

Annual Environmental Report 2009

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



CONTENTS

SECTION 1: INTRODUCTION

- 1.1 Introduction
 - 1.1.2 Policy
- 1.2 Site Description
 - 1.2.1 General
 - 1.2.2 Method of Working
 - 1.2.2.1 Composting Process

SECTION 2: DATA

- 2.1 Summary Data
 - 2.1.1 Waste Recovery Data
 - 2.1.2 Summary Reports on Emissions
 - 2.1.3 Summary reports on Environmental Monitoring
 - 2.1.3 (A) Surface Water Analysis Results
 - 2.1.3 (B) Ground Water Analysis Results
 - 2.1.3 (C) Dust Analysis Results
 - 2.1.3 (D) Odour Analysis Results
 - 2.3.1 (E) Noise Emissions
 - 2.1.4 Environmental Incidents and Complaints
 - 2.1.5 Environmental Spending
 - 2.1.6 Resource and Energy Consumption

SECTION 3: ENVIRONMENTAL MANAGEMENT SYSTEM

- Objectives and Targets 2010
- 3.1 Environmental Management Programme Review 2009
- 3.2 Environmental Management Programme Description 2010

SECTION 4: OTHER REPORTS

- Appendix 1 – Monthly Analysis of Windrows**
- Appendix 2 – Mobile Bowser Integrity Assessment**
- Appendix 3 – Lagoon Desludging Report**

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 2009-December 2009. 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 August 10th 2005

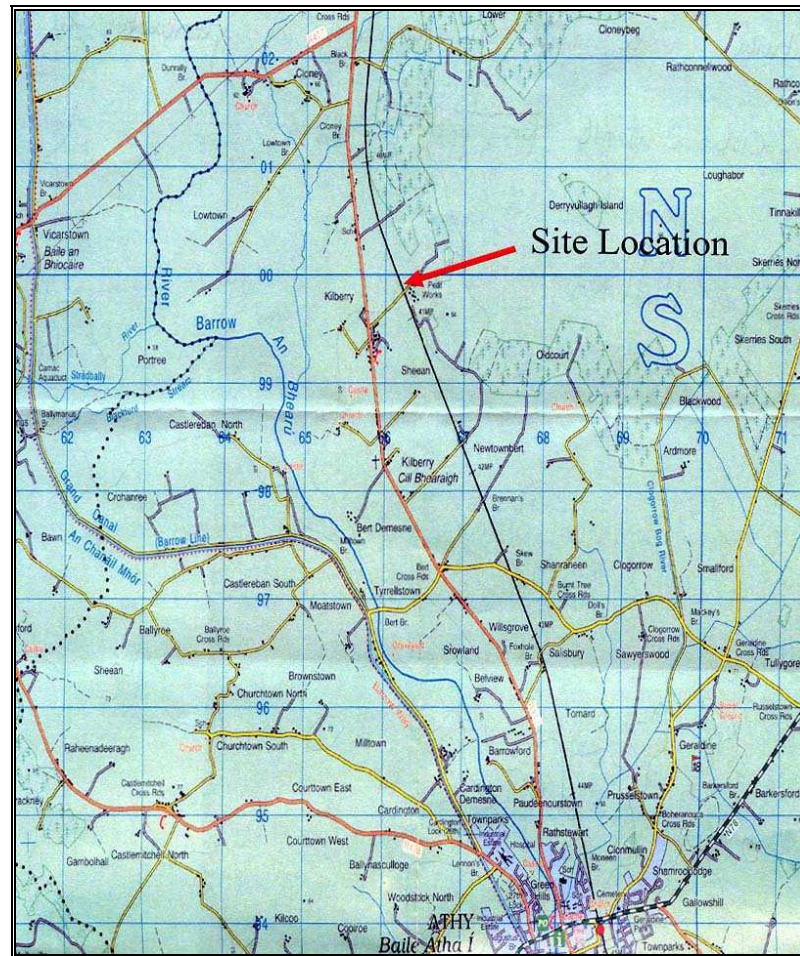
Jim Kelly
General Manager

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 five 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
- WWTP Sludge from Breweries

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 linear 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 SUMMARY DATA

2.1.1 Waste Recovery Data:

Waste Type	EWC Code	Annual Intake (Tonnes)
Greenwaste	20 02 01	8,657
Christmas Trees	02 01 07	1,308
Bark	03 03 01	1,283
Spent Mushroom Compost	02 03 99	925
Brewery by-Product	02 07 01	19,389
Wood pulp Sludge	07 01 12	54
WWTP Sludge – Dairy Plant	02 05 02	4,252
WWTP Sludge - Breweries	02 07 05	914

2.1.2 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 2009 Surface water analysis.

