Annual Environmental Report

2014

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

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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 2014 - December 2014. 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

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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.

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SECTION 2

DATA

2.1 SUMMARY DATA

2.1.1 Waste Recovery Data:

Waste Type	EWC Code	Annual Intake (Tonnes)
Greenwaste	20 02 01	19760
Bark	03 03 01	388
Brewery by-Product	02 07 01	19726
Dairy Sludge	02 05 02	1638
Brewery Sludge	02 07 05	686

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	255

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 2014 Surface water analysis. The results are very similar to previous years.

Table A.1 - Surface Water Q1 27th March 2014					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.4	7.5	7.6	7.5	7.8
Suspended Solids (mg/l)	<5	6	6	<5	<5
BOD (mg/l)	<2	<2	<2	<2	<2
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.1 - Surface Water Q2 6th June 2014					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.3	7.3	7.3	7.4	7.8
Suspended Solids (mg/l)	<5	<5	<5	<5	<5
DRO (mg/l)	<10	<10	<10	<10	<10
Mineral Oil (mg/l)	<10	<10	<10	<10	<10

Table A.3 - Surface Water Q3 15th Sept 2014					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.5	7.4	7.5	7.5	8.0
Suspended Solids (mg/l)	<5	7	<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 16th December 2014					
Parameter	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
pH	7.3	7.3	7.4	7.3	7.7
Suspended Solids (mg/l)	<5	<5	<5	10	<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 2015.

Groundwater Results Q1 27th March 2014					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.7	7.3	7.2	7.2	7.1
Conductivity µS/cm	534	543	644	1015	1029
Ammonia as N mg/l	2.3	6.5	5.7	8.2	10
Chloride mg/l	17	15	17	34	25
Sulphate mg/l	1.8	1.6	2.8	12	2.9
Nickel ug/l	5	12	3	16	7
Manganese ug/l	6	<2	8	111	305

Groundwater Results Q2 6th June 2014					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.5	7.3	7.2	7.0	7.0
Conductivity µS/cm l	633	565	674	1843	1689
Ammonia as N mg/l	2.0	6.5	5.4	23	14
Chloride mg/l	30	22	22	40	60
Sulphate mg/l	20	4.0	<0.5	3.8	1.2
Nickel ug/l	9	5	<2	34	10
Manganese ug/l	415	92	116	924	654

Groundwater Results Q3 15th Sept 2014					
Laboratory ID.	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**
pH	7.3	7.2	7.2	6.9	7.1
Conductivity µS/cm l	573	755	757	1739	920
Ammonia as N mg/l	1.6	6.4	5.8	23	9.2
Chloride mg/l	24	18	18	27	19
Sulphate mg/l	19	8.2	1.2	1.1	1.9
Nickel ug/l	7	6	<2	48	27
Manganese ug/l	487	172	444	989	474

Groundwater Q4 2014					
Parameter	**MW-01**	**MW-02**	**MW-03**	**MW-04**	**MW-05**
pH	7.7	7.4	7.3	7.1	7.0
Conductivity uS/cm	531	547	644	1452	2101
Ammonia as N mg/l	2.2	6.5	5.7	20	11
Chloride mg/l	20	18	18	32	80
Sulphate mg/l	1.6	1.2	1.4	4.7	7.9
Boron µg/l	12	10	8	23	N/A
Antimony µg/l	<2	<2	<2	<2	N/A
Arsenic µg/l	2	10	3	<2	N/A
Aluminium µg/l	<2	<2	<2	<2	N/A
Berylium µg/l	<2	<2	<2	<2	N/A
Barium µg/l	453	310	373	117	N/A
Chromium µg/l	<2	<2	<2	<2	N/A
Cadmium µg/l	<2	<2	<2	<2	N/A
Cobalt µg/l	<2	<2	<2	2	N/A
Copper µg/l	<2	<2	<2	<2	N/A
Iron mg/l	<0.1	<0.1	<0.1	0.3	N/A
Potassium	1.2	1.5	2.0	44	22
Manganese µg/l	290	79	185	1279	922
Silver µg/l	<2	<2	<2	<2	N/A
Nickel µg/l	7	6	<2	15	13
Lead µg/l	<2	<2	<2	<2	N/A
Selenium µg/l	<2	<2	2	<2	N/A
Tin µg/l	2	<2	<2	<2	N/A
Zinc µg/l	<2	12	<2	<2	N/A
Mercury µg/l	<1	<1	<1	<1	N/A
Total Coliforms cfu/100mls	20	4	<1	<1	40
E.Coli cfu/100mls	280	10	9	450	200

Groundwater Q4 2014-*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 2014 - *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 2014 – *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	13.2	<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 2014 - *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 2014 – *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) Dust Analysis Results

The 2014 results are typically within the licence limit with the exception of two occasions which were attributed to external influences. The wetting of roadways during dry periods has reduced overall dust levels on site.

