Annual Environmental Report 2013

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 2013 - December 2013. 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 (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

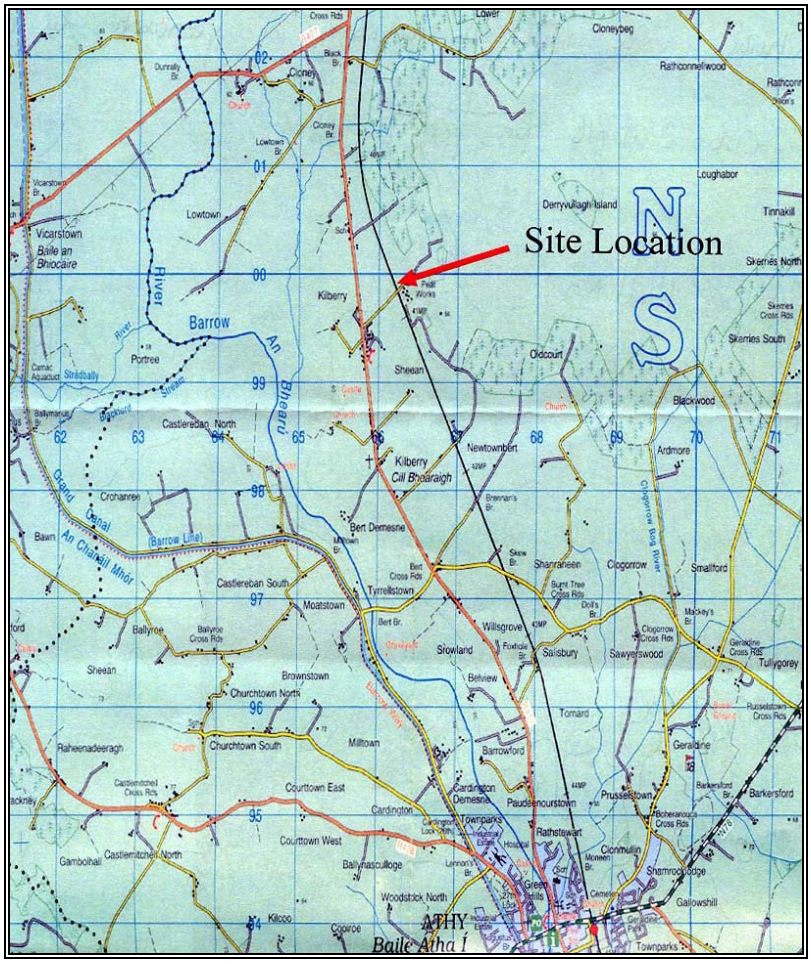
_____

Michael Delaney
General Manager

1.2 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	12715
Bark	03 03 01	228
Brewery by-Product	02 07 01	20683
Dairy Sludge	02 05 02	2105
Brewery Sludge	02 07 05	1472

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	1454

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 2013 Surface water analysis. All results are in line with previous years results with the exception of DRO in Q3. This had reduced again in Q4 and may have been due to very low water levels.

Table A.1 - Surface Water Q1 14th March 2013					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.8	7.7	7.7	7.7	8.0
Suspended Solids (mg/l)	27	11	14	15	12
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 27th June 2013					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	No Sample Available			7.8	8.0
Suspended Solids (mg/l)				14	<5
DRO (mg/l)				70	<10
Mineral Oil (mg/l)				<10	<10

Table A.3 - Surface Water Q3 10th Sept 2013					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.4	7.5	7.6	7.7	8.0
Suspended Solids (mg/l)	118	7	11	35	5
BOD (mg/l)	3	<2	<2	<2	<2
DRO (mg/l)	160	210	110	90	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.4 - Surface Water Q4 2nd Dec 2013					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.4	7.4	7.4	7.3	7.9
Suspended Solids (mg/l)	<5	<5	32	<5	<5
BOD (mg/l)	<2	<2	<2	<2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

2.1.3 (B) Ground Water Analysis Results

Groundwater results are elevated for a number of parameters most notably Ammonia – these results are consistent with previous years and MW 1,2,3 are in line with results from the EIS. MW 4,5 are both hydraulically up gradient of the site. The trends with regards to the elevated parameters will continue to be assessed during 2014.

Groundwater Results Q1 2013					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.5	7.3	7.3	7.0	6.9
Conductivity µS/cm	585	575	657	1948	2346
Ammonia as N mg/l	2.0	7.1	5.9	24	15
Chloride mg/l	19	15	17	40	66
Sulphate mg/l	14	<0.5	2.7	1.3	1.4
Nickel ug/l	10	9	36	30	8
Manganese ug/l	521	97	211	1361	1702

Groundwater Results Q2 2013					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.6	7.4	No Sample	7.0	7.0
Conductivity µS/cm l	563	571		1413	1709
Ammonia as N mg/l	1.6	6.4		16	12
Chloride mg/l	21	16		34	44
Sulphate mg/l	15	2.6		4.2	0.7
Nickel ug/l	7	6		40	11
Manganese ug/l	398	127		632	755

