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

Prepared for:

MILTOWN COMPOSTING SYSTEMS LTD.,

MILTOWNMORE,

FETHARD,

CO. TIPPERARY

3260 - Miltown

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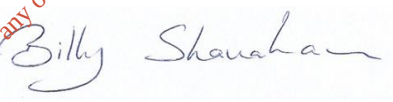

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1.0 INTRODUCTION

This Site Condition Report is being conducted as part of a review of Miltown's Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-01). 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 new waste reception building 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 currently not used but are included as part of the licence review for the future acceptance of surface water runoff from the site roofs and yard surface areas. 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

Miltown are requesting an increase in the daily throughput of at the facility from 24,500 tonnes per year to a maximum of 50,000 tonnes per year. They are also proposing to use the existing integrated constructed wetlands (ICW) for the polishing of storm water from the site (i.e., facility roofs and yard surfaces.

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 (water), Chapter 8 (soils & geology), 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 for the past five years are outlined in Tables 2-1 through Table 2-8 can be seen in the following tables:

Nitrate Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Nitrate	2011	2.49	0.54	13.71	25
	2012	2.07	0.87	8.42	25
	2013	2.04	0.82	10.39	25
	2014	1.42	1.02	12.23	25
	2015	3.14	0.27	8.48	25
	2016	9.0			25

pH Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1	GW2	GW3	ELV
pH	2011	6.5	6.4	6.1	≥ 6.5 and ≤ 9.5
	2012	7.1	6.8	6.9	≥ 6.5 and ≤ 9.5
	2013	6.6	6.4	6.1	≥ 6.5 and ≤ 9.5
	2014	6.9	6.9	6.6	≥ 6.5 and ≤ 9.5
	2015	6.8	6.7	6.4	≥ 6.5 and ≤ 9.5
	2016	6.6			≥ 6.5 and ≤ 9.5

Conductivity Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (us/cm)	GW2 (us/cm)	GW3 (us/cm)	Regulatory Value (us/cm)
Conductivity	2011	602	789	310	1000
	2012	589	757	278	1000
	2013	598	794	289	1000
	2014	578	807	297	1000
	2015	589	799	284	1000
	2016	504			1000

Ammonium (NH_4) Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Ammonia	2011	0.137	0.083	0.06	0.175
	2012	0.174	0.06	0.009	0.175
	2013	0.056	0.219	0.035	0.175
	2014	0.256	0.138	0.017	0.175
	2015	0.144	0.113	0.115	0.175
	2016	0.03	-	-	0.175

Total Ammonia Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Total Ammonia	2011	0.267	0.161	0.117	0.3*
	2012	0.338	0.116	0.021	0.3*
	2013	0.109	0.426	0.068	0.3*
	2014	0.498	0.268	0.175	0.3*
	2015	0.28	0.22	0.223	0.3*

*The regulatory value of 0.3 is from European Communities (Drinking Water)(No. 2) Regulations, 2007

Total Nitrogen Monitoring Results

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	Regulatory Value (mg/l)
Total Nitrogen	2011	4.7	1	13.1	
	2012	4.8	2.7	11.2	
	2013	2.8	1.2	9.8	
	2014	2.6	1	10	
	2015	4.1	1	11.1	

Chloride Monitoring Results

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Chloride	2011	74.6	121.4	27.8	187.5
	2012	75	152	27.9	187.5
	2013	77	188.5	2.6	187.5
	2014	68.4	137.9	28.5	187.5

BTEX Monitoring Results for GW-3

Sample Location	Benzene	Toluene	Ethyl Benzene	Xylene
2011	<0.1	<0.5	<0.5	<0.5
2012	<0.1	<0.5	<0.5	<0.5
2013	<0.1	11.2	<0.5	<0.5
2014	<0.1	<0.5	<0.5	<0.5
2015	<0.1	<0.5	<0.5	<0.5

VOC concentrations were less than the method detection limits (MDL) for all sampling events except for monitoring well GW3 in 2013 when an elevated concentration of toluene was observed. The concentration measured was above the regulation value of 10 µg/l.