2014 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	35	147	135	488 **
AM-02	76	194	59	244
AM-03	158	335	1128 *	169
AM-04	88	247	223	209

* The dust sample appeared to be tampered with. It is located on a public right of way and as such is easily accessible. This has not occurred in the past so no action will be taken at this time. Q4 results will be assessed to see if this trend continues.

** - Bird droppings contaminated the sample.

2.1.3 (D) Odour Analysis Results 2014 – See Appendix 1 for Sample location maps

The Odour results for 2014 are typical of an open windrow compost facility.

METEOROLOGICAL CONDITIONS Q1 - 4TH OF MARCH 2014			
Parameter		**Parameter**	
Weather	Dry with light breeze	**Wind speed**	1.89 m/sec (average)
Temp	7.4	**Wind Direction**	light breeze from SE-S-SW
General Air Quality	Good	**Bar Pressure**	990 mbar

Odour Sampling Results Q1 - 5TH OF MARCH 2014		
Locations	**On site observations**	**Results**
OD 1 (Upwind / Sensitive Receptor)	Faint intermittent diesel fume odour	<30 ou_E/m^3
OD 2 (Downwind)	Composting odour	133 ou_E/m^3
OD 3 (Downwind / Sensitive Receptor)	Composting odour	176 ou_E/m^3

METEOROLOGICAL CONDITIONS Q2 - 30TH OF APRIL 2014			
Parameter		**Parameter**	
Weather	Dry with gentle breeze	**Wind speed**	4.17 m/sec (average)
Temp	12.1°C	**Wind Direction**	Gentle breeze movement from south to west
General Air Quality	Good	**Bar Pressure**	998 mbar

Odour Sampling Results Q2 - 30th April 2014		
Locations	**On site observations**	**Results**
OD 1 (Upwind)	No noticeable odours	<30 ou_E/m^3
OD 2 (Downwind)	Composting odour	216 ou_E/m^3
OD 3 (Sensitive Receptor)	Composting odour	<30 ou_E/m^3

METEOROLOGICAL CONDITIONS Q3 – 22ND OF SEPTEMBER 2014			
Parameter		**Parameter**	
Weather	Dry with gentle breeze	**Wind speed**	4.78 m/sec (average)
Temp	14.3 °C	**Wind Direction**	Gentle breeze movement from south to west
General Air Quality	Good	**Bar Pressure**	1009 mbar

Odour Sampling Results Q3 – 22nd of September 2014		
Locations	**On site observations**	**Results**
OD 1 (Upwind / Sensitive Receptor)	No detectable odours	16 ou_E/m^3
OD 2 (Upwind / Sensitive Receptor)	No detectable odours	13 ou_E/m^3
OD 3 (Downwind)	Composting odour detected	29 ou_E/m^3

METEOROLOGICAL CONDITIONS Q4 - 2ND OF DECEMBER 2014			
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 - 2nd of December 2014		
Locations	**On site observations**	**Results**
OD 1 (Upwind / Sensitive Receptor)	No detectable odours	11 ou_E/m^3
OD 2 (Downwind)	Composting odour detected	215 ou_E/m^3
OD 3 (Downwind)	Intermittent composting odour detected	19 ou_E/m^3

2.1.4 (E) Air Emissions Results

Air Analysis Q1 2014				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind on north western boundary of phase 1	<4.18	<5	<0.2	<0.5

Air Analysis Q2 2014				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind on north western boundary of phase 1	<4.21	<5	<0.2	<0.5

Air Analysis Q3 2014				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind on north eastern boundary of phase 1	<4.20	<5	<0.2	<0.5

Air Analysis Q4 2014				
Location	Amines (ppm)	Ammonia (ppm)	Hydrogen Sulphide (ppm)	Mercaptens (ppm)
Downwind on north eastern boundary of phase 1	<4.02	<5	<0.2	<0.5

2.3.1 (E) Noise Emissions

Noise:

The annual noise-monitoring programme was carried out on the 15th and 22nd Sept 2014. The results of same are presented in Table E.1 and E.2.

