

Padraig Thornton Waste Disposal Ltd



Waste Licence Reg. No. W0195-01



**Annual Environmental Report 2013
Submitted March 2014**



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1 Introduction

This report is the Annual Environmental Report for Kilmainhamwood Compost. It has been prepared in compliance with Condition 11.7 of the Waste Licence (Licence Reg. No. W0195-01) and includes emission details and reporting for the reporting period of 2013.

This licence was granted by the Environmental Protection Agency (EPA) to Padraig Thornton Waste Disposal Ltd (PTWDL) on the 30th January 2006. The contents of this report are as required by Schedule G of Waste Licence W0195-01.

1.1 Operator

The facility operator and licensee of licence number W0195-01 is Padraig Thornton Waste Disposal Ltd, T/A Thorntons Recycling. This AER relates to Kilmainhamwood Compost, Ballynalurgan, Kilmainhamwood, Kells, Co. Meath.

The address and contact details for the company headquarters are;

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1.2 Reporting Period

The reporting period for this Annual Environment Report (AER) is between the 01/01/2013 to the 31/12/2013.

2 Facility Activities

2.1 Waste Activities carried out at the Facility

Part 1 of the current Waste Licence W0195-01 lists those activities contained in the Third and the Fourth Schedule of the Waste Management Act 1996, which are licensed to be carried out at Kilmainhamwood Compost, Ballynalurgan, Kilmainhamwood, Kells, Co. Meath. These activities are as follows:

Third Schedule

Class 6	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule:
Class 13.	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.

Fourth Schedule

Class 2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
Class 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.

2.2 Operation Processes – Waste Activities at the facility

The following section details the operational procedure for dealing with acceptable biodegradable waste that enters the Kilmainhamwood Compost Facility (Appendix 1 details the Facility layout with monitoring locations).

Standard Operation procedures in the Composting Building

In 2013 on arrival the transportation vehicle bringing material to the facility is inspected and checked to ensure that it is clean and there are no residual materials on the truck body and that it is properly covered or netted. Passing inspection the vehicle is directed towards the weighbridge. After weighing the following information is recorded on our computerised system (WIMS);

- a. Date
- b. The name of the carrier (including if appropriate, the waste carrier registration details),
- c. The vehicle registration number,
- d. The name of the producer(s)/collector(s) of the waste as appropriate,
- e. The name of the waste facility(if appropriate) from which the load originated including the waste licence or waste permit register number,
- f. A description of the waste including the associated EWC codes,
- g. The quantity of the waste, recorded in tonnes,
- h. The name of the person checking the load.

Once weighed the vehicle is directed to the reception hall, the door of the reception is opened and the vehicle is directed in, once inside the reception hall the door is closed. On clearance the driver is directed to tip load and the facility operator inspects the load whilst the load is tipping.

The facility operator signs off the acceptance form and confirms if material is suitable for processing at the facility. Any material not suitable for processing or is in contravention of the licence is removed for temporary storage in a quarantine area. The quarantined material is removed off site by a licensed contractor for disposal as per waste acceptance procedure, EP14 (Residual Waste Management Procedure) for Kilmainhamwood Compost.

Once tipping is complete the facility operator washes down the container with a steam power washer ensuring no residual material remains. The door is opened and the driver is directed to the weighbridge for weighing where he will be given a weighbridge docket. The vehicle then leaves the facility taking the exit route.

Inside the building the organic waste material suitable for composting is mixed and blended by weight with an amendment material. The typical blend is made up of 45% Seed Material, 10% sludge/grease trap waste and 45% Brown Bin/ source segregated catering waste. This mixed material is conveyed by loading shovel to a collection area where a batch size of 120 tonnes is reached and then removed by a loading shovel and placed into an aerated bay. The material is given a unique sub-batch code which allows for full traceability of the ingredients of the batch and traceability of the batch through the facility. When the bay is full the operator places one temperature probe into the material. The aeration is switched on which is controlled by a plc that brings the temperature to the required level. The composting material stays in this bay for one week. After this period the material is taken out of the bay and placed over the wall into Zone 3. The material is then placed into another bay and moisture is amended to the required level. A temperature probe is placed into the material and the aeration switched on. The composting material will stay in this zone for 2 weeks and will get one turn using a machine and a moisture amendment material if required.

After this period the material is taken into Zone 4 and screened through a 12mm screen. The oversize material is sent back to the start of the process as seed compost and any residual plastic from the process comes out the end of the screener and is sent to a licensed landfill once a full load is collected. The screened 12mm material is placed into an enclosed tunnel for pasteurisation. The tunnel can hold up to 25 sub-batches and when full the total material will be given a unique Batch Number for traceability. Once inside the enclosed tunnel the aeration is switched on and the temperature is brought to over 70°C for 60 consecutive minutes to satisfy the Animal By-Product Regulations (ABPR). After pasteurisation the material is sampled in situ and the samples sent to an approved Laboratory for analysis. Once the material has passed the ABPR requirements and EPA standards it can be classified as compost and removed from the tunnel by a clean machine and loaded for transport off site to the appropriate end user.

Any material not meeting ABPR and EPA standards can be reworked in the facility to produce higher grade compost or transported to an appropriate landfill site as cover.

During 2013 the facility underwent an extension to its existing facility. A reception hall was developed and procedures for acceptance of waste will be amended for 2014.

2.3 Weighbridge Calibration

The weighbridge was certified by Percia Molen in November 2013. A copy of the weighbridge verification test report is available within Appendix 2.

3 Quantity and Composition of Waste Received, Recovered and Disposed of During the Reporting Period

3.1 Waste Handled in Kilmainhamwood Compost

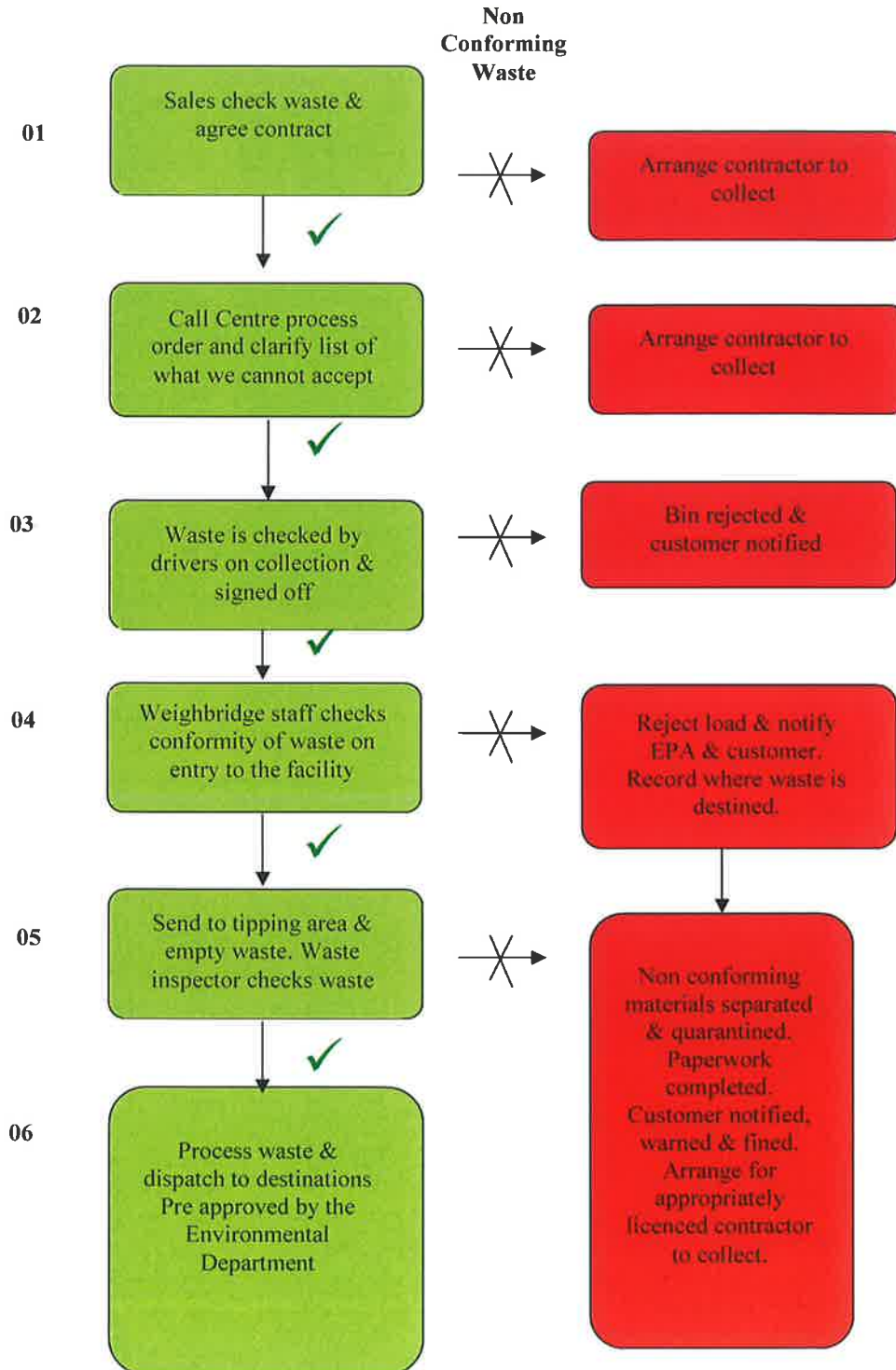
All waste is checked and documented at the weighbridge in accordance with our waste licence and our waste acceptance procedures as detailed in section 2.2. Waste is then inspected, processed and placed into our production system. The composting process takes up to 8 weeks to produce mature compost.

The facility has approval under the ABP Regulations from the Dept. of Agriculture, Food and the Marine. A copy of the Approval Certificate is contained within Appendix 3.

Should any non-conforming waste come to the attention of our staff it is either rejected before collection or segregated and quarantined to be disposed of by a licensed contractor. Paperwork in relation to all non-conforming wastes is maintained on site.

3.2 Waste Acceptance

The following is a simplified diagram explaining our waste acceptance procedures at Kilmainhamwood Compost.



All staff employed by Kilmainhamwood Compost have received an Environmental Health and Safety Induction which includes licence training, waste acceptance procedures, good practice in composting, emergency procedures and environmental awareness. All staff employed at the facility are diligent in assisting in eliminating the occurrence of non-conforming waste and producing a good quality compost at the facility.

