

Padraig Thornton Waste Disposal Ltd



Waste Licence Reg. No. W0195-01



**Annual Environmental Report 2010
Submitted March 2011**



1	<i>Introduction</i>	4
1.1	Operator	4
1.2	Reporting Period	4
2	<i>Facility Activities</i>	4
2.1	Waste Activities carried out at the Facility	4
2.2	Operation Processes – Waste Activities at the facility	5
2.3	Weighbridge Calibration	7
3	<i>Quantity and Composition of Waste Received, Recovered and Disposed of During the Reporting Period</i>	7
3.1	Waste Handled in Kilmainhamwood Compost	7
3.2	Waste Acceptance	7
3.3	Waste Received	9
3.4	Waste Disposed	9
4	<i>Contribution to the achievement of recovery targets</i>	10
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	10
4.2	The recovery of non hazardous biodegradable waste	10
5.0	<i>Summary Report and Interpretations on Environmental Monitoring and Emissions Data</i>	11
5.1	Total Dust Deposition 2010	11
5.2	Noise Monitoring 2010	11
5.3	Groundwater and Surface Water	12
5.3.1	Interpretation of Groundwater Analysis	16
5.3	Interpretation of Surface Water Analysis	17
5.4	Air Monitoring – Bacteria and Aspergillus Fumigatus	18
6.0	<i>Resources and Energy Usage</i>	19
6.1	Electricity	19
6.2	Water	19
6.3	Diesel	20
7.0	<i>Development/Infrastructural Works</i>	20
7.1	Site Developments 2010	20
7.2	Proposed Developments 2011	21
7.3	Plant Capacity 2010	21
8.0	<i>Schedule of Environmental Objectives and Targets for 2011</i>	22

<i>9.0 Report on the progress towards achievement of the Environmental Objectives and Targets contained in the previous year's report</i>	<i>22</i>
<i>10 Tank, drum, pipeline and bund testing.....</i>	<i>24</i>
10.1 Pipeline Tests	24
<i>11 Summary of Incidents and Complaints.....</i>	<i>24</i>
11.1 Incidents.....	24
11.2 Complaints.....	24
<i>12 Review of Nuisance Controls</i>	<i>24</i>
12.1 Dust.....	25
12.2 Noise.....	25
12.3 Odour.....	25
12.4 Litter.....	25
12.5 Birds.....	25
12.6 Vermin	26
12.6 Mud.....	26
<i>13 Management Structure, Programme for Public Information.....</i>	<i>26</i>
<i>14 Quantity of Compost Produced 2010.....</i>	<i>27</i>

Prepared by:

Tom Mc Donnell – Facility Manager

Kilmainhamwood Compost, Ballynalurgan, Kilmainhamwood, Kells, Co. Meath

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 2010.

This licence was granted by the Environmental Protection Agency (EPA) to Pdraig 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 Pdraig Thornton Waste Disposal Ltd. This AER relates to Kilmainhamwood Compost, Ballynalurgan, Kilmainhamwood, Kells, Co. Meath.

The address and contact details for the company headquarters are;

Thorntons Recycling Head Office
Unit S3B Henry Road
Park West Business Park
Dublin 10.

Telephone: 01- 623 5133

Fax: 01- 623 5131

Site Contact: Tom McDonnell

Mobile: 086-8563431

1.2 Reporting Period

The reporting period for this Annual Environment Report (AER) is between the 01/01/2010 to the 31/12/2010.

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)

Standard Operation procedures in the Composting Building

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;

- 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 ASAP by a licensed contractor for disposal as per waste acceptance procedure, EP14 for Kilmainhamwood Compost.

Once tipping is complete the facility operator washes down the container with a steam power washer insuring no residual material remains. The door is opened and the driver is directed to leave the reception hall and 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 if required.

After this period the material is placed 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 landfill when 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 taken out of 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.

2.3 Weighbridge Calibration

The weighbridge was calibrated and certified by the legal metrology service on the 23rd September 2010. A copy of this certificate is contained 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

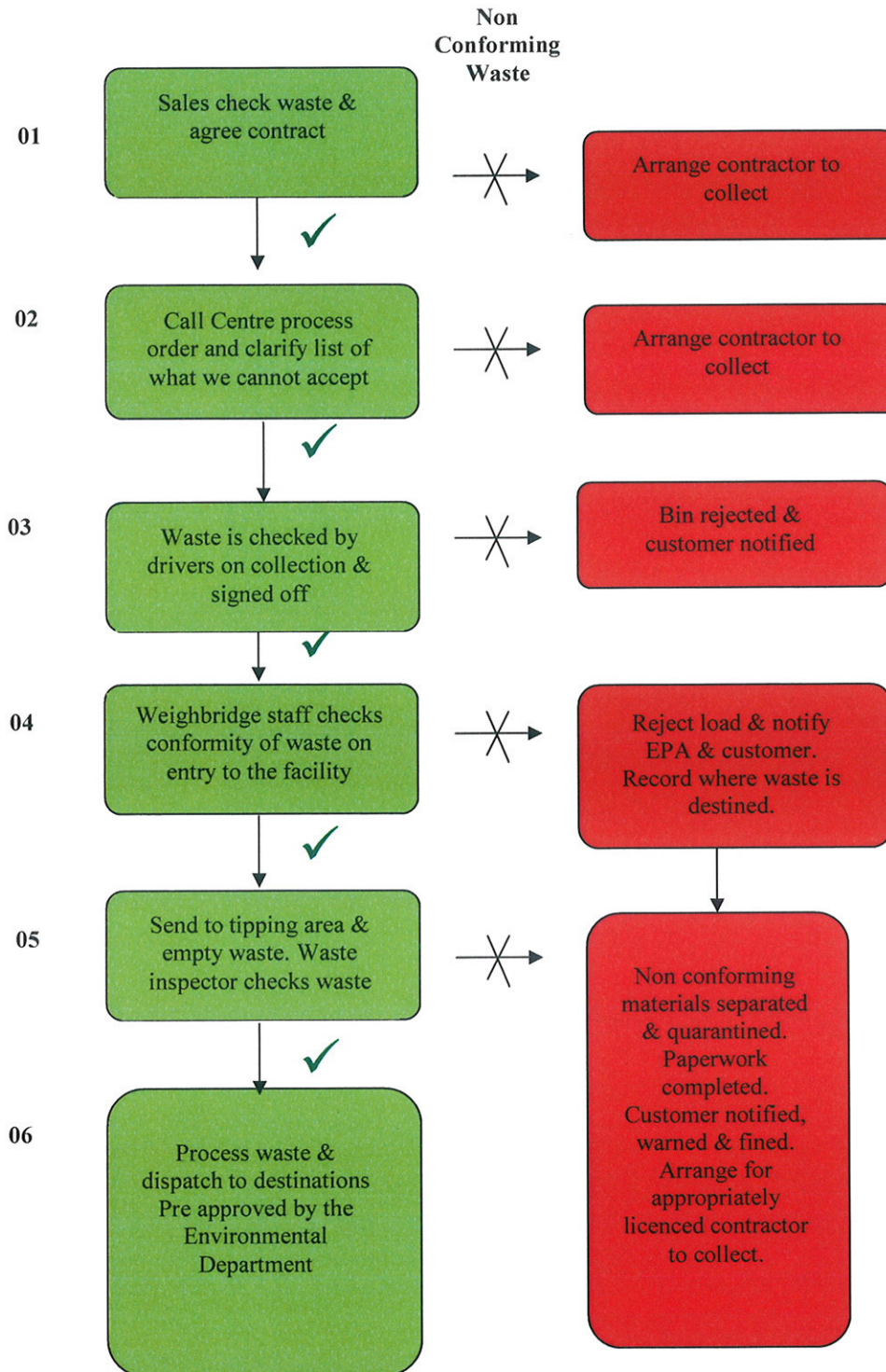
All waste is checked and documented at the weighbridge in accordance with our waste licence and our waste acceptance procedures as detailed in section 2.2. Waste is then inspected, processed and placed into our production system. The composting process takes up to 8 weeks to produce mature compost.

Mature compost started to leave the Facility on 14th April 2007 and was subjected to the quality analysis, as per Schedule E of the Licence W0195-01 and The Technical Amendment of the licence. Continued approval under the ABP Regulations from the Dept. of Agriculture was received on 05th October 2009. 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 new staff employed by Kilmainhamwood Compost have received an Environmental Health and Safety Induction which included 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 2010. The IMS system is available for inspection on the IMS drive at all company site offices.

3.3 Waste Received

A total of 20,815.65 tonnes of waste for composting was accepted at the facility in the reporting period from 1st January 2010 to 31st December 2010.

Table 3.3.1 Quantity and Composition of Waste Received 2009-2010

EWC Code	Materials Received	2009	2010
19 08 05	Sludge Urban Waste Water	1139.70	1.12
02 02 04	Sludge Food Prep Animal Origin	1322.94	1023.82
20 01 25	Grease Trap Waste	655.00	760.36
02 03 04	Unsuitable food waste	1954.87	51.30
20 01 08	Compostable Food Waste	15503.47	18768.67
02 07 04	Unsuitable Alcohol/Liquid	9.02	-
02 06 01	Bakers Waste	27.42	12.36
19 12 07	Wood – Processed	40.36	-
20 02 01	Compostable/ Green Waste	-	-
02 07 05	Sludge Alcohol/non-Alcohol	67.72	-
19 09 01	Screening Waste Water	2.88	-
02 01 01	Sludge Agriculture Washing	-	48.84
02 01 06	Sludge Textile Industrial	-	149.18
10 01 03	Ash from Peat and Untreated Wood	25.46	-
02 05 02	Sludge Dairy Industry	-	-
	TOTAL TONNAGE	20, 748.84	20, 815.65

3.4 Waste Disposed

Of the total 20,815.65 tonnes accepted at the facility in 2010, 1639.25 tonnes of the material was not suitable for composting and was sent to landfill as a residual waste. 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.

