

Annual Environmental Report 2017

Licence Registration No.: W0198-01

Licencee: Bord na Móna Plc.

Location of Activity: Kilberry, Athy, Co. Kildare.

Attention: Office of Environmental Enforcement
Environmental Protection Agency
P.O. Box 3000
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Co. Wexford

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SECTION 1

INTRODUCTION

1.1 INTRODUCTION

The following document represents the Annual Environmental Report (AER) for Bord na Móna Kilberry Compost facility for the period January 2017 - December 2017. Detailed within this report is a summary of all monitoring, and any activities and on-going improvements at the facility during this period that has had an influence on the environmental performance of the company.

Through the continued compliance with the conditions of their Waste licence register No. W0198-01, Bord na Móna continues to express their commitment of environmental improvement through out the site.

An Environmental and Quality Management System is established at the facility, which incorporates procedures of operational activities on site, emergency preparedness and response, reporting, dealing with unacceptable wastes and a public access to the site and site's environmental performance. Through the on-going achievement and reviewing of the objectives and targets, Bord na Móna facilitate on-going environmental improvements.

Bord na Móna's commitment is expressed in the company's Environmental Management policy, as given overleaf.

1.1.2 – Environmental Policy



Environmental Policy



Introduction

A licence from the Environmental Protection Agency (W0198-1) was granted on the 16th of December 2004. This licence is for the construction and operation of a Composting Facility at Kilberry, Athy, Co. Kildare. The quantity of waste to be accepted shall not exceed 96,000 tonnes per annum. Non-hazardous biodegradable wastes as agreed with the EPA will be accepted at this facility. A full list is available from the compost manager.

The process leading to the production of usable, composted material will require the completion of a series of stages as follows, acceptance procedures and tipping, mixing and formulation of windrows, turning / composting, screening of stabilised material and shredding and re-use of oversize material. The wastes are combined together to form windrows for composting. The average composting period will be 14-18 weeks during which time the composting process will stabilise a range of organic waste materials / by-products which will then be incorporated into horticultural growing media produced on the adjoining site.

Policy

Environmental care is a Bord na Móna core value. BnM seeks to be recognised in the compost supply business as a leader in terms of environmental care. Bord na Móna's environmental programmes shall be an integrated approach focused on continuous improvement. The environmental programmes in Bord na Móna will seek to achieve the following:

- Ensure compliance with the requirements of the EPA Waste Licence and National/European legislation.
- Review Environmental performance and establish environmental objectives and targets on an annual basis to improve the environmental performance of our composting facility
- Minimise potential negative environmental impacts through activities that are designed for the prevention of pollution
- Encourage the involvement of employees through training and awareness programmes to promote and ensure an environmentally friendly workplace.
- Audit practices and programmes to help ensure continuous improvement

The company values and promotes environmental leadership, responsibility and innovation in the management of all company facilities and operations. Management team are expected to provide sound environmental leadership, to maintain appropriate records and demonstrate compliance with programmes and practices.

Authorised as of February 26th 2018


Michael Delaney
General Manager

Attachment# 1 to EMSKIL-001 / rev 1

1.2 SITE DESCRIPTION

1.2.1 Site Location

The proposed development is located on the eastern portion of Kilberry townland, approximately 4 km north of Athy, Co. Kildare. It is located along the R417 between Athy and Monasterevin.



Regional Location of Bord na Mona Kilberry Compost Site

The total area the site occupies is ca. 2.5 hectares. The topography of the area is flat peat land and agricultural land with a gradual rise to the north. The land on the site is relatively level with a fall of 1:200 over the total site from south to north. The surrounding land is a mixture of agricultural, forestry and peat land with the southern boundary adjoining the Bord na Móna Moss Peat production site.

1.2.1 General

A licence from the Environmental Protection Agency (W0198-01) was granted on the 16th of December 2004. This licence was for the construction and operation of a Composting Facility at Kilberry, Athy, Co. Kildare. The quantity of waste to be accepted was 50,000 tonnes in the first year rising to 96,000 tonnes by the 5th year. Non-hazardous biodegradable wastes (Shredded Green waste, Brewery By-Product, Sawdust, Bark and Cocoa Husk) were the initial waste types accepted at this facility. In the intervening years a number of additional waste streams have been identified and added to the waste licence with agreement from the EPA. The current waste list is as follows:

- Shredded / Unshredded Green Waste
- Brewery By-Product
- Sawdust
- Bark
- Cocoa Husk
- Spent Mushroom Compost
- Christmas Trees
- Wood Pulp Sludge
- Fruit and Vegetables
- Dairy Products Sludge

1.2.2 Method of Working

1.2.2.1 Composting Process

The process leading to the production of usable, composted material requires the completion of a series of stages as follows:

1. Acceptance procedures and tipping
2. Mixing and formulation of windrows Shredding
3. Turning / Composting
4. Screening of stabilised material

1. Acceptance Procedures:

All vehicles entering the site firstly report to compost coordinator. A delivery note will accompany each vehicle detailing:

- Vehicle registration number
- Driver / Company
- Material type and origin
- Quantity of waste

These details will be entered on to the Bord na Móna MRP system along with the recorded weight of the vehicle. A hard copy of this information will be issued to the driver as a POD (Proof of Delivery).

2. Discharge/Mixing and formation of windrows.

On completion of acceptance procedures vehicles will be directed to a specific tipping area in the composting facility, where they will tip the feedstock in such a fashion as to provide a linear strip of material. If required material can also be directed to phase 2 for temporary storage and for shredding if required.

3. Turning / Composting

The current average composting period is 16 weeks, during which time the piles are turned approximately twice weekly (this can vary depending on weather conditions and results of testing)

A series of parameters are monitored during the composting cycle as follows:

- Temperature (using deep probes)
- CO₂ evolution (an index of microbial activity)
- Moisture content

The results of ongoing monitoring can trigger a number of interactions such as:

- Increased turning frequency
- Addition of water. Lagoon water is used as the source of this water.

4. Screening

Following the completion of composting the material is transported from the stockpile to the screening area, which is located in Phase 2 using the Volvo loader. The composted material is screened following confirmation that it has passed the standard for compost quality. The three grades of compost are:

1. 0 – 12 mm
2. 12-24 mm
3. >25mm (Known as Oversize)

Working Hours

Composting activities (Turning / Screening) will normally be undertaken during the hours of 08:00 and 18:00; Monday to Friday inclusive.

Delivery hours are confined to the hours of 08:00 to 18:00; Monday to Friday inclusive.

