Annual Environmental Report 2016

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 Johnstown Castle Co. Wexford

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

CONTENTS

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 2016 - December 2016. 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 an 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

BORD NA MÓNA

Environmental Policy

BORD NA MÓNA

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 is 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) will be accepted at this facility.

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 12-16 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 March 29th 2012

Ray Lenehan
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
3. Turning / Composting
4. Screening of stabilised material
5. Shredding and re-use of oversize 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 linier strip of material. Unshredded material is directed to the shredder in phase 2.

3. Turning / Composting

The current average composting period is 12 weeks, during which time the piles are turned approximately 20 times as follows:

Week 1 - 2	4 times per week
Week 3 – 6	2 times per week
Week 7-10	1 turn per week

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

- Temperature (using deep probes)
- CO_2 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, material below 10mm will be stockpiled for use in growing media plants, whilst material over this size will be set aside for shredding and composting.

5. Shredding:

Oversized material is collected at the screening plant and is reincorporated into the new windrows.

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.

.

SECTION 2

DATA

2.1 SUMMARY DATA

2.1.1 Waste Recovery Data:

Waste Type	EWC Code	Annual Intake (Tonnes)
Greenwaste	20 02 01	21240
Bark	03 03 01	618
Brewery by-Product	02 07 01	21522
Dairy Sludge	02 05 02	1068

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 2016 Surface water analysis. The results are very similar to previous years.

Table A.1 - Surface Water Q1 2016					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.5	7.6	7.6	7.6	8.0
Suspended Solids (mg/l)	5	17	<5	9	6
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 2016					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.6	7.6	7.6	7.6	8.1
Suspended Solids (mg/l)	<5	13	12	10	<5
BOD (mg/l)	2	3	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 2016					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.2	7.4	No Sample due to low flow	7.4	8.0
Suspended Solids (mg/l)	27	19		10	<5
DRO (mg/l)	<10	<10		<10	<10
Mineral Oil (mg/l)	<10	<10		<10	<10

Table A.4 - Surface Water Q4 2016					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.5	7.5	7.6	7.6	8.0
Suspended Solids (mg/l)	<5	5	<5	7	<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 2017.

Groundwater Results Q1 2016					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.7	7.3	7.2	6.7	6.6
Conductivity µS/cm	537	575	610	1532	1902
Ammonia as N mg/l	2.1	7.2	5.4	15	21
Chloride mg/l	20	15	16	44	61
Sulphate mg/l	<2	3.9	<2	<2	9.7
Nickel ug/l	<2	3	<2	10	3
Manganese ug/l	647	64	179	593	582

Groundwater Results Q2 2016					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.6	7.3	7.1	7.2	7.3
Conductivity µS/cm l	591	606	659	1426	865
Ammonia as N mg/l	1.7	6.0	5.5	9.5	0.03
Chloride mg/l		17	16	34	20
Sulphate mg/l	10	9	<2	<2	<2
Nickel ug/l	Analysis not carried out.				
Manganese ug/l					

Groundwater Results Q3 2016					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.6	7.3	7.2	7.0	7.2
Conductivity µS/cm l	603	685	747	1682	898
Ammonia as N mg/l	1.6	6.9	5.6	20	8.7
Chloride mg/l	26	20	17	30	19
Sulphate mg/l	7	13	<0.5	<0.5	<0.5
Nickel ug/l	1.22	1.43	1.7	28.6	8.83
Manganese ug/l	<0.76	<0.76	<0.76	443	<0.76

Groundwater Q4 2016					
Parameter	**MW-01**	**MW-02**	**MW-03**	**MW-04**	**MW-05**
pH	7.7	7.4	7.2	7.1	7.3
Conductivity uS/cm	530	628	860	1583	898
Ammonia as N mg/l	1.7	7.8	5.4	20	9
Chloride mg/l	24	20	21	26	20
Nitrate mg/l	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphate mg/l	<0.16	<0.16	<0.16	<0.16	<0.16
Sulphate mg/l	11	19	9.2	0.7	<0.5
Magnesium mg/l	17.6	<0.02	8.22	43.7	6.4
Boron µg/l	<135	<135	<135	<135	<135
Antimony µg/l	6.02	4.25	9.76	10.6	4.36
Arsenic µg/l	4.3	7.99	4.33	14.3	11
Aluminium µg/l	<50	<50	<50	191	114
Berylium µg/l	<1	<1	<1	<1	<1
Barium µg/l	<0.5	380	<0.5	694	502
Chromium µg/l	<3	<3	<3	<3	4.2
Cadmium µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt µg/l	<0.5	0.82	<0.5	139	2.71
Copper µg/l	<4	<4	<4	4.84	<4
Iron mg/l	1.86	0.597	2.21	25.2	7.6
Potassium mg/l	<2	2.33	2.25	39.5	12.8
Sodium mg/l	16.7	10.4	15.4	20.9	12.7
Calcium mg/l	71.6	107	167	267	193
Manganese µg/l	<0.5	127	<0.5	839	247
Silver µg/l	<2	<2	<2	<2	<2
Nickel µg/l	<0.5	2.73	<0.5	42.2	23.9
Lead µg/l	<0.5	<0.5	<0.5	1.31	0.836
Selenium µg/l	10.3	<1	10.3	2.87	<1
Tin µg/l	<3	<3	<3	<3	<3
Zinc µg/l	<3	6.67	<3	13.8	20.7
Mercury µg/l	<0.02	<0.02	<0.02	<0.02	<0.02