Table A.1 - Surface Water Q1 2009 16th March

Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.9	7.9	7.9	7.9	8.3
Suspended Solids (mg/l)	6	7	5	8	7
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 2009 30th June

Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.1	No Sample	7.4	7.5	8.1
Suspended Solids (mg/l)	12		84	<5	7
DRO (mg/l)	<10		<10	<10	<10
Mineral Oil (mg/l)	<10		<10	<10	<10

Table A.3 - Surface Water Q3 2009 30th Sept

Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.5	7.5	7.6	8.1	8.1
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 2009 13th Jan (2010)

Parameter	SW1	SW2	SW3	SW4	SW5
pH	7.6	7.5	7.5	7.5	7.9
Suspended Solids (mg/l)	10	10	8	50	30
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 2009 3rd March				
Laboratory ID.	MW1	MW2	MW3	MW4
pH	7.9	7.5	7.5	7.3
Conductivity $\mu\text{S/cm}$	465	590	669	1473
Ammonia as N mg/l	1.97	6.2	6.1	16
Chloride mg/l	17	18	16	28
Sulphate mg/l	0.98	<0.5	<0.5	<0.5
Manganese ug/l	712	229	189	1601
Zinc ug/l	6	8	21	41

Groundwater Results Q2 2009 3rd June				
Laboratory ID.	MW1	MW2	MW3	MW4
pH	7.5	7.4	7.3	7.0
Conductivity $\mu\text{S/cm l}$	608	608	665	1982
Ammonia as N mg/l	1.99	6.6	6.4	28
Chloride mg/l	21	16	16	34
Sulphate mg/l	45.11	0.75	<0.5	<0.5
Manganese ug/l	874	430	209	1579
Nickel ug/l	6	6	7	58

Groundwater Results Q3 2009 30th September					
Laboratory ID.	MW1	MW2	MW3	MW4	MW5
pH	7.7	7.3	7.3	7.0	7.1
Conductivity $\mu\text{S/cm l}$	545	652	674	2054	2056
Ammonia as N mg/l	<0.02	6.7	6.2	27	12
Chloride mg/l	20.15	16.48	16.48	33.32	31.41
Sulphate mg/l	28.78	2.77	<0.5	<0.5	0.74
Nickel ug/l	4	589	13	62	9
Manganese ug/l	560	5	188	971	777

Groundwater Q4 2009				
Parameter	MW-01	MW-02	MW-03	MW-04
pH	7.5	7.1	7.0	7.0
Ammonia as N mg/l	1.77	5.7	5.8	5.5
Chloride mg/l	22.08	19.95	18.03	25.86
Orthophosphate mg/l	<0.16	<0.16	<0.16	<0.16
Nitrate as N mg/l	<0.05	<0.05	<0.05	<0.05
Total Phosphorous mg/l	<0.05	0.15	0.26	0.57
Antimony µg/l	<2	<2	<2	<2
Arsenic µg/l	29	82	94	18
Aluminium µg/l	5	13	10	34
Beryllium µg/l	<2	<2	<2	<2
Barium µg/l	505	332	540	303
Calcium mg/l	80	132	159	178
Chromium µg/l	<2	<2	<2	<2
Cadmium µg/l	<2	<2	<2	<2
Cobalt µg/l	3	3	2	<2
Copper µg/l	<2	<2	<2	<2
Iron mg/l	3	5.5	6.8	8.8
Potassium mg/l	1.3	1.2	1.1	7.7
Manganese µg/l	519	153	179	319
Silver µg/l	<2	<2	<2	<2
Sodium mg/l	9	8	7	9
Nickel µg/l	8	7	20	15
Lead µg/l	<2	<2	<2	2
Selenium µg/l	<2	<2	<2	<2
Tin µg/l	<2	<2	<2	<2
Zinc µg/l	28	4	2	5
Mercury µg/l	<1	<1	<1	<1
Total Coliforms	<1	<1	<1	<1
E. Coli	<1	<1	<1	<1