Reduced site activities such as maintenance and cleaning proceed until 22:00 Monday to Friday inclusive.

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SECTION 2

DATA

2.1 SUMMARY DATA**2.1.1 Waste Recovery Data:**

Waste Type	EWC Code	Annual Intake (Tonnes)
Greenwaste	20 02 01	20680
Bark	03 03 01	479
Brewery by-Product	02 07 01	19327
Dairy Sludge	02 05 02	910

2.1.2 Wastes produced on site

Waste Type	EWC Code	Annual Output (Tonnes)
Uncomposted Fraction – Plastics etc	19 05 01	30

2.1.3 Summary Report on Emissions:

There are no emission points within the facility.

2.1.3 Summary Reports on Environmental Monitoring:

2.1.3 (A) Surface Water Analysis Results – Tables A.1 – A.4 below show results of 2017 Surface water analysis. The 2017 results are consistent with previous years.

Table A.1 - Surface Water Q1 2017					
Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.4	7.4	7.4	7.4	7.9
Suspended Solids (mg/l)	6	<5	<5	<5	<5
BOD (mg/l)	<2	<2	<2	<2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.1 - Surface Water Q2 2017					
Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.4	7.4	7.4	7.5	8.0
Suspended Solids (mg/l)	<5	<5	<5	<5	<5
BOD (mg/l)	<2	<2	<2	<2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.3 - Surface Water Q3 2017					
Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.5	7.6	7.6	7.6	7.9
Suspended Solids (mg/l)	11	56	54	24	<5
BOD (mg/l)	<2	3	3	2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.4 - Surface Water Q4 2017					
Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.2	7.1	7.2	7.2	7.8
Suspended Solids (mg/l)	<5	<5	<5	<5	<5
BOD (mg/l)	<2	<2	<2	<2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

2.1.3 (B) Ground Water Analysis Results

Groundwater results are elevated for a number of parameters most notably Ammonia – these results are consistent with previous years and MW 1,2,3 are in line with results from the EIS. MW 4,5 are both hydraulically up gradient of the site. The trends with regards to the elevated parameters will continue to be assessed during 2018.

Groundwater Results Q1 2017					
Laboratory ID.	MW1	MW2	MW3	MW4	MW5
pH	7.7	7.4	7.2	6.9	7.3
Conductivity $\mu\text{S}/\text{cm}$	546	684	783	1832	855.5
Ammonia as N mg/l	1.7	5.3	5.9	18	7.2
Chloride mg/l	25	22	20	39	20
Sulphate mg/l	8.6	40	0.74	2.7	0.69
Nickel $\mu\text{g}/\text{l}$	4.62	1.22	0.985	31.4	15.4
Manganese $\mu\text{g}/\text{l}$	321	166	288	1000	189
Total Coliforms cfu/ml	<1	<1	<1	<1	<1
E.Coli cfu/ml	<1	<1	<1	<1	<1

Groundwater Results Q2 2017					
Laboratory ID.	MW1	MW2	MW3	MW4	MW5
pH	7.5	7.2	7.0	6.5	6.7
Conductivity $\mu\text{S}/\text{cm l}$	482	650	717	1850	920
Ammonia as N mg/l	1.5	3.7	5.7	15	6.3
Chloride mg/l	25	22	19	51	21
Sulphate mg/l	6.2	41	3.3	1	<0.5
Nickel $\mu\text{g}/\text{l}$	3.11	1.13	<2	32.4	13.7
Manganese $\mu\text{g}/\text{l}$	443	387	249	1270	226
Total Coliforms cfu/ml	<1	<1	2	<1	<1
E.Coli cfu/ml	<1	<1	1	<1	<1

Groundwater Results Q3 2017					
Laboratory ID.	MW1	MW2	MW3	MW4	MW5
pH	7.6	7.4	7.3	6.8	7.2
Conductivity $\mu\text{S/cm l}$	504	67	62	1680	840
Ammonia as N mg/l	1.8	6.9	5.7	23	9.1
Chloride mg/l	24	22	17	48	18
Sulphate mg/l	1.3	50	<0.5	1.7	<0.5
Nickel ug/l	3.32	1.15	1.07	31.1	26.1
Manganese ug/l	209	162	188	828	124
Total Coliforms cfu/ml	2	40	8	310	610
E.Coli cfu/ml	2	40	<1	310	<1

Groundwater Q4 2017					
Parameter	MW-01	MW-02	MW-03	MW-04	MW-05
pH	7.7	7.4	7.2	7.0	7.2
Conductivity uS/cm	456.5	607	568	1461	1178
Ammonia as N mg/l	1.9	6.4	5.7	17	12
Chloride mg/l	24	21	17	40	30
Sulphate mg/l	0.86	54	<0.5	16	73
Nitrate mg/l	<0.05	<0.05	<0.05	<0.05	6.5
Phosphorus mg/l	0.07	0.08	0.07	0.06	0.07
Magnesium mg/l	16.6	6.64	5.34	38.8	14.3
Boron µg/l	7.25	9.6	<5	13	15.6
Antimony µg/l	<2	<2	<2	<2	<2
Arsenic µg/l	12.8	10.4	4.65	<2	4.99
Aluminium µg/l	<2	<2	<2	<2	<2
Beryllium µg/l	<2	<2	<2	<2	<2
Barium µg/l	479	368	392	101	421
Chromium µg/l	<2	<2	<2	<2	<2
Cadmium µg/l	<2	<2	<2	<2	<2
Cobalt µg/l	<2	<2	<2	<2	2.34
Copper µg/l	<2	<2	<2	<2	<2
Iron mg/l	<0.1	0.1	<0.1	0.264	<0.1
Potassium mg/l	1.68	1.75	1.57	47.1	58.1
Sodium mg/l	11.1	8.86	9.59	17.3	16.4
Calcium mg/l	64.3	109	130	231	197
Manganese µg/l	302	173	247	831	241
Silver µg/l	<2	<2	<2	<2	<2
Nickel µg/l	5.22	<2	<2	17.1	18.5
Lead µg/l	<2	<2	<2	<2	<2
Selenium µg/l	<2	<2	<2	<2	<2
Tin µg/l	<2	<2	<2	<2	<2
Zinc µg/l	<2	<2	<2	<2	4.01
Mercury µg/l	<1	<1	<1	<1	<1

