Annual Environmental Report 2011

Licence Registration No.:	W0198-01
	110120 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



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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 2011 - December 2011. 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



Environmental Policy



Introduction

A licence from the Environmental Protection Agency (WI 198-1) 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 10 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 November 25th 2009

Michael Delaney General Manager

1.2 <u>SITE DESCRIPTION</u>

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)
- 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, 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 <u>SUMMARY DATA</u>

2.1.1 Waste Recovery Data:

Waste Type	EWC Code	Annual Intake (Tonnes)
Greenwaste	20 02 01	16295
Bark	03 03 01	5052
Brewery by-Product	02 07 01	23993
Fruit and Vegetables	02 01 03	4696
Dairy Sludge	02 05 02	5656
Brewery Sludge	02 07 05	1957

2.1.2 Wastes produced on site

Waste Type	EWC Code	Annual Output (Tonnes)
Uncomposted Fraction – Plastics etc	19 05 01	30
Excess Water	19 05 99	2592

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) <u>Surface Water Analysis Results</u> – Tables A.1 – A.4 below show results of 2011 Surface water analysis.

Table A.1 - Surface Water Q1 2011								
ParameterSW1SW2SW3SW4SW5								
рН	7.7	7.5	7.7	7.7	8.0			
Suspended Solids (mg/l)	8	12	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.2 - Surface Water Q2 2011									
ParameterSW1SW2SW3SW4SW5									
pН	7.4	7.5	7.5	7.4	7.9				
Suspended Solids (mg/l)	30	10	37	7	6				
DRO (mg/l)	<10	<10	<10	<10	<10				
Mineral Oil (mg/l)	<10	<10	<10	<10	<10				

Table A.3 - Surface Water Q3 2011									
ParameterSW1SW2SW3SW4SW5									
рН	7.5	7.5	7.5	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.4 - Surface Water Q4 2011								
ParameterSW1SW2SW3SW4SW5								
рН	7.3	7.4	7.3	7.3	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 Q1 2011								
Laboratory ID.MW1MW2MW3MW4N								
рН	7.2	7.2	7.1	7.0	7.0			
Conductivity µS/cm	650	585	664	1935	1710			
Ammonia as N mg/l	1.6	7.1	5.9	25.0	16			
Chloride mg/l	20.29	13.63	15.57	40.34	17.16			
Sulphate mg/l	39.50	0.50	0.50	<0.5	0.84			
Nickel ug/l	10	8	18	52	27			
Manganese ug/l	527	94	174	1254	1570			

Groundwater Results Q2 2011							
Laboratory ID.MW1MW2MW3MW4N							
рН	7.6	7.3	7.1	7.0	7.0		
Conductivity µS/cm 1	506	625	875	1864	1158		
Ammonia as N mg/l	1.83	7.5	6.4	24	12		
Chloride mg/l	16.80	12.29	15.43	34.55	29.28		
Sulphate mg/l	11.25	2.88	<0.5	1.45	0.63		
Nickel ug/l	6	7	19	58	31		
Manganese ug/l	397	162	350	1364	543		

Groundwater Results Q3 2011								
Laboratory ID.MW1MW2MW3MW4MY								
рН	7.7	7.3	6.7	6.9	6.8			
Conductivity µS/cm 1	463	695	1023	1394	968			
Ammonia as N mg/l	1.79	6.3	5.6	21	9.1			
Chloride mg/l	18.98	18.15	23.31	34.59	23.82			
Sulphate mg/l	11.58	32.64	<0.5	8.08	<0.5			
Nickel ug/l	2	5	9	56	20			
Manganese ug/l	511	259	103	666	67			

