 2020	NS	182	307	350
Dust Deposition	June 2021	20	35	110	350
Dust Deposition	September 2021	99	55	150	350
Dust Deposition	December 2021	125	151	184	350

*- Location D2 changed to area close to weighbridge on northwest of site in 2020

The dust deposition results for samples collected between 2018 and 2021 indicated that concentrations were generally well below the guidance limit of 350 mg/m^2/day and that there were no ambient dust issues related to the composting operations at the site.

2.4.7 Odour

Miltown have been completing odour assessments at their facility as part of their EPA licence compliance activates. These measurements were carried out at two locations on a biannual basis up to the end of 2019 when the frequency was adjusted to quarterly in compliance with Schedule C of the site's EPA Industrial Emissions Licence. The results of the odour assessment are provided below.

Results of Odour Monitoring at Biofilters Locations 2018 and 2019

Parameter	Month & Year	ou_E/m^3 (OD01)	ou_E/m^3 (OD02)	Licence ELV (ou_E/m^3)
Odour	May 2018	168	57	750
Odour	October 2018	391	81	750
Odour	February 2019	121	42	750
Odour	December 2019	94	84	750

The site EPA licence was reviewed and in September 2019 the locations and frequency of the monitoring changed to quarterly and included monitoring at the downwind corner of both biofilters (i.e., emission points A 2-1 [Biofilter1] and A2-2 [Biofilter 2]). The results of the monitoring completed in 2020, 2021 and 2022 is outlined below.

Results of Odour Monitoring at Biofilters Locations 2020 to 2022

Parameter	Month & Year	ou_E/m^3 (A2-1 – Biofilter 1)	ou_E/m^3 (A2-2 – Biofilter 2)	Licence ELV (ou_E/m^3)
Odour	March 2020	133	78	750
Odour	June 2020	228	114	750
Odour	September 2020	195	125	750
Odour	October 2020	266	228	750
Odour	January 2021	246	228	750
Odour	September 2021	106	124	750
Odour	June 2022	111	71	750
Odour	October 2022	161	60	750

The odour monitoring completed between 2018 and 2022 indicated that the odour levels in and around the existing compost facility biofilters were well below the licence limit for the site of 750 ou_E/m^3.

2.4.8 Bioaersols

Bioaersols are monitored at the facility to assess concentrations of total fungi/bacteria and *aspergillus fumigatus*. Currently there is no specific methodology defined by the Environmental Protection Agency in Ireland for the sampling and analysis of Bioaersols. In the absence of a specific methodology, UK Composting Association's – *Standardized Protocol for the Sampling and Enumeration of Airborne Micro-organisms at Composting Facilities* was used when completing bioaersols sampling. Two samplers are erected at each of the three sampling locations (i.e., sensitive receptor, upwind of the facility and downwind of the facility). Following cleaning of samplers using ethanol swabs, the agar plates are inserted into the Bio stage sampler. Vacuum pumps were started in parallel and ran for the specified time period. Following the completion of the specified time period, the pumps were turned off and the

plates removed from the Biostage samplers and stored in sealed plastic bags prior to transportation to laboratory. As there are no limits or threshold values for these parameters in Ireland the threshold values were taken from a report published by The Composting Association and Health and Safety Laboratory for the Health and Safety Executive 2003. The results of the recent bioaersol sampling at the Miltown Composting facility are provided in the Tables below;

Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Sensitive Receptor 2018 to 2021

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Sensitive Receptor (R1)	Bacteria/Fungi	2018	76	147	1,000
	Bacteria/Fungi	2019	107	71	1,000
	Bacteria/Fungi	2020 (Q1)	69	63	1,000
	Bacteria/Fungi	2020 (Q3)	>214	133	1,000
	Bacteria/Fungi	2020 (Q4)	37	51	1,000
	Bacteria/Fungi	2021 (Q1)	15	21	1,000
	Bacteria/Fungi	2021 (Q4)	>150	>214	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	0	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003

Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Upwind Sample Location 2018 to 2021

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Upwind Location (UW1)	Bacteria/Fungi	2018	161	133	1,000
	Bacteria/Fungi	2019	142	88	1,000
	Bacteria/Fungi	2020 (Q1)	39	17	1,000
	Bacteria/Fungi	2020 (Q3)	79	157	1,000
	Bacteria/Fungi	2020 (Q4)	70	46	1,000
	Bacteria/Fungi	2021 (Q1)	>150	>214	1,000
	Bacteria/Fungi	2021 (Q4)	100	143	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	0	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003

Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Downwind Sample Location 2018 to 2021

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Downwind Location (DW1)	Bacteria/Fungi	2018	214	107	1,000
	Bacteria/Fungi	2019	117	107	1,000
	Bacteria/Fungi	2020 (Q1)	104	63	1,000
	Bacteria/Fungi	2020 (Q3)	80	86	1,000
	Bacteria/Fungi	2020 (Q4)	64	57	1,000
	Bacteria/Fungi	2021 (Q1)	>150	>214	1,000
	Bacteria/Fungi	2021 (Q4)	>150	>214	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	1	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003

The results of bioaerosol sampling completed at the Miltown Composting facility over the past three years has indicated no elevated bioaerosol concentrations at downwind and sensitive receptors in the area. Upwind concentrations, which would be a good indicator of background natural bioaerosol concentrations, show that the potential for impacts from the existing Composting facility are low.

2.5 Noise Emissions

The results of the most recent noise monitoring which has taken place at the Miltown Composting site can be seen in the following Tables. Monitoring was completed at noise sensitive receptor NSL1 located on the entrance road and northwest of the site as required by the site Industrial Emissions Licence (Ref. W0270-02).

Environmental Noise Results for NSL1 - 2020

2020 Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Daytime Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	55	43	36	84	55
NSL1 Daytime Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	52	45	36	81	55
NSL1 Daytime Monitoring Result 3	On entrance road into facility approximately 600m northwest of site buildings	44	41	35	69	55
2020 Evening- Time Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Evening Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	42	45	34	64	50
2020 Night- Time Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Night time Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	41	42	34	58	45
NSL1 Night time Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	37	40	34	46	45

Night-time monitoring was carried out at the site during the 2020 survey to assess baseline night-time noise levels at the noise sensitive locations although the site was not audible

Environmental Noise Results for NSL1 - 2021

2021 Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Daytime Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	51	51	37	75	55
NSL1 Daytime Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	55	50	41	85	55
NSL1 Daytime Monitoring Result 3	On entrance road into facility approximately 600m northwest of site buildings	49	49	41	77	55

Environmental Noise Results for NSL1 - 2022

2021 Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Daytime Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	38	40	31	66	55
NSL1 Daytime Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	44	47	32	65	55
NSL1 Daytime Monitoring Result 3	On entrance road into facility approximately 600m northwest of site buildings	49	53	31	75	55

The results of broadband measurements completed at NSL1 in 2020, 2021 and 2022 when the site had a throughput of 50,000 indicated the following;

- Daytime noise readings at NSL1 in 2020 ranged between 44 dB $L_{Aeq(30\ mins}$ and 55 dB $L_{Aeq\ (30\ mins)}$, readings at NSL1 in 2021 ranged between 49 dB $L_{Aeq(30\ mins}$ and 55 dB $L_{Aeq\ (30\ mins)}$ and readings in 2022 ranged between 38 dB $L_{Aeq(30\ mins}$ and 49 dB $L_{Aeq\ (30\ mins)}$. All daytime measurements at NSL1 in 2020, 2021 and 2022 were less than the EPA license limit of 55 dB L_{Aeq}.
- All L_{A90} readings for daytime measurements at NSL1 in 2020, 2021 and 2022 which is a measure of the prevailing noise climate (with one-off events like traffic removed) were less than 45dB and significantly less than the 55 dB L_{Aeq} limit.
- The evening noise reading at NSL1 in 2020 was 42 $L_{Aeq(30\ mins)}$ and was less than the 50 dB L_{Aeq} evening licence limit.
- Night-time noise readings at NSL1 in 2020 ranged between 37 dB $L_{Aeq(15\ mins)}$ and 41dB $L_{Aeq(15\ mins)}$ and were less than the 45 dB L_{Aeq} night-time licence limit .
- All L_{A90} readings for night-time measurements at NSL1 were less than 35 dB and were the significantly less than the 45 dB L_{Aeq} limit.
- No tonal noise was recorded from the facility during the day, evening and night-time readings in 2020, 2021 or 2022.

3.0 CONCLUSION

The results for the monitoring completed as part of the current waste licence schedule indicates that the site is compliant with the majority of the licence conditions and is upgrading the site where possible to minimise impacts on the environment. The monitoring results indicate that site operation are not having significant impact on site conditions.