Groundwater Q4 2016 – *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 2016 - *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-butylphthalete	<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 2016 – *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**
E.Coli	<1	<1	<1	<1	<1
Total Coliforms	<1	>100	<1	<1	8

2.1.3 (C) Dust Analysis Results

2016 Dust Results				
Location	**Q1 Dust ($mg/m^2/day$)**	**Q2 Dust ($mg/m^2/day$)**	**Q3 Dust ($mg/m^2/day$)**	**Q4 Dust ($mg/m^2/day$)**
AM-01	164	142	3953**	346
AM-02	No Sample	49	246	100
AM-03	581*	87	252	329
AM-04	223	153	270	276

* Appeared that the bottle had been tampered with as mud was visible around neck of bottle.

** Significant contamination from bird droppings.

2.1.3 (D) Odour Analysis Results 2016 – See Appendix 1 for Sample location maps

The Odour results for 2016 are typical of an open windrow compost facility.

METEOROLOGICAL CONDITIONS Q1 - 25TH FEB 2016			
Parameter		**Parameter**	
Weather	Cold dry and Cloudy	**Wind speed**	0.9 m/sec (average)
Temp	0 ºC	**Wind Direction**	Southerly
General Air Quality	Good	**Bar Pressure**	1010 mbar

Odour Sampling Results Q1 - 25TH FEB 2016		
Locations	**On site observations**	**Results**
OD 1 (Crosswind Sensitive Receptor)	Very faint intermittent peat odour - low intensity	<11 ou_E/m^3
OD 2 (Upwind)	Faint typical odour associated with composting - intermittent	17 ou_E/m^3
OD 3 (Downwind)	Persistent odour associated with composting - persistent but low intensity	24 ou_E/m^3

METEOROLOGICAL CONDITIONS Q2 - 18TH APRIL 2016			
Parameter		**Parameter**	
Weather	Cloudy, Mild, Intermittent light rain	**Wind speed**	2.4 m/sec (average)
Temp	8 ºC	**Wind Direction**	Westerly
General Air Quality	Good	**Bar Pressure**	1012 mbar

Odour Sampling Results Q2 – 18TH APRIL 2016		
Locations	**On site observations**	**Results**
OD 1 (Crosswind Sensitive Receptor)	Very faint intermittent peat odour - low intensity	28 ou_E/m^3
OD 2 (Upwind / Sensitive Receptor)	Faint typical odour associated with composting - intermittent	17 ou_E/m^3
OD 3 (Downwind)	Persistent odour associated with composting - persistent but low intensity	28 ou_E/m^3

METEOROLOGICAL CONDITIONS Q3 – 1ST SEPT 2016			
Parameter		**Parameter**	
Weather	Cloudy, Dry, Mild Slight wind	**Wind speed**	1.8 m/sec (average)
Temp	15.6 ^oC	**Wind Direction**	Southerly
General Air Quality	Good	**Bar Pressure**	1009 mbar

Odour Sampling Results Q3 – 1ST SEPT 2016		
Locations	**On site observations**	**Results**
OD 1 (Crosswind Sensitive Receptor)	Intermittent peat odour – low intensity	<12 ou_E/m^3
OD 2 (Upwind / Sensitive Receptor)	Faint Intermittent vegetation odour, Once off diesel odour, waste odour from lorry upwind- intermittent	<12 ou_E/m^3
OD 3 (Downwind)	Persistent sweet barely odour–low to medium intensity, Peat odour – Intermittent	53 ou_E/m^3

METEOROLOGICAL CONDITIONS Q4 – 12TH DEC 2016			
Parameter		**Parameter**	
Weather	Cloudy, Dry, Mild Light Breeze	**Wind speed**	0.7 m/sec (average)
Temp	12.3 ^{o}C	**Wind Direction**	Southwesterly
General Air Quality	Good	**Bar Pressure**	1010 mbar

Odour Sampling Results Q4 – 12TH DEC 2016		
Locations	**On site observations**	**Results**
OD 1 (Crosswind Sensitive Receptor)	A sweet/musky odour was detected, intermittent and low in intensity	<12 ou_E/m^3
OD 2 (Upwind / Sensitive Receptor)	A persistent sweet barley odour was detected with a low to medium intensity, intermittent waste smell with a low intensity from a once off waste collection lorry passing by.	29 ou_E/m^3
OD 3 (Downwind)	Faint peat/sweet barley odour was detected which is typical of the composting process, Intermittent and low intensity. A faint vegetation odour was also detected intermittently.	<12 ou_E/m^3