Groundwater Q4 2009-VOC Analysis				
VOC's (µg/l)	MW-01	MW-02	MW-03	MW-04
Dichlorodifluoromethane	<10	<10	<10	<10
Chloromethane	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10
Trichlorofluoromethane	<10	<10	<10	<10
1,1-Dichloroethene	<10	<10	<10	<10
Dichloromethane	<10	<10	<10	<10
trans-1,2-Dichloroethene	<10	<10	<10	<10
1,1-Dichloroethane	<10	<10	<10	<10
2,2-Dichloropropane	<10	<10	<10	<10
cis-1,2-Dichloroethene	<10	<10	<10	<10
Bromochloromethane	<10	<10	<10	<10
Chloroform	<10	<10	<10	<10
1,1,1-Trichloroethane	<10	<10	<10	<10
Carbon Tetrachloride	<10	<10	<10	<10
1,1-Dichloropropene	<10	<10	<10	<10
Benzene	<10	<10	<10	<10
1,2-Dichloroethane	<10	<10	<10	<10
Trichloroethene	<10	<10	<10	<10
1,2-Dichloropropane	<10	<10	<10	<10
Dibromomethane	<10	<10	<10	<10
Bromodichloromethane	<10	<10	<10	<10
Toluene	<10	<10	<10	<10
1,1,2-Trichloroethane	<10	<10	<10	<10
1,1,1,2-Tetrachloroethane	<10	<10	<10	<10
m,p-Xylene	<10	<10	<10	<10
Styrene	<10	<10	<10	<10
Isopropylbenzene	<10	<10	<10	<10
n-propylbenzene	<10	<10	<10	<10

Groundwater Q4 2009 - Cont'd VOC Analysis				
VOC's (µg/l)	MW-01	MW-02	MW-03	MW-04
2-Chlorotoluene	<10	<10	<10	<10
4-Chlorotoluene	<10	<10	<10	<10
1,2,4-Trimethylbenzene	<10	<10	<10	<10
4-Isopropyltoluene	<10	<10	<10	<10
1,4-Dichlorobenzene	<10	<10	<10	<10
1,2-Dichlorobenzene	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10
1,3-Dichloropropane	<10	<10	<10	<10
cis-1,3-Dichloropropene	<10	<10	<10	<10
trans-1,3-Dichloropropene	<10	<10	<10	<10
Dibromochloromethane	<10	<10	<10	<10
Chlorobenzene	<10	<10	<10	<10
Ethyl Benzene	<10	<10	<10	<10
o-Xylene	<10	<10	<10	<10
Bromoform	<10	<10	<10	<10
1,2,3-Trichloropropane	<10	<10	<10	<10
Bromobenzene	<10	<10	<10	<10
Tert-Butylbenzene	<10	<10	<10	<10
Sec-Butylbenzene	<10	<10	<10	<10
1,3,5-Trimethylbenzene	<10	<10	<10	<10
1,2- Dibromo-3-chloropropane	<10	<10	<10	<10
Hexachlorobutadiene	<10	<10	<10	<10
1,2,3-Trichlorobenzene	<10	<10	<10	<10
1,3-Dichlorobenzene	<10	<10	<10	<10
Tetrachloroethene	<10	<10	<10	<10
n-butylbenzene	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10