Groundwater Q4 2017 – SVOC Analysis					
SVOC's (µg/l)	MW-01	MW-02	MW-03	MW-04	MW-05
Phenol	<1	<1	<1	<1	<1
2-Chlorophenol	<1	<1	<1	<1	<1
2-Methylphenol	<1	<1	<1	<1	<1
4-Methylphenol	<1	<1	<1	<1	<1
2-Nitrophenol	<1	<1	<1	<1	<1
4-Nitrophenol	<1	<1	<1	<1	<1
2,4-Dichlorophenol	<1	<1	<1	<1	<1
2,4-Dimethylphenol	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	<1	<1	<1	<1	<1
Pentachlorophenol	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1	<1	<1	<1	<1
Nitrobenzene	<1	<1	<1	<1	<1
Azobenzene	<1	<1	<1	<1	<1
Hexachlorobenzene	<1	<1	<1	<1	<1
Naphthalene	<1	<1	<1	<1	<1
Acenaphthalene	<1	<1	<1	<1	<1
Acenaphthene	<1	<1	<1	<1	<1
Flourene	<1	<1	<1	<1	<1
Phenanthrene	<1	<1	<1	<1	<1
Anthracene	<1	<1	<1	<1	<1
Fluoranthrene	<1	<1	<1	<1	<1
Pyrene	<1	<1	<1	<1	<1
Benzo(a)anthracene	<1	<1	<1	<1	<1
Chrysene	<1	<1	<1	<1	<1
Benzo(b)fluoranthrene	<1	<1	<1	<1	<1
Benzo(k)fluoranthrene	<1	<1	<1	<1	<1

Groundwater Q4 2017 - Cont'd SVOC Analysis					
SVOC's (µg/l)	MW1	MW2	MW3	MW4	MW-05
Benzo(a)pyrene	<1	<1	<1	<1	<1
Indenol(1,2,3-cd)pyrene	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	<1	<1	<1	<1	<1
Benzo(ghi)perylene	<1	<1	<1	<1	<1
2-Chloronaphthalene	<1	<1	<1	<1	<1
Carbazole	<1	<1	<1	<1	<1
2-Methylnaphthalene	<1	<1	<1	<1	<1
Isophorone	<1	<1	<1	<1	<1
Dibenzofuran	<1	<1	<1	<1	<1
Dimethyl phthalate	<1	<1	<1	<1	<1
Diethyl phthalate	<1	<1	<1	<1	<1
Di-butylphthalate	<1	<1	<1	<1	<1
Di-octylphthalate	<1	<1	<1	<1	<1
Bis(2-ethylhexyl)phthalate	<1	<1	<1	<1	<1
Butylbenzylphthalate	<1	<1	<1	<1	<1
4-Chloroaniline	<1	<1	<1	<1	<1
2-Nitroaniline	<1	<1	<1	<1	<1
3-Nitroaniline	<1	<1	<1	<1	<1
4-Nitroaniline	<1	<1	<1	<1	<1
2,4-Dinitroaniline	<1	<1	<1	<1	<1
2,6-Dinitroaniline	<1	<1	<1	<1	<1
Bis(2-Chloroethyl)ether	<1	<1	<1	<1	<1
4-Bromophenylphenylether	<1	<1	<1	<1	<1
4-Chlorophenylphenylether	<1	<1	<1	<1	<1
Hexachloroethane	<1	<1	<1	<1	<1
Hexachlorobutadiene	<1	<1	<1	<1	<1
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1
Bis(2-chloroethoxy)methane	<1	<1	<1	<1	<1
N-nitrosodi-n-propylamine	<1	<1	<1	<1	<1

Groundwater Q4 2017 – Pesticide Suite					
Pesticides (µg/l)	MW-01	MW-02	MW-03	MW-04	MW-05
Dichlorvos	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01	<0.01	<0.01	<0.01	<0.01
Alpha - BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Gamma - BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01	<0.01	<0.01	<0.01	<0.01
Delta - BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Ethyl Parathion	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01
4, 4' - DDE	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.01	<0.01	<0.01	<0.01	<0.01
4, 4' - DDD	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	<0.01	<0.01	<0.01	<0.01	<0.01
4, 4' - DDT	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos Methyl	<0.01	<0.01	<0.01	<0.01	<0.01

Microbiological Analysis					
Cfu/100mls	MW-01	MW-02	MW-03	MW-04	MW-05
Total Coliforms	<1	2	<1	120	8
E.Coli cfu/ml	<1	<1	<1	<1	5

2.1.3 (C) Dust Analysis Results

2017 Dust Results				
Location	Q1 Dust (mg/m²/day)	Q2 Dust (mg/m²/day)	Q3 Dust (mg/m²/day)	Q4 Dust (mg/m²/day)
AM-01	182	182	1028 **	300
AM-02	240	317	105	76
AM-03	129	270	323	N/A *
AM-04	323	481	487	53

* Dust sampling container had been removed.

** Significant contamination from bird droppings.

2.1.3 (D) Odour Analysis Results 2017 – See Appendix 1 for Sample location maps

The Odour results for 2017 are typical of an open windrow compost facility.

METEOROLOGICAL CONDITIONS Q1 – 22ND MAR 2017			
Parameter		Parameter	
Weather	Dry, Cloudy and Cool	Wind speed	1.7 m/sec (average)
Temp	8°C	Wind Direction	NW
General Air Quality	Good	Bar Pressure	1008

Odour Sampling Results Q1 - 22ND MAR 2017		
Locations	On site observations	Results
OD 1 (Crosswind Sensitive Receptor)	Faint typical odour associated with composting - intermittent	<12 ou _E /m ³
OD 2 (Upwind)	Faint vegetation odour detected typical to proximity to vegetation at the boundary	<12 ou _E /m ³
OD 3 (Downwind)	Faint typical odour associated with composting process.	<12 ou _E /m ³

METEOROLOGICAL CONDITIONS Q2 – 18TH MAY 2017			
Parameter		Parameter	
Weather	Dry, Cool and Cloudy	Wind speed	0.4 m/sec (average)
Temp	12°C	Wind Direction	W
General Air Quality	Good	Bar Pressure	1008

Odour Sampling Results Q2 – 18TH MAY 2017		
Locations	On site observations	Results
OD 1 (Crosswind Sensitive Receptor)	Faint intermittent peat odour of low intensity and low persistence. Very faint, intermittent woody odour typical of composting facility	24 ou _E /m ³
OD 2 (Upwind)	Very faint smoke odour of low intensity and low persistence. Faint peat odour, intermittent and low intensity	<12 ou _E /m ³
OD 3 (Downwind)	Medium intensity must peat odour. Intermittent sweet citrus odour of medium intensity low persistence. Faint exhaust fume odour	12 ou _E /m ³