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

As part of licence compliance, Miltown composting retained Matrix Environmental to perform bi-annual monitoring of surface water quality at the site. The parameters sampled are outlined in the facility's EPA Waste Licence and include; BOD, Suspended Solids and Ammonia (NH_4-N).

Historically there were some ammonia impacts in the surface water samples collected at the discharge location at the Miltown Composting facility. Each monitoring event at surface water monitoring location SW-1 contained ammonia concentrations which exceeded the environmental quality standard of 0.02 mg/l. In 2015 a new waste reception building was constructed to cover the yard area that was identified as a source of ammonia impacts on surface water discharge from the site. Since the highest concentration was recorded in October 2013 (i.e., 27.81 mg/l) there has been a significant decrease in the concentrations of ammonia at SW1 resulting in a concentration of 0.35 mg/l in July 2017.

Parameter	Year	SW1 (mg/l)	ELV ** (mg/l)
Ammonia	2013	13.89*	0.065
	2014	1.19*	0.065
	2015	0.42*	0.065
	2016	0.42*	0.065
	2017	0.39*	0.065

*- mean concentration

**- 2009 Surface Water Regulation Good Status (mean)

The results indicate that the surface water from the site may require additional mitigation prior to discharge from the site. The licence review includes for the use of the existing ICW to further polish the surface water prior to discharge from the site. It is proposed that the surface water sampling location will move from the existing sample location SW1 to the discharge from the final pond in the ICW (SW1a). The ICW would allow for the further natural attenuation of surface water discharged from the site whereby the biomass within the ICW would take up any excess ammonia in surface waters flowing through the system.

As seen with the ammonia results, elevated BOD concentrations were observed in 2013, BOD concentrations have decreased significantly since and the trend is going in a downward direction. In all sampling events during 2016, all BOD concentrations were less than the Laboratory Method Detection Limit Detection (i.e., <2 mg/l O_2).

Parameter	Year	SW1 (mg/l)	ELV * (mg/l)
BOD	2013	134.27*	5
	2014	4.5*	5
	2015	3.72*	5
	2016	<2*	5
	2017	3*	5

*- mean concentration

Suspended solid concentrations spiked in the December 2013 sampling event and exceeded the EPA Water Quality limit of 50 mg/l. All other sampling events carried out at SW1 since the beginning of 2013 consisted of suspended solid concentrations less than 50 mg/l, with the most recent sampling events in 2017 indicating concentrations were less than the Laboratory Method Detection Limit Detection (i.e., <5 mg/l).

Parameter	Year	SW1 (mg/l)	ELV (mg/l)
Suspended Solids	2013	54.05*	50
	2014	26*	50
	2015	18.63*	50
	2016	<5*	50
	2017	<5*	50

*- mean concentration

It is expected that the inclusion of the ICW system for the further polishing of surface water runoff will see a continuation in the reduction of contaminants of concern in surface water discharge from the Miltown site.

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 biofilter is located to the south of Shed 1. 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 lper hour has been effective in controlling odour emissions. To assesst the effectiveness of the control system a monitoring programme is completed as required by Waste Licence W00270-01. 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 calorimetrically using an appropriate 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 bed. To assess the efficiency of the biofilter system, a sample is also collected and analysed from the biofilter from the biofilter bed surface. The results of the air sampling program completed at the biofilter between 2011 and 2017 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 Bi-Annual Monitoring of Ammonia Inlet Pipe 1- 2011-2017

Location	Month & Year	Ammonia Concentration (ppm)	ELV
Inlet Pipe 1	Mar-11	20	50
	Nov-11	15	50
	Mar-12	15	50
	Dec-12	15	50
	Mar-13	20	50
	Sep-13	10	50
	Mar-14	15	50
	Sep-14	25	50
	Mar-15	20	50
	Sep-15	15	50
	Mar -16	17.39	50
	Sep - 16	15	50
	Jun-17	20	50
	Sep - 17	15	50