Groundwater Q4 2009– SVOC Analysis				
SVOC's (µg/l)	MW-01	MW-02	MW-03	MW-04
Phenol	<1	<1	<1	<1
2-Chlorophenol	<1	<1	<1	<1
2-Methylphenol	<1	<1	<1	<1
4-Methylphenol	<1	<1	<1	<1
2-Nitrophenol	<1	<1	<1	<1
4-Nitrophenol	<1	<1	<1	<1
2,4-Dichlorophenol	<1	<1	<1	<1
2,4-Dimethylphenol	<1	<1	<1	<1
4-Chloro-3-methylphenol	<1	<1	<1	<1
2,4,6-Trichlorophenol	<1	<1	<1	<1
2,4,5-Trichlorophenol	<1	<1	<1	<1
Pentachlorophenol	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1	<1	<1	<1
Nitrobenzene	<1	<1	<1	<1
Azobenzene	<1	<1	<1	<1
Hexachlorobenzene	<1	<1	<1	<1
Naphthalene	<1	<1	<1	<1
Acenaphthalene	<1	<1	<1	<1
Acenaphthene	<1	<1	<1	<1
Flourene	<1	<1	<1	<1
Phenanthrene	<1	<1	<1	<1
Anthracene	<1	<1	<1	<1
Fluoranthrene	<1	<1	<1	<1
Pyrene	<1	<1	<1	<1
Benzo(a)anthracene	<1	<1	<1	<1
Chrysene	<1	<1	<1	<1
Benzo(b)fluoranthrene	<1	<1	<1	<1
Benzo(k)fluoranthrene	<1	<1	<1	<1

Groundwater Q4 2009 – Pesticide Suite				
SVOC's (µg/l)	MW-01	MW-02	MW-03	MW-04
Benzo(a)pyrene	<1	<1	<1	<1
Indenol(1,2,3-cd)pyrene	<1	<1	<1	<1
Dibenzo(a,h)anthracene	<1	<1	<1	<1
Benzo(ghi)perylene	<1	<1	<1	<1
2-Chloronaphthalene	<1	<1	<1	<1
Carbazole	<1	<1	<1	<1
2-Methylnaphthalene	<1	<1	<1	<1
Isophorone	<1	<1	<1	<1
Dibenzofuran	<1	<1	<1	<1
Dimethyl phthalate	<1	<1	<1	<1
Diethyl phthalate	<2	<2	<2	<2
Di-butylphthalate	<1	<1	<1	<1
Di-octylphthalate	<5	<5	<5	<5
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10
Butylbenzylphthalate	<1	<1	<1	<1
4-Chloroaniline	<1	<1	<1	<1
2-Nitroaniline	<1	<1	<1	<1
3-Nitroaniline	<1	<1	<1	<1
4-Nitroaniline	<1	<1	<1	<1
2,4-Dinitroaniline	<1	<1	<1	<1
2,6-Dinitroaniline	<1	<1	<1	<1
Bis(2-Chloroethyl)ether	<1	<1	<1	<1
4-Bromophenylphenylether	<1	<1	<1	<1
4-Chlorophenylphenylether	<1	<1	<1	<1
Hexachloroethane	<1	<1	<1	<1
Hexachlorobutadiene	<1	<1	<1	<1
Hexachlorocyclopentadiene	<1	<1	<1	<1
Bis(2-chloroethoxy)methane	<1	<1	<1	<1
N-nitrosodi-n-propylamine	<1	<1	<1	<1

Groundwater Q4 2009 – Pesticide Suite

Pesticides ($\mu\text{g/l}$)	MW-01	MW-02	MW-03	MW-04
Dichlorvos	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01	<0.01	<0.01	<0.01
Alpha - BHC	<0.01	<0.01	<0.01	<0.01
Gamma - BHC	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01	<0.01	<0.01	<0.01
Delta - BHC	<0.01	<0.01	<0.01	<0.01
Ethyl Parathion	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01	<0.01	<0.01	<0.01
Diieldrin	<0.01	<0.01	<0.01	<0.01
4, 4' - DDE	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.01	<0.01	<0.01	<0.01
4, 4' - DDD	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01	<0.01	<0.01	<0.01
Endrin	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulphate	<0.01	<0.01	<0.01	<0.01
4, 4' - DDT	<0.01	<0.01	<0.01	<0.01
Methoxychlor	<0.01	<0.01	<0.01	<0.01
Azinphos Methyl	<0.01	<0.01	<0.01	<0.01

2.1.3 (C) Dust Analysis Results

2009 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	951 *	329	611 *	65
AM-02	59	863 *	188	94
AM-03	193	317	246	29
AM-04	340	475	18	100

* - These dust bottles were all heavily contaminated with bird droppings.