TABLE E.1: NOISE MEASUREMENT RESULTS (DAYTIME) 15th and 22th May 2014

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	15/9/14	09:31	56	61	44	69
	30	15/9/14	11:45	56	61	44	67
	30	15/9/14	15:40	56	59	42	80
N2	30	15/9/14	10:06	44	42	30	74
	30	15/9/14	12:17	37	40	28	61
	30	22/9/14	10:15	42	45	31	66
N3	30	15/9/14	10:38	42	44	32	72
	30	15/9/14	12:39	46	46	29	71
	30	15/9/14	16:12	45	48	31	67
N4	30	15/9/14	11:12	45	48	36	62
	30	15/9/14	15:07	44	47	39	60
	30	22/9/14	11:08	60	63	54	69
NSL 1	30	15/9/14	08:58	48	49	39	69
	30	15/9/14	14:00	49	52	38	64
	30	15/9/14	14:34	53	56	48	68

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	One
Complaints requiring corrective action	None - New Odour Management Plan commenced August 2010
Categories of complaint	
Odour	One
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 2014 to December 2014		
		€
EPA Fees		8000
Consultancy & Monitoring		30,000
Training		5,000
Env Equipment		5,000
	Total Cost	**48000**

2.1.6 Resource and Energy Consumption

Fuel Usage 2014 – See table below

Machine Type	**Engine Type**	**Total (L)**
Komptech Topturn X67 Turner	Cat C9	107988
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 2014 – recorded at compost site metre.

81220 KwHr

SECTION 3

ENVIRONMENTAL MANAGEMENT

BORD NA MÓNA KILBERRY COMPOST FACILITY ENVIRONMENTAL OBJECTIVES AND TARGETS 2015

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	Training / EMS	• Carry out one spill drill. • All staff members to receive Environmental training. • Carry out annual review of all EMS procedures	Environmental (Kilberry)
3	Once off Projects	• Liaise with EPA RE the article 27 notification. • Investigate site expansion to increase the overall footprint of the site.	Environmental (Kilberry)
4	Carry out monitoring as per Licence 198-1	• Noise – Once per annum • Bioaerosols – Once per annum • Dust – four times per annum • SW - Quarterly • GW – Quarterly	Environmental (Newbridge / Kilberry)

3.1 Environmental Management Programme for 2015.

Review of Objectives and Targets for the period January to December 2014

Tables EMP 1.1 to 1.5 reviews the Objectives and Targets set for 2014. 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 2015. 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	2014 Review	Dept Responsible
Meet Operating Capacity Requirements.	Increase tonnage entering site – investigate new waste types.	2014	No new waste types added during 2014	Kilberry (Environmental)
	Implement new marketing strategies to increase customer base	2014	Continuous 2014	Horticulture (Newbridge)

Training EOT 1.2

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

Once off Projects EOT 1.3

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

Licence Compliance EOT 1.4

Objective	Target	Target Date	2014 Review	Person Responsible
Carry out monitoring as per Licence W0198-1	Noise – Once per annum	2014	Complete	Newbridge (Environmental)
	Bioaerosols – Annually	2014	Complete	Newbridge (Environmental)
	Dust - Quarterly	2014	Complete	Kilberry (Environmental)
	Groundwater – Quarterly	2014	Complete	Kilberry (Environmental)
	Surface Water - Quarterly	2014	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 2015	Newbridge (Horticulture)
	Implement new marketing strategies to increase customer base	Continuous 2015	Newbridge (Horticulture)

Training / EMS EOT 2.2

Objective	Target	Target Date	Person Responsible
Training / EMS	Carry out one spill drill.	Q3 2015	Environmental (Kilberry)
	All staff members to receive Environmental training.	Continuous 2015	Environmental (Kilberry)
	Carry out annual review of all EMS procedures	Q2 2015	Environmental (Kilberry)