Groundwater Q4 2011							
Parameter	MW-01	MW-02	MW-03	MW-04	MW-05		
pН	7.7	7.4	7.2	7.1	7.0		
Ammonia as N mg/l	2.08	6.50	5.5	18	7.2		
Chloride mg/l	15.03	12.70	17.37	39.68	88.90		
Orthophosphate mg/l	1.59	<0.5	<0.5	7.53	73.33		
Nitrate as N mg/l	<0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Total Phosphorous mg/l	< 0.05	0.11	0.17	5.94	12.47		
Antimony µg/l	13	12	7	29	134		
Arsenic µg/l	<2	<2	<2	<2	<2		
Aluminium µg/l	56	99	55	<2	15		
Berylium µg/l	15	4	6	<2	198		
Barium µg/l	<2	<2	<2	<2	<2		
Calcium mg/l	502	398	395	86	125		
Chromium µg/l	<2	<2	<2	<2	<2		
Cadmium µg/l	<2	<2	<2	<2	<2		
Cobalt µg/l	4	3	3	<2	4		
Copper µg/l	<2	<2	<2	<2	<2		
Iron mg/l	5.7	6.3	9.6	<0.1	7.9		
Potassium mg/l	1.3	1.5	1.2	54	232		
Manganese µg/l	465	108	379	30	1421		
Silver µg/l	<2	<2	<2	<2	<2		
Sodium mg/l	8	9	13	36	12		
Nickel µg/l	<2	<2	<2	<2	<2		
Lead µg/l	<2	<2	<2	<2	<2		
Selenium µg/l	<2	<2	<2	<2	<2		
Tin μg/l	11	5	<2	<2	63		
Zinc µg/l	<1	<1	<1	<1	<1		
Mercury µg/l	7.7	7.4	7.2	7.1	7.0		
Total Coliforms cfu/100mls	<1	<1	<1	12	4		
E.Coli cfu/100mls	<1	<1	<1	12	4		

Groundwater Q4 2011-VOC Analysis					
VOC's (µg/l)	MW-01	MW-02	MW-03	MW-04	MW-05
Dichlorodifluoromethane	<10	<10	<10	<10	<10
Chloromethane	<10	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10
Trichlorofluoromethane	<10	<10	<10	<10	<10
1,1-Dichloroethene	<10	<10	<10	<10	<10
Dichloromethane	<10	<10	<10	<10	<10
trans-1,2-Dichloroethene	<10	<10	<10	<10	<10
1,1-Dichloroethane	<10	<10	<10	<10	<10
2,2-Dichloropropane	<10	<10	<10	<10	<10
cis-1,2-Dichloroethene	<10	<10	<10	<10	<10
Bromochloromethane	<10	<10	<10	<10	<10
Chloroform	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<10	<10	<10	<10	<10
Carbon Tetrachloride	<10	<10	<10	<10	<10
1,1-Dichloropropene	<10	<10	<10	<10	<10
Benzene	<10	<10	<10	<10	<10
1,2-Dichloroethane	<10	<10	<10	<10	<10
Trichloroethene	<10	<10	<10	<10	<10
1,2-Dichloropropane	<10	<10	<10	<10	<10
Dibromomethane	<10	<10	<10	<10	<10
Bromodichloromethane	<10	<10	<10	<10	<10
Toluene	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<10	<10	<10	<10	<10
1,1,1,2-Tetrachloroethane	<10	<10	<10	<10	<10
m,p-Xylene	<10	<10	<10	<10	<10
Styrene	<10	<10	<10	<10	<10
Isopropylbenzene	<10	<10	<10	<10	<10
n-propylbenzene	<10	<10	<10	<10	<10