2.1.3 (D) Odour Analysis Results

Odour Sampling Results Q1 2009 12th March			
Locations	On site observations	Results	
SR 1 (Sensitive Receptor)	No distinct compost odour detected	<64	ou _E /m ³
OD 2 (Upwind)	No distinct compost odour detected	70	ou _E /m ³
OD 3 (Downwind)	No distinct compost odour detected	<64	ou _E /m ³

Odour Sampling Results Q2 2009 22nd June			
Locations	On site observations	Results	
SR 1 (Sensitive Receptor)	No distinct compost odour detected	<64	ou _E /m ³
OD 2 (Upwind)	No distinct compost odour detected	71	ou _E /m ³
OD 3 (Downwind)	Slight odour of Bark Mulch	79	ou _E /m ³

Odour Sampling Results Q3 2009 14th September			
Locations	On site observations	Results	
OD 1 (Downwind)	Slight odour of bark mulch	178	ou _E /m ³
OD 2 (Sensitive Receptor)	Strong compost odour detected	221	ou _E /m ³
OD 3 (Upwind)	No distinct compost odour detected	102	ou _E /m ³

Odour Sampling Results Q4 2009 2 nd December			
Locations	On site observations	Results	
OD 1 (Downwind)	Sharp compost odour	222	ou _E /m ³
OD 2 (Sensitive Receptor)	Odour not noticeable most of time	34	ou _E /m ³
OD 3 (Upwind)	No distinct compost odour detected	<30	ou _E /m ³

2.1.4 (E) Air Emissions Results

Air Analysis Q1 2009 12 th March				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site	<2	<5	<0.2	<0.5

Air Analysis Q2 2009 22 nd June				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site	<2	<5	<0.2	<0.5

Air Analysis Q3 2009 14 th September				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site	<2	<5	<0.2	<0.5

Air Analysis Q4 2009 2 nd December				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site	<2	<5	<0.2	<0.5

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

The annual noise-monitoring programme was carried out on the 1st and 2nd December 2009. The results of same are presented in Table E.1 and E.2.

TABLE E.1: NOISE MEASUREMENT RESULTS (DAYTIME) 1st Dec 2009

Location No.	Measurement Period (minutes)	Time	L _{eq} dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	L _{AFMax} dB(A)
N1	30	09:27 – 09:57	65	67	61	79
N2	30	09:57 – 10:27	54	55	48	72
N3	30	10:36 – 11:06	58	59	49	75
N4	30	11:12 – 11:42	64	58	50	86
NSL 1	30	11:44 – 12:14	56	59	52	77

TABLE E.2: NOISE MEASUREMENT RESULTS (NIGHT TIME) 2nd Dec 2009

Location No.	Measurement Period (minutes)	Time	L _{eq} dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	L _{AFMax} dB(A)
N1	10	06:54 – 07:04	44	48	-	62
N2	10	07:24 – 07:34	43	44	40	64
N3	10	07:35 – 07:45	44	45	38	70
N4	10	07:51 – 08:01	44	46	40	63
NSL 1	10	07:09 – 07:19	46	49	43	60

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	2
Complaints requiring corrective action	None
Categories of complaint	
Odour	2
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 2009 to December 2009	
	€
EPA Fees	11,037
Consultancy & Monitoring	32,000
Equipment	5000
Total Cost	

2.1.6 Resource and Energy Consumption

Fuel Usage 2009 – See table below

Machine Type	Engine Type	Total (L)
Komptech Topturn X53 Turner	Cat C9	81,305.31
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 2009 – recorded at compost site metre.

30/01/2009	117710
17/02/2009	127329
08/04/2009	137112
05/05/2009	146568
05/07/2009	163121
03/08/2009	168865
01/09/2009	169533
14/10/2009	179407
10/11/2009	188052
28/12/2009	191276

SECTION 3

ENVIRONMENTAL MANAGEMENT

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2010

Item No	Objective	Target	Responsible Function
1	Meet Operating Capacity Requirements.	<ul style="list-style-type: none"> Site operational for 5 years – capacity now 96,000 tonnes per annum Increase tonnage entering site – investigate new waste types. 	Horticulture (Newbridge)
2	Improve efficiency of site operations	<ul style="list-style-type: none"> Install Stockpiler in phase 2 to reduce front end loader movements. Install ‘units’ at each pump station within P1 and P2 to improve access to pumps. 	Environmental (Kilberry)
3	Water Management	<ul style="list-style-type: none"> Apply to Kildare County Council for planning permission to change site boundary Undertake licence review to include excess water disposal within new site boundary 	Environmental (Kilberry)
4	Once off Projects	<ul style="list-style-type: none"> Carry out review of Environmental monitoring requirements. Investigate elevated ammonia in GW Install windsock or weather station. 	Environmental. (Kilberry)
5	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 2010.