Groundwater Results Q3 2013					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.6	7.3	7.1	6.9	7.0
Conductivity µS/cm l	494	653	956	1703	1046
Ammonia as N mg/l	1.8	6.2	5	22	9.3
Chloride mg/l	22	18	24	46	26
Sulphate mg/l	12	12	16	1.8	1.3
Nickel ug/l	5	7	5	54	17
Manganese ug/l	428	170	472	727	256

Groundwater Q4 2013					
Parameter	**MW-01**	**MW-02**	**MW-03**	**MW-04**	**MW-05**
pH	7.7	7.4	7.2	7.0	7.2
Conductivity uS/cm	580	575	855	2127	2419
Ammonia as N mg/l	1.9	6.3	5.5	25	18
Chloride mg/l	21	17	20	44	75
Sulphate mg/l	13	2.6	1.0	1.3	7.2
Nitrate as N mg/l	<0.04	<0.04	<0.04	<0.04	<0.04
Boron µg/l	13	12	7	17	34
Antimony µg/l	<2	<2	<2	<2	<2
Arsenic µg/l	8	8	2	<2	8
Aluminium µg/l	<2	<2	<2	6	3
Berylium µg/l	<2	<2	<2	<2	<2
Barium µg/l	440	340	389	236	101
Calcium mg/l	70	113	166	237	318
Chromium µg/l	<2	<2	<2	<2	<2
Cadmium µg/l	<2	<2	<2	<2	<2
Cobalt µg/l	<2	2	2	<2	4
Copper µg/l	<2	<2	<2	<2	<2
Iron mg/l	<0.1	<0.1	<0.1	0.23	<0.1
Potassium mg/l	1.2	1.5	1.8	55	216
Manganese µg/l	366	128	496	1151	979
Silver µg/l	<2	<2	<2	<2	<2
Nickel µg/l	7	7	3	53	16
Lead µg/l	<2	<2	<2	<2	<2
Selenium µg/l	<2	<2	<2	<2	<2
Tin µg/l	<2	<2	<2	<2	<2
Zinc µg/l	<2	5	3	5	3
Mercury µg/l	<1	<1	<1	<1	<1
Total Coliforms cfu/100mls	42	20	22	210	2900
E.Coli cfu/100mls	>1	20	2	>1	>1

Groundwater Q4 2013-*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 2013 - *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 2013 – *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 2013 - *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 2013– *Pesticide Suite*					
Pesticides (µg/l)	**MW-01**	**MW-02**	**MW-03**	**MW-04**	**MW-05**
Tecnazene	<0.01	<0.01	<0.01	<0.01	<0.01
Trifluralin	<0.01	<0.01	<0.01	<0.01	<0.01
Alpha - BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Beta-BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Gamma - BHC	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene	<0.01	<0.01	<0.01	<0.01	<0.01
Triallate	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01
Triadimefon	<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
p,p - DDE	<0.01	<0.01	<0.01	<0.01	<0.01
o,p - DDE	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.01	<0.01	<0.01	<0.01	<0.01
Pendimethalin	<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
p,p - DDT	<0.01	<0.01	<0.01	<0.01	<0.01
o,p - DDT	<0.01	<0.01	<0.01	<0.01	<0.01
p,p – TDE	<0.01	<0.01	<0.01	<0.01	<0.01
o,p – TDE	<0.01	<0.01	<0.01	<0.01	<0.01
p,p - Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01
o,p - Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin 1	<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin 11	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01	<0.01	<0.01	<0.01	<0.01
Trans-Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01
Cis-Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01	<0.01	<0.01	<0.01	<0.01

2.1.3 (C) Dust Analysis Results

The 2013 dust results show that during periods of extremely dry weather dust results are in excess of the licence limit. A program of wetting the site roads adjacent to the compost facility will be implemented in 2014 during dry weather.

2013 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	47	206	286	253
AM-02	540	916	611	687
AM-03	481	387	276	264
AM-04	111	146	299	111

2.1.3 (D) Odour Analysis Results 2013 – See Appendix 1 for Sample location maps

The Odour results for 2013 are typical of an open windrow compost facility.

METEOROLOGICAL CONDITIONS Q1 - 5TH OF MARCH 2013			
Parameter		**Parameter**	
Weather	Dry and Calm	**Wind speed**	0.67 m/sec (average)
Temp	10.1	**Wind Direction**	Calm with light breeze from E, SE
General Air Quality	Good	**Bar Pressure**	995.9 mbar

Odour Sampling Results Q1 - 5TH OF MARCH 2013		
Locations	**On site observations**	**Results**
OD 1 (Downwind / Sensitive Receptor)	Slight odour of Bark Mulch odour	18 ou_E/m^3
OD 2 (Upwind)	No noticeable odours other than the occasional diesel fume odour from passing trucks	16 ou_E/m^3
OD 3 (Downwind / Sensitive Receptor)	Slight odour of Bark Mulch odour	31 ou_E/m^3

METEOROLOGICAL CONDITIONS Q2 - 10TH OF JUNE 2013			
Parameter		**Parameter**	
Weather	Dry, Calm	**Wind speed**	0.87 m/sec (average)
Temp	14.5°C	**Wind Direction**	Calm Light breeze from No, NW
General Air Quality	Good	**Bar Pressure**	1017 mbar