Groundwater Q4 2011 - Cont'd VOC Analysis					
VOC's (µg/l)	MW-01	MW-02	MW-03	MW-04	MW-05
2-Chlorotoluene	<10	<10	<10	<10	<10
4-Chlorotoluene	<10	<10	<10	<10	<10
1,2,4-Trimethylbenzene	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10
1,3-Dichloropropane	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	<10	<10	<10	<10	<10
Dibromochloromethane	<10	<10	<10	<10	<10
Chlorobenzene	<10	<10	<10	<10	<10
Ethyl Benzene	<10	<10	<10	<10	<10
o-Xylene	<10	<10	<10	<10	<10
Bromoform	<10	<10	<10	<10	<10
1,2,3-Trichloropropane	<10	<10	<10	<10	<10
Bromobenzene	<10	<10	<10	<10	<10
Tert-Butylbenzene	<10	<10	<10	<10	<10
Sec-Butylbenzene	<10	<10	<10	<10	<10
1,3,5-Trimethylbenzene	<10	<10	<10	<10	<10
1,2- Dibromo-3-chloropropane	<10	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10	<10
1,2,3-Trichlorobenzene	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<10	<10	<10	<10	<10
Tetrachloroethene	<10	<10	<10	<10	<10
n-butylbenzene	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10

Groundwater Q4 2011 – 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 2011 - 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 2011 – 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

2.1.3 (C) <u>Dust Analysis Results</u>

2011 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	123	112	71	258	
AM-02	No Sample	100	182	94	
AM-03	No Sample	476	299	206	
AM-04	1057 *	1504 *	76	135	

* - <u>This monitoring location is adjacent to the 'Tippler' unit where raw peat from the bog</u> is unloaded for use in the peat bagging facility.

|--|

METEOROLOGICAL CONDITIONS Q1 - 24 TH OF FEBRUARY 2011				
Parameter Parameter				
Weather	Dry, mainly calm with slight breeze from northwest/south-west	Wind speed	1.85 m/sec (average)	
Temp	11.1°C	Wind Direction	From West/south- west	
General Air Quality	Good	Bar Pressure	1016.4mbar	

Odour Sampling Results Q1 - 24 th of February 2011					
Locations	On site observations	Results			
OD 1	Slight odour of smoke from chimney of	$< 60 \text{ ou} - lm^3$			
(Upwind)	dwelling 1 (approx 30 m)	<00 ou _E /m			
	Windrow machine in operation. Strong				
OD 2	sweet odour from steam ejected from	$1236 \text{ ou} - lm^3$			
(Downwind)	windrow machine (approx 50m from	1250 Ou _E /III			
	sampling point)				
0D 3	Windrow machine in operation. Medium				
(Sensitive	to slight odour from composting process	$(60 \text{ av} / m^3)$			
	and windrow turning (approx 50m from	<00 00 <u>E</u> /III			
Keceptor)	sampling point)				

METEOROLOGICAL CONDITIONS Q2 - 18 TH OF MAY 2011					
Parameter Parameter					
Woother	Dry, with gentle breeze	Wind speed	4.47m/sec		
weather	from northwest	wind speed	(average)		
Temp	10.9°C	Wind Direction	From Northwest		
General Air Quality	Fair	Bar Pressure	1013mbar		

Odour Sampling Results Q2 - 18 th of May 2011					
Locations	On site observations	Results			
OD 1 (Upwind)	No Noticeable Odours	$<60 \text{ ou}_{\text{E}}/\text{m}^3$			
OD 2 (Downwind)	Very slight odour from the screening of compost in phase 2. Slight Bark mulch odour noticeable at times	<60 ou _E /m ³			
OD 3 Notable odour from compost in phase 1 which may also be attributed to leachate between compost rows. Loaders transporting compost from phase 1 to		161 ou _E /m ³			
	phase 2				

METEOROLOGICAL CONDITIONS Q3 - 21 ST OF SEPTEMBER 2011					
Parameter Parameter					
Weather	Dry, with breeze from	Wind speed	1.73m/sec		
weather	southwest	wind speed	(average)		
Temp	12.9°C Note 1	Wind Direction	From Southwest		
General Air Quality	Fair	Bar Pressure	1011.3mbar		