Kilmainhamwood Compost successfully maintained its certification for its management systems in ISO14001 Environmental, ISO 9001 Quality, OHSAS 18001 Health and Safety in 2013 and was audited by Certification Europe for same. The IMS system is available for inspection on the IMS drive at all company site offices.

3.3 Waste Received

A total of 28,869.88 tonnes of waste for composting was accepted at the facility in the reporting period from 1st January 2013 to 31st December 2013.

Table 3.3.1 Quantity and Composition of Waste Received 2012-2013

EWC Code	Materials Received	2012	2013
20 01 25	Grease Trap Waste	798.45	556.31
02 03 04	Unsuitable food waste	20.50	-
20 01 08	Compostable Food Waste	26659.86	23359.05
19 12 07	Wood/ Sawdust	16.42	1546.02
02 05 02	Sludge Dairy Industry	1027.39	778.72
20 02 01	Green Waste	56.78	60.74
02 01 06	Sludge Textile Industrial	170.36	163.12
02 02 01	Sludge Animal Origin Washing	-	21.46
20 01 08	Compostable Food Waste (Commercial)	2633.11	2384.46
	TOTAL TONNAGE	31382.87	28869.88

3.4 Waste Disposed

Of the total 28,869.88 tonnes accepted at the facility for composting in 2013 2,925.89 tonnes of the material was of a non-compostable fraction and was transferred from the material as a stabilised residual waste to landfill. The remaining material was suitable for composting and was sold as a product or returned into the operation to assist in the composting process and enable the production of compost.

3.5 Waste Recovered/Compost Produced

In 2013 8,110.67 tonnes of compost was produced at the facility and was either sold to landscape gardeners or arable farmers in the area.

4 Contribution to the achievement of recovery targets

4.1 Proposal for the contribution of the facility to the achievement of targets for the reduction of Biodegradable waste to landfill as specified in the landfill Directive

Progressive targets have been set out in the Landfill Directive (1999/31/EC) to reduce the proportion of biodegradable municipal waste landfilled. By 2006 Member States were restricted to land filling a maximum of 75% of the total weight of biodegradable municipal waste generated in 1995 (1,220,840), the baseline year. This target is further reduced to 50% of the 1995 baseline by 2009 and 35% by 2016. According to the National Waste Report 2011, an estimated 1,789,054 tonnes of biodegradable municipal waste was generated in Ireland in 2011.

Kilmainhamwood Compost, Ballynalurgan, Kilmainhamwood, Kells, Co. Meath have been successfully contributing towards National Targets and diverted approximately 18,709 tonnes in 2007, 20,651 tonnes in 2008, 20,748.84 tonnes in 2009, 20,815 tonnes in 2010, 26,889.94 tonnes in 2011, 31,383 tonnes in 2012 and 28,870 tonnes in 2013 of biodegradable waste from landfill for composting. Since its establishment in 2006 the facility has diverted successfully some 171,378 tonnes of biodegradable material away from landfill and produces an excellent resource in the form of compost. This material would have historically gone for disposal to licensed landfills. In 2014 Kilmainhamwood Compost will extend its facility to 40,000 tonnes. It has now received its new waste licence W0195-02 to enable it to increase incoming tonnage.

Thornton's Recycling offer all their customers the opportunity to segregate all biodegradable waste at source. The facility at Ballynalurgan, Kilmainhamwood, County Meath, and (Waste License W0195-01) has proven to be very successful. The facility accepts non-hazardous biodegradable wastes (including industrial sludge's, household and commercial waste for composting). Thorntons Recycling offers a three bin collection service to all households it services in Kildare, Meath and Dublin. It also offers a brown bin service to all commercial customers such as hospitals, hotels, restaurants etc. Kilmainhamwood Compost will aim to continue to increase the quantity of biodegradable waste that can be diverted from landfill even further and assist Ireland in achieving Targets lay down by the landfill Directive (1999/31/EC).

4.2 The recovery of non hazardous biodegradable waste

All non hazardous biodegradable waste arrives at the facility and when accepted is tipped in the reception hall. After inspection the material is amended with other organic material such as wood chip or sawdust in order to create a blend with a Carbon: Nitrogen ratio of 30: 1, moisture content of 65% and with an open texture. This material will be placed into our composting bays and achieves temperatures in excess of 60°C. After 3 weeks the material is screened and the screened compost is placed into pasteurization in order to comply with the ABP Regulations, 70°C for 60mins with a 12mm particle size. After a total period of 8 weeks the composting material will have matured and using Schedule E of Licence W0195-01 can be classified in either a class I or class II compost. Any end product not meeting this standard can be reworked in the process or classified as a stabilized bio-waste and disposed of at an approved landfill site.

5.0 Summary Report and Interpretations on Environmental Monitoring and Emissions Data

In accordance with Schedule D of PTWDL waste licence W0195-01 monitoring of dust, noise, surface water, groundwater and air microbes were carried out during the reporting period of 2013. The following section details results obtained and interpretations of results.

5.1 Total Dust Deposition 2013

Three fixed monitoring locations (DA, DB and DC) were used to perform total dust deposition monitoring quarterly over the 30 day sampling period as per Waste license W0195-01. The monitoring locations are presented in Appendix 1. The results presented in *Table 5.1* illustrate that total depositional dust at all locations. All dust depositions levels were under the guideline limit, 350 mg/m²/day, recommended by the EPA as per conditions of W0195-01. Quarterly reports were submitted to the EPA in 2013.

Table 5.1 Average ambient Total dust deposition concentrations at three monitoring locations at the Kilmainhamwood Compost 2013

Dust Location	Units	Q1 2013	Q2 2013	Q3 2013	Q4 2013
DA	mg/m ² /day	188	164	180	148
DB	mg/m ² /day	167	156	130	169
DC	mg/m ² /day	202	192	122	111

5.2 Noise Monitoring 2013

The noise survey was carried out at the location N1 referenced in the waste licence (see monitoring location Appendix 1). Monitoring was carried out on a quarterly basis as per Schedule D of waste licence W0195-01. The monitoring results are presented in *Table 5.2*. The results presented in *Table 5.2* illustrate that recorded noise levels at all locations. Reports have been submitted to the EPA, as per waste license requirements, and all levels displayed in *Table 5.2* are below the emission levels set down by the waste license W0195-01.

Table 5.2 Recorded Noise Levels dB (A) – Intervals 30 minutes 2013

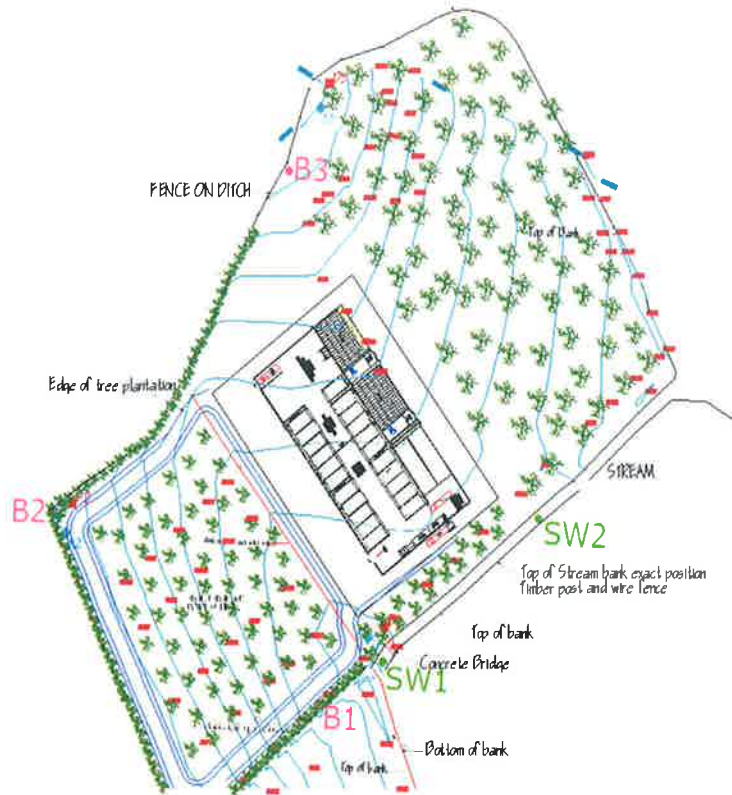
Noise Location	Time	unit	Q1	Q2	Q3	Q4
	Day	Leq	52.1	49.5	46	54
	Day	L10	49.6	44.3	44	43
N1	Day	L90	43.2	42.1	41	26
	Night	Leq	39.2	37.6	42	39
	Night	L10	37.2	35.1	43	42
	Night	L90	35.1	36.3	37	34

Quarterly Noise reports were submitted to the EPA.

5.3 Groundwater and Surface Water

As per Schedule D of waste licence W0195-01 Groundwater was monitored at B1, B2 and B3 bore wells and Surface Water was monitored quarterly at SW1 and SW2. Figure 5.3.1 shows the locations of the monitoring points and the results are outlined in the tables below.

Figure 5.3.1 Monitoring Locations of Surface Water and Groundwater



- SW1** -----Downstream Monitoring Point.
- SW2**-----Up stream Monitoring Point.
- B1** -----Groundwater Well No.1 Monitoring Point.
- B2** -----Groundwater Well No.2 Monitoring Point.
- B3** -----Groundwater Well No.3 Monitoring Point

Groundwater reports were submitted to the EPA and any elevations were discussed in detail in these reports. The results of monitoring during the reporting period are summarised in the following tables;