2.1.4 (E) Air Emissions Results

Air Analysis Q1 2016				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind - north-eastern boundary next to lagoon	<3.14	<5	<0.2	<0.5

Air Analysis Q2 2016				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind - eastern boundary next to lagoon	<3.93	<5	<0.2	<0.5

Air Analysis Q3 2016				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind - eastern boundary next to lagoon	<3.93	<5	<0.2	<0.5

Air Analysis Q4 2016				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind - eastern boundary north of lagoon	<3.99	<5	<0.2	<0.5

2.3.1 (E) Noise Emissions

Noise:

The annual noise-monitoring programme was carried out on the 27th April 2016 and the 3rd May 2016. 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	27-4-16	11:10	70	74	57	83
	30	27-4-16	12:52	71	75	55	83
	30	3-5-17	14:20	64	68	48	79
N2	30	27-4-16	11:44	45	46	37	66
	30	27-4-16	13:24	48	52	37	65
	30	3-5-17	15:30	47	50	42	64
N3	30	27-4-16	10:06	70	73	44	86
	30	27-4-16	14:02	59	61	47	77
	30	3-5-17	13:47	58	60	46	77
N4	30	27-4-16	10:38	61	66	43	75
	30	27-4-16	14:38	64	68	47	75
	30	3-5-17	14:55	59	64	42	71
NSL 1	30	27-4-16	12:20	58	62	48	76
	30	27-4-16	15:15	55	58	48	71
	30	3-5-17	16:03	61	63	48	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 2016 to December 2016	
	€
EPA Fees	8000
Consultancy & Monitoring	30,000
Training	7,000
Env Equipment	3,000
Total Cost	**48000**

2.1.6 Resource and Energy Consumption

Fuel Usage 2016 – See table below

Machine Type	Engine Type	Total (L)
Komptech Topturn X67 Turner	Cat C9	95660
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 2016 – recorded at compost site metre.

91,567 KwHr

SECTION 3

ENVIRONMENTAL MANAGEMENT

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2017

Item No	Objective	Target	Responsible Function
1	Environmental Compliance / EMS	• Prepare new environmental compliance procedure and compliance matrix – will detail all compliance reports required annually • Carry out review of all EMS procedures	Environmental (Kilberry)
2	Energy Management	• ISO50001 set up and implementation – liaise with quality to ensure the compost site meets the requirements of the standard. • All staff members to receive Energy management training.	Environmental / Quality (Kilberry)
3	Once off Projects	• Prepare safe start procedures and checklists for all loaders • Prepare a noise management plan for the site.	Environmental (Kilberry)
4	Carry out monitoring as per Licence 198-1	• 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 2017.

Review of Objectives and Targets for the period January to December 2016

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2016. 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 2017. 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	2016 Review	Dept Responsible
Meet Operating Capacity Requirements.	Increase tonnage entering site – investigate new waste types.	2016	No new waste types added during 2016	Kilberry (Environmental)
	Implement new marketing strategies to increase customer base	2016	Continuous 2016	Horticulture (Newbridge)

Training EOT 1.2

Objective	Target	Target Date	2016 Review	Dept Responsible
Training /EMS	Carry out one spill drill.	2016	Move to 2017	Environmental (Kilberry)
	All staff members to receive Environmental training.	2016	Two staff received : Manual handling Environmental Safety Refresher	Environmental (Kilberry)
	Carry out annual review of all EMS procedures.	Q2 2016	Not fully Complete – due Q2 2017. 1 new procedure released in 2016	Environmental (Kilberry)

Once off Projects EOT 1.3

Objective	Target	Target Date	2016 Review	Dept Responsible
Once off projects	Investigate site expansion in increase the overall footprint of the site.	2016	Site expansion discussions are currently on-hold.	Kilberry (Environmental)
	Assess new conditions of the IED licence and implement any changes	Q2 2016	Complete. Accident prevention policy required within 6 months	Kilberry (Environmental)

Licence Compliance EOT 1.4

Objective	Target	Target Date	2016 Review	Person Responsible
Carry out monitoring as per Licence W0198-1	Noise – Once per annum	2016	Complete	Newbridge (Environmental)
	Bioaerosols – Annually	2016	Complete	Newbridge (Environmental)
	Dust - Quarterly	2016	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2016	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2016	Complete	Kilberry (Environmental)