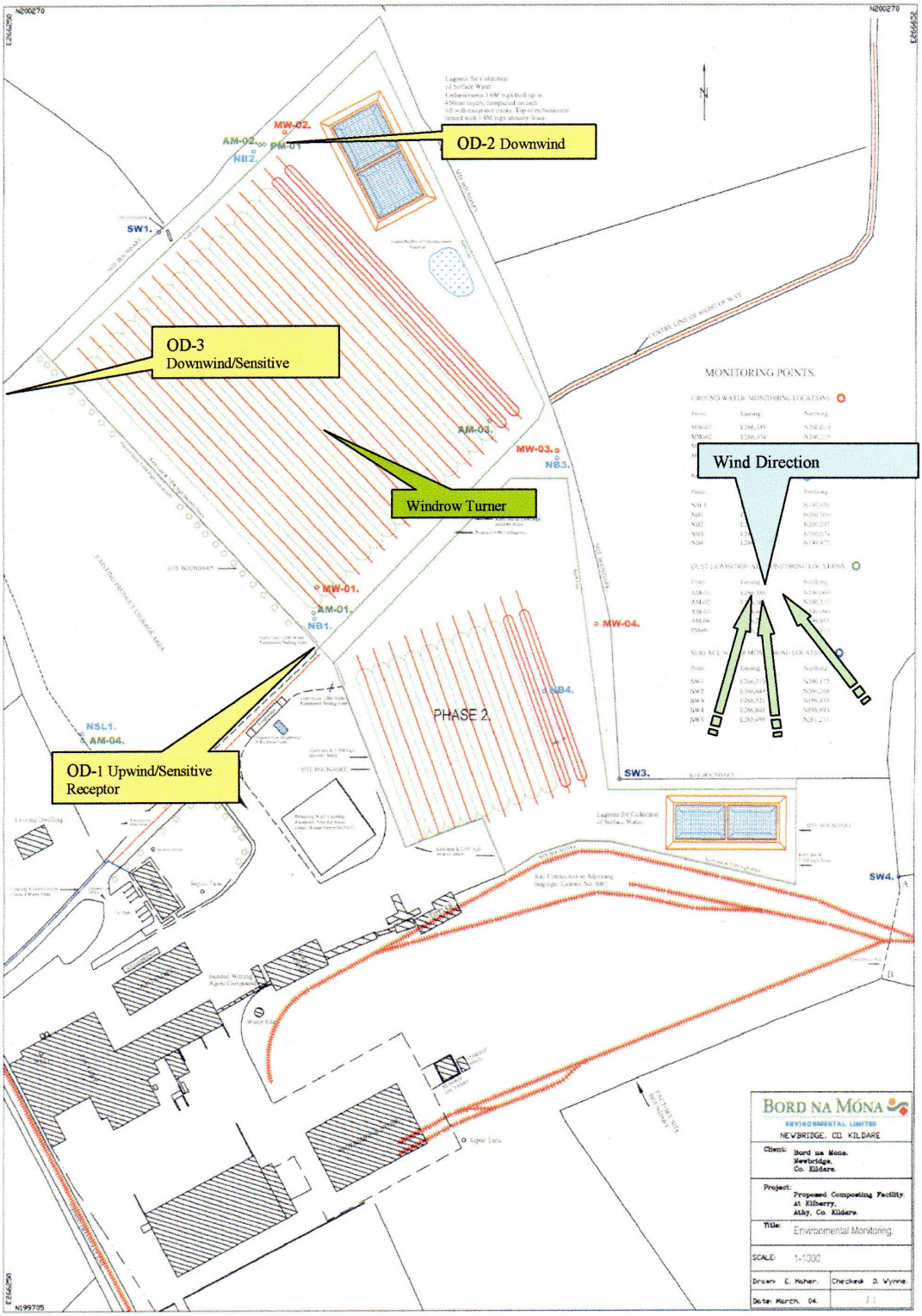
Once Off Projects EOT 2.3

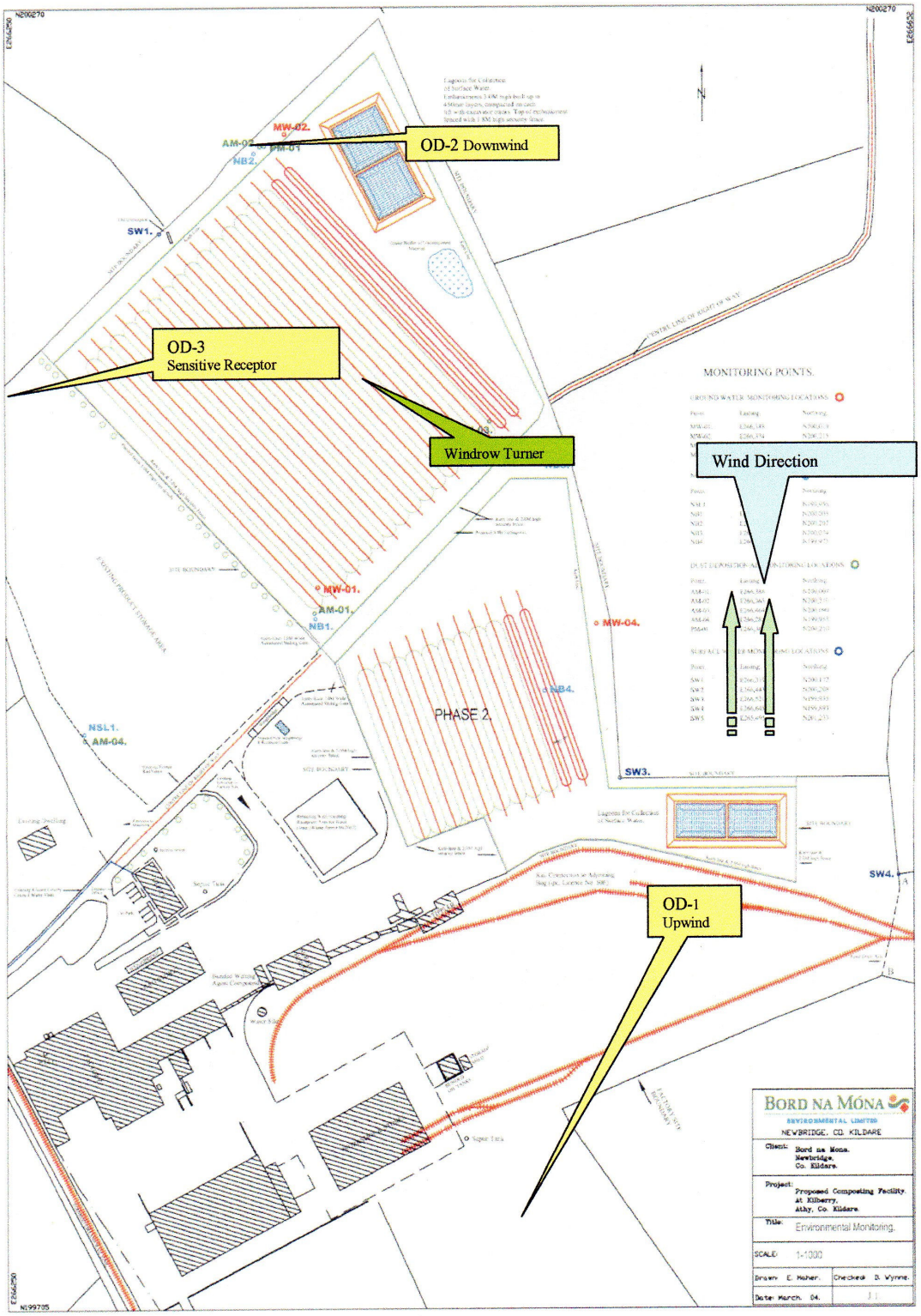
Objective	Target	Target Date	Person Responsible
Once off Projects	Liaise with EPA RE the article 27 notification.	Q2 2015	Kilberry (Environmental)
	Investigate site expansion to increase the overall footprint of the site.	2015	Kilberry (Environmental)