Review of Objectives and Targets for the period January to December 2009

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2009. 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 2010. 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	2009 Review	Dept Responsible
Meet Operating Capacity Requirements.	Investigate new waste types for inclusion in composting process.	Continuous 2009	2 new wastes added	Kilberry (Environmental)
	Finalise method for rapid approval of new wastes as part of licence review.	2009	Licence Review Postponed till 2010	Kilberry (Environmental)

Energy Awareness**EOT 1.2**

Objective	Target	Target Date	2009 Review	Dept Responsible
	Continue recording of all fuel usage for compost facility plant for 2009.	2009	Fuel usage for all equipment recorded as a whole in 2009	Kilberry (Environmental)
Determine Energy Usage for Compost facility	Record electricity usage on a monthly basis	Monthly 2009	Complete. Set a date at start of each month for recording.	Kilberry (Engineering)
	Review timing of on-site light's to improve energy usage	Q2 2009	Complete	Kilberry (Environmental)

Waste Management**EOT 1.3**

Objective	Target	Target Date	2009 Review	Dept Responsible
Water Management	Plant proposed additional site area with a suitable tree species	Q1 2009	1 Hectare site planted with a variety of tree species.	Kilberry (Environmental)
	Apply to EPA for permission to dispose excess water using bog / tree filtration system.	Q2/Q3 2009	Licence Review postponed till 2010	Kilberry (Environmental)

Training and Awareness**EOT 1.4**

Objective	Target	Target Date	2009 Review	Dept Responsible
Once off Projects	Desludge Lagoons – remove excess sludge and re-process on-site	Q1 2009	Complete April 2009 (See report Appendix 3)	Kilberry (Environmental)
	Investigate GW4 ammonia results – include assessment of on site septic tank	2009	Septic tank emptied regularly during 2009. Visual inspection carried out.	Kilberry (Environmental)
	Assess sampling procedures as per EPA requirements	Q2 2009	Complete	Kilberry (Environmental)

Licence Compliance**EOT 1.5**

Objective	Target	Target Date	2009 Review	Person Responsible
Carry out monitoring as per Licence W0198-1	Noise – Once per annum	2009	Complete	Newbridge (Environmental)
	Bioaerosols – Twice per annum	2009	Complete – EPA reduced frequency to once per annum	Newbridge (Environmental)
	Dust - Quarterly	2009	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2009	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2009	Complete	Kilberry (Environmental)

Operating Requirements**EOT 2.1**

Objective	Target	Target Date	Person Responsible
Meet Operating Capacity Requirements.	Site operational for 5 years – capacity now 96,000 tonnes per annum	2010	Newbridge (Horticulture)
	Increase tonnage entering site – investigate new waste types.	Continuous 2010	Kilberry (Environmental)

Site Management**EOT 2.2**

PDF Created with deskPDF-PDF-Writer - Trial :: http://www.docudesk.com

Objective	Target	Target Date	Person Responsible
Improve efficiency of site operations	Install Stockpiler in phase 2 to reduce front-end loader movements.	Q2 / Q3 2010	Kilberry (Environmental)
	Install 'units' at each pump station within P1 and P2 to improve access to pumps.	2010	Kilberry (Engineering)

Water Management**EOT 2.3**

Objective	Target	Target Date	Person Responsible
Water Management	Apply to Kildare County Council for planning permission to change site boundary	Q2 2010	Kilberry (Environmental)
	Undertake licence review to include excess water disposal within new site boundary	Q2 / Q3 2010	Kilberry (Environmental)

EPA Compliance**EOT 2.4**

Objective	Target	Target Date	Person Responsible
Once off Projects	Carry out review of Environmental monitoring requirements.	Q2 2010	Kilberry (Environmental)
	Investigate elevated ammonia in GW	Continuous 2010	Kilberry (Environmental)
	Install windsock or weather station.	Q3/Q4 2010	Kilberry (Environmental)