Results of Bi-Annual Monitoring of Ammonia Inlet Pipe 2- 2011-2017

Location	Month & Year	Ammonia Concentrations (ppm)	ELV
Inlet Pipe 2	Mar-11	17	50
	Nov-11	10	50
	Mar-12	15	50
	Dec-12	15	50
	Mar-13	15	50
	Sep-13	20	50
	Mar-14	15	50
	Sep-14	10	50
	Mar-15	10	50
	Sep-15	20	50
	Sep– 16	10	50
	Jun-17	10	50
	Sep - 17	15	50

Results of Bi-Annual Monitoring of Ammonia of Outlet Gas- 2011-2017

Location	Month & Year	Ammonia Concentration (ppm)	ELV
Outlet Pipe	Mar-11	<5	50
	Nov-11	<5	50
	Mar-12	<5	50
	Dec-12	<5	50
	Mar-13	<5	50
	Sep-13	<5	50
	Mar-14	<5	50
	Sep-14	<5	50
	Mar-15	<5	50
	Sep-15	<5	50
	Sep -16	<5	50
	Jun-17	<5	50
	Sep - 17	<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 biofilter and on the Biofilter bed surface.

Results for Hydrogen Sulphide Concentration at Inlet Pipe 1 – 2011 - 2016

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Inlet Pipe 1	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep-15	<0.2	5
	Mar-16	<0.2	5
	Sep-16	<0.2	5
	Jun-17	<0.2	5
	Sep - 17	<0.2	5

Results for Hydrogen Sulphide Concentration at Inlet 2- 2011-2017

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Inlet Pipe 2	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep -15	<0.2	5
	Sep–16	<0.2	5
	Jun-17	<0.2	5
	Sep - 17	<0.2	5

Results for Hydrogen Sulphide Concentration at Outlet - 2011-2017

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Outlet Pipe	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep -15	<0.2	5
	Mar-16	<0.2	5
	Sep-16	<0.2	5
	Jun-17	<0.2	5
	Sep - 17	<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 biofilter and on the Biofilter Bed surface between 2011 and 2016.

Results for Mercaptan Concentrations at Inlet Pipe 1 - 2011 - 2017

Location	Month & Year	Mercaptan Concentration (ppm)	ELV (ppm)
Inlet Pipe 1	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep-15	<0.5	5
	Mar-16	0.5	5
	Sep-16	0.5	5
	Jun-17	0.5	5
	Sep - 17	0.5	5

Results for Mercaptan Concentrations at Inlet Pipe 2- 2011 - 2017

Location	Month & Year	Mercaptan Concentration (ppm)	ELV
Inlet Pipe 2	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep -15	<0.5	5
	Mar-16	<0.5	5
	Sep-16	<0.5	5
	Jun-17	<0.5	5
	Sep - 17	<0.5	5

Results for Mercaptan Concentration at Biofilter Bed - 2011 - 2016

Location	Month & Year	Mercaptan Concentration (ppm)	ELV
Biofilter Bed Surface	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep -15	<0.5	5
	Mar-16	<0.5	5
	Sep-16	<0.5	5
	Jun-17	<0.5	5
	Sep - 17	<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). Each dust-sampling bottle was securely capped after the recommended exposure period of between 28 and 31 days. The samples were then returned to the laboratory for gravimetric analysis. The collected sample material is rinsed into a pre weighed evaporating dish and

evaporated down to dryness. The total dry residue, which comprises both insoluble and soluble dust, is then determined. Results are expressed in mg/m^2/day.

Dust monitoring was carried out at three on site locations which can be seen in the following Tables.

Results for Dust Deposition at Location D-1

Location	Date	Dust Deposition mg/m^2/Day	ELV
On ditch south of the main processing area.	Sep-11	100	350
	Oct-11	159	350
	Nov-11	47	350
	Dec-11	24	350
	Jan-12	176	350
	Jul-12	129	350
	Jun-13	88	350
	Sep-13	88	350
	Dec-13	29	350
	Jun-14	123	350
	Sep-14	41	350
	Dec-14	53	350
	Sep -15	30	350
	Apr - 16	91	350
	Jul – 16	188	350
	Jul - 17	212	350
	Aug - 17	334	350