Odour Sampling Results Q3 - 21 st of September 2011				
Locations	On site observations	Results		
	Strong composting odour with windrow			
OD 1	turner operation approx 30 meters away	$2.044 \text{ ov} /m^3$		
(Downwind)	Shredder in operation approx 70 meters	3,044 0u _E /m		
	away			
	Strong/medium composting odour with			
OD 2	windrow turner operation approx 40			
(Sensitive	meters away	$222 \text{ ou}_{\text{E}}/\text{m}^3$		
Receptor)	Shredder in operation approx 60 meters			
	away			
OD 3	No noticeable adours	$< 60 \text{ ou} - lm^3$		
(Upwind)	no nonceable odours	<00 0u _E /11		

METEOROLOGICAL CONDITIONS Q4 - 18 TH OF OCTOBER 2011					
Parameter Parameter					
Weather	Dry, cool with breeze from west/southwest	Wind speed	2.1m/sec (average)		
Temp	11.2°C ^{Note 1}	Wind Direction	Intermittent from west/southwest		
General Air Quality	Good	Bar Pressure	1002.5 mbar		

Odour Sampling Results Q4 - 18 th of October 2011				
Locations	On site observations	Results		
	Moderate odour detected, wind was			
OD 1	intermittent for west/southwest. Odour			
(Sensitive	was typical of odour from the	$150 \text{ ou}_{\text{E}}/\text{m}^3$		
Receptor)	composting process. windrow turner			
	operating approx 45-60 meters away			
	Moderate odour detected, wind was			
OD 2	intermittent for west/southwest. Odour			
(Downwind)	was typical of odour from the	$198 \text{ ou}_{\text{E}}/\text{m}^3$		
	composting process. windrow turner			
	operating approx 50 meters away			
OD 3	Slight chimney smoke odour detected	$306 \text{ ou } /m^3$		
(Upwind)	from dwelling on western boundary	500 00 _E /11		

2.1.4 (E) <u>Air Emissions Results</u>

Air Analysis Q1 2011					
Location	Amines	Ammonia	Hydrogen	Mercaptens	
Location	(ppm)	(ppm)	Sulphide (ppm)	(ppm)	
Centre of Site	<9.8 x 10 ⁻⁷	<5	<0.2	<0.5	

Air Analysis Q2 2011					
Location	Amines	Ammonia	Hydrogen	Mercaptens	
Location	(ppm)	(ppm)	Sulphide (ppm)	(ppm)	
Centre of Site	118	<5	<0.2	<0.5	

Air Analysis Q3 2011						
Location	Amines	Ammonia	Hydrogen	Mercaptens		
Location	(ppm)	(ppm)	Sulphide (ppm)	(ppm)		
Sensitive Receptor	<3.97	<5	<0.2	<0.5		

Air Analysis Q4 2011						
Location	Amines	Ammonia	Hydrogen	Mercaptens		
Location	(ppm)	(ppm)	Sulphide (ppm)	(ppm)		
Sensitive Receptor	<3.99	<5	<0.2	<0.5		

2.3.1 (E) <u>Noise Emissions</u>

Noise:

The annual noise-monitoring programme was carried out on the 14th October 2011. The results of same are presented in Table E.1 and E.2.

TABLE E.1: NOISE MEASUREMENT RESULTS (DAYTIME) 14 th Oct 2011						
Location No.	Measurement Period (minutes)	Time	L _{eq} dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	L _{AFMax} dB(A)
N1	30	08:15	59	59	47	80
N2	30	08:49	62	65	39	80
N3	30	09:25	57	61	39	75
N4	30	09:58	58	59	57	71
NSL 1	30	10:42	55	58	48	70

TABLE E.2: NOISE MEASUREMENT RESULTS (NIGHT TIME) 15 th Oct 2011						
Location	Measurement	Timo	L _{eq}	L ₁₀	L ₉₀	L _{AFMax}
No.	Period (minutes)	Time	dB(A)	dB(A)	dB(A)	dB(A)
N1	10	07:04	59	57	37	77
N2	10	07:19	41	43	33	57
N3	10	07:42	61	62	45	81
N4	10	07:54	68	73	53	83
NSL 1	10	07:31	48	48	42	67