Licence Compliance**EOT 2.5**

PDF Created with deskPDF-Writer - Trial - http://www.docudesk.com

Objective	Target	Target Date	Person Responsible
Carry out monitoring as per Licence 198-1	Noise – Once per annum	2010	Environmental (Newbridge)
	Bioaerosols – Once per annum	2010	Environmental (Newbridge)
	Dust - Quarterly	2010	Kilberry (Environmental)
	Groundwater – Quarterly	2010	Kilberry (Environmental)
	Surface Water - Quarterly	2010	Kilberry (Environmental)

APPENDIX 1

*MONTHLY ANALYSIS OF WINDROWS AT
KILBERRY
2009*

REPORT NO: **KILBERRY MONTHLY ANALYSIS 09**

PREPARED BY: Colman Hynes/Dearbháil Ní Chualáin,
Scientist,
Bord na Móna ltd.

DATE: 28/01/2010

Table of Contents

Introduction 1

Results 2

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: KC09

Results

Sample reference: KC09

Sample matrix: Composted greenwaste and GBG/Sludges

pH, EC and CAT soluble nutrients

2008	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	7.44	272	21	17	41	369	66.9
Feb	6.33	276	4	43	77	334	63.9
Mar	6.51	437	109	51	181	414	62.9
Apr	7.59	502	220	3	112	403	62.8
May	7.29	722	237	4	146	403	63.7
Jun	6.94	205	231	3	234	143	59.5
July	6.88	557	72	2	74	86	59.1
Aug	6.76	690	168	53	221	98	60.6
Sep	6.86	699	249	4	253	146	60.6
Oct	6.67	1016	353	2	355	250	63.0
Nov	6.72	772	294	60	353	123	69.0
Dec	7.82	548	367	7	374	187	483

Maturity

Germination of Cress

Sample no (month)	% of sample mixed with peat			% germination compared to control		
	25%	50%	100%	A	B	C
Jan	90	80	100			
New CEN Method	% Germination of ten seeds	% Germination of ten seeds	% Germination of ten seeds	mean length of ten roots (cm)	mean length of ten roots (cm)	mean length of ten roots (cm)
Feb	100	100	90	24	27	31
Mar	90	100	100	19	26	33
Apr	90	100	90	25	27	22
May	100	100	90	27	25	24
Jun	100	100	100	41	46	46
July	100	100	100	40	42	44
New Method	% Germination of control	ARL	Control	RI %	MLV	

Aug	100	36.6	42.1	87.6	87.0
Sept	100	41.1	42.1	98.3	97.5
Oct	100	33.2	34.7	95.7	95.7
Nov	100	40.3	48.0	83.9	83.9
Dec	100	46.5	40.2	117.1	115.7

AGR **Average Germination Rate**
CVG **Coefficient of Variation**
RL **Root length**
ARL **Average Root Length**

Sample no (month)	C:N Ratio
Jan	13
Feb	20
Mar	40
Apr	20
May	15
Jun	16
July	10
Aug	11
Sep	11
Oct	19
Nov	12
Dec	13

Foreign Matter

Particle Size Analysis (Dry Wt. Basis)

	<1mm %	1-2mm %	2-4mm %	4-8mm %	8-16.5mm %	16.5-31.5mm %	>31.5mm %
Jan	19	29	9	11	21	10	0
Feb	37.40	24.95	11.05	13.71	5.12	7.77	0.00
Mar	0.93	1.41	3.21	10.13	40.78	43.55*	0.00
Apr	0.99	1.85	3.80	12.32	34.46	46.57*	0.00
May	4.93	10.38	14.77	26.93	22.55	19.98	0.46
Jun	28.28	23.22	12.92	12.31	10.33	9.81	3.11
July	27.60	25.32	12.15	11.44	11.25	7.88	4.35
Aug	17.33	21.31	16.31	21.23	11.49	8.35	3.98
Sep	8.92	16.44	16.75	25.32	30.64	1.92	0.00
Oct	16.06	20.33	8.67	8.55	18.38	19.78	8.24
Nov	2.53	6.30	10.54	20.62	31.29	22.41	6.30
Dec	1.23	2.05	4.81	14.44	30.79	25.01*	21.67*