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, 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 2009, an estimated 1,939,524 tonnes of biodegradable municipal waste was generated in Ireland in 2009 of which 55% was land filled which is down from 57% on 2008 report. The quantity of organic waste collected from household kerbsides grew by 65% (62,447 tonne in 2009 from 37,920 tonnes in 2008). Ireland has made significant inroads into closing the gap between the EU targets and where we currently stand on diversion from landfill.

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 and 20,815 tonnes in 2010 of biodegradable waste from landfill for composting. This material would have historically gone for disposal to licensed landfills. It is hoped that in 2011/2012 Kilmainhamwood Compost will extend its facility to 40,000 tonnes, subject to a waste licence review and further assist in diverting valuable food waste from landfill.

Thornton's Recycling offer all their customers the opportunity to segregate all biodegradable waste at source and with the development of Kilmainhamwood Compost can offer a composting alternative to all its customers. The facility at Ballynalurgan, Kilmainhamwood, County Meath, (Waste Licence 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). Thornton's Recycling offer a three bin collection service to households in Meath, Kildare and Dublin and have invested in 2010 in an additional specially adapted vehicle for collection of food waste from 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 laid 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 in 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 2010. The following section details results obtained and interpretations of results.

5.1 Total Dust Deposition 2010

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 licence 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 deposition levels were under the guideline limit, 350 mg/m²/day, recommended by the EPA as per conditions of W0195-01 reports have been submitted to the EPA.

Table 5.1 Average ambient Total dust deposition concentrations at three monitoring locations at the Kilmainhamwood Compost 2010

Dust Location	Units	Mar-10	Jun-10	Aug-10	Nov-10
DA	mg/m ² /day	62	114	101	68
DB	mg/m ² /day	78	132	88	44
DC	mg/m ² /day	33	98	79	66

5.2 Noise Monitoring 2010

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 licence requirements, and all levels displayed in *Table 5.2* are below the emission levels set down by the waste licence W0915-01.

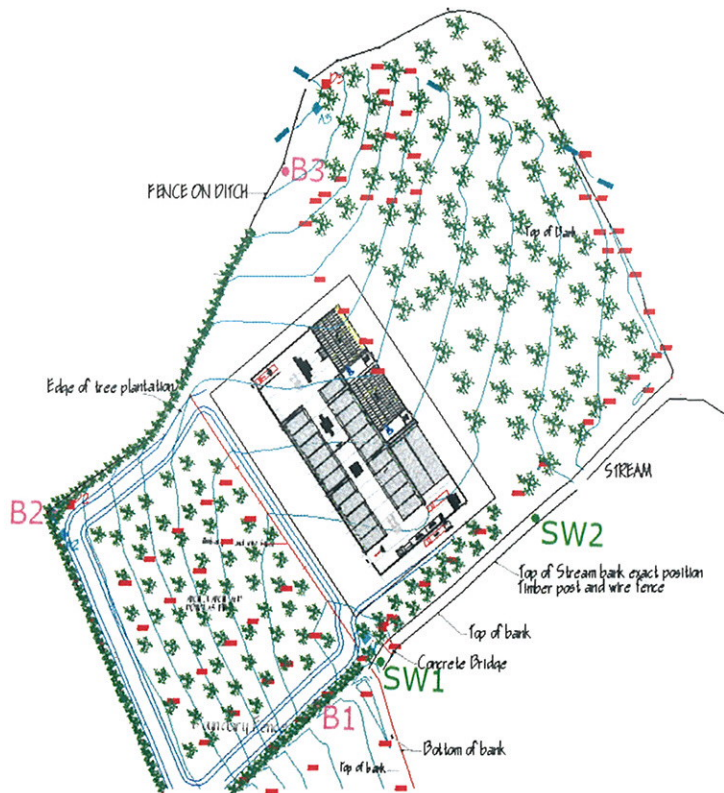
Table 5.2 Recorded Noise Levels dB(A) – Intervals 30 minutes 2010

Noise Location	Time	unit	Mar-10	Jun-10	Jul-10	Dec-10
	Day	Leq	46.1	52.1	40.5	46.4
	Day	L10	48	52	40.5	47
N1	Day	L90	40	39	33.9	33
	Night	Leq	38.2	42.9	38.5	40.5
	Night	L10	40	44	42.4	40
	Night	L90	33	43	26.8	30

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 -----Down stream 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

The results of monitoring during the reporting period are recorded in the following tables;

Table 5.3.2

MONITORING WELL B1: Chemical Analysis of Groundwater.

PARAMETERS	UNIT	Limit	21/01/2009	15/09/2009	27/05/2010	22/11/2010
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>	mAoD(malin)		80.81m	80.81m	80.81m	80.81m
Colour	-	No abnormal change	-		Clear	-
Conductivity @ 25°C	uS/cm	1,000	-		1,005	-
Odour	-		-		No Odour	-
pH	pH Units	6.5-9.5	-		7.44	7.4
Temperature	deg C	25	-		11	-
Ground Water Level	M		35.5	16.35	16.3	17.2
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.4	7.6	7.44	7.4
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	<0.06	0.055	0.13	<0.01
Calcium	Ca mg/l	200	-	81.94	-	75.58
Chloride	Cl mg/l	30	23.78	20.41	23.8	18.65
Nitrate	NO ₃ mg/l	25	-	<0.09	-	<0.272
Phosphorous	P mg/l		-	0.042	-	0.196
Potassium	K mg/l	5	-	3.69	-	2.15
Ortho Phosphate	PO ₄ mg/l	0.03	-	<0.005	-	0.026
Sodium	Na mg/l	150	-	20.53	-	20.05
Sulphate	SO ₄ mg/l	200	281.22	202.43	267	171.86
Metals						
Boron	B mg/l	1	-	0.1031	-	0.0834
Cadmium	Cd mg/l	0.005	-	<0.00009	-	<0.00009
Chromium (Total)	Cr mg/l	0.03	-	0.001	-	0.0032
Copper	Cu mg/l	0.03	-	<0.0002	-	<0.00011
Iron	Fe mg/l	0.2	-	0.4828	-	0.6089
Lead	Pb mg/l	0.01	-	0.0111	-	0.0091
Magnesium	Mg mg/l	50	-	28.14	-	28.51
Manganese	Mn mg/l	0.05	-	0.00112	-	0.0339
Nickel	Ni mg/l	0.02	-	0.004	-	0.0029
Zinc	Zn mg/l	0.01	-	0.1798	-	0.23
Bacteria						
Feacal Coliforms	cfu/100ml	0.00	-	2	-	20
Total Coliforms	cfu/100ml	0.00	-	10	-	920
List I/II						
Organic Volatile Compounds	mg/l		---	<0.001	---	
Semivolatiles	mg/l		--	<0.0005	--	
Pesticides	mg/l		-	-	-	

Table 5.3.3

MONITORING WELL B2: Chemical Analysis of Groundwater.						
PARAMETERS	UNIT	Limit	21/01/2009	15/09/2009	27/05/2010	22/11/2010
FIELD ANALYSIS						
mAoD(malin)			86.93	86.93m	86.93m	86.93m
<i>General Water Quality Parameters</i>						
Colour	-	No abnormal change	-		Clear	-
Conductivity @ 25°C	uS/cm	1,000	-		1018	-
Odour	-		-		No Odour	-
pH	pH Units	6.5-9.5	-		7.23	7.3
Temperature	deg C	25	-		11	
Ground Water Level	M		16	21.9	21.74	21.8
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.4	7.5	7.23	7.3
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	0.43	0.018	0.12	<0.01
Calcium	Ca mg/l	200	-	88.78	-	85.42
Chloride	Cl mg/l	30	14.73	14.05	17	14.02
Nitrate	NH ₃ mg/l	25	-	<0.09	-	<0.272
Phosphorous	P mg/l		-	0.017	-	<0.011
Potassium	K mg/l	5	-	1.89	-	1.51
Ortho Phosphate	PO ₄ mg/l	0.03	-	<0.005	-	<0.005
Sodium	Na mg/l	150	-	24.76	-	26.32
Sulphate	SO ₄ mg/l	200	279.88	188.77	277	179.94
<i>Metals</i>						
Boron	B mg/l	1	-	0.0625	-	0.0347
Cadmium	Cd mg/l	0.005	-	<0.00009	-	<0.00009
Chromium (Total)	Cr mg/l	0.03	-	0.00093	-	<0.00214
Copper	Cu mg/l	0.03	-	0.185	-	<0.00011
Iron	Fe mg/l	0.2	-	0.0927	-	0.0566
Lead	Pb mg/l	0.01	-	0.0118	-	0.0009
Magnesium	Mg mg/l	50	-	25.34	-	27.13
Manganese	Mn mg/l	0.05	-	0.0849	-	0.3044
Nickel	Ni mg/l	0.02	-	0.0011	-	0.0008
Zinc	Zn mg/l	0.01	-	0.1084	-	0.0066
<i>Bacteria</i>						
Feecal Coliforms	cfu/100ml	0.00	-	1	-	10
Total Coliforms	cfu/100ml	0.00	-	7	-	150
List I/II			-			
Volatile Organic Compounds	mg/l		-	<0.001	-	
Semivolatiles	mg/l		-	<0.0005	-	
Pesticides	mg/l		-	-	-	