METEOROLOGICAL CONDITIONS Q3 – 27TH JUL 2017			
Parameter		Parameter	
Weather	Damp, Bright and Cool	Wind speed	0.7 m/sec (average)
Temp	15°C	Wind Direction	E
General Air Quality	Good	Bar Pressure	1012

Odour Sampling Results Q3 – 27TH JUL 2017		
Locations	On site observations	Results
OD 1 (Crosswind Sensitive Receptor)	Faint peat odour detected typical to that of composting facility	<12 ou _E /m ³
OD 2 (Upwind)	Faint and intermittent vegetation odour detected. Occasional faint exhaust fume odour – passing trucks	<12 ou _E /m ³
OD 3 (Downwind)	Faint and musty citrus odour typical of facility. Odour is of moderate intensity.	17 ou _E /m ³

METEOROLOGICAL CONDITIONS Q4 – 21ST NOV 2017			
Parameter		Parameter	
Weather	Damp, Bright and Cool	Wind speed	2.1 m/sec (average)
Temp	14 °C	Wind Direction	W
General Air Quality	Good	Bar Pressure	1002 mbar

Odour Sampling Results Q4 – 21ST NOV 2017		
Locations	On site observations	Results
OD 1 (Upwind / Sensitive Receptor)	Chimney smoke odour from private dwelling.	24 ou _E /m ³
OD 2 (Downwind)	Intermittent composting odour detected.	14 ou _E /m ³
OD 3 (Downwind)	Musty citrus odour typical of the composting facility.	16 ou _E /m ³

2.1.4 (E) Air Emissions Results

Air Analysis Q1 2017				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind – south east corner phase 1	<4.00	<5	<0.2	<0.5

Air Analysis Q2 2017				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind - eastern corner phase 1	<4.00	<5	<0.2	<0.5

Air Analysis Q3 2017				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind – west of phase 1 and 2	<4.00	<5	<0.2	<0.5

Air Analysis Q4 2017				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind – east of phase 1 and 2	<4.23	<5	<0.2	<0.5

2.3.1 (E) Noise Emissions**Noise:**

The annual noise-monitoring programme was carried out on the 21st and 24th April 2017. The results of same are presented in Table E.1.

TABLE E.1: NOISE MEASUREMENT RESULTS (DAYTIME)							
Location No.	Duration (minutes)	Date	Start Time	L _{eq} dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	L _{AFMax} dB(A)
N1	30	21/04/17	07:36	64	67	56	82
	30	21/04/17	11:52	75	79	61	91
	30	24/04/17	09:24	78	82	61	87
N2	30	21/04/17	08:15	45	46	40	70
	30	21/04/17	12:22	49	43	34	89
	30	24/04/17	14:30	48	48	37	81
N3	30	21/04/17	08:48	69	72	48	89
	30	21/04/17	12:54	59	62	42	85
	30	21/04/17	13:57	65	68	45	94
N4	30	21/04/17	09:17	48	51	40	61
	30	21/04/17	13:23	53	51	35	82
	30	24/04/17	09:57	52	51	36	77
NSL 1	30	21/04/17	10:01	57	61	48	72
	30	21/04/17	07:03	57	61	47	74
	30	21/04/17	11:21	61	64	52	80

2.1.4 Environmental Complaints

All environmental incidents and complaints are recorded and actioned upon in accordance with the specific procedures as outlined in the Bord na Móna Kilberry Compost facility documented environmental management system.

Environmental Complaints	Number of complaints
Complaints received	None
Complaints requiring corrective action	None
Categories of complaint	
Odour	
Noise	
Water	
Air	
Procedural	
Miscellaneous	

2.1.5 Environmental Spending

The itemised approximate spend on environmental issues at Bord na Móna Kilberry are listed below.

January 2017 to December 2017	
	€
EPA Fees	8000
Consultancy & Monitoring	30,000
Training	5,000
Total Cost	43,000

2.1.6 Resource and Energy Consumption

Fuel Usage 2017 – See table below

Machine Type	Engine Type	Total (L)
Komptech Topturn X67 Turner	Cat C9	88775
Komptech Crambo 6000 Shredder	Cat C16	
Komptech L3 Multistar Screen	Dieselelectric 44KVA	
L110E Volvo Front Loader	Volvo D7D LB E2	
L110E Volvo Front Loader 2	Volvo D7D LB E2	

Electricity Usage 2017 – recorded at compost site metre.

80180 KwHr

SECTION 3

ENVIRONMENTAL MANAGEMENT

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2018

Item No	Objective	Target	Responsible Function
1	Environmental Compliance / EMS	<ul style="list-style-type: none"> • Carry out full review of all sites EMS procedures • Carry out sump, bund and pipeline testing. • Lagoon and retaining wall structure reports due. 	Environmental (Kilberry)
2	Energy / Training	<ul style="list-style-type: none"> • ISO50001 achieved in 2017 – continue to implement any energy saving initiatives • All staff members to receive refresher EMS training • Compost site operators to receive spill drill training 	Environmental / Quality (Kilberry)
3	Once off Projects	<ul style="list-style-type: none"> • Install new barrier system at entrance to P1 and P2 • Carry out repairs to surface of compost working areas. • New signs for all monitoring locations 	Environmental / Engineering (Kilberry)
4	Carry out monitoring as per Licence 198-1	<ul style="list-style-type: none"> • Noise – Once per annum • Bioaerosols – Once per annum • Dust – four times per annum • SW - Quarterly • GW – Quarterly 	Environmental (Newbridge / Kilberry)

3.1 Environmental Management Programme for 2018.

Review of Objectives and Targets for the period January to December 2017

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2017. A number of the listed Objectives and their subsequent targets are cyclical as the company attempts to achieve continuous environmental improvement.

Tables EMP 2.1 to 2.5 set out the Objectives and Targets for 2018. A number of the listed Objectives and their subsequent targets are cyclical as the company attempts to achieve continuous environmental improvement.