Odour Sampling Results Q2 - 30th of May 2012		
Locations	**On site observations**	**Results**
OD 1 (Downwind)	Moderate composting odour originating from compost turning in phase 1	98 ou_E/m^3
OD 2 (Upwind / Sensitve Receptor)	No noticeable odours	11 ou_E/m^3
OD 3 (Downwind)	Strong composting odour originating from compost turning in phase	431 ou_E/m^3

METEOROLOGICAL CONDITIONS Q3 – 5TH OF SEPTEMBER 2013			
Parameter		**Parameter**	
Weather	Dry and calm	**Wind speed**	0.79 m/sec (average)
Temp	18.5 °C	**Wind Direction**	Calm at times light breeze from N
General Air Quality	Good	**Bar Pressure**	1007 mbar

Odour Sampling Results Q3 – 5th of September 2013		
Locations	**On site observations**	**Results**
OD 1 (Upwind / Sensitive Receptor)	Slight Intermittent composting odour originating from compost turning in phase 1	<30ou_E/m^3
OD 2 (Downwind)	Composting odour originating from compost turning in phase 1 and leachate lying on Phase 2 composting yard	137 ou_E/m^3
OD 3 (Upwind / Sensitive Receptor)	No noticeable odours	<30 ou_E/m^3

METEOROLOGICAL CONDITIONS Q4 - 15TH OF OCTOBER 2013			
Parameter		**Parameter**	
Weather	Dry, Calm	**Wind speed**	0.54 m/sec (average)
Temp	9.9°C	**Wind Direction**	Calm, light air movement from SW, S, SE & E
General Air Quality	Good	**Bar Pressure**	1004.3 mbar

Odour Sampling Results Q4 - 15th of October 2013		
Locations	**On site observations**	**Results**
OD 1 (Downwind / Sensitive Receptor)	Faint Intermittent composting odour	<30 ou_E/m^3
OD 2 (Downwind / Sensitive Receptor)	Faint Intermittent composting odour	<30 ou_E/m^3
OD 3 (Downwind)	Faint odour from leachate	<30 ou_E/m^3

2.1.4 (E) Air Emissions Results

Air Analysis Q1 2012				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site	<3.99	<5	<0.2	<0.5

Air Analysis Q2 2012				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Centre of Site		<5	<0.2	<0.5

Air Analysis Q3 2013				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Western Boundary (Downwind)	<4	<5	<0.2	<0.5

Air Analysis Q4 2012				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
North Western Boundary (DW)	<4	<5	<0.2	<0.5

2.3.1 (E) Noise Emissions

Noise:

The annual noise-monitoring programme was carried out on the 10th and 20th May 2013. The results of same are presented in Table E.1 and E.2.

TABLE E.1: NOISE MEASUREMENT RESULTS (DAYTIME) 10th and 20th May 2013

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	10/5/13	09:34	57	60	48	77
	30	10/5/13	12:27	61	64	55	79
	30	20/5/13	15:05	59	62	45	79
N2	30	10/5/13	10:11	52	51	43	82
	30	10/5/13	10:55	57	59	51	75
	30	20/5/13	14:32	49	51	39	67
N3	30	10/5/13	11:23	58	62	53	72
	30	10/5/13	15:10	51	53	39	73
	30	20/5/13	14:00	57	59	41	79
N4	30	10/5/13	10:48	49	52	42	62
	30	10/5/13	14:35	53	57	45	80
	30	20/5/13	15:37	53	56	40	73
NSL 1	30	10/5/13	09:01	57	58	46	78
	30	10/5/13	14:01	57	59	51	76
	30	20/5/13	16:10	54	57	44	75

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	Two
Complaints requiring corrective action	None - New Odour Management Plan commenced August 2010
Categories of complaint	
Odour	Two
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 2013 to December 2013		
		€
EPA Fees		8000
Consultancy & Monitoring		30000
Training		5000
Env Equipment		5000
	Total Cost	**48000**

2.1.6 Resource and Energy Consumption

Fuel Usage 2013 – See table below

Machine Type	**Engine Type**	**Total (L)**
Komptech Topturn X67 Turner	Cat C9	85627
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 2013 – recorded at compost site metre.

24910 KwHr

SECTION 3

ENVIRONMENTAL MANAGEMENT

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2014

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. • Review emergency response procedure.	Environmental (Kilberry)
3	Once off Projects	• Prepare Article 27 Notification form for oversize material • Liaise with Agency RE using Kilberry site as sample site for preparation of BREF notes under terms of IED legislation	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 2014.

Review of Objectives and Targets for the period January to December 2013

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2012. 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 2014. 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	2013 Review	Dept Responsible
Meet Operating Capacity Requirements.	Increase tonnage entering site – investigate new waste types.	2013	Tonnage decreased by 26 % in 2013	Kilberry (Environmental)
	Implement new marketing strategies to increase customer base	201	Continuous 2013	Horticulture (Newbridge)

Training EOT 1.2

Objective	Target	Target Date	2013 Review	Dept Responsible
Emergenccy Response, Health and safety and Training	Carry out one spill drill	Q3 2013	Complete	Kilberry (Environmental)
	All staff to receive Environmental training through training coordinator	2013	Complete	Kilberry (Environmental)
	Provide all hauliers with instruction RE safe driving within compost site	Q3 2013	Complete	Kilberry (Environmental)