Table 5.3.2

MONITORING WELL B1: Chemical Analysis of Groundwater.						
PARAMETERS	UNIT	Limit	13/07/12	19/11/12	20/09/13	09/12/13
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>	mAoD(malin)		80.81	80.81	80.81	80.81
Colour	-	No abnormal change				
Conductivity @ 25°C	uS/cm	1,000				
Odour	-					
pH	pH Units	6.5-9.5	7.5	7.4	7.3	7.4
Temperature	deg C	25				
Ground Water Level	M		63.83	63.71	70.11	63.81
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.5	7.4	7.3	7.4
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	<0.01	<0.01	<0.01	<0.01
Calcium	Ca mg/l	200	-	105.2	-	80.2
Chloride	Cl mg/l	30	21	18	17.2	11.14
Nitrate	NO ₃ mg/l	25	-	0.22	-	0.52
Phosphorous	P mg/l	-	-	0.043	-	0.445
Potassium	K mg/l	5	-	5.811	-	4.415
Ortho Phosphate	PO ₄ mg/l	0.03	-	0.04	-	0.096
Sodium	Na mg/l	150	-	28.87	-	22.71
Sulphate	SO ₄ mg/l	200	641.61	171.5	156.67	146.85
<i>Metals</i>						
Boron	B mg/l	1	-	0.08814	-	0.2087
Cadmium	Cd mg/l	0.005	-	<0.0009	-	0.000148
Chromium (Total)	Cr mg/l	0.03	-	<0.0024	-	0.0148
Copper	Cu mg/l	0.03	-	0.000995	-	0.001072
Iron	Fe mg/l	0.2	-	0.1806	-	0.001863
Lead	Pb mg/l	0.01	-	0.003386	-	0.01141
Magnesium	Mg mg/l	50	-	38.86	-	26.3
Manganese	Mn mg/l	0.05	-	0.158	-	0.3348
Nickel	Ni mg/l	0.02	-	0.002224	-	0.002224
Zinc	Zn mg/l	0.01	-	0.1245	-	0.3535
<i>Bacteria</i>						
Feacal Coliforms	cfu/100ml	0.00	-	6	-	56
Total Coliforms	cfu/100ml	0.00	-	100	-	60
List I/II			-		-	
Volatile Organic Compounds	mg/l		-	<0.001	-	<0.001
Semivolatiles	mg/l		-	<0.0005	-	<0.0005
Pesticides	mg/l		-	<0.0001	-	<0.0001

Table 5.3.3

MONITORING WELL B2: Chemical Analysis of Groundwater.						
PARAMETERS	UNIT	Limit	13/07/2012	19/11/2012	20/09/13	09/12/13
FIELD ANALYSIS						
mAoD(malin)			86.93	86.93	86.93	86.93
<i>General Water Quality Parameters</i>						
Colour	-	No abnormal change				
Conductivity @ 25°C	uS/cm	1,000				
Odour	-					
pH	pH Units	6.5-9.5	7.2	7.2	7.4	7.4
Temperature	deg C	25				
Ground Water Level	M		64.73	64.86	64.93	65.43
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.2	7.2	7.4	7.2
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	<0.01	<0.01	0.408	0.01
Calcium	Ca mg/l	200	-	127	-	95.18
Chloride	Cl mg/l	30	13	13.94	14.47	14.07
Nitrate	NH ₃ mg/l	25	-	<0.110	-	<0.110
Phosphorous	P mg/l	-	-	<0.024	-	<0.04
Potassium	K mg/l	5	-	2.805	-	2.485
Ortho Phosphate	PO ₄ mg/l	0.03	-	0.01	-	0.031
Sodium	Na mg/l	150	-	42.71	-	31.38
Sulphate	SO ₄ mg/l	200	178.73	259.06	178.73	183.8
<i>Metals</i>						
Boron	B mg/l	1	-	0.06888	-	0.1691
Cadmium	Cd mg/l	0.005	-	<0.00009	-	0.00013
Chromium (Total)	Cr mg/l	0.03	-	<0.00214	-	0.00214
Copper	Cu mg/l	0.03	-	0.000228	-	0.01207
Iron	Fe mg/l	0.2	-	0.006903	-	0.1747
Lead	Pb mg/l	0.01	-	0.000141	-	0.004331
Magnesium	Mg mg/l	50	-	45.04	-	28.92
Manganese	Mn mg/l	0.05	-	0.3387	-	0.06978
Nickel	Ni mg/l	0.02	-	0.000273	-	0.001199
Zinc	Zn mg/l	0.01	-	0.03372	-	0.1716
Bacteria						
Feecal Coliforms	cfu/100ml	0.00	-	14	-	14
Total Coliforms	cfu/100ml	0.00	-	100	-	20
List I/II						
Organic						
Volatile Compounds	mg/l		-	<0.001	-	<0.001
Semivolatiles	mg/l		-	<0.0005	-	<0.0005
Pesticides	mg/l		-	<0.0001	-	<0.0001

Table 5.3.4

MONITORING WELL B3: Chemical Analysis of Groundwater.						
PARAMETERS	UNIT	Limit	13/07/2012	19/11/2012	20/09/13	09/12/13
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>						
	mAoD(malin)		86.51	86.51	86.51	86.51
Colour	-	No abnormal change				
Conductivity @ 25°C	uS/cm	1,000				
Odour	-					
pH	pH Units	6.5-9.5	7.3	7.4	7.8	7.6
Temperature	deg C	25				
Ground Water Level	M		68.41	69.91	67.81	76.31
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.3	7.4	7.8	7.6
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	<0.01	<0.01	<0.01	0.012
Calcium	Ca mg/l	200	-	94.59	-	80.64
Chloride	Cl mg/l	30	12	14.28	14.68	14.13
Nitrate	NH ₃ mg/l	25	-	0.56	-	0.63
Phosphorous	P mg/l	-	-	0.038	-	0.496
Potassium	K mg/l	5	-	2.581	-	2.422
Ortho Phosphate	PO ₄ mg/l	0.03	-	0.033	-	0.09
Sodium	Na mg/l	150	-	17.03	-	18.17
Sulphate	SO ₄ mg/l	200	127.41	118.42	127.41	117.8
<i>Metals</i>						
Boron	B mg/l	1	-	0.06207	-	0.02878
Cadmium	Cd mg/l	0.005	-	<0.00009	-	<0.00009
Chromium (Total)	Cr mg/l	0.03	-	<0.00214	-	0.004875
Copper	Cu mg/l	0.03	-	0.000221	-	0.02059
Iron	Fe mg/l	0.2	-	0.1243	-	0.6908
Lead	Pb mg/l	0.01	-	0.000129	-	<0.00002
Magnesium	Mg mg/l	50	-	20.96	-	20.32
Manganese	Mn mg/l	0.05	-	0.04571	-	0.002225
Nickel	Ni mg/l	0.02	-	0.000318	-	0.000156
Zinc	Zn mg/l	0.01	-	0.009455	-	0.01223
Bacteria						
Feacal Coliforms	cfu/100ml	0.00	-	0	-	0
Total Coliforms	cfu/100ml	0.00	-	0	-	0
List I/II						
Volatile Organic Compounds	mg/l		-	<0.001	-	<0.001
Semivolatiles	mg/l		-	<0.0005	-	<0.0005
Pesticides	mg/l		-	<0.0001	-	<0.0001

LEGEND	
-	No data reported or no analyses conducted
<	Less Than
Limit	EPA Report Towards setting the guideline values for groundwater protection
NDP	No Determination Possible

5.3. Surface Water Analysis

Results of the surface water were compared to the Salmonid Water Quality Standards - S.I. No 293 of 1988. Full detailed quarterly reports for surface water monitoring and additional reports as requested were forwarded to the Agency in 2013.

Samples taken for surface waste were taken from SW2 which represents the background water quality in the stream adjacent to the composting plant and from SW1 which is a monitoring location downstream of the main activities at the site. Table 5.3.5 and Table 5.3.6 display all results for surface water monitoring carried out in 2013.

Table 5.3.5: SW1 Results

Surface Water Monitoring Location SW1: Chemical Analysis

PARAMETERS	UNIT	Limit	2013		2013	
			16/03/2013	05/07/2013	20/09/2013	12/12/2013
<i>Notes</i>						
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>						
<i>Colour</i>	-		Clear	Clear	Clear	Clear
<i>Conductivity @ 25°C</i>	uS/cm		-	-	-	-
<i>Odour</i>	-		No Odour	No Odour	No Odour	No Odour
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
<i>Total Suspended Solids</i>	mg/l	<25	<10	<10	8	<10
<i>Mineral Oils</i>	mg/l	<5	<0.2	<0.4	<0.0025	<0.1
<i>pH</i>	pH Units	>6- <9	7.6	7.4	7.7	7.3
<i>Inorganics</i>						
<i>Total Ammonia</i>	NH ₄ mg/l	<1	0.07	0.05	0.219	0.04
<i>Chloride</i>	Cl mg/l		13.3	10.6	24.04	15.0

Limit - Salmonid Water Quality Standards - S.I. No 293 of 1988

LEGEND	
-	No data reported or no analyses conducted
<	Less Than
NDP	No Determination Possible

Table 5.3.6: SW2 Results**Surface Water Monitoring Location SW2: Chemical Analysis**

			2013	2013	2013	
PARAMETERS	UNIT	Limit	16/03/2013	05/07/2013	20/09/2013	12/12/2013
Notes						
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>						
Colour	-		Clear	Clear	Clear	Clear
Conductivity @ 25°C	uS/cm		-	-	-	-
Odour	-		No Odour	No Odour	No Odour	No Odour
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
Total Suspended Solids	mg/l	<25	<10	<10	5	<10
Mineral Oils	mg/l	<5	<0.2	<0.04	<0.0025	<0.1
pH	pH Units	>6- <9	7.3	7.4	7.8	7.2
<i>Inorganics</i>						
Total Ammonia	NH ₄ mg/l	<1	0.06	0.06	0.219	0.05
Chloride	Cl mg/l		13.1	10.3	23.05	14.80

5.4 Air Monitoring – Bacteria and Aspergillus Fumigatus

As per schedule D of the licence, bacteria and *Aspergillus fumigatus* monitoring was carried out by independent consultants Odour Monitoring Ireland, a copy of this report is contained within Appendix 4 of this report

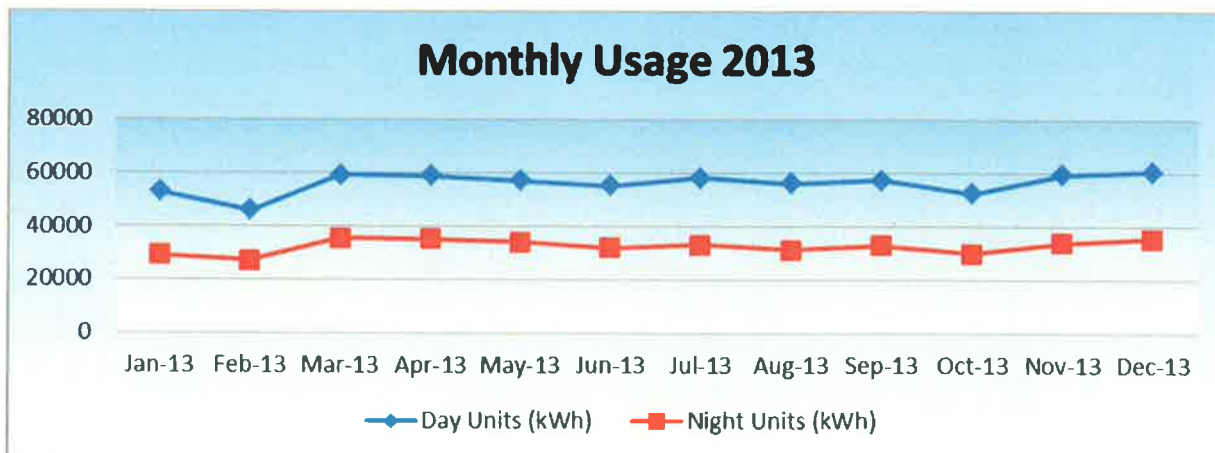
6.0 Resources and Energy Usage

The following section discusses resources such as Electricity, Fuel and Water used at Kilmainhamwood Compost in 2013. As per condition 5.7 of the licence a copy of the energy efficiency audit was carried out at the facility and was forwarded to the EPA in previous AER's. The company now has an energy management system in place which records trends and identifies management opportunities for savings in relation to electricity and diesel used at the facility monthly.