Results for Dust Deposition at Location D-2

Location	Date	Dust Deposition mg/m^2/Day	ELV
Opposite site offices	Sep-11	112	350
	Oct-11	76	350
	Nov-11	88	350
	Dec-11	30	350
	Jan-12	59	350
	Jul-12	82	350
	Jun-13	84	350
	Sep-13	71	350
	Dec-13	59	350
	Jun-14	270	350
	Sep-14	66	350
	Dec-14	41	350
	Sep -15	40	350
	Apr - 16	80	350
	Jul - 16	299	350
	Jul - 17	212	350
	Aug - 17	71	350

Results for Dust Deposition at Location D-3

Location	Date	Dust Deposition mg/m^2/Day	ELV
On north-eastern boundary of site	Sep-11	35	350
	Oct-11	593	350
	Nov-11	65	350
	Dec-11	77	350
	Jan-12	35	350
	Jul-12	170	350
	Jun-13	24	350
	Sep-13	71	350
	Dec-13	76	350
	Jun-14	59	350
	Sep-14	41	350
	Dec-14	47	350
	Sep -15	70	350
	Apr - 16	24	350
	Jul – 16	123	350
	Jul - 17	194	350
	Aug - 17	170	350

All dust deposition concentrations were below the emission limit value of 350 mg/m^2/Day, except for one monitoring event in October 2011 when sample D3 was contaminated by bird droppings.

2.4.7 *Particulate Matter (PM_{10})*

Annual sampling for PM_{10} concentrations are completed at the Miltown site. Sample air was drawn onto a pre-conditioned and pre-weighed filter at a flow rate of 5 l/min and monitoring was carried out over a 24 hour period. The filter was then re-weighed and the weight gain determined and the result expressed in µg/m^3. All PM_{10} concentrations were below the air quality standards 2002.

Results for Bi-Annual PM_{10} Monitoring – 2011 - 2017

Location	Month & Year	PM_{10} Concentration (µg/m^3)	Regulatory Limit (µg/m^3)
Adjacent to bio filter unit entrance	Jan-11	0.1	50
	Nov-11	0.1	50
	Jun-12	0.1	50
	Dec-12	0.1	50
	Jun-13	0.1	50
	Dec-13	0.1	50
	Jun-14	0.1	50
	Dec-14	0.1	50
	Jun-15	0.83	50
	Dec -15	0.1	50
	Jun - 16	<0.1	50
	Jun - 17	2.11	50

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. All Concentrations of bacteria/fungi and *aspergillus fumigatus* were below the observed threshold values. The results of the bioaersol sampling at the Miltown Composting facility between 2011 and 2017 are provided in the Tables below;

Total Bacteria/Fungi Results at Sensitive Receptor – 2011-2017

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value*
SR1	2011	90 -100	100	45	1000
	2012	90-100	339	384	1000
	2013	65-75	74	79	1000
	2014	70-80	104	162	1000
	2015	73-88	126	92	1000
	2017	60-88	135	193	1000

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

Total Bacteria/Fungi at Upwind Location– 2011-2017

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value*
UW1	2011	90 -100	86	76	1000
	2012	90-100	324	314	1000
	2013	65-75	205	218	1000
	2014	70-80	252	51	1000
	2015	73-88	109	61	1000
	2017	60-88	131	207	1000

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

Total Bacteria/Fungi Results at Downwind Location– 2011-2017

Location	Year	Relative Humidity %	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value
DW1	2011	90 -100	66	37	1000
	2012	90-100	599	724	1000
	2013	65-75	93	40	1000
	2014	70-80	137	97	1000
	2015	73-88	124	148	1000
	2017	60-88	180	220	1000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.
**Typically, the downwind location is located equal-distant from the site boundary

Total Aspergillus Fumigatus Concentration at Sensitive Receptor– 2011-2017

Location	Year	Relative Humidity %	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value
SR1	2011	90 -100	0	0	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	1	1	5000
	2015	73-88	0	0	5000
	2017	60-88	0	0	5000