Compliance EOT 2.1

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

Energy Management EOT 2.2

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

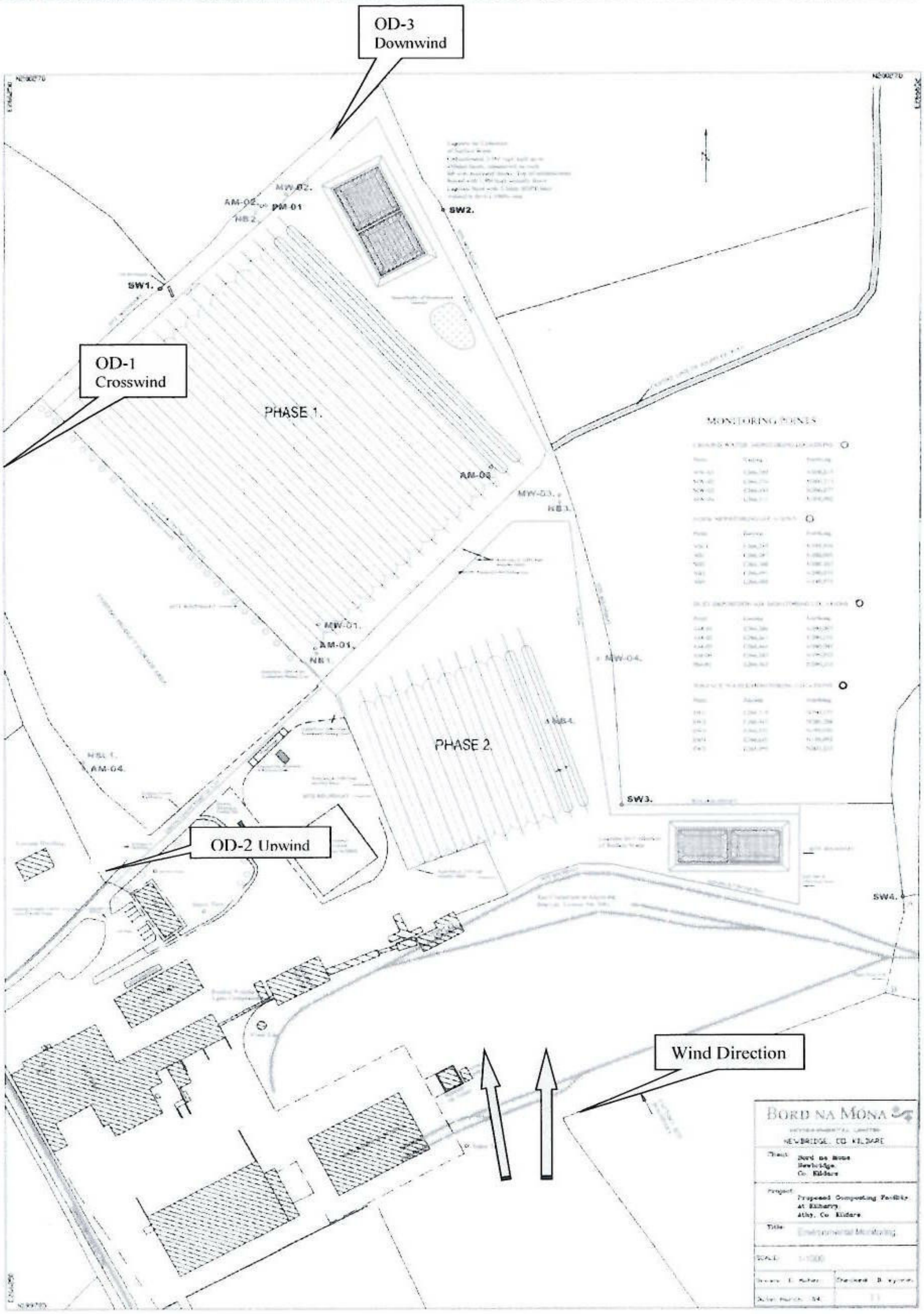
Once Off Projects EOT 2.3

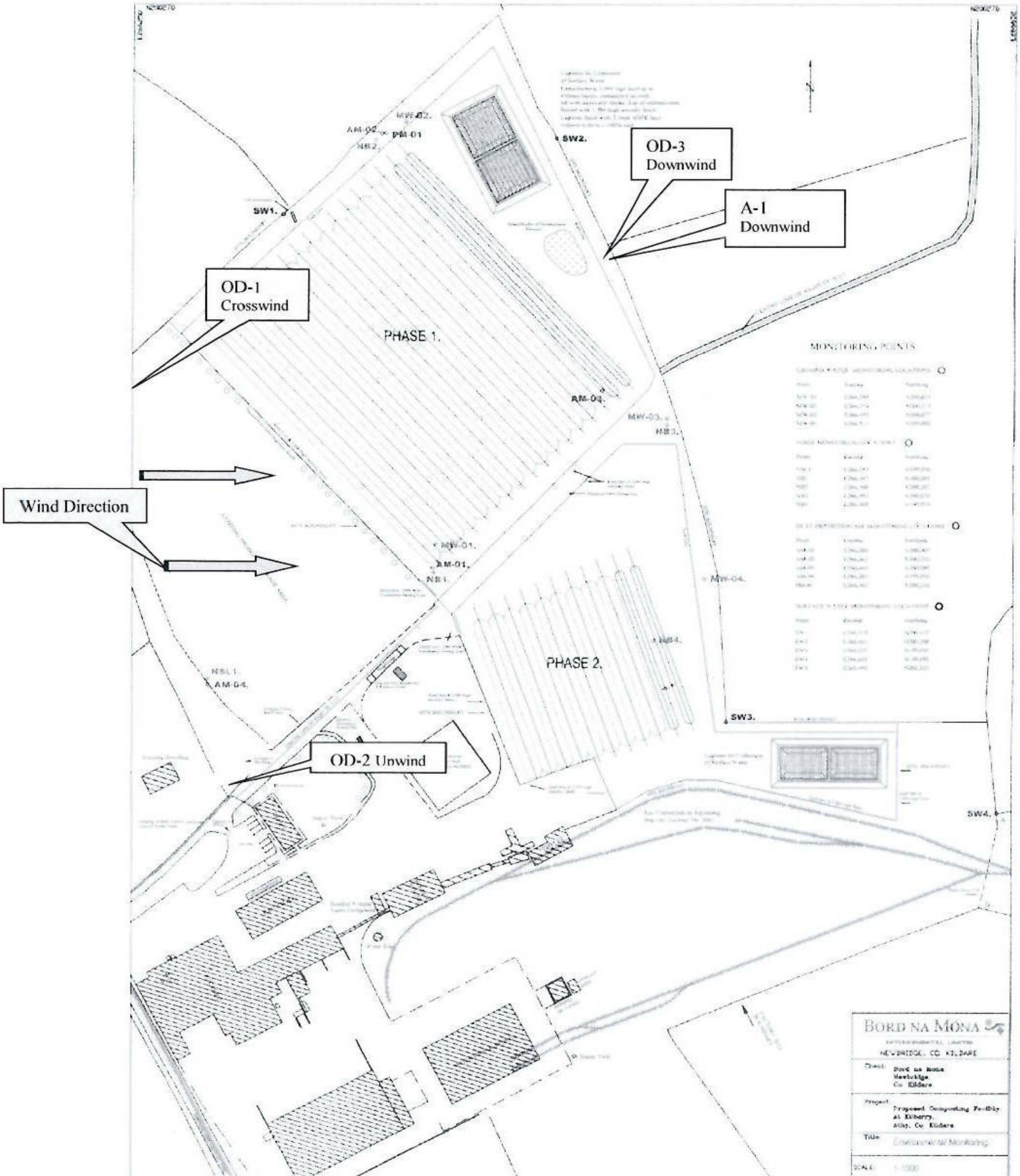
Objective	Target	Target Date	Person Responsible
Once off Projects	Prepare safe start procedures and checklists for all loaders	Q2 2017	Kilberry (Environmental)
	Prepare a noise management plan for the site.	Q3 2017	Kilberry (Environmental)