Site Infrastructure**EOT 1.1**

Objective	Target	Target Date	2017 Review	Dept Responsible
Env Compliance / EMS	Prepare new environmental compliance procedure and compliance matrix – will detail all compliance reports required annually	Q1 2017	Complete EMSKIL019	Kilberry (Environmental)
	Carry out review of all EMS procedures	Q2 2017	Complete Q2 2017	Kilberry (Environmental)

Energy Management**EOT 1.2**

Objective	Target	Target Date	2017 Review	Dept Responsible
Energy management	ISO50001 set up and implementation – liaise with quality to ensure the compost site meets the requirements of the standard.	2017	Complete	Environmental / Quality (Kilberry)
	All staff members to receive Energy management training.	Q3 2017	Complete	Environmental / Quality (Kilberry)

Once off Projects**EOT 1.3**

Objective	Target	Target Date	2017 Review	Dept Responsible
Once off Projects	Prepare safe start procedures and checklists for all loaders	Q2 2017	Complete	Kilberry (Environmental)
	Prepare a noise management plan for the site.	Q3 2017	Complete.	Kilberry (Environmental)

Licence Compliance**EOT 1.4**

Objective	Target	Target Date	2017 Review	Person Responsible
Carry out monitoring as per Licence W0198-1	Noise – Once per annum	2017	Complete	Newbridge (Environmental)
	Bioaerosols – Annually	2017	Complete	Newbridge (Environmental)
	Dust - Quarterly	2017	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2017	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2017	Complete	Kilberry (Environmental)

Compliance**EOT 2.1**

Objective	Target	Target Date	Person Responsible
Env Compliance / EMS	Carry out full review of all sites EMS procedures	Q1 2018	Environmental (Kilberry)
	Carry out sump, bund and pipeline testing	Q2/Q3 2018	Environmental (Kilberry)
	Undertake assessment of lagoon structure and retaining wall.	Q2 2018	Engineering (Newbridge)

Energy Management / Training**EOT 2.2**

Objective	Target	Target Date	Person Responsible
Energy management / Training	ISO50001 achieved in 2017 – continue to implement any energy saving initiatives	2018	Environmental / Quality (Kilberry)
	All staff members to receive refresher EMS training.	Q3 2018	Environmental (Kilberry)
	Compost site operators to receive spill drill training	Q3 2018	Environmental (Kilberry)

Once Off Projects**EOT 2.3**

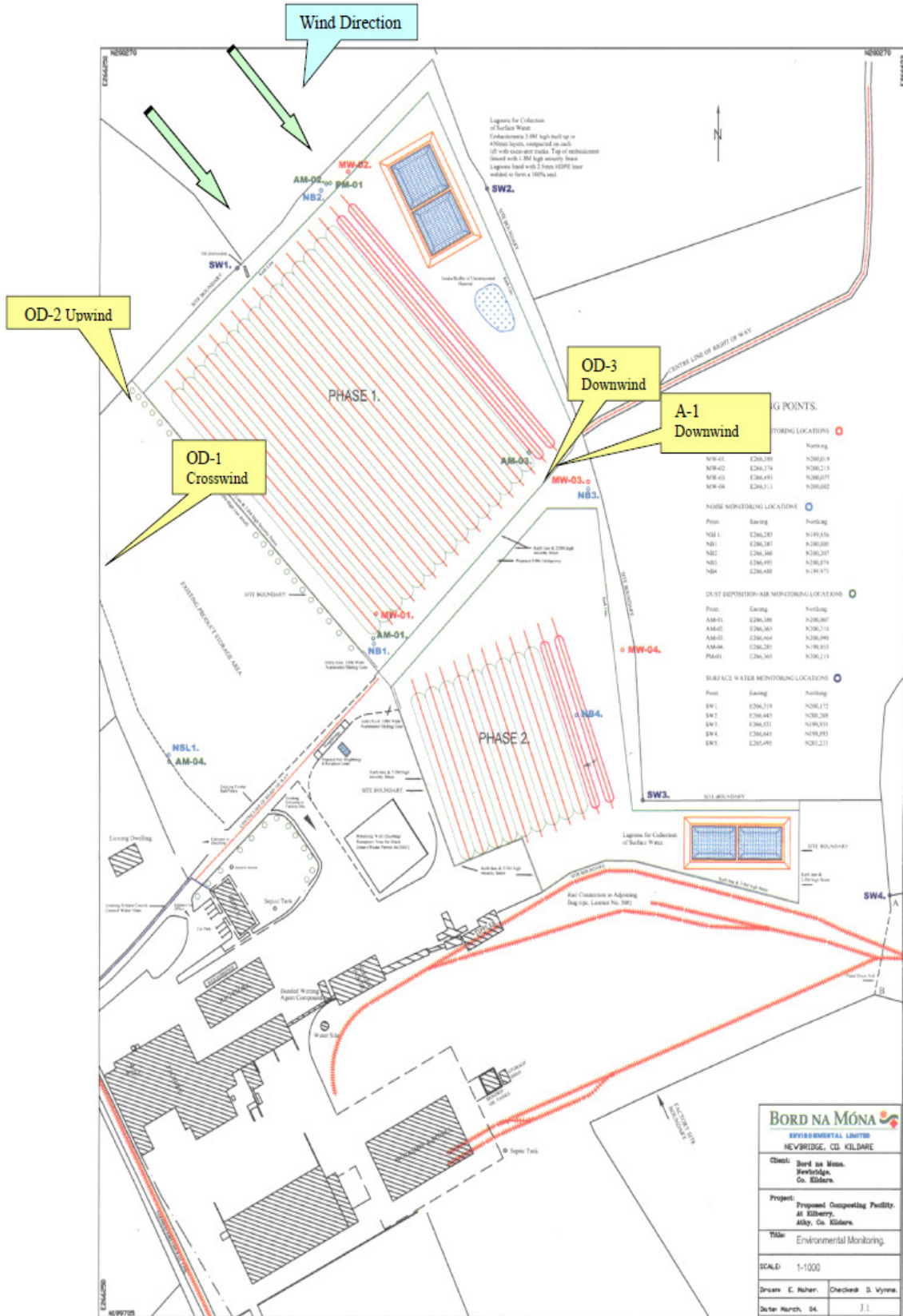
Objective	Target	Target Date	Person Responsible
Once off Projects	Install new barrier system at entrance to P1 and P2	Q2 2018	Kilberry (Environmental) Kilberry (Engineering)
	Carry out repairs to surface of compost working areas.	Q1 2018	Kilberry (Environmental) Kilberry (Engineering)
	New signs for all monitoring locations.	Q4 2018	Kilberry (Environmental)