6.1 Electricity

Electricity consumption at the facility in 2013 was a total of 1,062,116 (KWh) a slight increase on 2012 total usage but may be attributed to construction work on site. Figures 6.1 display the monthly day and night time trend for the year's energy consumption at Kilmainhamwood Compost.

Figure 6.1 Energy Consumption 2013



6.2 Water

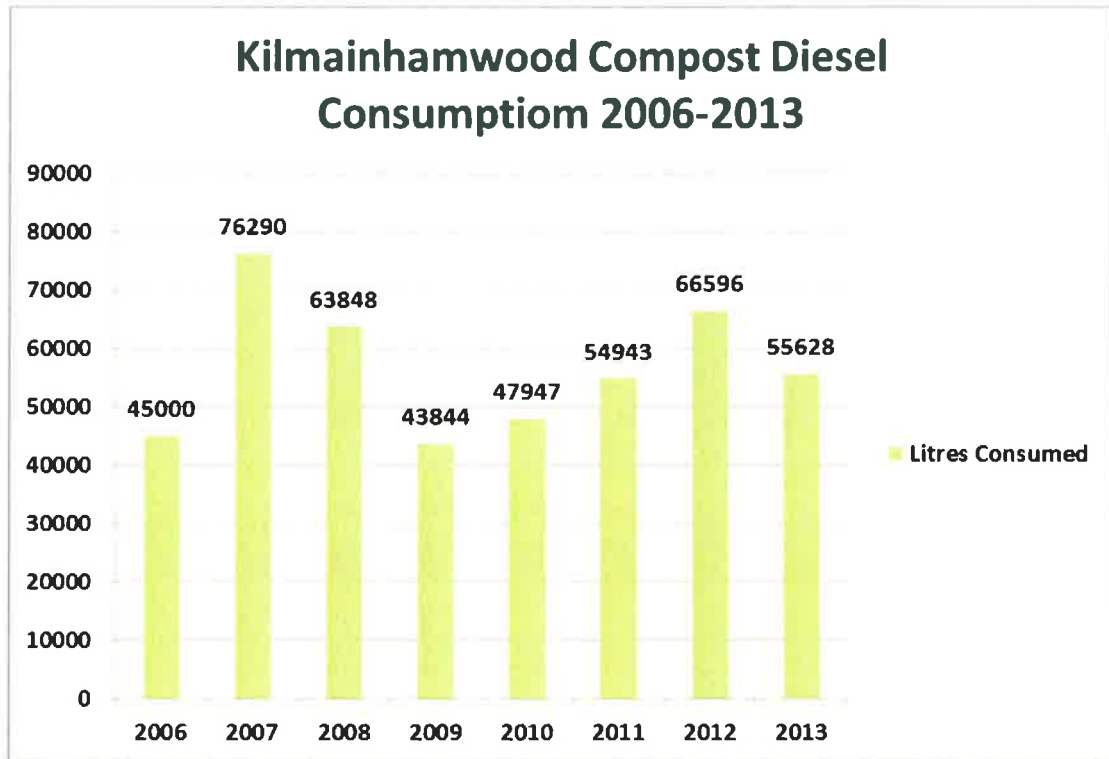
Kilmainhamwood compost is not connected to the local water mains and uses its rain collection tank as a source of water at the facility. This water is used for washing trailers, equipment and floors. No water is used in the process as the incoming material contains excess moisture.

Drinking water is supplied by a contract water supplier and is bought in large bottles. For emergency purposes there is an over ground collection tank that holds 90,000 litres and is supplied by Bore well 3 if required.

6.3 Diesel

The main consumption of diesel in 2013 was the loading shovels and shredding machine used in the composting processes. A total of 55,628 litres of diesel was consumed in 2013, a decrease from 66,596 litres in 2012. The decrease in diesel usage may be attributed to the decrease in tonnage processed at the facility. All machines are serviced regularly in order to achieve optimum fuel efficiency. The composting process at the facility is continuously monitored in order to assess energy efficiency and improvements which can be made.

Figure 6.3: Diesel Consumption 2006 – 2013



7.0 Development/Infrastructural Works

7.1 Site Developments 2013

During 2013 the following developments were carried out;

- **Training** - Staff training including machinery operation and driver certification
- **ISO-** Kilmainhamwood Compost maintained certification in standards for ISO 14001 Environmental, ISO 9001 Quality and OHSAS 18001 in 2013 and was audited in December 2013
- **Building Works** – During 2013 a major building expansion took place in line with the planned extension of the facility to 40,000 tonnes. A main contractor was appointed and construction works commenced in February 2013. A new reception hall, pasteurisation tunnel, outgoing compost hall and a new administration/welfare building was constructed
- **Weighbridge** – During 2013 the weighbridge was relocated to beside the new administration building
- **Composting bays** – Seven new additional composting bays were constructed inside the old reception area to allow for additional tonnage to be processed at the facility

7.2 Proposed Developments 2014

The company have secured planning and has extended the facility to 40,000 tonnes as per planning received. A new revised licence was issued by the EPA to the facility in February 2014. Proposed new developments at the facility include;

- Procedures to be amended in line with the new EPA waste licence
- New Energy Efficient LED lighted to be installed at the facility in 2014. Currently sourced and testing in the new reception hall area and these will be installed in all areas in 2014
- Stage 2 Approval to be obtained from Department of Agriculture for new pasteurisation tunnel in line with animal by products
- Investment of new mobile equipment
- Continuous development of facility procedures in line with ISO certification and Animal By-Products Regulations.

7.3 Plant Capacity 2013

During 2013 28,869.88 tonnes of waste was processed at the facility. The facility contains the following plant which processes the waste on site;

- Three L90E Volvo Loading Shovels
- One KOMPTech 5000S Slow speed shredder
- One McDonald International 50ft Screener

The L90E Volvo Loading Shovels can move over 100 tonne of material per hour so they are well within their working capacity.

The Komptech Shredder can shred 100 Tonne per hour.

The McDonald Screener has a capacity of 120 tonne per hour.

The average waste intake in 2013 was 550 tonnes per week and all of the above plant is well within their working Capacity. Kilmainhamwood Compost is part of the Thornton's Recycling Group so if there were any emergency breakdowns or additional plant machinery required then they can be brought from another facility for use on site. Thorntons Recycling have a maintenance garage which is fully equipped with mechanics, fitters etc which are available for use by Kilmainhamwood Compost if required.

8.0 Schedule of Environmental Objectives and Targets for 2014

The contents of the Integrated Management System (IMS) are too large to contain within the main body of this report, however the Agency can access the system for inspection on a specially designated Drive (X Drive or IMS Drive) at any of the companies' site offices.

A new schedule of objectives and targets for the forthcoming year of 2014 for Kilmainhamwood Compost is contained within Appendix 5 of this report.

9.0 Report on the progress towards achievement of the Environmental Objectives and Targets contained in the previous year's report

An update on the Environmental Objectives and Targets for Kilmainhamwood Compost, waste licence W0195-01, as detailed in the Management Programme for the company for 2013 is contained within the integrated management system on site. Kilmainhamwood Compost established an Environmental Management System on commencement of activities in 2006. This was further expanded in recent years to cover a number of additional procedures specific to composting and the Animal By-Products Regulations. The following is a summary of what is currently on the IMS and which relates to Kilmainhamwood Compost;

Top Level Manual
Legal Register
Emergency Response Plans
Policies – EHS and Quality
Key Performance Indicators
Training File – Skills Matrix
Third Party Contractors Files
Management Programme – Objectives and Targets
Staff Handbook

Environmental Procedures

- Communications Programme
- Waste Outlet Audit
- Environmental Monitoring and Analysis
- Odour Control
- Oil – Chemical Spill
- House Keeping
- Biofilters Monitoring Procedure Kilmainhamwood
- Feedstock Acceptance Kilmainhamwood
- Vehicle Emergency Response WCP Procedure
- Residual Waste Management Kilmainhamwood
- Tanker Emergency Response WCP Procedure
- Screen Sampling Procedure for Kilmainhamwood
- Housekeeping Procedure Kilmainhamwood
- Pathogen Sampling Procedure Kilmainhamwood
- Filling Pasteurisation Tunnel Procedure.
- Pasteurisation procedure
- Emptying Compost from Pasteurisation Tunnel Procedure
- Compost quality sampling procedure
- Biofilter turning and media change procedure

Health and Safety

- A detailed Safety Statement with risk assessments is also contained within the EMS
- An emergency site specific plan is available for Kilmainhamwood Compost.

Quality

- Staff Appraisal
- Purchasing
- Weekly Operating Report Procedure
- Customer Focus
- Third Party Contractors

Generic Procedures

- Aspects
- Legal Identification and Evaluation
- Management Programmes
- Communications
- Training
- Emergency Response
- Monitoring and measurement
- Complaints
- Non-conformance and preventative actions
- Document control
- Internal auditing
- Management Review
- Records Management
- Risk Assessment
- Contractor Control
- Operational Control

10 Tank, drum, pipeline and bund testing.

At Kilmainhamwood Compost there three underground tanks in use. There is one original tank which collects the leachate from the biofilters and two newly constructed tanks. One collects washings and run off from the reception Hall and the wash bay, the other acts as a pressure trap for the newly constructed Pasteurization tunnel. There are no fuel tanks on site and diesel is filled via a bunded mobile tank. Kilmainhamwood Compost commissioned Fitz Scientific consultants to carry out an integrity test on all three underground tanks in 2013 to BS8007 standards. A copy of this report is contained within Appendix 7 of this report.

10.1 Pipeline Tests

All pipe lines are running free and clear and will be serviced on a regular basis by Thornton's Tanker Services. Copies of worksheets are maintained on site for all services carried out.

11 Summary of Incidents and Complaints

11.1 Incidents

There were no incidents recorded in 2013.