Table 5.3.4

MONITORING WELL B3: Chemical Analysis of Groundwater.						
PARAMETERS	UNIT	Limit	21/01/2009	15/09/2009	27/05/2010	22/11/2010
FIELD ANALYSIS						
<i>General Water Quality Parameters</i>						
	mAoD(malin)					
Colour	-	No abnormal change	-	-	Clear	-
Conductivity @ 25°C	uS/cm	1,000	-	-	557	-
Odour	-		-	-	No Odour	-
pH	pH Units	6.5-9.5	-	-	7.2	-
Temperature	deg C	25	-	-	11	-
Ground Water Level	M		-	23.8	18.3	10
LABORATORY ANALYSIS						
<i>General Water Quality Parameters</i>						
pH	pH Units	6.5-9.5	7.4	7.7	7.2	7.4
<i>Inorganics</i>						
Ammonia	NH ₄ mg/l	<0.15	<0.06	<0.01	0.13	<0.01
Calcium	Ca mg/l	200	-	90.25	-	83.17
Chloride	Cl mg/l	30	13.68	14.79	16.3	13.84
Nitrate	NH ₃ mg/l	25	-	0.46	-	<0.272
Phosphorous	P mg/l	-	-	0.041	-	0.019
Potassium	K mg/l	5	-	2.44	-	2.08
Ortho Phosphate	PO ₄ mg/l	0.03	-	0.02	-	0.016
Sodium	Na mg/l	150	-	15.16	-	18.58
Sulphate	SO ₄ mg/l	200	86.89	94.47	91.14	94.02
<i>Metals</i>						
Boron	B mg/l	1	-	0.00409	-	0.0356
Cadmium	Cd mg/l	0.005	-	<0.00009	-	<0.00009
Chromium (Total)	Cr mg/l	0.03	-	<0.00093	-	<0.00214
Copper	Cu mg/l	0.03	-	<0.0002	-	0.0019
Iron	Fe mg/l	0.2	-	<0.0037	-	0.0106
Lead	Pb mg/l	0.01	-	<0.00038	-	0.00005
Magnesium	Mg mg/l	50	-	20.4	-	23.44
Manganese	Mn mg/l	0.05	-	0.0208	-	0.0377
Nickel	Ni mg/l	0.02	-	<0.00047	-	0.0003
Zinc	Zn mg/l	0.01	-	0.0046	-	0.0105
Bacteria						
Feecal Coliforms	cfu/100ml	0.00	-	0	-	<1
Total Coliforms	cfu/100ml	0.00	-	0	-	51
List I/II						
Volatile Organic Compounds	mg/l		-	<0.001	-	
Semivolatiles	mg/l		-	<0.0005	-	
Pesticides	mg/l		-	-	-	

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

5.3.1 Interpretation of Groundwater Analysis

Results from monitoring of groundwater locations were compared to the Interim Guideline Values from the EPA document "Towards Setting Guideline values for the Protection of Groundwater in Ireland" and subsequent reports were forwarded to the EPA on the 14th July (Reference W0195/10/TMD/15 GW Q2) and 22nd December 2010 (Reference W0195/10/TMD/34 GW Q4).

Reference to the relevant geological information for this area, the 1:100,000 scale Sheet 13 – Bedrock Geological Map of Meath (GS/ 1999) indicates that Kilmainhamwood Compost is located in quite a varied area of bedrock geology and one of the few areas of Permo-Triassic rocks within Ireland. A sequence of red sandstones and evaporate deposits of gypsum and anhydrite unconformably overlie a sequence of older Carboniferous rocks bounded to the west by the Kingscourt Fault. The Kingscourt Sandstone Formation (KS) consists of a lower siltstone unit which grades upwards to a thickly bedded, cross laminated red sandstone. This formation conformably overlies the Kingscourt Gypsum Formation (KG). This formation is composed of a basal impersistent conglomerate, followed by a mud dominated sequence of two major gypsum and anhydrite levels.

3 no. monitoring boreholes were drilled within the site in March 2003 by Southern Pumps Ltd. The type of subsoil and bedrock described in the driller's logs supports the above description of geology in the area. Clay with gravel layers was reported to overlie Chalk. Based on the appearance of Chalk, it is assumed that the bedrock encountered was Gypsum, which would be typical of the geology in this region of Ireland.

Monitoring Location B1 and B2 indicated elevated levels of sulphate in 2010 but this is consistent with baseline data and may be attributed to the underlying geology in the area as discussed above. The elevated conductivity at these boreholes may also be similarly related to geology.

Iron and zinc levels recorded in B1 were slightly elevated in November 2010 when compared with the interim guideline values of the EPA document "Towards Setting Guideline values for the protection of Groundwater in Ireland". It is important to note that this borehole is not used for drinking water at the facility and potable water is bought in. It may be noted that although zinc occurs naturally most zinc finds its way into the environment through human activities such as mining, it must be noted that there is an active Gypsum mine located close to the facility.

Iron occurs naturally in an aquifer but levels in groundwater can be increased by the dissolution of ferrous borehole liners. However it is noted that the water yield in borehole B1 is low with a reading of 20 gallons per hour from its bore well log. This is significantly less than borehole B2 and B3 which have water yields of 200 and 500 gallons per hour respectively. Hence a higher concentration of natural occurring elements may be found in borehole B1.

Monitoring Location B3 recorded good quality groundwater with all parameters below the respective limits in the interim guideline value as per EPA report.

Boreholes are not used for potable water at the facility and are used only used for sanitary facilities and to top up the existing water tank on site in the event that it may be required. Nevertheless Thorntons Recycling will continue to monitor the groundwater and mitigate against any elevations, within their power to do so.

5.3. Interpretation of 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 2010 these include reference W0195/10/TMD/08 SW Q1 submitted on the 20th April 2010, reference W0195/10/TMD/13 SW Q2 submitted on the 12th July 2010, 12/07 W0195/10/TMD/27 SW Q3 submitted on the 5th October 2010 and reference 195/10/TMD/33 SW Q4 submitted on the 8th December 2010.

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 2010.

Table 5.3.5: SW1 Results

PARAMETERS	UNIT	25/03 /2010	05/01 /2010	17/06 /2010	29/06 /2010	16/09 /2010	11/11 /2010
FIELD ANALYSIS							
General Water Quality Parameters							
Colour	-	Clear	-	Clear	-	Clear	Clear
Conductivity @ 25°C	uS/cm	-	-	-	-	-	-
Odour	-	No Odour	-	No Odour	-	No Odour	No Odour
pH	pH Units	-	-	-	-	-	-
Temperature	deg C	9.2	-	14.7	-	13.1	8

LABORATORY ANALYSIS							
General Water Quality Parameters							
Total Suspended Solids	mg/l	5	<10	2	<10	3.5	<2.0
Mineral Oils	mg/l	<0.01	-	<0.01	-	<0.01	<0.01
pH	pH Units	7.95	7.5	8.38	7.7	7.78	8.25
Inorganics							
Total Ammonia	NH ₄ mg/l	0.532	2.27	0.846	4.42	0.503	<0.2
Chloride	Cl mg/l	16.9		14.7		12.3	13.2

Table 5.3.6: SW2 Results

PARAMETERS	UNIT	25/03/2010	05/01/2010	17/06/2010	29/06/2010	16/09/2010	11/11/2010
FIELD ANALYSIS							
General Water Quality Parameters							
Colour	-	Clear	-	Clear	-	Clear	Clear
Conductivity @ 25°C	uS/cm	-	-	-	-	-	-
Odour	-	-	-	No Odour	-	No Odour	No Odour
pH	pH Units	-	-	-	-	-	-
Temperature	deg C	10.1	-	14.1	-	12.9	7.9
LABORATORY ANALYSIS							
General Water Quality Parameters							
Total Suspended Solids	mg/l	6	<10	3.5	73	5.5	2.5
Mineral Oils	mg/l	<0.01	-	<0.01	-	<0.01	<0.01
pH	pH Units	7.76	7.4	8.49	7.7	7.79	7.21
Inorganics							
Total Ammonia	NH ₄ mg/l	<0.2	0.05	0.461	0.1	<0.2	<0.2
Chloride	Cl mg/l	16.4	-	14.4		12	13.4