Waste Management EOT 1.3

Objective	Target	Target Date	2013 Review	Dept Responsible
Water Management	Carry out study on Bio-Trickling as a method of pre treatment of leachate	Q1 2013	On site study finished in 2013 - positive results however project now postponed	Innovation (Newbridge)
	Assess potential of installing a constructed wetland within the bog for leachate treatment	Q3 2013	Postponed	Innovation (Newbridge)

Once off Projects EOT 1.4

Objective	Target	Target Date	2013 Review	Dept Responsible
IDA / Kilberry projects	Development of growing media and organic fertilisers	Continuous 2013	On going	Kilberry (Environmental)
	Co-formulation of Irish peat with Coir	Continuous 2013	Complete and continuous improvements in methods	Kilberry (Environmental)
	Management and use of Irish waste in growing media	Continuous 2013	On going	Kilberry (Environmental) Innovation (Newbridge)

Licence Compliance EOT 1.5

Objective	Target	Target Date	2013 Review	Person Responsible
Carry out monitoring as per Licence W0198-1	Noise – Once per annum	2013	Complete	Newbridge (Environmental)
	Bioaerosols – Annually	2013	Complete	Newbridge (Environmental)
	Dust - Quarterly	2013	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2013	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2013	Complete	Kilberry (Environmental)

Operating Requirements EOT 2.1

Objective	Target	Target Date	Person Responsible
Meet Operating Capacity Requirements.	Increase tonnage entering site – investigate new waste types	Continuous 2014	Newbridge (Horticulture)
	Implement new marketing strategies to increase customer base	Continuous 2014	Newbridge (Horticulture)

Energy Management EOT 2.2

Objective	Target	Target Date	Person Responsible
Emergency Response, Health and Safety and Training	Carry out one spill drill.	2014	Environmental (Kilberry)
	All staff members to receive Environmental training.	2014	Environmental (Kilberry)
	Review emergency response procedure.	Q2 2014	Environmental (Newbridge)