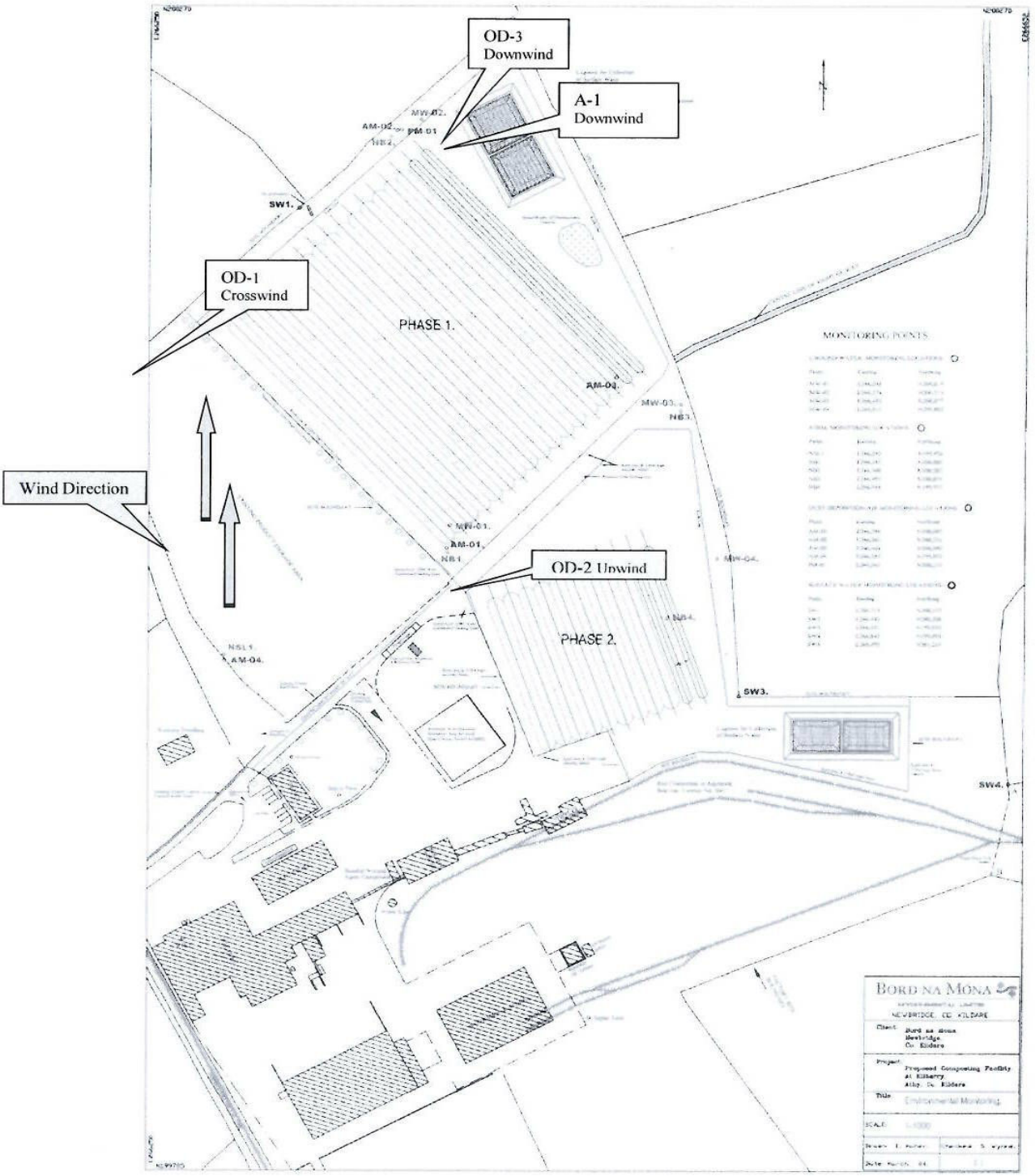
Licence Compliance EOT 2.4

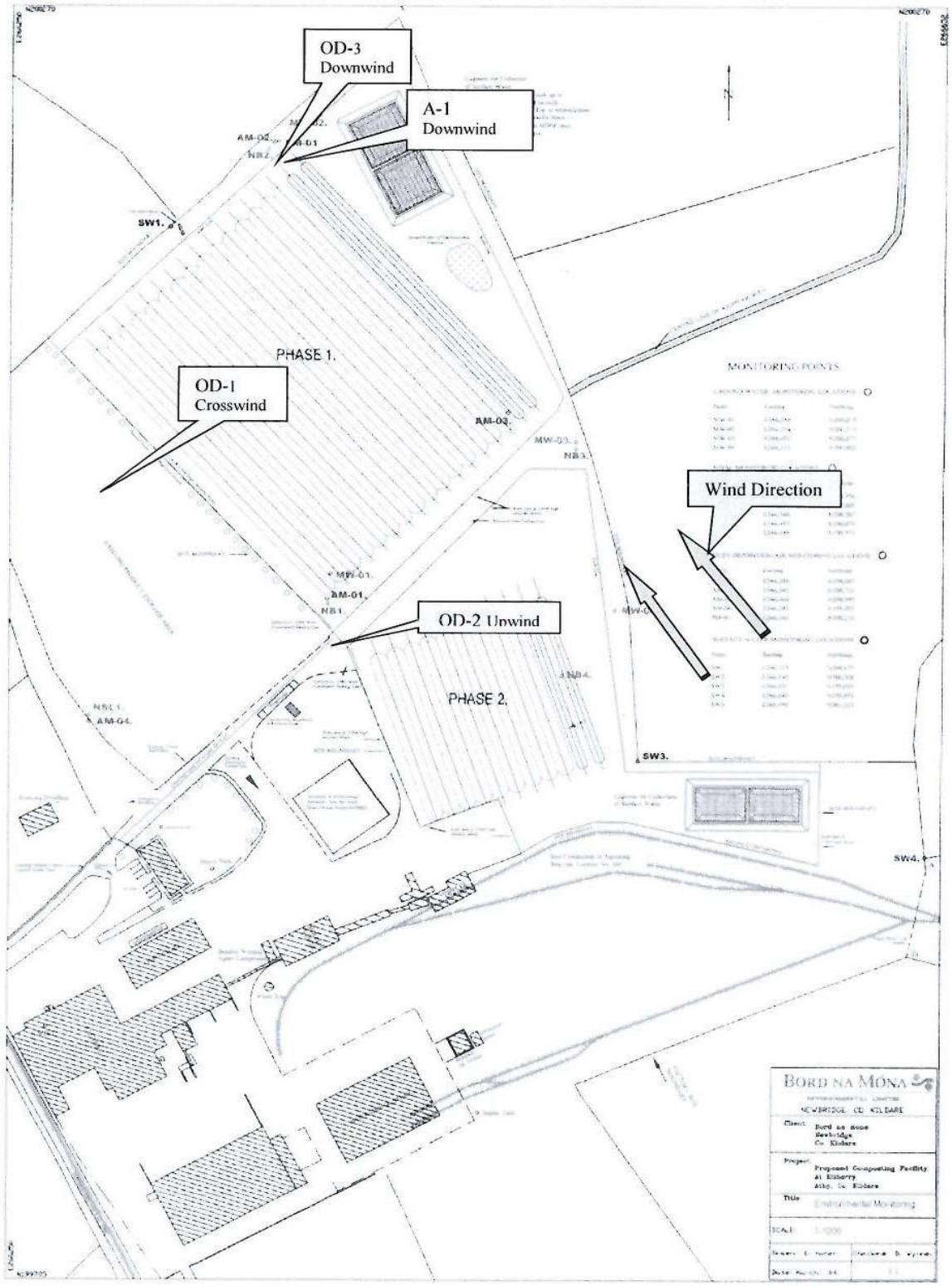
Objective	Target	Target Date	Person Responsible
Carry out monitoring as per Licence 198-1	Noise – Once per annum	2017	Environmental (Newbridge)
	Bioaerosols – Once per annum	2017	Environmental (Newbridge)
	Dust - Quarterly	2017	Kilberry (Environmental)
	Groundwater – Quarterly	2017	Kilberry (Environmental)
	Surface Water - Quarterly	2017	Kilberry (Environmental)