5.4 Air Monitoring – Bacteria and Aspergillus Fumigatus

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

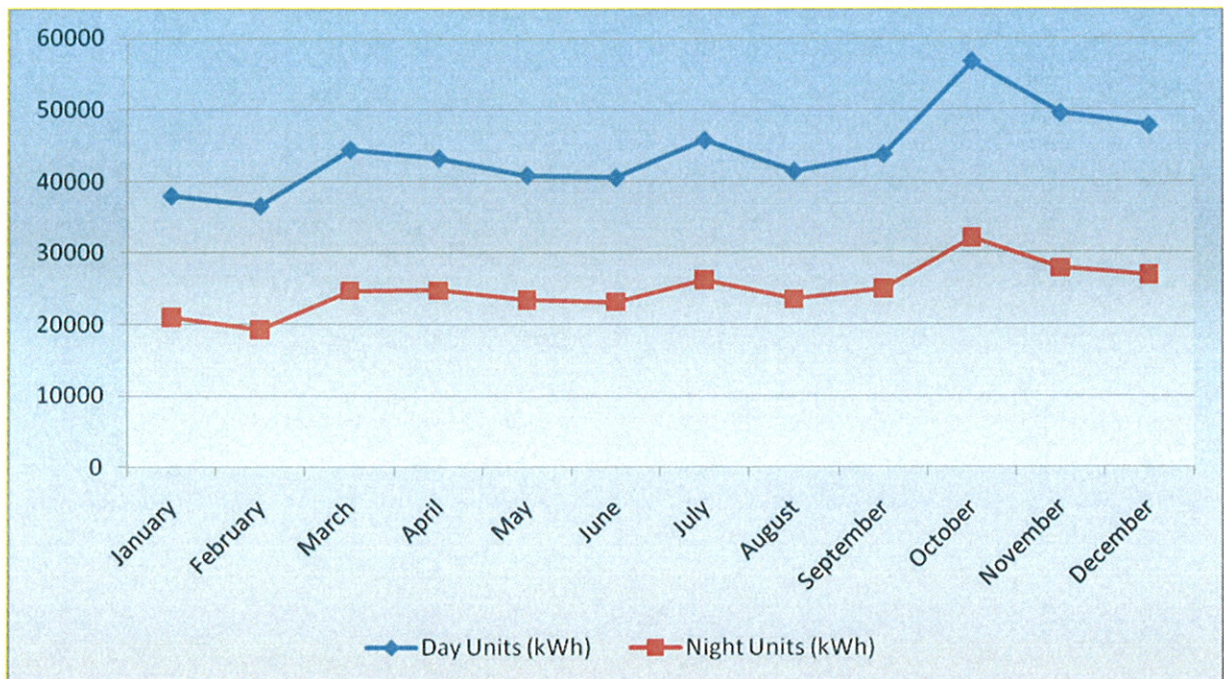
6.0 Resources and Energy Usage

The following section discusses resources such as Electricity, Fuel and Water used at Kilmainhamwood Compost in 2010. As per condition 5.7 of the licence a copy of the energy efficiency audit carried out at the facility is contained within Appendix 5 of this report.

6.1 Electricity

Electricity consumption at the facility decreased in 2010 with a conscious effort to reduce energy consumption at the facility. In 2010 a total of 826,203.97 kWh was consumed. 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 2010



6.2 Water

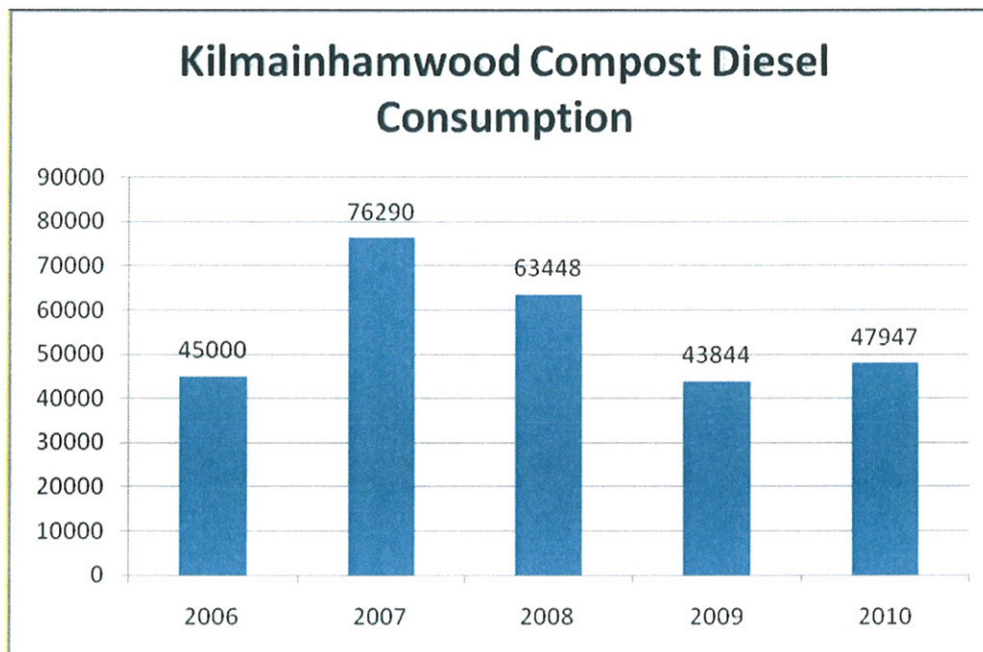
Kilmainhamwood compost is not connected to the local water mains and uses its rain collection tank as a source of water for the facility. This water is used for washing trailers, equipment and floors. No water is used in the process as the incoming material contains excess moisture.

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 2010 was the Loading shovels and shredding machines used in the composting processes. A total of 47,947 litres of diesel were consumed during 2010. 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 – 2010



7.0 Development/Infrastructural Works

7.1 Site Developments 2010

During 2010 the facility accepted and processed 20815.65 Tonnes of waste. The following developments were carried out on site in 2010;

- **Training** - Staff training - Machinery operation and driver certification
- **ISO-** Kilmainhamwood Compost maintained certification in standards for ISO 14001 Environmental, ISO 9001 Quality and OHSAS 18001 in 2010.
- **Odour abatement upgrade** - During 2010 Kilmainhamwood Compost commenced the installation of its odour abatement upgrade. Phase 1 was completed in 2009 which resulted in existing composting bays being enclosed. This allowed the processed air to be captured and with the installation of the acid scrubber in 2010 this process air can be treated to remove the ammonia before it is sent to the biofiltration system, thus increasing efficiency and effectiveness of the biofilters on site. The

installation of the odour abatement upgrade was completed and commissioned in quarter 1 2011.

7.2 Proposed Developments 2011

A number of developments are proposed for the forthcoming year of 2011. All developments are carried out with the intention of reducing environmental impacts of the facility and increasing waste processing efficiency at Kilmainhamwood Compost. Developments proposed include;

- It is proposed to complete the upgrade of our odour abatement system. We intend to reduce the amount of air requiring treatment by extracting the process air from our enclosed composting bays within the building and passing this process air through an acid scrubber before the air is sent to our biofiltration system. This will increase the efficiencies and the effectiveness of the biofilters. Details of which have been forwarded to the EPA.
- Remove and replace the biofilter media in biofilter 2 during quarter 1 of 2011. This will enhance the effectiveness of biofilter 2 to breakdown mal odours.
- It is proposed that a 15 acre willow plantation is developed at the facility. This will enhance the environment by its consumption of CO₂ and its timber can be used as a renewable source of Biofuel. This land is currently not in use and was to be planted in 2010.
- Continuous development of facility procedures in line with ISO certification and Animal By-Products Regulations, it is proposed to introduce a one way flow system at the facility. Having received full planning permission for our planned expansion we can now develop a one way plan design, subject to the waste licence review from the EPA.
- Additional composting infrastructure is needed in Ireland to treat biodegradable waste which has to be diverted away from landfill. It is hoped that Kilmainhamwood compost will be able to extend its facility to handle 40,000 tonnes in 2011 subject to a licence review.

7.3 Plant Capacity 2010

During 2010 20,815 tonnes of waste was processed at the facility. The facility contains the following plant which processes the waste on site;

- Two 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 is 400 tonnes per week and all of the above plant is well with in 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 2011

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 2011 for Kilmainhamwood Compost is contained within Appendix 6 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 2010 is contained in Appendix 6 of this report. Kilmainhamwood Compost established an Environmental Management System on commencement of activities in 2006. This was further expanded in 2007, 2008, 2009 and 2010 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
- Polices – 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
- Waste Acceptance Kilmainhamwood
- Vehicle Emergency Response WCP Procedure
- Residual Waste Management Kilmainhamwood
- Tanker Emergency Response WCP Procedure
- Screen Sampling Procedure for Kilmainhamwood
- Housekeeping Procedure Kilmainhamwood
- Sampling Procedure Kilmainhamwood
- Filling Pasteurisation Tunnel Procedure.
- Pasteurisation procedure
- Emptying Compost from Pasteurisation Tunnel 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
- Call Centre Instruction Manual
- 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 is only one tank in use. This tank collects the leachate from the biofilters and from the wash bay. There are no fuel tanks on site and diesel is filled via a bunded mobile tank. Kilmainhamwood Compost commissioned White Young Green, environmental consultants to carry out an integrity test on the leachate process tank in December 2009 to BS8007 standards. The tank at the facility passed the integrity tests. A copy of the report is attached in Appendix 7. This tank will be tested every three years as per Condition 3.10.5 of waste licence; therefore further tests are not due to be completed until the end of 2012.

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 was one incident recorded in 2010 in relation to surface this was investigated and corrective actions put in place. A full detailed report was passed to the Agency.

11.2 Complaints

There were twenty three complaints made to the Facility during 2010, most of these were in relation to odour and made during March and November period. All complaints were investigated in full and responded to. Full details of the complaints have been maintained on site at the facility as per our complaints procedure PM08 – Complaints

During 2010 Kilmainhamwood Compost commenced an upgrade to the odour abatement system on site. This included the installation of an acid scrubber to improve the effectiveness of the biofilter systems at the facility. This project started in June 2010 and was fully installed and commissioned on 31st January 2011.

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, 2011. This has lead 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. It is planned to repeat this process on Biofilter 2 during quarter 1, 2011.