2.1.4 Environmental Incidents & 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	Three
Complaints requiring corrective action	None - New Odour Management
	Plan commenced August 2010
Categories of complaint	
Odour	Three
Noise	
Water	
Air	
Procedural	
Miscellaneous	

2.1.5 Environmental Spending

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

January 2011 to December 2011	<u>1</u>
	€
EPA Fees	11,037
Consultancy & Monitoring	29,500
Equipment	350
Total Cost	t

2.1.6 Resource and Energy Consumption

Fuel Usage 2011 – See table below

Machine Type	Engine Type	Total (L)
Komptech Topturn X67 Turner	Cat C9	
Komptech Crambo 6000 Shredder	Cat C16	
Komptech L3 Multistar Screen	Dieselelectric 44KVA	91981.15
L110E Volvo Front Loader	Volvo D7D LB E2	
L110E Volvo Front Loader 2	Volvo D7D LB E2	

Electricity Usage 2011 – recorded at compost site metre.

88712 KwHr

SECTION 3

Environmental Management

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2012

Item No	Objective	Target	Responsible Function
1	Meet Operating Capacity Requirements.	 Increase tonnage entering site – investigate new waste types. Implement new marketing strategies to increase customer base 	Horticulture (Newbridge)
2	Emergency Response, Health and Safety and Training	 Carry out one spill drill. All staff members to receive Environmental training. Conduct occupational air study within cab of the turner 	Environmental (Kilberry)
3	Water Management	 Hold Ideation Session to assess possible treatments options for the leachate. Rank ideas and commence discussion with senior management on which treatment options to pursue. 	Innovation. (Newbridge)
4	Once off Projects	 Replant berm with a new species of plant more resistant to dry conditions. Investigate the elevated COD levels recorded during EPA sampling event. Asses rainfall impact on Lagoon levels through a detailed monitoring program. 	Environmental (Kilberry)
5	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 2012.

Review of Objectives and Targets for the period January to December 2011

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2011. 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 2012. 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	2011 Review	Dept Responsible
Meet Operating Capacity	Increase tonnage entering site – investigate new waste types.	2011	Tonnage increased by 54 % in 2011	Kilberry (Environmental)
Requirements.	Implement new marketing strategies to increase customer base	Q2 2011	Continuous 2011	Horticulture (Newbridge)

Site Management

EOT	1.2
-----	-----

Objective	Target	Target Date	2011 Review	Dept Responsible
Improve efficiency of site	Ensure pumps remain clear to increase drainage of site.	Continuous 2011	Complete	Kilberry (Environmental)
operations	Install 'units' at each pump station within P1 to improve access to pumps.	Q2/Q3 2011	2011 Review 11 Complete Not Complete due to operational constraints	Kilberry (Engineering)

Bord na Móna Compost Facility
Waste Management

EOT 1.3

Objective	Target	Target Date	2011 Review	Dept Responsible
Water More comont	Apply to Kildare County Council for planning permission to change site boundary	to Kildare County Council for Ig permission to change site January 2011 ry	Section 5 request sent to KCC. Advised that planning is required. Currently assessing which treatment option to proceed with.	Kilberry (Environmental)
water Management	Undertake licence review to include excess water disposal within new site boundary	2010	Not Commenced. This is dependent on which treatment option is chosen. It will be added to the 2013 Objectives if required	Kilberry (Environmental)

Bord na Móna

EPA Compliance

EOT 1.4

Objective	Target	Target Date	2011 Review	Dept Responsible
	Assess potential for local farmers to use excess water as a fertiliser substitute	Q1 2011	Postponed until a final decision on which treatment option to proceed with for excess water	Kilberry (Environmental)
Once off Projects	BnM Environmental to assess sewage treatment plants onsite and adjacent to site.	Q2 2011	with for excess waterBnM Environmental undertook an assessment of the WWT system011adjacent to the stores building. Recommended emptying the sump on a regular basis	Kilberry (Environmental)
	Finalise Ammonia in GW assessment	monia in GW assessment Q2 2011	Interim Ammonia in GW Assessment report sent to the agency in 2011	Kilberry (Environmental)