APPENDIX 1
Odour Monitoring Location Maps
Quarter 1-4


OD-3
Downwind
OD-1
Crosswind
OD-2 Unwind
Wind Direction
PHASE 1.
PHASE 2.
MW-02.
AM-02.
PM-01
NB2.
SW2.
SW1.
AM-03
MW-03.
NB3.
MW-01.
AM-01.
NB1.
MW-04.
NB4.
NSL1.
AM-04.
SW3.
SW4.
MONITORING POINTS
BORD NA MÓNA
NEWBRIDGE, CO. KILDARE
Proposed Composting Facility at Kilberry Athy, Co. Kildare
Environmental Monitoring


OD-3
Downwind
A-1
Downwind
OD-1
Crosswind
PHASE 1.
Wind Direction
PHASE 2.
OD-2 Unwind
SW1.
SW2.
SW3.
SW4.
MONITORING POINTS
BORD NA MÓNA


OD-3
Downwind
A-1
Downwind
OD-1
Crosswind
Wind Direction
OD-2 Unwind
PHASE 1.
PHASE 2.
MONITORING POINTS
SW1.
SW3.
SW4.
AM-01.
AM-02.
AM-03.
AM-04.
MW-01.
MW-02.
MW-03.
MW-04.
NB1.
NB2.
NB3.
NB4.
NSL1.
PM-01
BORD NA MONA
NEWBRIDGE, CO. KILDARE
Client: Bord na Mona Newbridge Co. Kildare
Project: Proposed Composting Facility at Kilberry Athy, Co. Kildare
Title: Environmental Monitoring


OD-3
Downwind
A-1
Downwind
SW1.
PHASE 1.
OD-1
Crosswind
AM-02.
MW-03.
NB3.
MONITORING POINTS
Wind Direction
MW-01.
AM-01.
NB1.
OD-2 Unwind
NB4.
PHASE 2.
NSL1.
AM-04.
SW3.
SW4.
BORD NA MÓNA
NEWBRIDGE CO. KILDARE
Client: Bord na mona
Newbridge
Co. Kildare
Project: Proposed Composting Facility
At Kilberry
Athy, Co. Kildare
Title: Environmental Monitoring
SCALE: 1:1000

APPENDIX 2
Compost Analysis Report

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

QM Doc. Name:	Final Compost Results IS441
QM Doc. Ref.:	QM-GC-01K
Issue No.:	1
Revision No.:	1
Date:	15/08/2012
Page:	**1 OF 7**

MONTHLY ANALYSIS OF WINDROWS AT KILBERRY

2016

REPORT NO: **KILBERRY MONTHLY ANALYSIS 2016**

PREPARED BY: Colman Hynes
Bord na Móna ltd.

DATE: 23/03/17

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441	
QM-GC-01K	
1	
1	
20/07/2012	
2 OF 7	

Introduction

Samples are collected monthly for analysis according to the EPA licence 198-1 *Schedule F: Standards for Compost Quality* and also I.S. 441:2011
Samples are collected by the Bord na Mona Horticulture lab. Analysis begins on the day of sampling and held in cold storage during analysis.