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 2010.

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, etc in 2010. The Environmental team also meet if requested, with Local representatives of the area to discuss operation of the facility and to ensure that clear channels of communication are kept open between the facility and the public for the future.

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 (Appendix 8).

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, David Duff and Tommy Rogers. Below is a brief outline of the management structure of the site;

Carmel Thornton	Paul Thornton	Shane Thornton	Anna Marie Thornton
Director	Director	Director	Director

Gary Brady
Managing Director

Tom McDonnell
Facility Manager

Dermot Ward
Production Supervisor

General Operatives
(2)

The Facility Manager of Kilmainhamwood Compost is Tom Mc Donnell. The Production Supervisor is Dermot Ward and is deputy manager when Tom Mc Donnell is not on site. There are two Loader Shovel Drivers, Fran Dowd and Brendan Hilliard.

14 Quantity of Compost Produced 2010

The total amount of compost produced in Kilmainhamwood compost in 2010 was 3292.07 Tonnes. All compost produced met the parameters of Class II Standard.

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

Table 14.1 Summary Compost Quality Analysis 2010

Compost Record Summary 2011				
Parameters	Batch 21710A	Batch 23010A	Batch 23810A	Batch 24410A
<i>Nutrients</i>				
Nitrogen g/kg DM	3.19	2.16	2.6	2.75
Phosphorous mg/kg DM	-	-	5,660	6,720
Potassium mg/kg DM	-	-	15,900	15,600
<i>Trace elements</i>				
Cadmium mg/kg Dm	0.9	0.7	1.24	1.1
Chromium mg/kg DM	17.6	13.6	14.9	23.4
Mercury mg/kg DM	0.2	0.1	0.11	0.12
Lead mg/kg DM	93.8	78.1	78.7	98.7
Zinc mg/kg DM	254	212	273	2.68
Nickel mg/kg DM	8.7	23	20.3	26
Copper mg/kg DM	142	106	106	111
Arsenic mg/kg	5.89	5.16	5.75	8.98
<i>Physical Contaminants</i>				
Glass/Metal/Plastic %	0.26	0.08	0	0
Plastic %	0.17	0	0	0
Stones % >5mm	3.17	2.42	5.26	4.74
<i>Maturity testing</i>				
Carbon:Nitrogen ratio	15	12.5	13.5	11.5
CO ₂ evolution mgCO ₂ /g	14.71	16.44	7.28	3.62
<i>Physical Characteristics</i>				
Moisture content %	29.79	9.4	14	21.1
Organic Carbon %m/m	35.68	33.71	35.17	31.74
PH	6.7	6.4	6.3	6.5
<i>Pathogen Testing</i>				
Salmonella Species	Absent	Absent	Absent	Absent
E. coli cfu	<10	<10	<10	<10
Compost Standard	Class II	Class II	Class II	Class II



Environmental Protection Agency

| PRTR# : W0195 | Facility Name : Kilmainhamwood Compost | Filename : W0195_2010 Kilmainhamwood Return 2011.xls | Return Year : 2010 |

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.11

REFERENCE YEAR	2010
-----------------------	------

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 (W0195)
AER Returns Contact Email Address	Tom@thorntons-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	n/a
Production Volume	20800.0
Production Volume Units	Tonnes
Number of Installations	1
Number of Operating Hours in Year	2720
Number of Employees	4
User Feedback/Comments	There are no sewer emissions from the facility and the stream surface water is monitored upstream and downstream as per the facility licence.
Web Address	www.thorntons-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 ?	

Link to previous years emissions data

IPRTR# : W0195 | Facility Name : Kilmanhamwood Compost | Filename : W0195_2010 Kilmanhamwood Return 2011.xls | Return Year : 2010 |

31/03/2011 09:41

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT	Name	METHOD		QUANTITY					
		M/C/E	Method Code	Method Used	Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex II						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

POLLUTANT	Name	METHOD		QUANTITY					
		M/C/E	Method Code	Method Used	Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex II						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)

POLLUTANT	Name	METHOD		QUANTITY							
		M/C/E	Method Code	Method Used	Description	Emission Point 1	Emission Point 2	Emission Point 3	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
210	Dust	M	OTH		Standard Method	0.031	0.031	0.025	0.087	0.0	0.0

* 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. Operators should provide the following information for each landfill site in the table below. Methane emissions to the environment under (Total) KG/yr for Section A, Sector specific PRTR pollutants above. Please complete the table below.

Landfill: Kilmanhamwood Compost

Please enter summary data on the quantities of methane flared and / or utilised	M/C/E	Method Code	Method Used	Designation or Description	Facility Total Capacity m3 per hour
Total estimated methane generation (as per site model)	0.0				N/A
Methane flared	0.0				0.0 (Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A, above)	0.0				N/A

4.2 RELEASES TO WATERS [Link to previous years emissions data](#)

| PRTR# : W0195 | Facility Name : Kilmairhamwood Compost | Filename : W0195_2010 Kilmairhamwood Return 2011.xls | Return Year : 2010 |

31/03/2011 09:42

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASERS TO WATERS									
No. Annex II	POLLUTANT	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	QUANTITY	
				Method Code	Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year
							0.0	0.0	0.0

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this on
Please enter all quantities in this section in KGs

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASERS TO WATERS									
No. Annex II	POLLUTANT	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	QUANTITY	
				Method Code	Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year
							0.0	0.0	0.0

Please enter all quantities in this section in KGs

* 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)

RELEASERS TO WATERS									
Pollutant No.	POLLUTANT	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	QUANTITY	
				Method Code	Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year
							0.0	0.0	0.0

Please enter all quantities in this section in KGs

* 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# : W0195 | Facility Name : Kilmamharwood Compost | Filename : W0195_2010 Kilmamba

31/03/2011 09:42

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
No. Annex II	POLLUTANT Name	M/C/E	Method Code	METHOD		Emission Point 1	T (Total) KG/Year	QUANTITY	
				Method Used	Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year
							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 Code	METHOD		Emission Point 1	T (Total) KG/Year	QUANTITY	
				Method Used	Designation or Description			A (Accidental) KG/Year	F (Fugitive) KG/Year
							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 : Kilmainhamwood Compost | Filename : W0195_2010 Kilmainhamwood Return 2011.xls | Return Year : 2010 |

31/03/2011 09:43

SECTION A : PRTR POLLUTANTS

POLLUTANT		METHOD		QUANTITY				
No. Annex II	Name	M/C/E	Method Code	Method Used	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
							0.0	0.0

Please enter all quantities in this section in KGs

* 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		QUANTITY				
Pollutant No.	Name	M/C/E	Method Code	Method Used	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
							0.0	0.0

Please enter all quantities in this section in KGs

* 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	Haz. Waste Destination Facility Licence/Permit No of Next Non-Haz. Waste Receiver/Disposer	Haz. Waste Address of Next Destination Facility Address of Non-Haz. Waste Receiver/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	20 03 07	No	1389.11	bulky waste	D5	M	Weighted	Offsite in Ireland	Bord na Mona Ltd, WQ201- Kildare, Ireland	Drehid Landfill, Killeen road, Ballyfermot, Dublin 10, Ireland		
Within the Country	20 03 07	No	250.14	bulky waste	R13	M	Weighted	Offsite in Ireland	Padraig Thornton Waste Disposal Ltd, WQ44-02			

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

AER 2010 List of Appendices

Appendix 1 – Facility Layout complete with Monitoring Locations

Appendix 2 – Weighbridge Certificate 2010

Appendix 3 – ABP Approval Certificate

Appendix 4 – Bioaerosol Impact Assessment

Appendix 5 – Energy Efficiency Audit

Appendix 6 –Progress on Objectives and Targets for 2010 and New Objectives and Targets for 2011

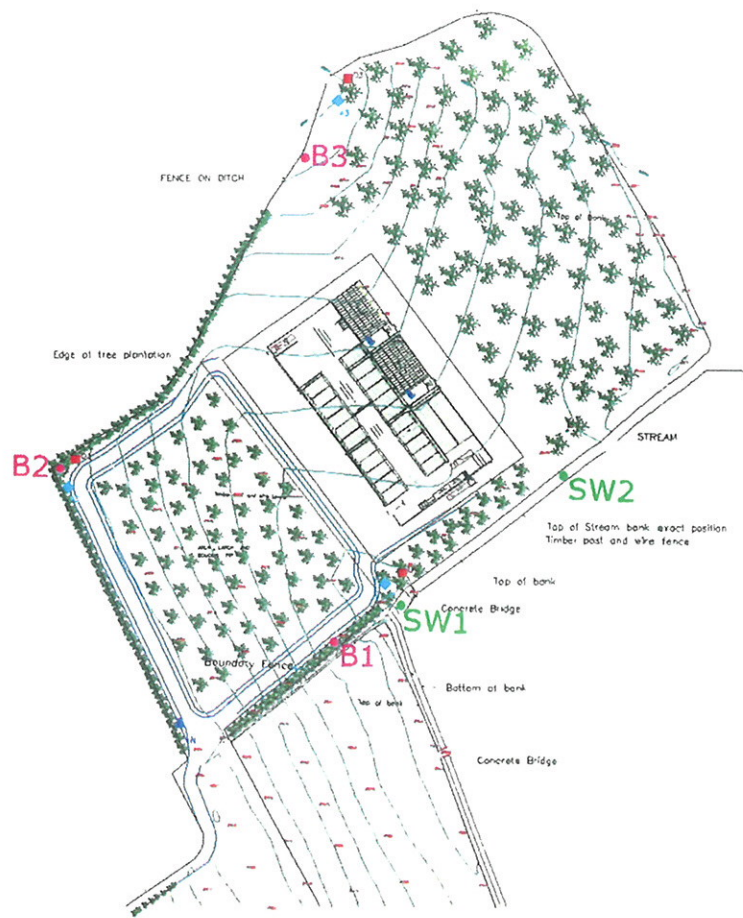
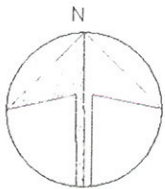
Appendix 7 – Leachate Tank Integrity Certificate