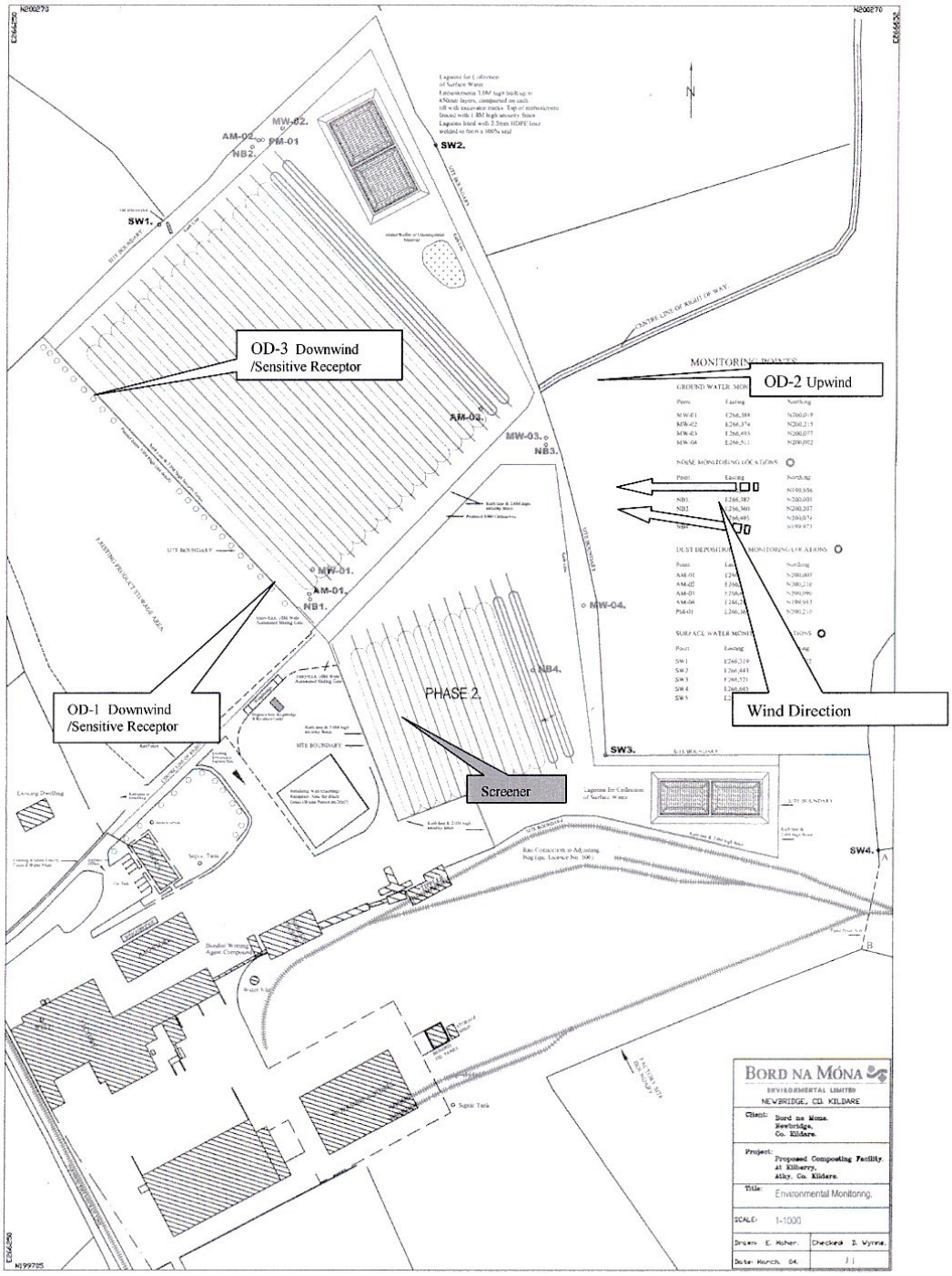
Once Off projects EOT 2.3

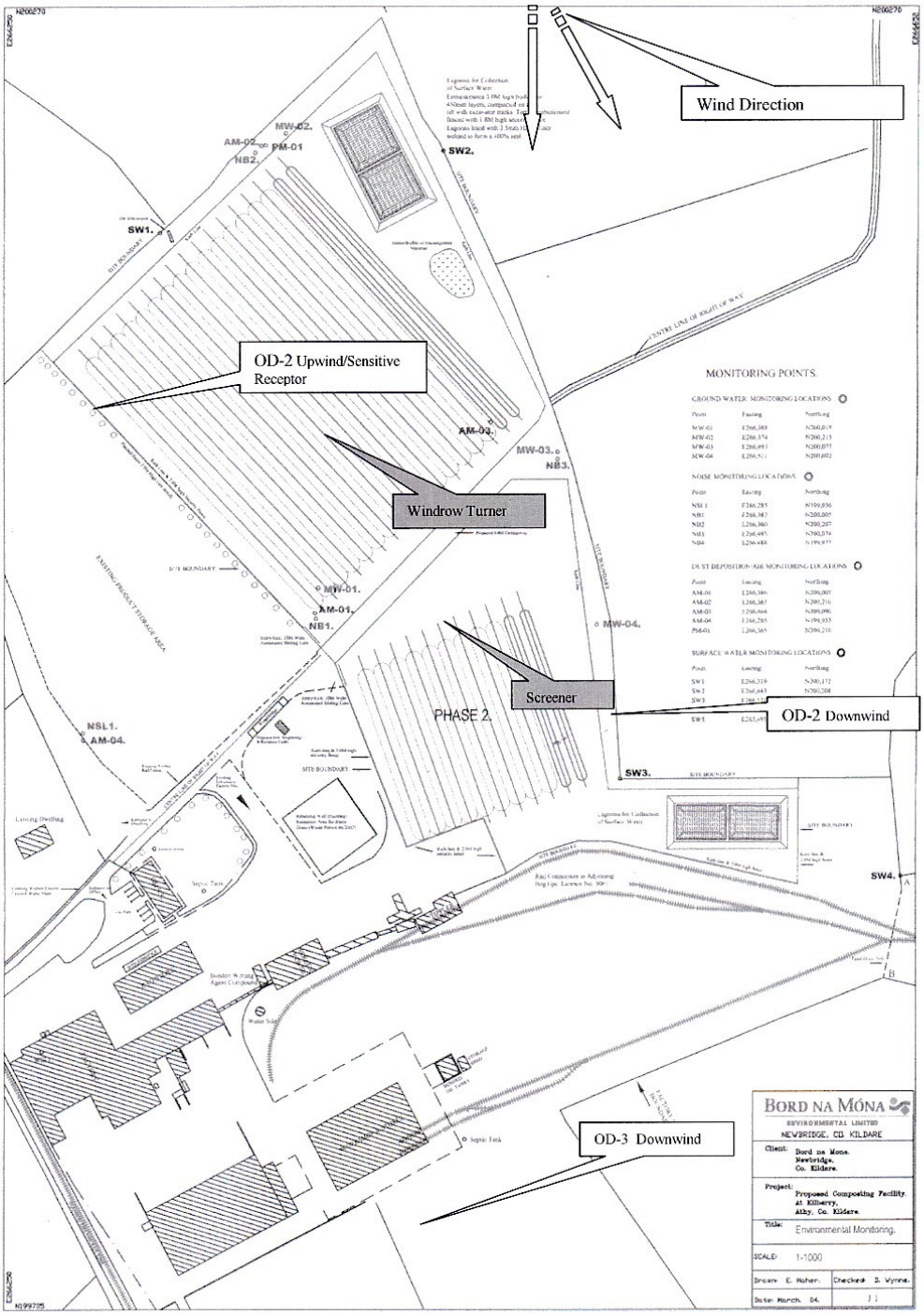
Objective	Target	Target Date	Person Responsible
Once off projects	Prepare Article 27 Notification form for oversize material	Q1 2014	Environmental (Kilberry)
	Liaise with Agency RE using Kilberry site as sample site for preparation of BREF notes under terms of IED legislation	Q2 2014	Environmental (Kilberry)