Licence Compliance**EOT 2.4**

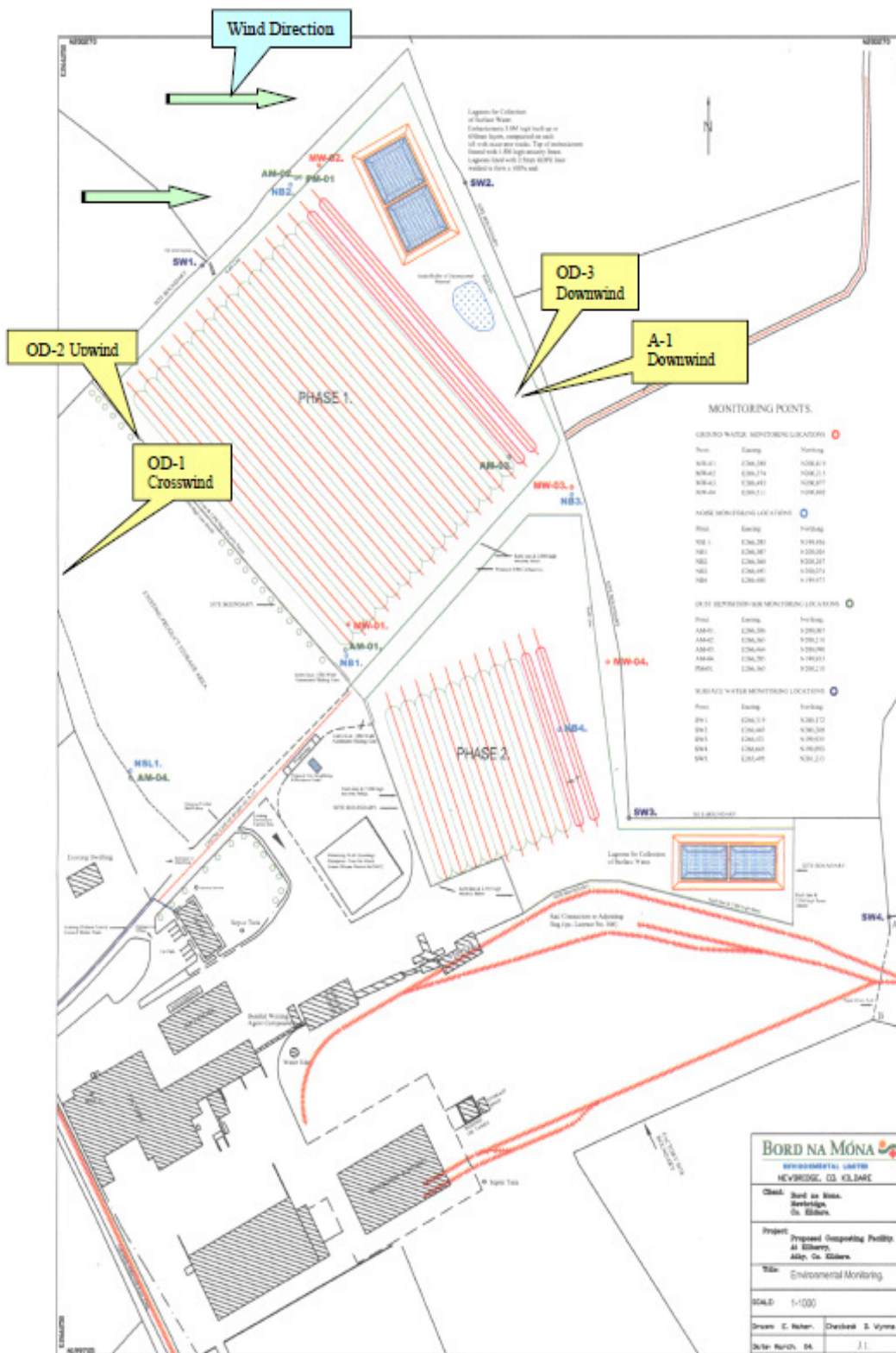
Objective	Target	Target Date	Person Responsible
Carry out monitoring as per Licence 198-1	Noise – Once per annum	2018	Environmental (Newbridge)
	Bioaerosols – Once per annum	2018	Environmental (Newbridge)
	Dust - Quarterly	2018	Kilberry (Environmental)
	Groundwater – Quarterly	2018	Kilberry (Environmental)
	Surface Water - Quarterly	2018	Kilberry (Environmental)