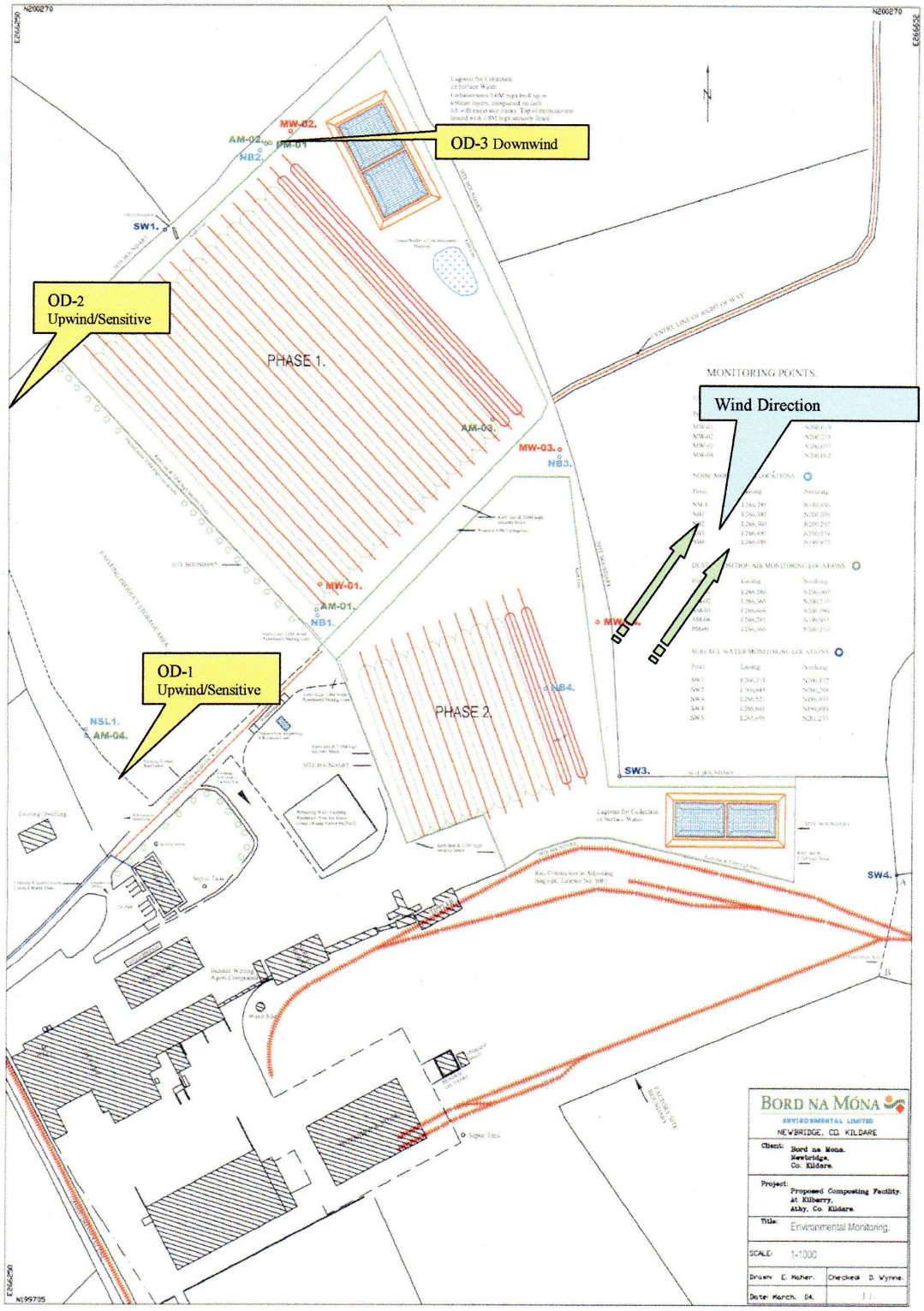
Licence Compliance EOT 2.4

Objective	Target	Target Date	Person Responsible
Carry out monitoring as per Licence 198-1	Noise – Once per annum	2015	Environmental (Newbridge)
	Bioaerosols – Once per annum	2015	Environmental (Newbridge)
	Dust - Quarterly	2015	Kilberry (Environmental)
	Groundwater – Quarterly	2015	Kilberry (Environmental)
	Surface Water - Quarterly	2015	Kilberry (Environmental)

APPENDIX 1
Odour Monitoring Location Maps


OD-2 Downwind
OD-3
Downwind/Sensitive
Windrow Turner
Wind Direction
OD-1 Upwind/Sensitive
Receptor
MW-02.
AM-02.
PM-01
NB2.
SW1.
AM-03.
MW-03.
NB3.
MW-01.
AM-01.
NB1.
MW-04.
NB4.
PHASE 2.
NSL1.
AM-04.
SW3.
SW4.
MONITORING POINTS.
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.


OD-2 Downwind
OD-3
Sensitive Receptor
Windrow Turner
Wind Direction
OD-1
Upwind
PHASE 2
MONITORING POINTS
MW-02.
AM-02.
PM-01
NB2.
SW1.
MW-01.
AM-01.
NB1.
MW-04.
NB4.
NSL1.
AM-04.
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.