Licence Compliance

EOT 1.5

Objective	Target	Target Date	2011 Review	Person Responsible
	Noise – Once per annum	2011	Complete	Newbridge (Environmental)
Carry out monitoring as per Licence W0198-1	Bioaerosols – Annually	2011	Complete	Newbridge (Environmental)
	Dust - Quarterly	2011	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2011	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2011	Complete	Kilberry (Environmental)

Operating Requirements

EOT 2.1

Objective	Target	Target Date	Person Responsible
Meet Operating Capacity	Increase tonnage entering site – investigate new waste types	Continuous 2012	Newbridge (Horticulture)
Meet Operating Capacity Requirements.	Implement new marketing strategies to increase customer base	Continuous 2012	Newbridge (Horticulture)

Energy Management

EOT 2.2

Objective	Target	Target Date	Person Responsible
	Carry out one spill drill.	Q2 2012	Environmental (Kilberry)
Emergency Response, Health and Safety and Training	All staff members to receive Environmental training.	Q3 2012	Environmental (Kilberry)
	Conduct occupational air study within cab of the turner	Q1 2012	Environmental (Newbridge)

Objective	Target	Target Date	Person Responsible
Water Monogoment	Hold Ideation Session to assess possible treatments options for the leachate.	Q1 2012	Innovation. (Newbridge)
water management	Rank ideas and commence discussion with senior management on which treatment options to pursue	Q2 2012	Innovation. (Newbridge)

Annual Environmental Report 2011

EOT 2.3

Bord na Móna

Once Off Projects

EOT 2.4

Objective	Target	Target Date	Person Responsible
	Replant berm with a new species of plant more resistant to dry conditions.	Q1/Q2 2012	Kilberry (Environmental)
Once off Projects	Investigate the elevated COD levels recorded during EPA sampling event.	Q1 201	Kilberry (Environmental)
	Asses rainfall impact on Lagoon levels through a detailed monitoring program.	Continuous 2012	Kilberry (Environmental) Innovation. (Newbridge)

Licence Compliance

EOT 2.5

Objective	Target	Target Date	Person Responsible
	Noise – Once per annum	2012	Environmental (Newbridge)
	Bioaerosols – Once per annum	2012	Environmental (Newbridge)
Carry out monitoring as per Licence 198-1	Dust - Quarterly	2012	Kilberry (Environmental)
	Groundwater – Quarterly	2012	Kilberry (Environmental)
	Surface Water - Quarterly	2012	Kilberry (Environmental)

APPENDIX 1 Odour Monitoring Location Maps









APPENDIX 2 Compost Analysis Report

Report No:	KILBERRY MONTHLY ANALYSIS 2011
PREPARED BY:	Colman Hynes Bord na Móna ltd.
DATE:	27/02/12

Table of Contents

Results49

Introduction

Samples are collected monthly for analysis according to the EPA licence 198-1 *Schedule F: Standards for Compost Quality.*

Samples are collected by the Bord na Mona Horticulture lab. Analysis begins on the day of sampling and held in cold storage during analysis.

Compost Testing and Analysis Service

Report ref: KC11

Results

Sample reference: KC11

Sample matrix: Composted greenwaste and GBG/Sludges

pH, EC and CAT soluble nutrients

2011	pН	EC	NH ₄ -N	NO ₃ -N	PO ₄ -P	K	M/C %
		µS.cm ⁻¹	$mg.L^{-1}$	$mg.L^{-1}$	$mg.L^{-1}$	$mg.L^{-1}$	
Jan	7.28	431	105	0	77	370	73.2
Feb	6.82	465	4	11	100	660	71.0
Mar	7.04	642	239	6	97	501	67.4
Apr	6.96	673	361	6	151	703	67.0
May	7.04	569	112	4	135	334	64.2
Jun	6.81	907	323	3	157	562	63.1
July	7.08	469	391	6	63	1400	45.0
Aug	7.51	1508	101	3	89	390	61.0
Sep	6.79	651	53	2	81	660	51.4
Oct	7.16	664	28	0	28	71	70.3
Nov	6.78	665	56	2	57	94	60.4
Dec	6.68	630	51	3	54	87	63.7