11.2 Complaints

There were 17 complaints made to the Facility and/or to the EPA during 2013. Full details of the complaints have been maintained on site at the facility as per our complaints procedure PM08 – Complaints

12 Review of Nuisance Controls

Potential nuisances at composting facilities include dust, noise, odour, litter, birds, vermin and mud. Kilmainhamwood Compost do their utmost to control any nuisance which may occur at the facility, checks on nuisances are carried out daily and corrective actions are carried out as required.

12.1 Dust

Kilmainhamwood Compost is required to carry out dust monitoring quarterly (please refer to section 5.1 of this report). As all waste processes take place indoors there are no dust emissions from the process. The main source of dust is from the roadways which are wetted down during dry weather conditions. In an effort to further reduce dust emissions from the yard and roadways Kilmainhamwood compost use Thornton's road sweeper on a regular basis at the facility.

12.2 Noise

Noise monitoring surveys were conducted at the facility; see section 5.3 of this report. As all activities takes place inside the building noise levels are well within the permitted range.

12.3 Odour

All waste activities take place inside the fully enclosed building which is under negative pressure. A survey of the biofilter system was carried out it was proposed to upgrade the odour abatement system and install an acid scrubber. In 2009 the composting bays were enclosed in order to capture the process air.

During 2010 installation of the acid scrubber was completed and the total upgrade was commissioned in quarter 1 of 2011. This has led to the ammonia being removed from the processed air before entering the biofilter system and has thus enhanced the efficiency of the biofiltration system.

In February 2010 the media in biofilter 1 was removed and replaced with shredded roots and trees. This proved to be a great success. The media in biofilter 2 was replaced in February 2011 and has also proved to be a great success. This biofilter system is designed to breakdown any foul odours before it leaves the system. Daily monitoring of this system takes place and the biofilters were continuously assessed during 2013.

12.4 Litter

Daily checks are carried out on litter within and around the site boundary any litter which may escape is cleared up immediately. All waste transportation vehicles are either enclosed or have a net which covers waste, preventing littering while waste is in transit. All staff sweep and tidy picking areas constantly throughout the day and daily housekeeping checks are carried out by supervisors in all areas with random checks carried out by the site manager to ensure that these are completed. All housekeeping checks are maintained on file in the site office.

12.5 Birds

Kilmainhamwood Compost has no problems with birds at the facility. Doors at the facility are kept closed.

12.6 Vermin

Complete Pest Control are contracted to carry out pest control for the facility. This includes rodents and flies. They conduct regular checks of all bait points around the facility which effectively controls rodents at the facility, all documentation for site visits and reports are maintained on site.

Flies have not been a problem at the facility. However to ensure a fly problem never develops at the facility, Complete Pest Control carry out mitigation measures of spraying of areas where flies would most likely occur at regular intervals e.g. in the corridors.

12.6 Mud

All surfaces are hard standing and as such mud is not an issue at the facility. We also have a regular visit from Thornton's road sweeper that keeps these hard standings clean

13 Management Structure, Programme for Public Information

Programme of Public Information

Kilmainhamwood Compost operates an open door policy at the facility and has carried out tours with local representative groups, clients etc.

New and existing clients are brought through our waste acceptance procedures and are supplied with information by sales representatives or call centre agents in relation to what waste types we can accept at the facility. Thornton's Recycling has also upgraded its website so customers can access information such as waste collection permit numbers and waste licences etc.

All information relating to activities carried out at Kilmainhamwood Compost is maintained on site. Public information is accessible at the site at all times at the site office or at the Office of Environmental Enforcement. Detailed Communications Procedures (PM04- Communications, PM08 Complaints Procedure and EP01 – Communications Programme) has been implemented in our IMS and are used throughout the company.

Management Structure

Kilmainhamwood Compost is part of the Thornton's Recycling Group and as such has access to the Management Facilities of Thornton's Recycling. These facilities include an Environmental Department which includes Mercedes Kavanagh and David Duff. Below is a brief outline of the management structure of the site;

Paul Thornton **Shane Thornton**
Director *Director*

Gary Brady
Managing Director

Tom McDonnell
Facility Manager

Brendan Hilliard
Deputy Manager

General Operatives
(3)

The Facility Manager of Kilmainhamwood Compost is Tom Mc Donnell. Brendan Hilliard completed the course for Certificate in Compost Facility Operation is deputy manager when Tom Mc Donnell is not on site.

14 Quantity of Compost Produced 2013

The total amount of compost produced in Kilmainhamwood compost in 2013 was 8,110.67 Tonnes. All compost produced met the parameters of Class II Standard.

There were eight batches of compost analysed and a summary of their reports are outlined below;

Table 14.1a Summary Compost Quality Analysis 2013

Compost Record Summary 2013				
Parameters	Batch 20713A	Batch 21213A	Batch 21813A	Batch 22513A
<i>Nutrients</i>				
Nitrogen g/kg DM	3.28	3.35	3.10	3.17
Phosphorous mg/kg DM	5,950	5,110	4,100	4,390
Potassium mg/kg DM	13,500	11,300	12,000	11,500
<i>Trace elements</i>				
Cadmium mg/kg Dm	0.891	0.994	0.663	0.611
Chromium mg/kg DM	42.4	163	121	79.5
Mercury mg/kg DM	0.1	<0.1	0.13	0.11
Lead mg/kg DM	79.2	91.23	81	124.56
Zinc mg/kg DM	314	247	339	268
Nickel mg/kg DM	28.9	67.5	63.2	46.4
Copper mg/kg DM	167	110	127	136
Arsenic mg/kg	5.55	6.23	5.35	6.40
<i>Physical Contaminants</i>				
Glass/Metal/Plastic %	0.0	0.07	0.12	0.12
Plastic %	0.0	0.06	0.10	0.25
Stones % >5mm	1.0	4.29	6.6	5.89
<i>Maturity testing</i>				
Carbon:Nitrogen ratio	12.30	11	9.76	9.97
CO ₂ evolution mgCO ₂ /g	19.55	2.25*	3.81*	21.46
<i>Physical Characteristics</i>				
Moisture content %	29.40	32	26.9	27.80
Organic Carbon %m/m	69.6	63.80	30.35	54.5
PH	6.08	8.45	6.17	6.17
<i>Pathogen Testing</i>				
Salmonella Species	Absent	Absent	Absent	Absent
E. coli cfu	<10	<10	<10	<10
Compost Class Standard	Class II	Class II	Class II	Class II

Table 14.1b Summary Compost Quality Analysis 2013

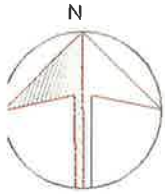
Compost Record Summary 2013				
Parameters	Batch 23513A	Batch 23913A	Batch 24413A	Batch 24613A
<i>Nutrients</i>				
Nitrogen g/kg DM	3.01	2.96	3.03	3.42
Phosphorous mg/kg DM	4,440	3,900	7,090	5,580
Potassium mg/kg DM	9,950	9,960	13,300	12,400
<i>Trace elements</i>				
Cadmium mg/kg Dm	0.823	0.851	0.888	0.759
Chromium mg/kg DM	55.60	41.9	57.40	49.3
Mercury mg/kg DM	0.11	0.12	<0.1	<0.1
Lead mg/kg DM	93.79	88.1	73.28	56.71
Zinc mg/kg DM	292	261	267	227
Nickel mg/kg DM	34.9	25.5	42.80	36.4
Copper mg/kg DM	83.3	85.2	117	99.1
Arsenic mg/kg	6.20	4.88	7.52	6.26
<i>Physical Contaminants</i>				
Glass/Metal/Plastic %	0.1	0.1	0.0	0.1
Plastic %	0.0	0.0	0.0	0.1
Stones % >5mm	2.10	0.88	1.49	1.45
<i>Maturity testing</i>				
Carbon:Nitrogen ratio	12.80	12	10.40	9.50
CO ₂ evolution mgCO ₂ /g	15.87	13.87	6.98	6.74
<i>Physical Characteristics</i>				
Moisture content %	29.3	28.8	34.5	34.5
Organic Carbon %m/m	66.3	61	54.4	55.90
PH	7.82	7.9	7.73	7.85
<i>Pathogen Testing</i>				
Salmonella Species	Absent	Absent	Absent	Absent
E. coli cfu	<10	<10	<10	<10
Compost Class Standard	Class II	Class II	Class II	Class II

*AT TIME OF SPREADING

APPENDIX 1

LEGEND

- DUST MONITORING (D1, D2, D3)
- ▲ NOISE MONITORING (N)
- ◆ SFP MONITORING (S1, S2, S3)
- BOREHOLE (B1, B2, B3)
- SURFACE WATER (SW1, SW2)



APPENDIX 2

WEIGHBRIDGE VERIFICATION TEST REPORT NO : SO10214

CUSTOMER: Thonntons Compost
SITE ADDRESS: Kilmainhamwood
Co. Meath

TYPE APPROVAL CERT NO: DK 0199.27
INDICATOR TYPE: LD5204 10000224
DATA PLATE: Yes
INDICATOR SERIAL NO: 100427616
MINIMUM CAPACITY (kg): 400
MAXIMUM CAPACITY (kg): 50000
DIVISION (e) (kg): 20
PRINTER SERIAL NO:
TARE FACILITY: Disabled

SERVICE REPORT NO: 16223
MANUFACTURER: Leon
TYPE: Weighbridge
SIZE: 18M X3M
LOCATION: Yard

Accuracy of Zero, Linearity/Hysteresis, Discrimination & Comparison Tests = *

Approximate Test Interval (e)	MPE (e)	Actual Load (kg)	Indicator Up	Display Error (e)	True Error (e)	Indicator Down	Display Error (e)	True Error (e)	SL	Discrimination	Comparison
ZERO	0.25	0	0	0.00		0	0.00				
2	0.25	40	40	0.00	0.00	40	0.00	0.00			
20	0.25	440	440	0.00	0.00	438	-0.10	-0.10		Yes	Yes
500	0.50	10040	10038	-0.10	-0.10	10038	-0.10	-0.10			
1000	1.0	20040	20038	-0.10	-0.10	20038	-0.10	-0.10	SL1		
1250	1.0	25040	25036	-0.20	-0.20	25036	-0.20	-0.20		Yes	Yes
2000	1.0	40040	40036	-0.20	-0.20	40036	-0.20	-0.20	SL2		
2250	1.5	45040	45036	-0.20	-0.20	45036	-0.20	-0.20		Yes	Yes
SL1		20040									
SL2		40040									
PASSED		Yes									