OD-3 Downwind
OD-2
Upwind/Sensitive
OD-1
Upwind/Sensitive
Wind Direction
PHASE 1.
PHASE 2.
MW-02.
AM-02.
NB2.
MW-01.
AM-01.
NB1.
MW-03.
AM-03.
NB3.
NB4.
NSL1.
AM-04.
SW1.
SW3.
SW4.
MONITORING POINTS.
BORD NA MÓNA
ENVIRONMENTAL LIMITED
NEWBRIDGE, CO. KILDARE
Client: Bord na Mona, Newbridge, Co. Kildare.
Project: Proposed Composting Facility, At Kilberry, Athy, Co. Kildare.
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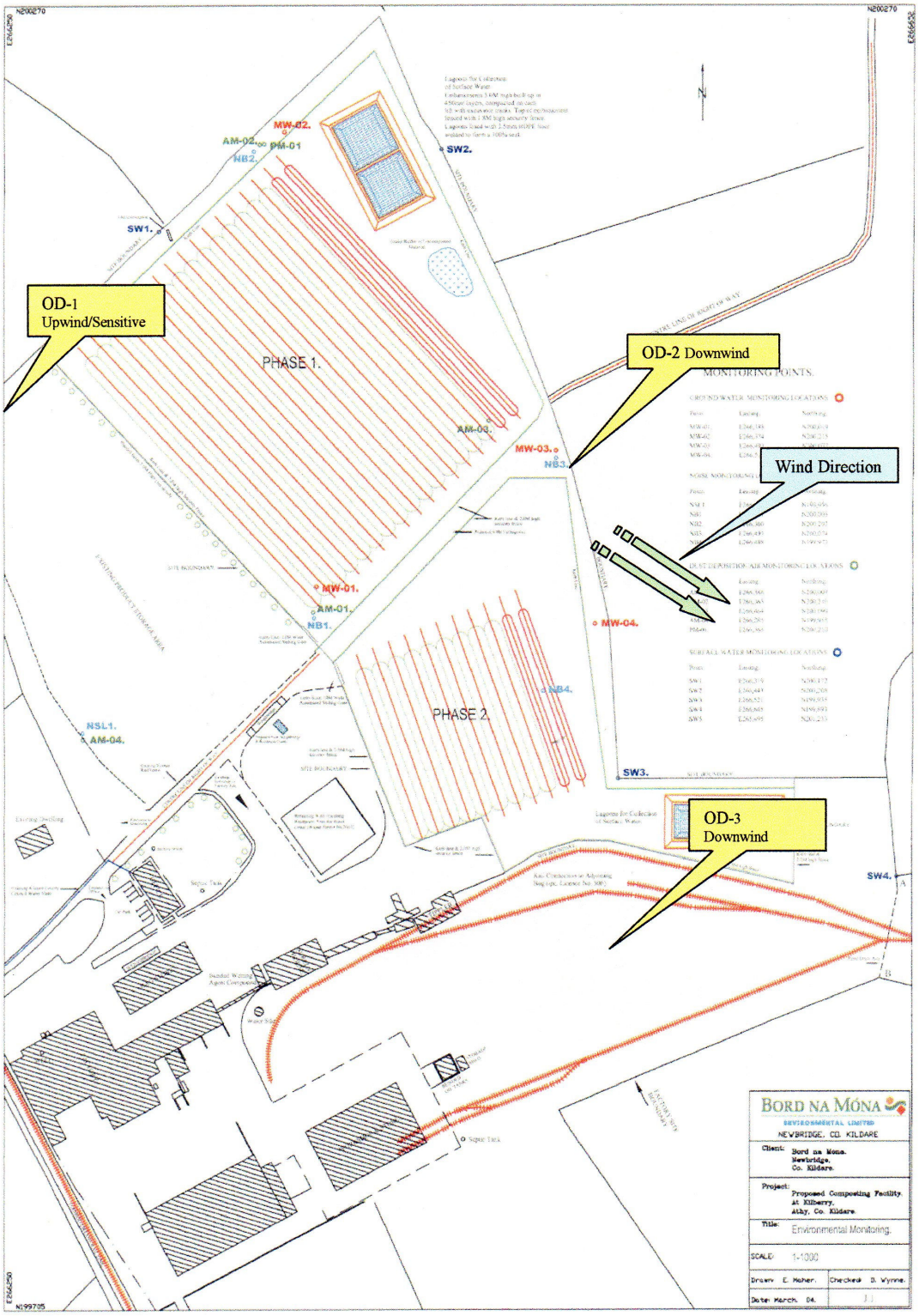
Date: March. 04.


OD-1
Upwind/Sensitive
OD-2 Downwind
Wind Direction
OD-3
Downwind
PHASE 1.
PHASE 2.
MW-02.
AM-02.
PM-01
NB2.
SW2.
SW1.
AM-03.
MW-03.
NB3.
MW-01.
AM-01.
NB1.
MW-04.
NB4.
NSL1.
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SW3.
SW4.
MONITORING POINTS.
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.

APPENDIX 2
Compost Analysis Report

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

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

MONTHLY ANALYSIS OF WINDROWS AT KILBERRY 2014

REPORT NO: **KILBERRY MONTHLY ANALYSIS 2014**

PREPARED BY: Colman Hynes
Bord na Móna ltd.

DATE: 09/03/2015

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

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

Introduction

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

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441	
QM-GC-01K	
1	
1	
20/07/2012	
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Compost Testing and Analysis Service

Report ref: KC13

Results

Sample matrix: Composted greenwaste and spent grain/Sludges

PLANT Nutrient , CAT Soluble Nutrients, and Physical Analysis

TEST Method	**I.S. EN13037**	**I.S.EN13038**	**I.S.EN13651**	**I.S.EN13651**	**I.S.EN13651**	**I.S.EN13651**	**I.S.EN13040**
2014	**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	7.1	580	7	86	204	1010	64.3
Feb	7.5	540	66	52	13	642	74.1
Mar	7.40	318	10	17	139	548	68.0
Apr	7.50	689	15	25	90	890	53.0
May	7.30	642	46	67	225	927	59.0
Jun	6.90	707	19	96	176	924	54.0
July	8.30	599	115	4	28	620	48.0
Aug	7.40	617	85	2	109	1010	49.5
Sep	7.90	1137	302	6	133	1230	52.7
Oct	6.70	897	76	140	42	823	64.2
Nov	6.77	615	4.5	15	62.25	832.5	63.5
Dec	n/a	n/a	n/a	n/a	n/a	n/a	n/a