Maturity

Germination of Cress

New Method	% Germination of control	ARL	Control	RI %	MLV	
Jan	100	30.8	32.5	95.6	94.8	
Feb	100	40.3	32.5	125.8	123.8	
Mar	100	8.7	38.4	22.6	22.6	
Apr	100	10.5	38.4	27.4	27.3	
May	93.3	2.5	38.9	9.2	8.3	
June	100	44.0	44.7	97.5	98.4	
July	100	42.7	43.1	99.3	99.1	
Aug	93	38.1	43.1	94.9	94.9	
Sept	93	4.6	40.2	12.5	12.3	
Oct	100	30.2	30.4	99.7	99.3	
Nov	100	45.6	41.3	110.5	110.2	
Dec	100	40.9	41.3	98.4	99.0	
AGR	Average Ge	ermination Rate	•			
CVG	Coefficie	nt of Variation				
RL	Roo	ot length				
ARL	Average	Root Length				

<u>C:N Ratio</u>

	C:N Ratio
Jan	13
Feb	12
Mar	13
Apr	14
May	13
Jun	13
July	12
Aug	13
Sep	14
Oct	12
Nov	13
Dec	22

Foreign Matter Particle Size Analysis (Dry Wt. Basis)

	<1mm %	1-2mm %	2-4mm %	4-8mm %	8-16.5mm	16.5-	>31.5
					%	31.5mm %	mm %
Jan	10.15	21.33	25.65	26.70	13.61	1.85	0.71
Feb	1.99	2.79	5.66	17.63	27.89	27.60	16.44
Mar	5.93	10.64	13.03	19.66	20.72	21.83	8.19
Apr	8.62	13.21	14.94	18.76	18.76	13.69	12.02
May	23.07	20.99	10.92	10.12	9.58	16.65	8.67
Jun	18.95	17.06	13.33	15.22	14.44	3.51	17.49
July	66.26	11.31	6.67	4.85	6.67	3.33	0.91
Aug	14.93	9.97	11.84	13.88	14.11	15.02	20.24
Sep	30.87	24.97	14.27	13.04	8.73	0.98	7.13
Oct	9.30	17.42	19.15	22.85	21.89	9.39	0.00
Nov	15.95	26.52	22.51	23.76	11.26	0.00	0.00
Dec	7.96	17.93	18.57	19.91	18.94	16.69	0.00

*Very wet and formed dry lumps.

Foreign Matter over 2mm

	Foreign Matter >
	2mm
Jan	<1%
Feb	<1%
Mar	<1%
Apr	<1%
May	<1%
Jun	<1%
July	<1%
Aug	<1%
Sep	<1%
Oct	<1%
Nov	<1%
Dec	<1%

Trace Elements

Sample no ¹	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
Standard	100	350	150	1.5	1	50	100
Jan	15.6	112	10.2	0.327	0.05	6.49	22.6
Feb	27.8	118	14.8	0.34	0.05	7.14	14
Mar	22.8	119	15.6	0.366	0.05	9.38	25.3
Apr	45.8	141	21.1	0.435	0.053	10.5	31.5
May	28.2	127	15.3	0.294	<0.05	14.7	65
Jun	36.6	199	12.1	0.342	<0.05	14.9	45
July	55.6	186	43.7	0.879	0.087	14.5	9.9
Aug	27.1	108	15.8	0.427	<0.05	14.8	22.4
Sep	25.0	98	19	0.360	0.05	7.4	10.6
Oct	38.6	1 <u>5</u> 6	21.4	0.43	0.05	11.3	18.1
Nov	35	171	19.5	0.41	0.07	11.1	17.6
Dec	27.7	89.2	5.72	0.33	0.05	28.3	68.4