SL - Substitute Load

NOT TESTED AT MAX CAPACITY, BALLAST NOT PROVIDED

REPEATABILITY TEST (Zero Track On)
50%-MPE(e) 0.30
>90%-MPE(e) 1.50

ROLLING LOAD TEST
MPE(e) 1.50
Max Load 40000

	Indicator	Indicator	Indicator
50%	25038	25036	25040
>90%	45034	45036	45036
PASSED	Yes		

	Indicator	Indicator	Indicator
→	35036	35034	35034
←	35036	35036	35038
PASSED	Yes		

ECCENTRIC LOAD TEST - MPE (e): 0.5

Position	1	2	3	4	5	6	7	8	9	10
Test Load	8040	8040	8040	8040	8040	8040	8040	8040		
Indicator	8042	8042	8038	8036	8042	8044	8038	8038		
Error (e)	0.10	0.10	-0.10	-0.20	0.10	0.20	-0.10	-0.10		
PASSED	Yes									

LOADCELL DATA

Number	8
Make	Vishay/Revere
Type	Revere ASC
Test cert	R60/2000-DE-03.02
Divisions	3000
Conformity	Yes
PASSED	Yes

COMPARISON TEST

Printer	N/A
Remote	N/A
PC	Yes
Other	N/A
PASSED	N/A

MARKINGS

CE	Yes
SEALING	Yes
CLASS	Yes
GREEN M	Yes
PASSED	Yes

OTHER TESTS

Leveling	N/A
High Res	Yes
Max +9e	N/A
Zero 4%	N/A
PASSED	N/A

CUSTOMER CONTACT:
PHYSICAL CONDITION: Good
TEST WEIGHTS USED: PM1-28
DT1-17
VERIFICATION DATE: 20 November 2013

EMAIL:
AUTHORISED PERSON: 10000048-Milly Perry
CERTIFICATE NO: T257171
03589
NEXT CALIBRATION DATE: 20 November 2014

SIGNATURE: *D. Campbell*

DATE: 26/11/2013

APPENDIX 3



Mr. Tom McDonnell,
Thorntons Recycling Ltd.,
Unit S3B,
Parkwest Business Park,
Dublin 12.

Our Ref: RNP 6 – 1 (Comp - 06)

26 February 2014

Dear Mr. McDonnell,

Re: Approval under the European Communities (Transmissible Spongiform Encephalopathies and Animal By-products) Regulations 2008 (S.I. No 252 of 2008) (as amended) and in accordance with Regulation (EC) No. 1069 of 2009 and Regulation (EU) No. 142 of 2011.

I refer to your approval to operate **Kilmainhamwood Compost** located at Ballynalurgan, Kilmainhamwood, Kells, Co. Meath as a **Composting Plant** which expires on the **28 February 2014**.

Pending the signing into law of the revised statutory instrument that gives legal effect to the above-mentioned EU Regulations and the finalisation of the composting conditions document, your approval to operate has been extended until **31 May 2014**.

A revised Certificate of Approval together with updated Ministerial Conditions will issue to you thereafter.

If you have any queries, please ring me at 057 8694356.

Yours sincerely

Mairéad Broderick
Milk and Meat Hygiene/ABP/TSE Division
Grattan House, Grattan Business Centre,
Dublin Road, Portlaoise, Co Laois.

Mairead.Broderick@agriculture.gov.ie

APPENDIX 4



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E-mail: info@odourireland.com
www.odourireland.com

**BIOAEROSOL IMPACT ASSESSMENT AT KILMAINHAMWOOD COMPOST,
NOBBER, CO. MEATH**

PERFORMED BY ODOUR MONITORING IRELAND ON BEHALF OF KILMAINHAMWOOD COMPOSTING LTD

PREPARED BY:	Dr. Brian Sheridan
ATTENTION:	Mr. Tom McDonnell
DATE:	31 st March 2014
REPORT NUMBER:	2014135(1)
DOCUMENT VERSION:	Version 1
REVIEWERS:	


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Document Amendment Record

Client: Kilmainhamwood Compost Ltd

Title: Bioaerosol Impact Assessment at Kilmainhamwood Compost Ltd, Nobber, Co. Meath

Project Number: 2014135(1)			Document Reference: Bioaerosol Impact Assessment at Kilmainhamwood Compost Ltd, Nobber, Co. Meath		
2014135(1)	Document for review	B.A.S.	JMC	B.A.S	31/03/2014
Revision	Purpose/Description	Originated	Checked	Authorised	Date
					

1. Introduction

Odour Monitoring Ireland was commissioned by Thorntons Recycling to perform a bioaerosol assessment in the vicinity of Kilmainhamwood Compost, Nobber, Co. Meath. The bioaerosol assessment was carried out in accordance with the guidance document established by the UK Composting Association "Standardised protocol for the testing and enumeration of micro organisms". Total Mesophilic bacteria and *Aspergillus fumigatus* sampling was performed using equivalent Andersen single stage impactors. Triplicate sampling and plates / impactor blanks were performed at each of the three identified sampling locations within the vicinity of Kilmainhamwood Compost facility located at Nobber, Co. Meath.

The bioaerosol concentration levels were determined at each sampling location in triplicate. Three sampling locations were chosen including Loc 1, Loc 2 and Loc 3. Currently, there are no significant bioaerosol impacts in the vicinity of Kilmainhamwood Composting facility located at Nobber, Co. Meath with all reported bioaerosol ambient air concentrations lower than the guideline assessment criteria range for the operating facility.

1.1 Scope of the study

The main aims of the study were:

- To enumerate the ambient air concentration of two bioaerosols groups namely: *Aspergillus fumigatus* and Total Mesophilic bacteria during operation of the composting facility at Nobber, Co. Meath. These are the two most frequently requested bioaerosols to be monitored for composting plants.

2. Materials and methods

This section describes in detail the materials and methods used throughout the study period. Monitoring was carried out on the 18th March 2014.

2.1 Sampling locations

Figure 5.1 and Table 2.1 illustrate the sample location in the vicinity of the site. Sample locations were predominately chosen on the basis of meteorological conditions on the day of the survey whereby one upwind location and two downwind locations were chosen to determine the bioaerosol concentration levels in the vicinity of the facility.

Table 2.1. Monitoring locations and parameters monitored.

Location ID	Parameter monitored	Location details
Loc 1	Total Mesophilic bacteria and Aspergillus fumigatus	Upwind of site at boundary
Loc 2	Total Mesophilic bacteria and Aspergillus fumigatus	Downwind of site on boundary
Loc 3	Total Mesophilic bacteria and Aspergillus fumigatus	Downwind of site on boundary

2.2 Meteorological data

Table 2.2 illustrates the average wind direction during over the monitoring period. Average wind speed was breeze. Cloud cover was high with an octave rating of 5 to 6 (i.e. on an 8 point scale). Barometric pressure was approximately 98.60 KPa. Relative humidity was high with an average reading of 84% while temperature was low with a value of 7.40 degrees Celsius recorded. This would be typical for this time period of the year in Eastern Ireland.

Table 2.2 Meteorological conditions during the monitoring period.

Parameter	Day 1-18 th March 2014
Wind direction (From)	NW
Wind speed (m s ⁻¹)	5.40
Cloud cover (Octaves)	5 to 6
Barometric pressure	98.6
Temperature (°C)	7.40
Relative humidity (%)	84
Rainfall (mm)	0.10

2.3 Bioaerosols monitoring

Monitoring of bioaerosols was performed in strict accordance with available information and advice including the sources:

1. Standardised Protocol for the Sampling and Enumeration of Airborne Micro-organisms at Composting Facilities. (1999). The UK Composting Association.
2. Macher, J. (1999). Bioaerosol assessment and control. American Conference of Government Industrial Hygienists, Kemper Woods Centre, 1330 Kemper Meadow Drive, Cincinnati, OH.

3. Direct Laboratories, (formerly ADAS), Woodthorne, Wergs Road, Wolverhampton, WV6 8QT.
4. SKC Inc, 863 Valley View Road, Eighty-four, PA, 15330.

Impactor plate sampling was carried out in accordance with the document "Sampling Protocol for the Sampling and Enumeration of Airborne Micro-organisms at Composting facilities, The Composting Association, UK.

One sampling technique was employed namely:

- Biostage single stage 400 hole impactor (SKC Inc, PA)- This is directly equivalent to the Andersen N6 single stage impactor and meets the requirements of NIOSH 0800 and NIOSH 0801 biological sampling standards (i.e. this impactor is a direct copy of the Andersen N6 impactor with added benefits including the Surelok system which prevents any air leakages. This was an inherent problem of the Andersen N6 single stage impactor).

Generally, sampling times of 10 to 15 minutes were used to assess ambient background levels using the impactor plates as longer sampling times can lead to desiccation of the plate and impacted microbes. Sampling times of 10 minutes were used for the duration of this study.

The Biostage (i.e. Andersen N 6 equivalent impactor) was calibrated using a Bios Primary flow calibrator to a volumetric flow rate of 28.3 *litres min*⁻¹ and Hi Flow 30 battery operated automatically timed pumps were used for suction airflow.

The Biostage impactors were fixed to tripods ensuring an adjustable sampling height of between 1.0 to 1.90 metres. The sampling height was fixed at 1.50 metres. Two Biostage impactors were used throughout the study period. The use of correctly designed sampling equipment ensured correct operation at all times throughout the study period.

The Irish Equine Centre (ISO 17025 accredited) tested two medias including Malt Extract Agar media (MEA) for *Aspergillus fumigatus*, and standard plate count agar (TVC) for total Mesophilic bacteria. MEA media facilitates the sporulation of *Aspergillus fumigatus*, which is used to identify the species. Sterile fresh 90mm plates were supplied by Fannin Healthcare accredited laboratory services and placed in sealed coolers. Fresh plates were used to eliminate the formation of a skin upon the plate upper surface (i.e. develops with age). It was thought that this may cause problems while using an impaction method (i.e. particle bounce off).

2.4. Transport of bioaerosol samples

All sampling plates during monitoring were allowed to equilibrate to ambient temperature before sampling. This allowed for the development of less harsh conditions upon impacted bioaerosols. It was also noticed that cooled plates (approximately 5°C) formed an outer "skin" which could facilitate particle bounce. Following equilibration, it was apparent from observation, better "knitting" of impactor plates occurred. Before each sampling event, the Biostage impactors were sterilised using cotton wool and 70% iso-propanol. The impactors were autoclaved for complete sterilisation before sampling. Once sampled, all agar plates were inverted, sealed with parafilm, placed within a flexible plastic container, and neatly stacked within a mobile cooler for delivery to Irish Equine Centre laboratory located in Kill, Co. Kildare. Once received, they were incubated at the appropriate temperatures of 30°C for Total viable counts (i.e. Mesophilic bacteria) and 37°C for *Aspergillus fumigatus* by the laboratory technician.