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

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

Maturity

Germination of Cress

Method IS EN 16086-2 2011	% AGR	RI %
Jan	**100**	**108**
Feb	**100**	**76**
Mar	**93**	**134**
Apr	**100**	**48**
May	**97**	**84**
June	**93**	**88**
July	**87**	**78**
Aug	**100**	**68**
Sept	**114**	**93**
Oct	**100**	**58**
Nov	**100**	**104**
Dec	**n/a**	**n/a**

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

C:N Ratio

Test Method Sample no (month)	% Organic Matter	I.S.EN13039 C:N Ratio
Jan	64	9
Feb	76	13
Mar	83	18
Apr	80	12
May	67	12
Jun	65	14
July	69	10
Aug	72	13
Sep	66	11
Oct	66	15
Nov	77	13
Dec	n/a	n/a

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

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

Foreign Matter over 2mm

	Foreign Matter > 2mm	Stones >4mm	%N	%P	%K
Method	PAS 100:2005		Based on I.S EN 13654-1	ISEN13650	ISEN13650
Jan	0	1.12	3.83	0.59	0.77
Feb	0.38	2.78	3.21	0.67	0.61
Mar	1.55	0.84	2.60	0.54	0.47
Apr	0.07	0	3.80	0.53	0.74
May	1.9	5.63	3.20	0.50	0.60
Jun	1.19	2.44	2.50	0.50	0.60
July	0	0	3.70	0.50	0.50
Aug	0	2.64	3.10	0.50	0.70
Sep	1.520	.34	3.30	0.62	0.84
Oct	0	0	3.62	0.57	0.71
Nov	0	0	3.33	0.48	0.63
Dec	n/a	n/a	n/a	n/a	n/a

***Based on BP PAS100:2005**

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
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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	29.8	158	29.6	0.46	0.11	8.03	7.16
Feb	41.4	183	37.8	0.41	0.09	9.12	9.97
Mar	34.6	125	140	0.41	0.11	10	7.06
Apr	31.2	234	33.9	0.63	0.12	7.6	5.57
May	48	179	91.6	0.71	0.08	59.5	189
Jun	30.1	127	39.5	0.51	0.07	9.36	6.87
July	34.6	153	43.4	0.62	0.08	9.89	6.99
Aug	29.6	141	42.3	0.5	0.09	9.11	7.84
Sep	43.6	180	42	0.72	0.12	11.3	9.51
Oct	37.9	156	42.5	0.61	0.08	16.3	51.1
Nov	28.6	128	23.7	0.5	0.07	17.6	56.9
Dec	n/a	n/a	n/a	n/a	n/a	n/a	n/a

*** Repeats** May14 Ni =7.06, Cr=7.35

Microbiological Analysis

Sample no	E Coli CFU/g)	Salmonella (spp/25g)
Method used	**Based on ISO 16649-2 (2001)**	**RayAL ELISA OPTIMA**
Jan	<10	Absent
Feb	<10	Absent
Mar	<10	Absent
Apr	<10	Absent
May	60	Absent
Jun	20	Absent
July	70	Absent
Aug	<10	Absent
Sep	<10	Absent
Oct	60	Absent
Nov	<10	Absent
Dec	n/a	n/a

- *
-

BORD NA MÓNA

BORD NA MÓNA HORTICULTURE LIMITED

Final Compost Results IS441
QM-GC-01K
1
1
20/07/2012
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Stability Analysis

Method prEN16087-1

Sample no	Mmol/O_2/kg OS/h
Standard	
Jan	5.3
Feb	2.2
Mar	6.4
Apr	14.2
May	8
Jun	7.5
July	8.7
Aug	10.6
Sep	5.6
Oct	11.2
Nov	10
Dec	n/a

* Repeat of individual piles in brackets

Weed Test

Method BGKe.V2006

Sample no	Weeds/L
Standard	
Jan	<.05
Feb	<.05
Mar	<0.5
Apr	<0.5
May	<0.05
Jun	0.67
July	<0.5
Aug	<0.5
Sep	<0.5
Oct	<0.5
Nov	<0.5
Dec	**n/a**

APPENDIX 3
PRTR Scans

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.18

REFERENCE YEAR	2014

1. FACILITY IDENTIFICATION

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

Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Kilberry
Address 2	Athy
Address 3	
Address 4	
	Kildare
Country	Ireland
Coordinates of Location	-7.0108 53.0473
River Basin District	IESE
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Craig Mallinson
AER Returns Contact Email Address	craigmallinson@inbox.com
AER Returns Contact Position	Consultant
AER Returns Contact Telephone Number	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	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) ?	No

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	255.0	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