Licence Compliance EOT 2.4

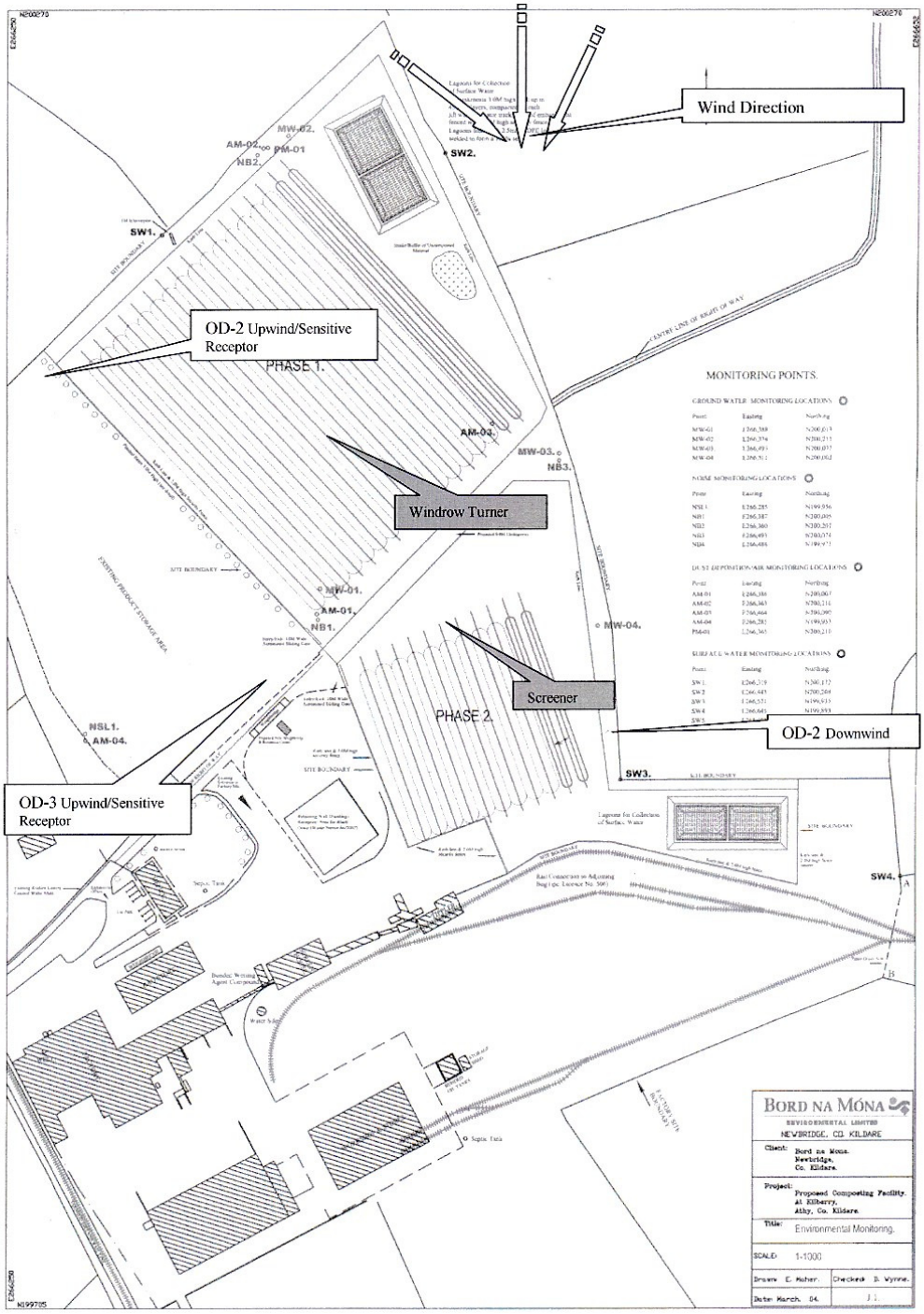
Objective	Target	Target Date	Person Responsible
Carry out monitoring as per Licence 198-1	Noise – Once per annum	2014	Environmental (Newbridge)
	Bioaerosols – Once per annum	2014	Environmental (Newbridge)
	Dust - Quarterly	2014	Kilberry (Environmental)
	Groundwater – Quarterly	2014	Kilberry (Environmental)
	Surface Water - Quarterly	2014	Kilberry (Environmental)