Appendix 8 – Communications Programme and Associated Procedures

APPENDIX 1

LEGEND

- DUST MONITORING (D1, D2, D3)
- ▲ NOISE MONITORING (N)
- ◆ *ditto*
- BOREHOLE (B1, B2, B3)
- SURFACE WATER (SW1, SW2)



APPENDIX 2



Metrology Acts, 1980-1998

Certificate of Conformity

Certificate No: D/10/210

Client Name: Thornton Recycling

Address: Newcastle Kilmainhamwood, Kells, Co Meath

This is to certify that the metrological instrument described hereunder was examined and tested by me on 23/09/10 and was found to be in conformity with the requirements of the Metrology Acts, 1980-1998 and that the Standards used to perform the tests are traceable to National Standards.

(NOTE: This Certificate only indicates that the instrument concerned conforms to the requirements of the Metrology Acts 1980 - 1998 and does not imply compliance with any other applicable regulations enforced by other Statutory Bodies.)

DESCRIPTION

Instrument Type: Weighbridge

Manufacturer	Leon
Model	LD52xx
Serial no.	100427616
Capacity	50000 kg
Scale Interval	20 kg
Type Approval No.	DK0199.27/2
Accuracy Class (where Applicable)	III

Date: 08/05/10

Legal Metrology Inspector



APPENDIX 3



Department of
**Agriculture,
Fisheries and Food**
An Roinn
Talmhaíochta,
Iascaigh agus Bia

Ref no: RNP 6-1 (Comp-6)

5 October 2009

Padraig Thornton Waste Disposal Ltd
T/a Thorntons Recycling Ltd
Unit S3B
Parkwest Business Park
Dublin 12

RE: European Communities (Transmissible Spongiform Encephalopathies and Animal By-Products) Regulations of 2008 (S.I. No. 252 of 2008 as amended by S.I. No. 291 of 2009 and S.I. No. 345 of 2009) and Regulation (EC) No. 1774/2002

I am directed by the Minister for Agriculture, Fisheries & Food to inform you that you have been approved to operate Kilmainhamwood Compost located at Ballynalurgan, Kilmainhamwood, Kells, Co. Meath as a Composting Plant from **8th October 2009 to 7th October 2011**, in accordance with Part 4 of the European Communities (Transmissible Spongiform Encephalopathies and Animal By-Products) Regulations of 2008 (S.I. No. 252 of 2008 as amended).

The official **approval number** allocated to your composting plant is **COMP - 6** and your approval is subject to the following conditions:

SPECIFIC PLANT CONDITIONS:

1. The plant may accept Category 2 manure and digestive tract content separated from the digestive tract, as detailed in **Article 5(1)(a)**, milk and colostrum as detailed in **Article 5(1)(c)** of Regulation (EC) No 1774/2002.
2. The plant may accept the following Category 3 material:
 - Feathers as detailed in **Article 6(1)(c)**
 - Former foodstuff waste as detailed in **Article 6(1)(f)**
 - Raw milk as detailed in **Article 6(1)(g)**
 - Fish waste as detailed in **Article 6(1)(h)** and **Article 6(1)(i)**
 - Shells, hatchery by-products and cracked eggs as detailed in **Article 6(1)(j)**
 - Catering waste as detailed in **Article 6(1)(l)** of Regulation (EC) No 1774/2002 and defined in **Annex 1** of this Regulation.
3. The plant must not accept any other Animal By-Products, as defined in **Article 2(1)(a)** of Regulation (EC) No 1774/2002.
4. The plant must process the above mentioned approved Category 2 and 3 material using EU processing standards:
 - (a) Maximum particle size before entering the composting reactor:
12mm


- (b) Minimum temperature in all material in the reactor: 70°C
 - (c) Minimum time in the reactor at 70°C (all material): 60 minutes
4. The plant's HACCP must be implemented and must be updated and modified as required.
 5. Unless otherwise directed by the Department of Agriculture, Fisheries and Food (DAFF), every batch of material, immediately after processing must be sampled for E-coli. Every batch of end product must be sampled for Salmonella. Batches for Salmonella testing may comprise of up to one months production of compost. Microbiological analysis must be carried out at a DAFF approved laboratory. In the event of a sample failure, DAFF must be notified immediately.

GENERAL CONDITIONS

1. The plant must meet the requirements of Regulation (EC) No 1774/2002, S.I. No. 252 of 2008 as amended, S.I. No. 253 of 2008, and all other relevant legislation.
2. Plant management must ensure that all necessary conditions as outlined in the attached document: "*Conditions for approval and operation of composting plants treating animal by-products in Ireland*" are complied with. These conditions may be subject to change.
3. Sale or supply of fertiliser or soil improvers must be in accordance with S.I. No. 253 of 2008, Regulation (EC) No 181 of 2006 and the Conditions for approval and operation of composting plants treating animal by-products in Ireland.
4. DAFF must be notified immediately of any changes in the registered company name or in plant management.

Please note that failure to comply with these conditions may result in enforcement proceedings or the suspension or withdrawal of your approval.

For the Minister for Agriculture, Fisheries and Food


Geraldine Lanigan
Higher Executive Officer

An Officer authorised in that behalf by the said Minister.

APPENDIX 4

ODOUR
monitoring
IRELAND

ODOUR & ENVIRONMENTAL ENGINEERING CONSULTANTS

Unit 32 De Granville Court, Dublin Rd, Trim, Co. Meath

Tel: +353 46 9437922

Mobile: +353 86 8550401

E-mail: info@odouireland.com

www.odouireland.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:	25 th Feb 2011
REPORT NUMBER:	2011A85(1)
DOCUMENT VERSION:	Version 1
REVIEWERS:	

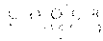
TABLE OF CONTENTS

<u>Section</u>	<u>Page number</u>
TABLE OF CONTENTS	i
DOCUMENT AMENDMENT RECORD	ii
1. Introduction	1
1.1 Scope of the study	1
2. Materials and methods	2
2.1 Sampling locations	2
2.2 Meteorological data	2
2.3 Bioaerosols monitoring	2
2.4. Transport of bioaerosol samples	3
2.5 Bioaerosol assessment criteria	4
3. Results	5
3.1 Ambient Bioaerosol air quality	5
4. Conclusions	6
5. <i>Appendix I- Monitoring locations</i>	7

Document Amendment Record

Client: Kilmainhamwood Compost Ltd

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

Project Number: 2011A85(1)			Document Reference: Bioaerosol Impact Assessment at Kilmainhamwood Compost Ltd, Nobber, Co. Meath		
2011A85(1)	Document for review	B.A.S.	JMC	B.A.S	25/02/2011
Revision	Purpose/Description	Originated	Checked	Authorised	Date
					

1. Introduction

Odour Monitoring Ireland was commissioned 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 12th December 2010 between the hours of 11.30AM and 15.30PM.

2.1 Sampling locations

Figure 5.1 and Table 2.1 illustrates 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 Mesophillic bacteria and Aspergillus fumigatus	Upwind of site at boundary
Loc 2	Total Mesophillic bacteria and Aspergillus fumigatus	Downwind of site on boundary
Loc 3	Total Mesophillic 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 low breeze. Cloud cover was high with an octave rating of 5 to 6 (i.e. on an 8 point scale). Barometric pressure was approximately 1007 mbar. Relative humidity was high with an average reading of 82.60% while temperature was low with a value of 5.80 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 1-12 th Dec 2010
Wind direction (From)	NE
Wind speed (m s ⁻¹)	1.20
Cloud cover (Octaves)	5 to 6
Barometric pressure	1007
Temperature (°C)	5.80
Relative humidity (%)	82.60
Rainfall (mm)	0

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 Cruinn Diagnostics 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. Results were received within 10 to 15 working days following sampling.

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	1000 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	5,000 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 Mesophilic bacteria were assessed on the day of sampling namely 12th Dec 2010.

Table 3.1. Bioaerosols concentration levels in the vicinity of the Kilmainhamwood facility on 12th Dec 2010.

Location ID	Average <i>Aspergillus fumigatus</i> concentration (CFU m ⁻³) ¹	Average Mesophilic bacteria concentration (CFU m ⁻³) ¹	Sample count ²
Loc 1	8	16	3
Loc 2	112	220	3
Loc 3	194	466	3

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 24 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 Mesophilic 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).