2.5 Bioaerosol assessment criteria

Table 2.3 illustrates the assessment criteria to be used for comparison of results during operations to ascertain ambient air quality in the vicinity of the Kilmainhamwood Composting facility located at Nobber, Co. Meath.

Table 2.3. Assessment criteria for the ambient bioaerosol air quality in the vicinity of Kilmainhamwood Composting facility.

Assessment criteria	Reference concentration range	Notes	Reference
Total fungi (includes <i>Aspergillus fumigatus</i>) ¹	500 to 5,000 CFU m ⁻³	Environment Agency proposed concentration level, Reported concentration range in Swan, 2003 & Sheridan et al., 2004	McNeel et al., 1999 Wheeler et al., 2001, Swan et al., 2003 Sheridan et al., 2004
Mesophillic bacteria ¹	1,000 to 10,000 CFU m ⁻³	Environment Agency proposed concentration level, Reported concentration range in Swan, 2003 and Sheridan et al., 2004	Gorny and Dutkiewicz (2002) Wheeler et al., 2001 Swan et al., 2003 Dutch Occupational Health Association NWA 1989. Sheridan et al., 2004

Notes: ¹ denotes the values of CFU m⁻³ refers to Colony Forming Unit per cubic metre of air sampled.

3. Results

3.1 Ambient Bioaerosol air quality

Table 3.1 illustrates the results from bioaerosol air quality monitoring. Both *Aspergillus fumigatus* and Total Mesophillic bacteria were assessed on the day of sampling namely 18th March 2014.

Table 3.1. Bioaerosols concentration levels in the vicinity of the Kilmainhamwood facility on 18th March 2014.

Location ID	Average <i>Aspergillus fumigatus</i> concentration (CFU m ⁻³) ¹	Average Mesophillic bacteria concentration (CFU m ⁻³) ¹	Sample count ²
Loc 1	9	27	3 ea.
Loc 2	18	72	3 ea.
Loc 3	36	144	3 ea.

Notes: ¹ denotes a total of 6 blanks (3 plate and 3 impactor blanks for the monitored bioaerosol) were incorporated into the sampling exercise. All blanks were negative CFU m⁻³.

² denote total number of sample counts for each parameter monitored at each location. The total number of sample plates was 30 plates.

Table 3.1 illustrates the ambient bioaerosol air quality within and in the vicinity of the Kilmainhamwood composting facility. As can be observed, *Aspergillus fumigatus* concentrations are low but increased downwind of the facility biofilter. Total Mesophillic bacteria concentration levels at monitored location Loc 2 and Loc 3 were raised in comparison to monitoring location 1. International literature suggests that bioaerosol concentrations greatly dissipate with distance from the source (i.e. within 80 to 200 metres from the emission source).

Following a review of literature, it is reported that concentration levels of bioaerosols in ambient environment range from 0 to 400 CFU m⁻³ for *Aspergillus fumigatus*, 0 to 15,673 CFU m⁻³ for Total fungi and 79 to 3204 CFU m⁻³ for Total bacteria. The data set measured is within the lower end of this range. Background monitoring of bioaerosols is important due to the complexities in monitoring once a facility is in operation. The main reasons for background monitoring include:

- Microbes are ubiquitous in the environment and air or surface samples will always contain some bacteria or fungi.
- Microbes grow and are released at irregular intervals and depend on some sort of air turbulence to be transported from their original source.
- Bioaerosols vary greatly in size and therefore some remain in ambient air for longer periods of time in comparison to larger, heavier particles that fall quickly to the ground. This is explained with Stokes law.
- Meteorological factors such as relative humidity, temperature and wind speed greatly effect ambient air concentrations.
- Due to the variety of size and sensitivity, the sampling methodology will greatly affect the measured concentration.
- Seasonal effects can increase or decrease ambient bioaerosol concentrations.

In accordance with the assessment criteria reported in Table 2.3, bioaerosols concentrations are within the lower ambient air concentration range for *Aspergillus fumigatus* and Total Mesophillic bacteria on the day of monitoring.

4. Conclusions

The following conclusions may be drawn from the study;

1. The bioaerosol concentration levels were determined at each sampling location in triplicate. Three sampling locations were chosen including Loc 1, Loc 2 and Loc 3.
2. Currently, there are no significant bioaerosol impacts in the vicinity of Kilmainhamwood Composting facility located at Nobber, Co. Meath with all reported bioaerosol ambient air concentrations lower than the guideline assessment criteria range for the operating facility.

5. *Appendix I* Monitoring locations

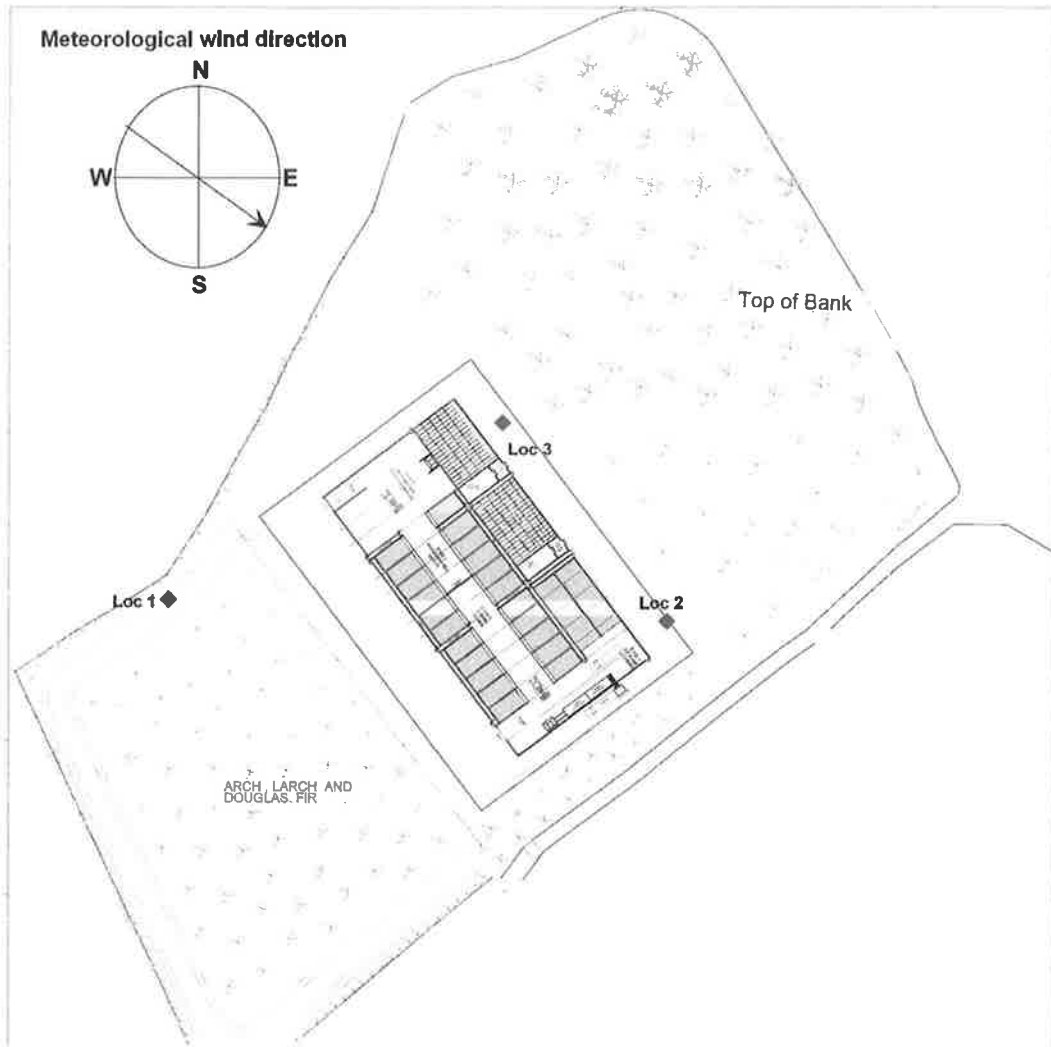


Figure 5.1. Schematic overview of Bioaerosol monitoring locations and wind direction on the day of monitoring.

APPENDIX 5

PM03- F01 Management Programme 2014

COMPLETED				CARRIED FORWARD FROM 2013				ON HOLD
Ref Number	Date	Type	Objective and Target	Location	Responsibility	Method	Time Frame	Status
EP 01	Jan-14	Environmental	Site Expansion to 40,000 tonnes EPA licence and Stage 2 approval from Department	Kilmainhamwood	TMCD/MK	<ol style="list-style-type: none"> 1. Proposed decision received EPA objections X 2 2. Chance to respond by 17th Jan - No response by TR 3. Awaiting EPA decision re Oral Hearing 4. TMCD to organise Stage 2 approval with Dept for new build 	31/04/2013	EPA Licence Granted Feb 2014. Awaiting approval from department for Stage 2 plan submitted on the 14.02.14
EP 02	Jan-14	Environmental	New Lighting within building as per energy audit	Kilmainhamwood	TMCD	<ol style="list-style-type: none"> 1. On site light assessment completed, levels of illumination determined on site. Assess what is available in market place for composting environments 2. Obtain quote for LED illumination 	Mar-14	Completed - 22 new LED lights installed, energy efficient and fully operational
EP04	Jan-14	Environmental	Review of HACCP	Kilmainhamwood	TMCD	<ol style="list-style-type: none"> 1. TMCD completed updated HACCP course 2. TMCD draft template and refer to legislation from HACCP course 3. Plan submitted to Department of agriculture animal by products section for part of the Stage 2 approval for new extension on composting 	14.02.14	Completed - Procedures amended by TMCD and MK and linked to ISO
EP05	Jan-14	Environmental	ECCO loading shovels	Kilmainhamwood	TMCD	<ol style="list-style-type: none"> 1. TMCD to research new machinery with better fuel efficiencies 2. TMCD/ST obtained 3 quotes 3. Volvo choosen due to service and reliability 	01.02.14	Completed - 3 new loading shovels purchased using 20% less fuel
EP06	Jan-14	Environmental	Validation of new Pasteurization tunnel	Kilmainhamwood	TMCD	<ol style="list-style-type: none"> 1. Completed construction and commissioned new tunnel and temperature probes calibrated 17/02/5 2. Lodged validation proposal to Dept as part of Stage 2 - Lodged 14.02.14 3. Wait for approval from Dept on proposal 4. Once received drilling of 16 holes for temperature probes 5. Proceed with validation plan - 3 months approximately 	Jun-14	Started - Awaiting agreement from Department on proposal submitted
EP16	March 2014	Environmental	Site Procedures to be amended in line with new licence issued by EPA W0195=02	Kilmainhamwood	TMCD/MK	<ol style="list-style-type: none"> 1. Review new licence and set out a schedule for changes to include Licence. Department of Agriculture, Food and Marine and ISO procedures 2. Review existing procedures and amend in line with schedule 	Jun-14	Not Started