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441	
QM-GC-01K	
1	
1	
20/07/2012	
3 OF 7	

Compost Testing and Analysis Service

Report ref: KC15

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**
2016	**pH**	**EC** $\mu S.cm^{-1}$	**NH_4-N** $mg.L^{-1}$	**NO_3-N** $mg.L^{-1}$	**PO_4-P** $mg.L^{-1}$	**K** $mg.L^{-1}$	**M/C %**
Jan	6.80	275	19	6	38	218	68.0
Feb	7.10	151	4	24	26	53	73.4
Mar	8.40	140	0	5	8	581	59.7
Apr	6.20	585	27	92	53	529	69.2
May	7.37	449	8	3	41	680	62.5
Jun	7.12	429	52	0	41	660	50.7
July	6.12	498	3	0	92	502	50.8
Aug	6.78	639	9	16	64	529	67.8
Sep	7.06	373	34	30	35	501	69.4
Oct	6.72	653	0	2	12	646	44.0
Nov	5.11	964	11	0	73	589	54.4
Dec	6.80	700	15	20	60	545	62.1

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
4 OF 7

Maturity

Germination of Cress

Method IS EN 16086-2 2011	% AGR	RI %
Jan	**100**	**102.5**
Feb	**100**	**108.2**
Mar	**100**	**99.6**
Apr	**100**	**88.0**
May	**100**	**85.6**
June	**100**	**85**
July	**100**	**90**
Aug	**100**	**95.7**
Sept	**100**	**80.6**
Oct	**100**	**85.9**
Nov	**100**	**85**
Dec	**100**	**100.5**

% AGR	**%Average Germination Rate**
RI %	**Root Index %**

C:N Ratio

Test Method Sample no (month)	% Organic Matter	I.S.EN13039 C:N Ratio
Jan	76	12
Feb	71	12
Mar	71	13
Apr	76	16
May	71	12
Jun	76	13
July	72	12
Aug	69	11
Sep	67	11
Oct	60	13
Nov	72	17
Dec	68	13

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
5 OF 7

Foreign Matter over 2mm

	Foreign Matter > 2mm	Stones >4mm	%N	%P	%K
Method	PAS 100:2005		Based on I.S EN 13654-1	ISEN13650	ISEN13650
Jan	0	0	3.40	0.46	0.46
Feb	0	0	3.33	0.52	0.14
Mar	0	0	3.00	0.50	0.40
Apr	0	0	2.65	0.42	0.58
May	0	0	3.30	0.33	0.51
Jun	0	0	3.30	0.33	0.51
July	0	0	3.27	0.51	0.56
Aug	0	0	3.39	0.43	0.62
Sep	0	0	3.52	0.65	0.70
Oct	0	0	2.49	0.34	0.61
Nov	0	0	2.33	0.27	0.53
Dec	0	0	2.88	0.38	0.82

***Based on BP PAS100:2005**

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
6 OF 7

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**			**ISO16772**	**I.S.EN13650**	
Standard	**100**	**350**	**150**	**1.5**	**1**	**50**	**100**
Jan	35	160	40.6	0.61	0.08	9.91	7.93
Feb	46.9	189	51.1	0.7	0.1	22.8	35.6
Mar	47.6	186	49.2	0.76	0.17	19.1	24
Apr	23.5	116	24.4	0.45	0.08	10.2	12.4
May	36.3	138	27.7	0.55	0.11	36.6	87.9
Jun	35.3	156	29.7	0.58	0.52	46.4	99
July	32	120	22.4	0.54	0.51	27.6	68.2
Aug	27.3	135	27.3	0.51	0.46	9.22	8.68
Sep	33.3	170	32.1	0.74	0.3	18	21
Oct	23.9	115	42.9	0.77	0.2	17.8	14.5
Nov	18.8	84.2	18.3	0.42	0.2	8.16	8.63
Dec	27	123	22.8	0.48	0.2	48.9	97.9

Microbiological Analysis

Sample no	E Coli CFU/g)	Salmonella (spp/25g)
Method used	**Based on ISO 16649-2 (2001)**	**RayAL ELISA OPTIMA**
Standard		
Jan	40	Absent
Feb	140	Absent
Mar	<10	Absent
Apr	<10	Absent
May	<10	Absent
Jun	30	Absent
July	420	Absent
Aug	<10	Absent
Sep	710	Absent
Oct	<10	Absent
Nov	<10	Absent
Dec	<10	Absent

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

2

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
7 OF 7

Stability Analysis

Method prEN16087-1

Sample no	Mmol/O_2/kg OS/h
Standard	
Jan	12.38
Feb	5.1
Mar	1.7
Apr	11.2
May	13
Jun	13.3
July	
Aug	13
Sep	14
Oct	
Nov	
Dec	

* Repeat of individual piles in brackets

Weed Test

Method BGKe.V2006

Sample no	Weeds/L
Standard	
Jan	1
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	<0.5

APPENDIX 3
PRTR

Guidance to completing the PRTR workbook

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2016

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	
	Kildare
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	Env 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

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 05 01	No	30.0	non-composted fraction of municipal and similar wastes	D1	E	Volume Calculation	Offsite in Ireland	Kyletalesha WTS,W0194-01	Kyletalesha ,"","Laois,"","Ireland		

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