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 Mesophilic 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

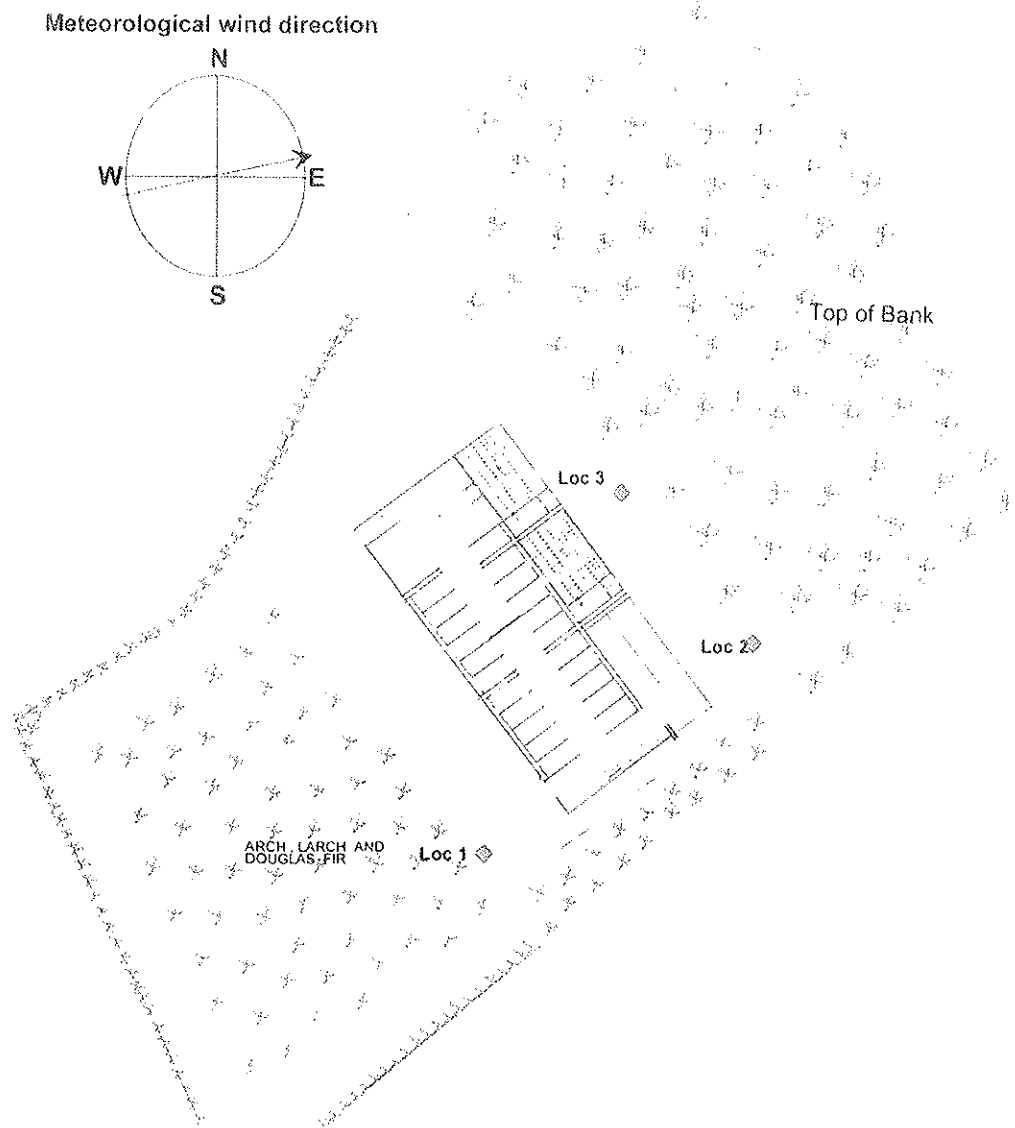


Figure 5.1. Schematic overview of Bioaerosol monitoring locations and wind direction on the day of monitoring.

APPENDIX 5



KILMAINHAMWOOD COMPOST ENERGY REPORT

1.0 Introduction

Padraig Thornton Waste Disposal Ltd (PTWDL), T/A Thorntons Recycling own and operate Kilmainhamwood Compost, Ballynalrgan, Kilmainhamwood, Kells, Co Meath, Waste Licence W0195-01. In compliance with its waste licence as per condition 5.7.1 Kilmainhamwood Compost is required to carry out an "audit of the energy efficiency of the site". An audit programme was submitted to the Agency in relation to same on the 20th August 2008 and the Agency agreed to the submitted programme in later correspondence (EPA Reference W0195-01/AK06KF, dated the 11th September 2008).

In summary the programme agreed to the following;

Outcome of the Study

The outcome of this study will provide;

- A description of the company, the site, site operations and how energy is used at the site.
- An analysis of most significant contributions to energy consumption levels.
- Recommendations on measures the company can take to reduce their energy consumption
- Recommendations on how energy efficiency can be implemented into the company's environmental management system
- Longer term capital projects which will substantially help to decrease energy consumption.
- Targets and benchmarks the company may wish to introduce to control energy use.

Work Programme

- *Audit* – we will carry out a one day energy audit at Kilmainhamwood Compost, Nobber, Co Meath to identify measures that may reduce the energy consumption. We will interview a variety of staff, observe current behaviours and review management practices. Whilst undertaking the energy audits, we will also review cultural attitudes to energy on site.
- *Data Analysis/Evaluation* - We will evaluate all the data from the audit and all other supplied data to help compile an opportunities list on how energy can be used more effectively. The focus will be on practical and economic measures.



- *Renewable Energy* – We will briefly consider any potential opportunities from using renewable energy on site.
- *Report Writing and Presentation* – we will write a report summarising the findings from this study. A final report will be submitted to the EPA. The report will identify where existing controls/practices meet best practice as defined within the EPA guidance note.

This report will constitute all of the above as agreed with the Agency. Kilmainhamwood Compost is committed to a reduction in energy consumption; this study will be concerned with identifying resources used and costs associated with these namely Electricity and Fuel. All costs and figures will be based on information obtained through the Annual Environmental Report (AER) for 2007, invoices in 2007 and information collated for 2008 for Kilmainhamwood Compost and suggestions for improvement on energy efficiency will be recommended. A one day audit took place at Kilmainhamwood Compost on the 29th September 2008 by the Project Co-ordinator Mercedes Feely and the auditor Tom McDonnell. Information collated during this auditor will also be used within the body of this report.

2.0 Site Description and Activities

Kilmainhamwood Compost is located in Ballynalurgan, Kells, Co Meath. The facility has been in operation since September 2006, it received from the Environmental Protection Agency (EPA) its first waste licence and a later amendment in July 2005 (WL0195-01). The waste intake is limited to 20,800 tonnes per annum of biodegradable waste for composting. All wastes are processed within the main compost buildings. The site is licensed to operate 6 days a week, Monday to Friday 08.00-18.00 and Monday to Saturday 08.00-13.00. In order to assess energy usage and how recommendations can be made to improve consumption on site it is necessary to examine the process in detail, the following section details a summary on site activities at Kilmainhamwood Compost.

2.1 Standard Operation procedures in the Composting Building

On arrival the transportation vehicle bringing material to the facility is inspected and directed towards the weighbridge. During which information particular to the customer is recorded on the computerised system.

Once weighed the vehicle is directed to the reception hall where it tips and the facility operator confirms if the material is suitable for processing at the facility. Inside the building the organic waste material suitable for composting is loaded into a batch mixer and is blended by weight with an amendment material. This mixer has capacity for a 12 tonne blend and delivers the blended material via a conveyor to a collection area where when a batch size of 120 tonnes is reached the materials are removed by a loading shovel



and placed into an aerated bay (controlled by fans). 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 two weeks. After this period the material is taken out of the bay and placed over the wall into Zone 3 (Appendix 1). 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 4 weeks and will get one turn using a machine and a moisture amendment if required.

After this period the material is placed is taken into Zone 4 (Appendix 1) and screened through a 12mm screen. The oversize material is sent back to the start of the process as seed compost and the screened 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 E.P.A. standards it can be classified as compost and taken out of 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.

There are currently 5 staff working on the site and the facility is manned from 08.00 to 18.00 Monday to Friday and 08.00 to 13.00 on a Saturday. In order to complete the composting process discussed there is a range of machinery used on site. Table 2.1a illustrates the main machinery used and the source of energy for the machine;



Table 2.1a – Types of machinery and source of energy

Machine	Source of Energy	Total Usage	Consumption Per Week	Consumption Year
Shredder Doppstadt AK 430	Diesel	10 hours p/wk @ 40 litres per hour	400 Litre of Diesel	20,800 litres diesel
Cat 318 C Used to load Shredder	Diesel	10 hours p/wk @15 litres per hour	150 litre of diesel	7,800 litres of diesel
Volvo Loading Shovel L90E X 2	Diesel	35 hours p/wk@ 13 litres per hour X 2	455 x 2 litres of diesel = 910	47,320 Litres of diesel
Forklift	Diesel	2 hours p/wk@ 5 litres per hour	10 litres	520 litres
Food Tractor	Diesel	5 hours p/wk @ 8 litres per hour	40 litres	2080 litres
Screener	Electricity	140Kw/h	14 hours per week	
3 x Fans 37.5 KW	Electricity	112 Kw/h	168 hours per week	
24 x Fans 3 KW	Electricity	72 Kw/h	100 hours per week	
44 x Lighting 400w	Electricity	17.60 Kw/h	44 hours per week	
Office – Lighting, computer	Electricity	3kw per hour	40 hours per week	

3.0 Site Energy Analysis

There are two main energy sources used at Kilmainhamwood Compost i.e. Electricity from the Electricity Supply board and fuel in the form of diesel purchased from a third party supplier