APPENDIX 1
Odour Monitoring Location Maps
Quarter 1-4

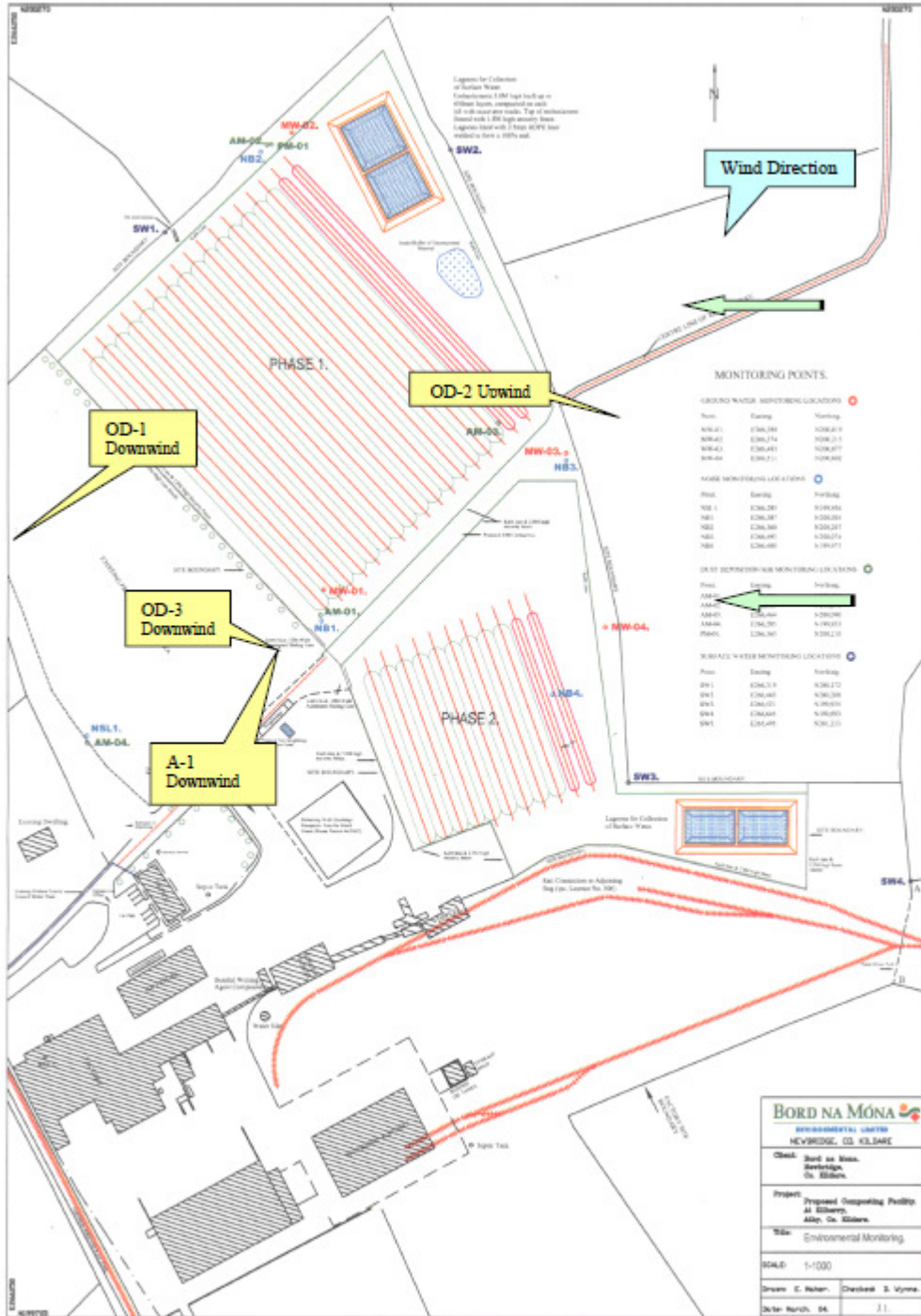
Quarter 1 Odour Monitoring Map



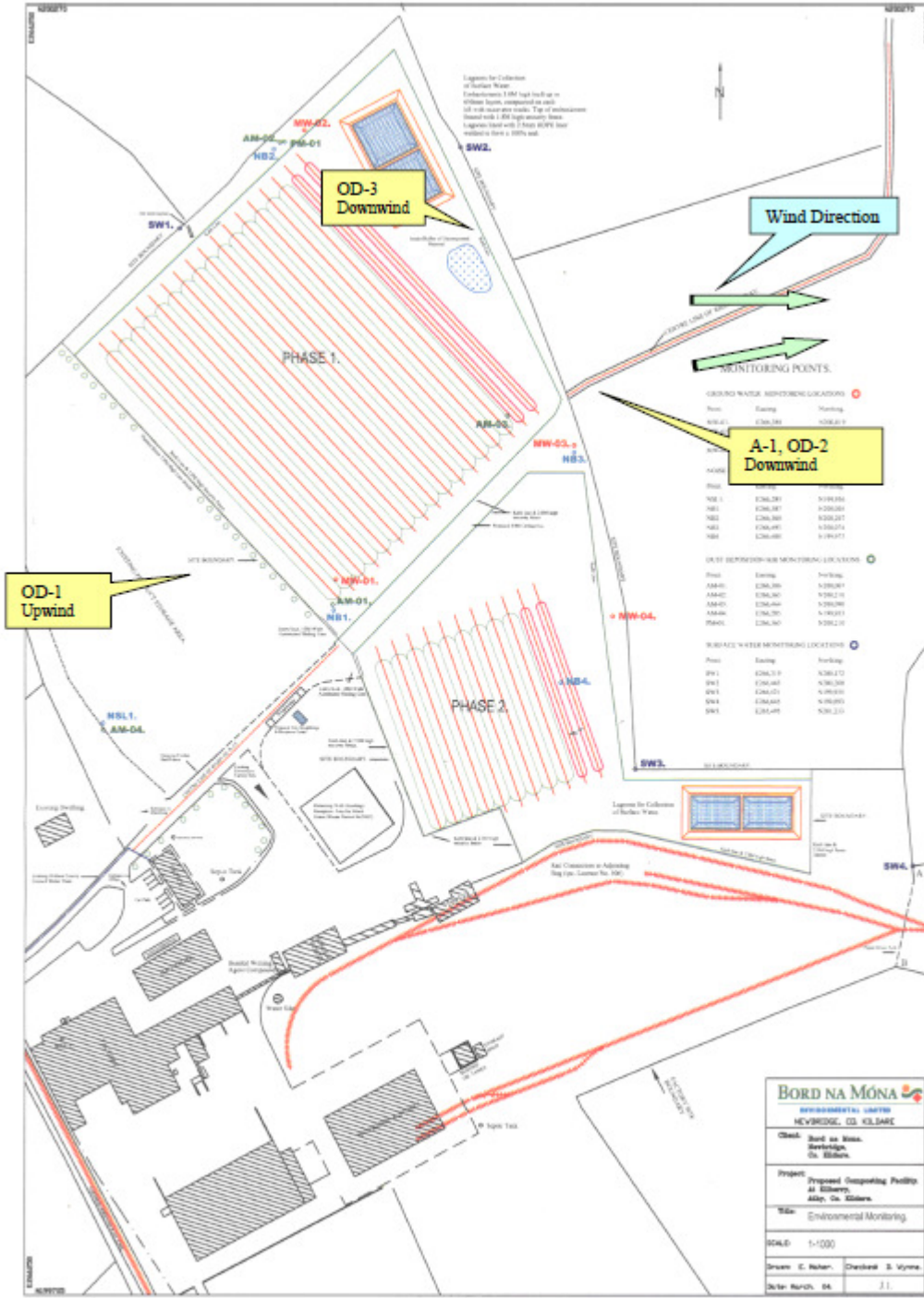
Quarter 2 Odour Monitoring Map



Quarter 3 Odour Monitoring Map



Quarter 4 Odour Monitoring Map



BORD NA MÓNA
 REFINEMENTS LIMITED
 HEYBIDGE, CO. KILDARE

Client: Bord na Móra, Heybridge, Co. Kildare

Project: Proposed Gasworks Facility at Heybridge, Co. Kildare

Title: Environmental Monitoring

SCALE: 1:1000

Drawn: C. Nolan / **Checked:** B. Vynne

Date: March, 04 / **Page:** 3.1

APPENDIX 2
Compost Analysis Report

Note: - No piles passed in Dec 2017

Final Compost Results IS441

QM-GC-01K

1

1

Compost Testing and Analysis Service

Report ref: KC17

Results

Sample matrix: Composted greenwaste and spent grain/Sludges

PLANT Nutrient , CAT Soluble Nutrients, and Physical Analysis

TEST Method	I.S. EN13037	I.S.EN13038	I.S.EN13651	I.S.EN13651	I.S.EN13651	I.S.EN13651	I.S.EN13040
2017	pH	EC $\mu\text{S.cm}^{-1}$	$\text{NH}_4\text{-N}$ mg.L^{-1}	$\text{NO}_3\text{-N}$ mg.L^{-1}	$\text{PO}_4\text{-P}$ mg.L^{-1}	K mg.L^{-1}	M/C %
Jan	7.38	239	8	0	51	486	65.1
Feb	6.70	1056	18	0	351	295	66.7
Mar	7.00	1064	5	0	96	871	55.2
Apr	7.50	1487	5	0	201	548	54.5
May	7.50	863	11	1	40	799	51.1
Jun	7.40	1049	305	6	153	624	54.4
July	6.80	1041	246	26	158	415	59.3
Aug	6.90	1309	38	0	132	1147	46.2
Sep	6.80	1687	18	0	25	1081	56.8
Oct	7.60	1972	37	0	46	1058	74
Nov	7.50	2100	19	0	189	956	74.1
Dec							