APPENDIX 6



Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.17

REFERENCE YEAR	2013
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1. FACILITY IDENTIFICATION

Parent Company Name	Padraig Thornton Waste Disposal Limited
Facility Name	Kilmainhamwood Compost
PRTR Identification Number	W0195
Licence Number	W0195-01

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).
3.13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.
3.6	The roasting, sintering or calcining of metallic ores in plants with a capacity exceeding 1,000 tonnes per year.
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	Ballynalurgan
Address 2	Kilmainhamwood
Address 3	Kells
Address 4	Co Meath
Country	Ireland
Coordinates of Location	-6.78888 53.8686
River Basin District	GBNIIENB
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	TOM MCDONNELL
AER Returns Contact Email Address	tom@thomtons-recycling.ie
AER Returns Contact Position	Facility Manager
AER Returns Contact Telephone Number	0868563431
AER Returns Contact Mobile Phone Number	0868563431
AER Returns Contact Fax Number	
Production Volume	20800.0
Production Volume Units	Tonnes
Number of Installations	1
Number of Operating Hours in Year	2860
Number of Employees	4
User Feedback/Comments	There are no sewer emissions from facility and the SW is monitored upstream and downstream as per the licence.
Web Address	www.Thomtons-recycling.ie

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)?	
---	--

This question is only applicable if you are an IPPC or Quarry site

SECTION A - SECTOR SPECIFIC PRTR POLLUTANTS															
Please enter all quantities in this section in KGs															
POLLUTANT	Name	M/C/E	Method Code	Method Used Description or Description	Emission Point 1			Emission Point 2			Emission Point 3				
					T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year		
No. Airline 1					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button															
SECTION B - REMAINING PRTR POLLUTANTS															
Please enter all quantities in this section in KGs															
POLLUTANT	Name	M/C/E	Method Code	Method Used Description or Description	Emission Point 1			Emission Point 2			Emission Point 3				
					T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year		
No. Airline 1					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button															
SECTION C - REMAINING POLLUTANT EMISSIONS (As required in your Licence)															
Please enter all quantities in this section in KGs															
POLLUTANT	Name	M	O/T/H	Method Used Description or Description	Emission Point 1			Emission Point 2			Emission Point 3				
					DA	DB	DC	DA	DB	DC	DA	DB	DC		
Dust					0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button															

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their net methane (CH₄) emission to the environment under 'Total' kg/yr for Section A. Sector specific net methane emissions should be reported in Section B. Please complete the table below.

Landfill: Kilmahamwood, Compost

Methane flared and / or utilised	M/C/E	Method Code	Method Used Description or Description	Facility Total Capacity m ³ per hour
Total estimated methane generation (as per site model)	0.0		N/A	N/A
Methane flared	0.0			0.0 (Total Flaring Capacity)
Methane utilised in operations	0.0			0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0		N/A	N/A

4.2 RELEASES TO WATERS

[Link to previous years emissions data](#)

Facility Name: Facility Address: Facility City: Facility State: Facility Zip: Reporting Year:

10/10/2015 10:46

Data on ambient monitoring of stormwater or groundwater, conducted as part of your license requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility. Please enter all quantities in this section in KGs.

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS		RELEASES TO WATERS					
POLLUTANT	Name	M/C/E	Method Used Designation or Description	Emission Point 1	T. (Total) KG/Year	A. (Accidental) KG/Year	F. (Fugitive) KG/Year
Pollutant No					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS		RELEASES TO WATERS					
POLLUTANT	Name	M/C/E	Method Used Designation or Description	Emission Point 1	T. (Total) KG/Year	A. (Accidental) KG/Year	F. (Fugitive) KG/Year
Pollutant No					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your License)		RELEASES TO WATERS					
POLLUTANT	Name	M/C/E	Method Used Designation or Description	Emission Point 1	T. (Total) KG/Year	A. (Accidental) KG/Year	F. (Fugitive) KG/Year
Pollutant No					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.3 RELEASES TO WASTEWATER OR SEWER

[Link to previous years emissions data](#)

PRTR Ref: W0195; Facility Name: Kilmaithunwood, Campbell's Plastics; PRTR of W0195; 2013;

14/03/2014 10:44

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
No. Annex II	Pollutant Name	M/C/E	METHOD		Emission Point 1	T (Total) KG/Year	QUANTITY		
			Method Code	Method Used Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
Pollutant No.	Pollutant Name	M/C/E	METHOD		Emission Point 1	T (Total) KG/Year	QUANTITY		
			Method Code	Method Used Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.4 RELEASES TO LAND

[Link to previous years emissions data](#)

| PRTR#: W0195 | Facility Name: Kilmahamwood Compost | Filename: PRTR of W0195_2013.xls | Return Year: 2013 |

14/03/2014 10:44

SECTION A : PRTR POLLUTANTS

POLLUTANT		METHOD		Please enter all quantities in this section in KGs		
No./Annex II	Name	M/C/E	Method Code / Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

POLLUTANT		METHOD		Please enter all quantities in this section in KGs		
Pollutant No.	Name	M/C/E	Method Code / Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

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	Hkz Waste Licence/Permit No of Next Destination Facility Hkz Waste Licence/Permit No of Recoverer/Disposer	Hkz Waste Address of Next Destination Facility Non Hkz Waste Address of Recoverer/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination (e.g. Final Recovery / Disposal Site) (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 05 01	No	2925.89	non-composted fraction of municipal and similar wastes	D5	M	Method Used	Offsite in Ireland	Bord na Mona Dreghid Landfill W0201-01	Dreghid, Co. Kildare, Ireland		

* Select a row by clicking on the Description of Wastes field the delete button.

- [Link to previous years waste data](#)
- [Link to previous years waste summary data & percentage change](#)
- [Link to Waste Guidance](#)

APPENDIX 7



BUND/SUMP INTEGRITY CERTIFICATE

Project: Thornton's Recycling Ltd. – Kilmainhamwood Compost
Waste Licence No.: W0195-01
Bund/Sump ID: Bund 1 (Pasteurisation Tank/Sump)
Dates of Test: From 16th August 2013 to 19th August 2013

The Pasteurisation Tank Bund/Sump has been tested in accordance with the procedure defined in Section 9.2 of British Standard BS 8007:1987. This procedure describes the hydrostatic testing of concrete structures.

Initial water levels were taken and these were monitored during the test and daily over a 4-day period. Any drop in water level would indicate a bund failure and a non compliance with the Waste Licence.

The recorded levels for the test carried out on the above structure are outlined in Table 1. The net water increase over the 4-day period was 0mm as recorded in the control. The decrease in water level in the above structure was recorded as 0mm, thus the Pasteurisation Tank Bund/Sump is within the requirements of Section 9.2 of BS 8007:1987.

Table 1. Pasteurisation Tank Bund/Sump

Initial Water Level in Bund/Sump (mm)	Change in Water Level in Bund/Sump (+ or -) (mm)	Control Water Level (mm)	Change in Control Water Level (+ or -) (mm)	Dates of Test
76.5 mm from ground level to water level	0	0	0	16/08/2013 – 19/08/2013

Signed:

Aadil Khan
Environmental Technical Manager



BUND/SUMP INTEGRITY CERTIFICATE

Project: Thornton's Recycling Ltd. – Kilmainhamwood Compost
Waste Licence No.: W0195-01
Bund/Sump ID: Bund 2 (Biofilter Leachate Tank Bund/Sump)
Dates of Test: From 16th August 2013 to 19th August 2013

The Biofilter Leachate Tank Bund/Sump has been tested in accordance with the procedure defined in Section 9.2 of British Standard BS 8007:1987. This procedure describes the hydrostatic testing of concrete structures.

Initial water levels were taken and these were monitored during the test and daily over a 4-day period. Any drop in water level would indicate a bund failure and a non compliance with the Waste Licence.

The recorded levels for the test carried out on the above structure are outlined in Table 1. The net water increase over the 4-day period was 0mm as recorded in the control. The decrease in water level in the above structure was recorded as 0mm, thus the Biofilter Leachate Tank Bund/Sump is within the requirements of Section 9.2 of BS 8007:1987.

Table 1. Biofilter Leachate Tank Bund/Sump

Initial Water Level in Bund/Sump (mm)	Change in Water Level in Bund/Sump (+ or -) (mm)	Control Water Level (mm)	Change In Control Water Level (+ or -) (mm)	Dates of Test
70.4 mm from ground level to water level	0	0	0	16/08/2013 – 19/08/2013

Signed:

 Aadil Khan
 Environmental Technical Manager



BUND/SUMP INTEGRITY CERTIFICATE

Project: Thornton's Recycling Ltd. – Kilmainhamwood Compost
Waste Licence No.: W0195-01
Bund/Sump ID: Bund 3 (Leachate Storage Bund/Sump)
Dates of Test: From 19th July 2013 to 22nd July 2013

The Leachate Storage Tank Bund/Sump has been tested in accordance with the procedure defined in Section 9.2 of British Standard BS 8007:1987. This procedure describes the hydrostatic testing of concrete structures.

Initial water levels were taken and these were monitored during the test and daily over a 4-day period. Any drop in water level would indicate a bund failure and a non compliance with the Waste Licence.

The recorded levels for the test carried out on the above structure are outlined in Table 1. The net water increase over the 4-day period was 0mm as recorded in the control. The decrease in water level in the above structure was recorded as 0mm, thus the Leachate Storage Tank Bund/Sump is within the requirements of Section 9.2 of BS 8007:1987.

Table 1. Biofilter Leachate Tank Bund/Sump

Initial Water Level in Bund/Sump (mm)	Change in Water Level In Bund/Sump (+ or -) (mm)	Control Water Level (mm)	Change in Control Water Level (+ or -) (mm)	Dates of Test
60.4 mm from ground level to water level	0	0	0	19/07/2013 – 22/07/2013

Signed:

Aadil Khan
Environmental Technical Manager