Pathogens

Sample no	Faecal Coliforms (MPN/g)	Salmonellae (presence or absence)
Standard		
Jan	150	Absent
Feb	<10	Absent
Mar	<10	Absent
Apr	<10	Absent
May	10	Absent
Jun	20	Absent
July	<10	Absent
Aug	<10	Absent
Sep	150	Absent
Oct	<10	Absent
Nov	<10	Absent
Dec	<10	Absent

APPENDIX 3 PRTR Scans Sheet : Facility ID Activities



Environmental Protection Agency

AER Returns Workbook

30/3/2012 19:33

| PRTR# : W0198 | Facility Name : Bord na Móna Plc | Filename : W0198_2011.xts | Return Year : 2011 |

Guidance to completing the PRTR workbook

AER Returns Workbook

REFERENCE YEAR 2011

Version 1.1.13

1. FACILITY IDENTIFICATION

Parent Company Name	Bord Na Mona
Facility Name	Bord na Móna Plc
PRTR Identification Number	W0198
Licence Number	W0198-01

Waste or IPPC Classes of Activity

No.	class_name
	Recycling or reclamation of organic substances which are not used
	as solvents (including composting and other biological
4.2	transformation processes).
	Use of waste obtained from any activity referred to in a preceding
4.11	paragraph of this Schedule.
	Storage of waste intended for submission to any activity referred to
	in a preceding paragraph of this Schedule, other than temporary
	storage, pending collection, on the premises where such waste is
4.13	produced.
Address 1	Kilberry
Address 2	Athy
Address 3	Co. Kildare
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	Consultant
AER Returns Contact Telephone Number	059-8631519 /087-2886848
AER Returns Contact Mobile Phone Number	087 2886848
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
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 ?	

PRTR# : W0198 | Facility Name : Bord na Móna Plc | Filename : W0198 2011.xls | Return Year : 2011 | Page 1 of 2

Sheet : Facility ID Activities

AER Returns Workbook

30/3/2012 19:33

If applicable which activity class applies (as per Schedule 2 of the regulations) 2	
Is the reduction scheme compliance route being	
used ?	

| PRTR# : W0198 | Facility Name : Bord na Móna Plc | Filename : W0198_2011.xls | Return Year : 2011 | Page 2 of 2

Sheet : Treatment Transfers of Waste

AER Returns Workbook

30/3/2012 19:34

	Within the Country	Within the Country		Transfer Destination					
	19 05 99	19 05 01		on Code	Furnnean Waste				
" Select a rov	No	No		Hazardou					
v by double-clicking	2592.0	30.0		5		Year)	(Tonnes per	>	
the Description of Waste then dick the delete button	wastes not otherwise specified	similar wastes	non-composted fraction of municipal and	Description of Waste					
20	R3	Ŋ	Obeletion	Operation	Waste				
IVI	Z	m	TAN CIT	MOR					
vergned	Veinhed	Veighed	Neu ION O'Sed	Anthone I looped		lethod Used			
Utrsite in Ireland	Offeite in Ireland	Offsite in Ireland	TIANUALI	Location of					
008-002	Rathcon Farm, WFP-WW-09-	Kyletalesha WTS, W0194-01				Licence/Permit No of Recover/Disposer	Haz Waste: Name and	Licence/Permit No of Next	Haz Waste : Name and
Con,Co. Wicklow,".", Ireland	Rathcon Farm, Grange	".",Laois,".",Ireland				Non Haz Waste: Address of Recover/Disposer	Destination Facility		
						Disposer (HAZARDOUS WASTE	Address of Final Recoverer /		
					In succession who is one	i.e. Final Recovery / Disposal S (HA7ARDOLIS WASTE ONLY	Actual Address of Final Destinat		

| PRTR# : W0198 | Facility Name : Bord na Móna Pic | Filename : W0198_2011.xls | Return Year : 2011 |

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