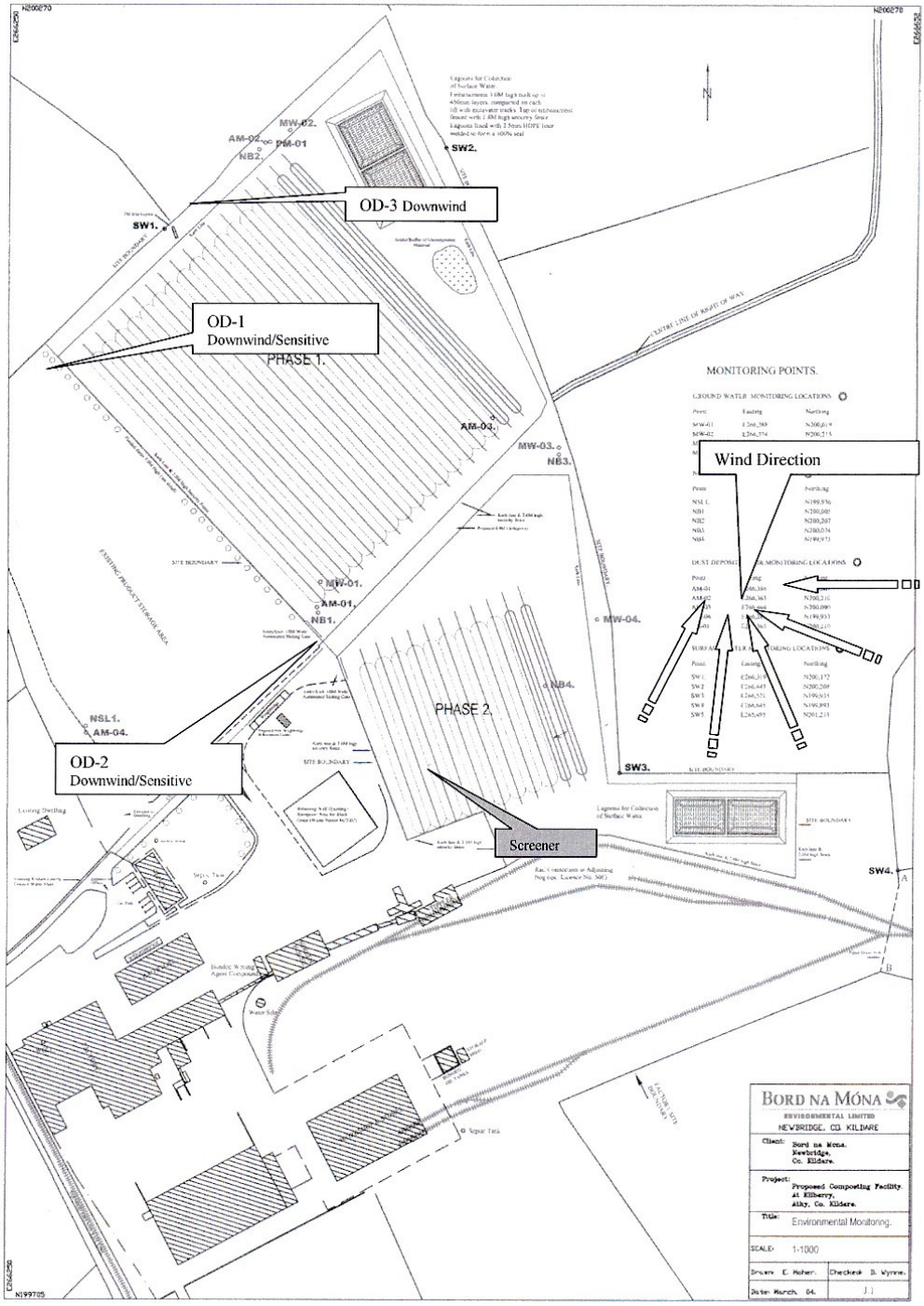
APPENDIX 1
Odour Monitoring Location Maps


OD-3 Downwind /Sensitive Receptor
OD-2 Upwind
OD-1 Downwind /Sensitive Receptor
Wind Direction
Screener
PHASE 2
MW-01.
MW-02.
MW-03.
MW-04.
AM-01.
AM-02.
AM-03.
PM-01
NB1.
NB2.
NB3.
NB4.
SW1.
SW2.
SW3.
SW4.
BORD NA MÓNA
ENVIRONMENTAL LIMITED
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
Drawn: E. Maher. Checked: D. Wynne.
Date: March 04.


Wind Direction
OD-2 Upwind/Sensitive Receptor
Windrow Turner
Screener
OD-2 Downwind
OD-3 Downwind
PHASE 2
MONITORING POINTS.
GROUND WATER MONITORING LOCATIONS
NOISE MONITORING LOCATIONS
DUST DEPOSITION-AIR MONITORING LOCATIONS
SURFACE WATER MONITORING LOCATIONS
BORD NA MÓNA
ENVIRONMENTAL LIMITED
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
Drawn: E. Maher. Checked: D. Wynne.
Date: March. 04.

Odour Q3 2011




OD-3 Downwind
OD-1
Downwind/Sensitive
PHASE 1.
OD-2
Downwind/Sensitive
PHASE 2
Screener
Wind Direction
MONITORING POINTS.
MW-01
MW-02
MW-03
MW-04
AM-01
AM-02
AM-03
AM-04
NB1
NB2
NB3
NB4
NSL1
SW1
SW2
SW3
SW4
BORD NA MÓNA
ENVIRONMENTAL LIMITED
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
Drawn: E. Maher.
Checked: B. Wynne.
Date: March 04.

APPENDIX 2
Compost Analysis Report

REPORT NO: **KILBERRY MONTHLY ANALYSIS 2013**

PREPARED BY: Colman Hynes
Bord na Móna ltd.