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

Total Aspergillus Fumigatus Concentration at Upwind Location– 2011-2017

Location	Year	Relative Humidity %	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value
UW1	2011	90 -100	0	0	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	0	0	5000
	2015	73-88	0	0	5000
	2017	60-88	0	0	5000

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

Total Aspergillus Fumigatus Concentration at Downwind Location– 2011-2017

Location	Year	Relative Humidity %	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value
DW1	2011	90 -100	1	1	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	3	4	5000
	2015	73-88	0	0	5000
	2017	60-88	0	0	5000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.
** Typically, the downwind location is located equal-distant from the site boundary

2.5 Noise Emissions

The results of the historical noise monitoring which has taken place at the Miltown Composting site can be seen in the following Tables;

Environmental Noise Results 2011

2011 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	46	45	35	76	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	58	57	56	85	55
2011 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250m from processing building	215514.54 E, 133557.45 N	38	38	31	68	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	62	62	61	68	45

Environmental Noise Results 2012

2012 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	47	44	32	71	55
			43	39	31	71	55
			60	55	34	84	55
N2	On road to the north of main processing buildings	215514.54 E, 133557.45 N	52	54	47	68	55
			56	55	49	77	55
			60	64	49	81	55

Environmental Noise Results 2013

2013 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	56	45	36	78	55
			44	40	34	60	55
			48	45	38	61	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	65	57	45	87	55
			59	57	42	74	55
			58	56	43	74	55

Environmental Noise Results 2014

2014 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.549 E, 133557.45 N	48	47	33	76	55
			52	47	33	83	55
			46	40	30	78	55
N2	On road to the north of main processing buildings	215770.916 E, 133473.469 N	54	53	43	81	55
			67	67	44	92	55
			62	66	52	67	55
2014 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	43	48	37	63	45
			48	51	38	71	45
			52	50	36	81	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	50	54	43	57	45
			50	52	43	49	45
			50	53	44	55	45

Environmental Noise Results for 2015

2015 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	49	53	40	80	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	58	55	43	85	55
2015 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	35	40	32	46	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	37	44	33	50	45

Environmental Noise Results for 2016

2016 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	43	48	37	62	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	50	55	45	82	55

2.5.1 Broadband Monitoring Results 2011-2017

The results of broadband measurements completed at the Miltown Composting facility between 2011 and 2017 indicated the following;

- Daytime noise readings at NSL ranged between 43 dB L_{Aeq} in 2016 and 60 dB L_{Aeq} in 2012. All other dB L_{Aeq} daytime readings recorded between 2011 and 2016 were less than the EPA licence limit of 55 dB L_{Aeq}
- All L_{A90} readings for day time measurements at NSL were less than the 55 dB L_{Aeq} limit.
- Night time noise readings at NSL ranged between 38 dB L_{Aeq} in 2011 and 52 dB L_{Aeq} in 2014. There was one other reading at NSL that marginally exceeded the 45 dB L_{Aeq} night time limit (i.e., 48 dB L_{Aeq} in 2014).
- All L_{A90} readings for night time measurements were less than 38 dB and were the significantly less than the 45 dB L_{Aeq} limit.
- Daytime noise readings at N2 ranged between 50 dB L_{Aeq} in 2016 and 67 dB L_{Aeq} during the monitoring event in 2014. All but one of L_{Aeq} daytime readings recorded between 2011 and 2016 were greater than the EPA licence limit of 55 dB L_{Aeq}
- All L_{A90} readings for day time measurements were less than the 55 dB L_{Aeq} limit, with the exception of the 2011 monitoring event, which marginally exceeded the 55 dB L_{Aeq} limit (N2 2011-56 dB L_{Aeq}).
- Night time noise readings at NSL ranged between 37 dB L_{Aeq} in 2015 and 62 dB L_{Aeq} in 2011. There was one reading at N2 that was less than the 45 dB L_{Aeq} night time limit (i.e., 37 dB L_{Aeq} in 2015).
- All L_{A90} readings for night time measurements were less than 45 dB, with the exception of 61 dB L_{Aeq} during the 2011 monitoring event.

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 operation of the site and the mitigation control systems has not had a significant impact on site conditions.