*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	29.6	130	24.8	0.595	<0.05	67.1	126*
Feb	19	94	18	0.38	0.04	<10	15.9
Mar	14.7	43	6.5	0.19	<.02	15.5	80.7
Apr	22.6	83.6	11.2	0.33	0.02	10.1	29
May	16.7	131	10.7	0.245	<.05	11.1	43.7
Jun	22.5	115	11.3	0.333	<.05	6.01	10.1
July	26.7	116	37.9	0.416	<.05	8.24	10.5
Aug	33.4	118	18	0.462	<0.05	25.1	51.7
Sep	32.1	133	17.9	0.373	<0.05	8.96	15.8
Oct	28	99	7.3	0.17	<0.02	<10	2.18
Nov	26.2	118	7.02	0.2	<0.05	19.6	71.6
Dec	20.6	118	27.2	0.225	<0.05	6.7	23.3

*Note two samples from 70/30 Peat/GW production analysed at this time, came out at 19 and 6 mg/kg.

Pathogens

Sample no	Faecal Coliforms (MPN/g)	Salmonellae (presence or absence)
Standard		
Jan	<10	Not detected
Feb	<10	Not detected
Mar	<10	Not detected
Apr	<10	Not detected
May	160	Not detected
Jun	<10	Not detected
July	<10	Not detected
Aug	10	Not detected
Sep	210	Not detected
Oct	<10	Not detected
Nov	60	Not detected
Dec	<10	Not detected

APPENDIX 2

Diesel Bowser Bund Test
AT
BORD NA MONA COMPOST FACILITY,
KILBERRY,
ATHY,
Co. KILDARE.

Prepared by:

Mr. Craig Mallinson
Environmental Consultant

Mr Ger Phelan
Environmental Coordinator

Date: December 2009

CONTENTS

1.0 Scope

2.0 Survey Methodology

2.1 Monitoring Requirements

2.2 Assessment Techniques

2.3 Reporting

1.0 Scope

The scope of the testing is limited to the following:

- a. Identification and Inspection of the mobile bund
- b. Test the pipes for 'liquid tightness' for **seven** days.)
- c. Reporting and interpretation of the assessment results.

2.0 Survey Methodology

2.1 Monitoring requirements

As part of the companies Waste licence W0198-01. Integrity testing of all bunds on site is required every three years. The bunds are referenced as follows:

Bund I.D.

1. Mobile Diesel Bowser Bund



2.2 Assessment Techniques

1. Fill bund with water to the level of the battery.
2. Day 1 – record level of water by means of a photograph
3. Day 7 – reassess water level and record using a photograph.

2.3 On-Site Observations

Weather conditions were not recorded as the bund is enclosed.

Daily measurement of water level recorded - No drop in level recorded for the duration of the test.

BUND TESTING REPORT

CLIENT: Bord na Mona Kilberry Compost Facility
LOCATION: Various – Mobile bund used throughout site
SURVEY DATES: 30/10/07 – 06/11/07
PERSONNEL: Craig Mallinson (CM)
Ger Phelan (GP)

DAILY LOG

DATE		EVAPORATION /24hr	PERSONNEL
26/11/09	Fill	+/- 1mm	GP
27/11/09	Test	+/- 1mm	CM
28/11/09	Test	+/- 1mm	
29/11/09	Test	+/- 1mm	
30/11/10	Test	+/- 1mm	
01/12/09	Test	+/- 1mm	
02/12/09	Test	+/- 1mm	
02/12/09	Test	+/- 1mm	CM

COMMENTS

This Bund (Mobile Diesel Bund) was tested for Seven days, following the test period there was no drop in level. It is therefore concluded that the sump is watertight.



Photo ID – Mobile Bind Day 1



Photo ID – Mobile Bind Day 7

APPENDIX 3

Lagoon Desludging Project
AT
BORD NA MONA COMPOST FACILITY,
KILBERRY,
ATHY,
Co. KILDARE.

Prepared by:

Mr. Craig Mallinson
Environmental Consultant

Mr Ger Phelan
Environmental Coordinator

Date: April 2009

1.0 Introduction

The two lagoons located on Phase 1 of the compost site were emptied and cleaned over the 3rd, 4th and 6th April 2009. The material removed from the lagoons was tipped onto the compost site for reintroduction into the windrows.

The following pages contain photographic evidence of the cleaning process.