DATE: 6/3/14

Table of Contents

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: KC13

Results

Sample reference: KC13
Sample matrix: Composted greenwaste and GBG/Sludges

pH, EC and CAT soluble nutrients

2011	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	6.60	234	44	0.6	232	528	70.3
Feb	7.30	441	111	5	120	372	70.5
Mar	7.5	405	51	8	184	577	65.8
Apr	7.4	512	8	7	147	633	65.8
May	6.4	767	0	229	202	775	50.8
Jun	6.1	681	0	178	233	796	56.6
July	7.1	588	271	4	223	935	59.1
Aug	6.6	988	328	209	217	976	49.5
Sep	7.6	735	0	149	83	223	62.2
Oct	7.5	730	255	135	186	966	58.4
Nov	6.3	741	14	217	191	784	58.9
Dec	7.4	361	8	5	217	709	73.0

Maturity

Germination of Cress

Method IS EN 16086-2 2011	% AGR	RI %
Jan	**100**	**128.8**
Feb	**97**	**83**
Mar	**100**	**97**
Apr	**100**	**102**
May	**97**	**89**
June	**100**	**100**
July	**107**	**96**
Aug	**97**	**91**
Sept	**n/a**	**n/a**
Oct	**93**	**88**
Nov	**93**	**83**
Dec	**97**	**80**

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

C:N Ratio

Test Method Sample no (month)	% Organic Matter	I.S.EN13039 C:N Ratio
Jan	**81**	**15**
Feb	**83**	**17**
Mar	**79**	**13**
Apr	**65**	**12**
May	75	13
Jun	80	11
July	79	14
Aug	73	9
Sep	77	12
Oct	73	11
Nov	79	12
Dec	78	14

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	**<0.5%**	**<0.5%**	**2.94**	**0.51**	**0.40**
Feb	**<0.5%**	**<0.5%**	**3.20**	**0.50**	**0.40**
Mar	**<0.5%**	**<0.5%**	**3.30**	**0.55**	**0.56**
Apr	**8.1%**	**4.5%**	**3.10**	**0.55**	**0.63**
May	**<0.5%**	**<0.5%**	**3.30**	**0.48**	**0.52**
Jun	**<0.5%**	**<0.5%**	**4.00**	**0.58**	**0.51**
July	**.4%**	**1.28%**	**3.22**	**0.55**	**0.57**
Aug	**0.03**	**.76**	**4.36**	**0.61**	**0.55**
Sep	**.22**	**8.0**	**3.56**	**0.65**	**0.54**
Oct	**<.5%**	**.62**	**3.60**	**0.55**	**0.65**
Nov	**<.5%**	**.84**	**3.60**	**0.56**	**0.56**
Dec	**<.5%**	**.62**	**3.00**	**0.69**	**0.61**

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	27.3	108	16	0.37	0.05	7.36	8.79
Feb	44	159	20	0.31	0.06	18.4	13.7
Mar	33.5	113	17.6	0.33	0.11	6.49	6.69
Apr	163	456	122	3.19	0.2	376	9.27
May	42.1	111	15.4	0.32	0.05	13.3	12.4
Jun	34.5	141	22.9	0.46	0.06	7.96	7.58
July	32.9	119	17.3	0.38	0.05	9.17	8.62
Aug	48.2	136	34.9	0.5	0.08	11.2	8.48
Sep	40.3	129	19.9	0.37	0.06	9.8	10.2
Oct	41.2	154	24.8	0.38	0.05	11.6	15.5
Nov	32.8	129	26	0.42	0.06	8.76	10.1
Dec	23.7	139	19.5	0.3	0.05	6.57	8.69

*** Repeats April** *A323 Cu-7.6, Ni-1.4, Zn-58 Cd .39, A327 Cu-8.1, Ni-1.6, Zn-32 Cd .39*

Microbiological Analysis

Sample no	E Coli CFU/g)	Salmonella (spp/25g)
Method used	Based on ISO 16649-2 (2001)	RayAL ELISA OPTIMA
Standard		
Jan	160	Absent
Feb	<10	Absent
Mar	180	Absent
Apr	<10	Absent
May	<10	Absent
Jun	<10	Absent
July	>1500*	Absent
Aug	80	Absent
Sep	60	Absent
Oct	<10	Absent
Nov	<10	Absent
Dec	<10	Absent

- * Repeated July KC91 3 Piles A332,A338&A334 Results <10,<10&<10

Stability Analysis

Method prEN16087-1

Sample no	Mmol/O_2/kg OS/h
Standard	
Jan	**2.1**
Feb	**9.3**
Mar	**16*(15, 3.6)**
Apr	**6.6**
May	**9.3**
Jun	**5.8**
July	**3.8**
Aug	**5.3**
Sep	**8.9**
Oct	5.1
Nov	9.4
Dec	7.3

* Repeat of individual piles in brackets

Weed Test

Method BGKe.V2006

Sample no	Weeds/L
Standard	
Jan	**None**
Feb	**<0.5**
Mar	**<0.5**
Apr	**<0.5**
May	**<0.5**
Jun	**.67**
July	**<0.5**
Aug	**<0.5**
Sep	1
Oct	<.05
Nov	
Dec	

APPENDIX 3
PRTR Scans

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.18

REFERENCE YEAR	2013

1. FACILITY IDENTIFICATION

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

Waste or IPPC Classes of Activity

No.	class_name
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.13	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 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	0872886848
AER Returns Contact Mobile Phone Number	0872886848
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	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	Weighed	Offsite in Ireland	Kyletalesha WTS,W0194-01	Kyletalesha ,",Laois,",",Ireland		
Within the Country	19 05 99	No	1454.0	wastes not otherwise specified	R3	M	Weighed	Offsite in Ireland	Rathcon Farm,WFP-WW-09-008-002	Rathcon Farm,Grange Con,Co. Wicklow,",",Ireland		

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