Maturity

Germination of Cress

Method IS EN 16086-2 2011	% AGR	RI %
Jan	100	106
Feb	100	98
Mar	100	99
Apr	100	94
May	100	92
June	100	92
July	100	105
Aug	100	115
Sept	100	120
Oct	100	102
Nov	100	104
Dec		
% AGR	% Average Germination Rate	
RI %	Root Index %	

C:N Ratio

Test Method Sample no (month)	% Organic Matter	I.S.EN13039 C:N Ratio
Jan	72	13
Feb	74	14
Mar	91	16
Apr	89	19
May	82	19
Jun	88	24
July	91	25
Aug	79	20
Sep	91	20
Oct	94	20
Nov	94	20
Dec		

Foreign Matter over 2mm

Method	Foreign Matter > 2mm	Stones >4mm	%N	%P	%K
	Based on I.S EN				
	PAS 100:2005		13654-1	ISEN13650	ISEN13650
Jan	0	0	3.19	0.41	0.59
Feb	0	0	2.94	0.41	0.59
Mar	0.83	0	3.08		
Apr	4.23	0	2.66		
May	0	0	2.38		
Jun	0	0	2.06		
July	0	0	2.03	0.04	0.39
Aug	0	0	2.22	0.04	0.35
Sep	0	0	2.52	0.04	0.48
Oct	0	0	2.57	0.04	0.53
Nov	0	0	2.57	0.04	0.47
Dec					

*Based on BP PAS100:2005

Heavy Metals (Dry weight basis)

Sample no	Cu mg.kg ⁻¹	Zn mg.kg ⁻¹	Pb mg.kg ⁻¹	Cd mg.kg ⁻¹	Hg mg.kg ⁻¹	Ni mg.kg ⁻¹	Cr mg.kg ⁻¹
Method used	I.S.EN13650			ISO167 72	I.S.EN13650		
Standard	100	350	150	1.5	1	50	100
Jan	27.3	137	28.6	0.55	0.2	35.4	65.8
Feb	14.93	61.5	10.5	<0.5	0.08	3.77	4
Mar	18	82	17	<0.5	0	14.6	24
Apr	22	92	14.3	0.49	0	6.7	7.3
May	13.3	71.6	18.3	<0.49	0.104	<2.19	<2.05
Jun	6.99	68.1	8.69	<0.49	0.73	<2	<2
July	20	87	20	<1	0.111	8	8.87
Aug	18	87	44	<1	0.2	7	8
Sep	21	103	33	<1	<0.1	5	5
Oct	27	94	19	<1	<0.1	9	99
Nov	22	96	18	<1	<0.1	20	36
Dec							

Microbiological Analysis

Sample no	E Coli CFU/g	Salmonella (spp/25g)
Method used	Based on ISO 16649-2 (2001)	RayAL ELISA OPTIMA
Standard		
Jan	<10	Absent
Feb	455	Absent
Mar	157	Absent
Apr	540	Absent
May	360	Absent
Jun	150	Absent
July	<10	Absent
Aug	490	Absent
Sep	100	Absent
Oct	170	Absent
Nov	400	Absent
Dec		

• *

Stability Analysis Method prEN16087-1

Sample no	Mmol/O ₂ /kg OS/h
Standard	
Jan	9.26
Feb	9.26
Mar	8.9
Apr	9.03
May	9.94
Jun	9.66
July	10.98
Aug	10.08
Sep	9.65
Oct	12.3
Nov	11.45
Dec	

* Repeat of individual piles in brackets

Weed Test

Method BGKe.V2006

Sample no	Weeds/L
Standard	
Jan	<0.5
Feb	<0.5
Mar	<0.5
Apr	<0.5
May	<0.5
Jun	<0.5
July	<0.5
Aug	<0.5
Sep	<0.5
Oct	<0.5
Nov	<0.5
Dec	

APPENDIX 3
PRTR



| PRTR# : W0198 | Facility Name : Bord na Móna Plc (Kilberry) | Filename : W0198_2017.xls | Return Year : 2017 |

[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.18

REFERENCE YEAR	2017
-----------------------	------

1. FACILITY IDENTIFICATION

Parent Company Name	Bord na Mona Public Limited Company
Facility Name	Bord na Móna Plc (Kilberry)
PRTR Identification Number	W0198
Licence Number	W0198-01

Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Kilberry
Address 2	Athy
Address 3	
Address 4	
Country	Ireland
Coordinates of Location	-7.0108 53.0473
River Basin District	IESE
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Craig Mallinson
AER Returns Contact Email Address	craigmallinson@inbox.com
AER Returns Contact Position	Consultant
AER Returns Contact Telephone Number	0872886848
AER Returns Contact Mobile Phone Number	0872886848
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	1
Number of Operating Hours in Year	0
Number of Employees	5
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General
50.1	General

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	
Have you been granted an exemption?	
If applicable which activity class applies (as per Schedule 2 of the regulations)?	
Is the reduction scheme compliance route being used?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE

[Guidance on waste imported/accepted onto site](#)

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities)?	
---	--

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE
 Before 2017, the following information was required for the transfer of waste. From 2017, the following information is required. Please enter all quantities on this sheet in Tonnes.
 Please enter all quantities on this sheet in Tonnes.

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Non-computer fraction of municipal and other waste	Waste Treatment Operation	Method Used		Location of Treatment	The Waste Name and Location of the Receiving Facility (The Waste Name and Receiver/Dispatcher)	The Waste Name and Location of the Receiving Facility (The Waste Name and Receiver/Dispatcher)	Name and License / Permit No. and Address of the Receiving Facility (ONLY)	Actual Address of the Receiving Facility (ONLY)
							M/C/E	Method Used					
Within the County	19 05 01	No	30.0	Non-computer fraction of municipal and other waste		D1	E	Volume Calculation	Offsite in Ireland	Kyralasha WTS W094-01	Kyralasha		

* Select a row by double-clicking the Description of Waste then click the delete button