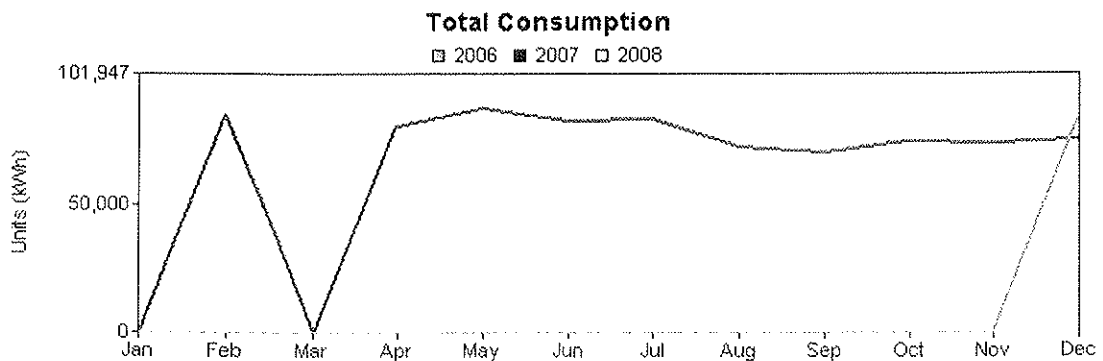
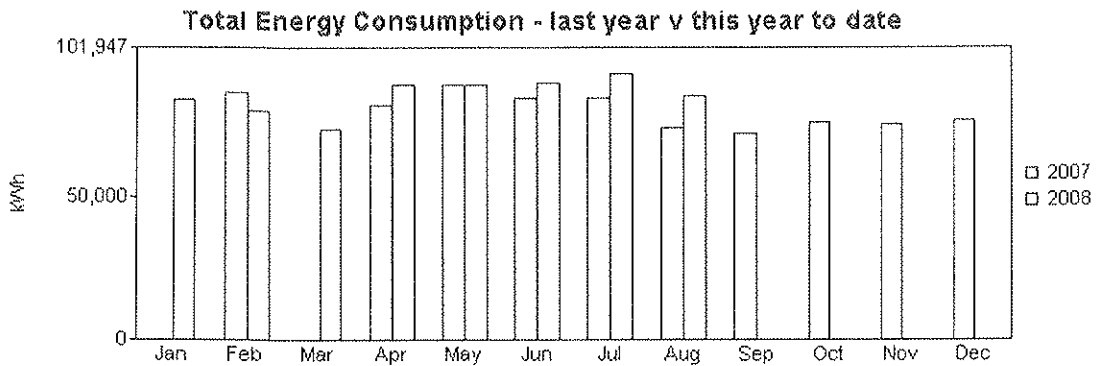
3.1 Electricity

Electricity is supplied to Kilmainhamwood Compost via the Electricity Supply Board (ESB), total consumption in 2007 at the facility was 792,943 (kWh) (Source ESB client account on line). In order to identify trends consumption figures for January – August 2007 were compared with consumption figures for January- August 2008. Electricity



consumption for 2008 did increase due to the necessary installation of a screener which is used approximately 10 hours per week. This screener improves the quality of the compost by removing any fine particles of residual such as plastics which may be present in the compost product.

Figure 3.1a – Total Electricity Consumption 2007 versus 2008



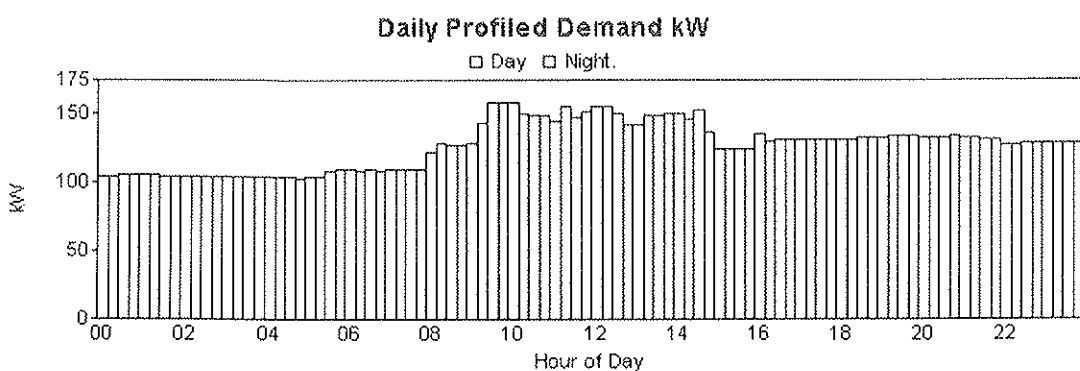
The area which currently uses the largest consumption of electricity is the extraction system for odour abatement.

Figure 3.1b displays a typical day's demand on electricity for the facility. As may be noted from the figure there is a constant demand of up to 100KW per hour no matter



what time of the day. This is largely due to the fact that the facility has to operate fans to assist in the composting process i.e. aeration fans.

Figure 3.1b – Daily Demand on Electricity for the 30th July 2008



Peak electricity consumption at the facility is between the hours of 09.00 and 10.00 as may be noted from a typical days demand above. This may be attributed to opening hours and a ramping up on machinery and lighting etc

A one day energy audit was carried out at Kilmainhamwood on the 29th September 2008 to identify measures that may reduce the energy consumption. The facility manager Tom McDonnell and supervisor Dermot Ward were interviewed and current behaviours and management practices were reviewed. A study was carried out on site to ascertain areas in which a significant savings on electricity could be obtained; we did this by examining key areas where electricity was consumed. We set a control where lights were off, bay fans off, screener off and extraction fans speed to 80%, we then turned the electricity on/off in areas to see how it affected power consumption, the following was observed;

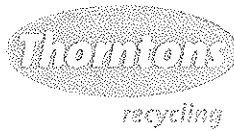


Table 3.1c

Conditions	KW	KVA	Power Factor
Control - Lights off, bay fans off, screener off and extraction fans at 80% speed	62.4	68.84	0.89
Reception lights on and above conditions maintained	68	86	0.9
All lights on above conditions maintained	77	86	0.9
All lights on above conditions maintained and Extraction fans set at 98%	124	134	0.925
All lights on, bay fans on, screener off and extraction still at 98%	127	137	0.925
All lights on, bay fans on, screener on and extraction still at 98%	146	177	0.82

It may be noted from the above table that the screener would have the biggest affect on electricity consumption at the facility

Recommendations.

- Lighting at the facility is on only in areas of operation during the day time, there is only a necessity for security lighting in areas which are not in operation. The lighting in all the processing buildings consists of high bay fitting with luminaries estimated to be rated at 400W each. During Night time all lights are turned off. If we installed a centralised panel and all lighting at the facility could automatically default to night time position when machinery is not in operation or by pressing a switch. An alternative would be to appoint of members of staff i.e. supervisors for turning off and checking all lights at the facility during night time hours. All staff should make an effort to switch off lights in the areas that they are required. The possibility of placing in clear cladding in roof areas should be researched to maximise natural light and reduce electricity consumption and change lighting in administration building to CFL's.



- Odour Control System – This plant operates on full flow but has the ability to work on half flow during night time hours. The demand on the system is not as high during winter time as material is not as hot and odourous as in the summer time months. I propose the system is switched to half power during the cold months of December and January.
- Operation of all Machinery – A large part of the plant on site is turned off during break times. A consultation should be carried out with the manufacturers of all the machinery to ensure that this is the correct thing to do; often the largest part of electricity is during the power up process of machinery.
- Compressor – A compressor can have a significant contribution to energy consumption, a compressor was used at the facility for odour control but this has ceased since July 2008
- Administration of Electricity Usage – Going forward I propose that all electricity usage day (kWh), night (kWh) and cost should be entered in on receiving the invoice into a simple spreadsheet. This will allow us to track improvements and trends in the electricity consumption at the site.
- Hot water – There is always a supply of hot water from taps at the facility which may be fuelled by an electric switch. These should be all checked to ensure efficiency and if indeed the hot water is necessary in areas.

3.2 Water

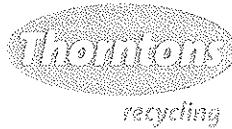
Water consumption at the facility is extremely hard to define as it is not metered or connected to the local mains and water consumption is directly from the well on site. No water is used for processing as incoming material normally contains excess moisture from the natural degrading process. For emergency purposes there is an over ground tank that holds 90,000 litres of water and is supplied by Bore well number 3.

Some Water Uses at Kilmainhamwood Compost;

- Wash down of vehicles, processing machinery etc
- Fire Hoses/Hydrants
- Showers
- Canteen
- Toilets

Recommendations

- Recycle the washbay water
- Roof drainage could be diverted into a holding tank and used to top up the water reserves for the fire system.
- All dripping taps, hoses and hydrants to be repaired immediately and checked on a monthly basis
- Toilets to be adapted to only allowed a certain amount of water in per flush



3.3 Diesel

The main types of fuel used at Kilmainhamwood Compost includes plant diesel (Gas Oil). 76, 290 litres of diesel was consumed at the facility in 2007.

Table 3.3a below estimates the proposed quantity of diesel which will be consumed at the facility in 2008 totally 78290 litres. This is of a similar quantity of which was consumed in 2007.

Table 3.3a

Machine	Source of Energy	Consumption Year
Shredder Doppstadt AK 430	Diesel	20,800 litres diesel
Cat 318 C Used to load Shredder	Diesel	7,800 litres of diesel
Volvo Loading Shovel L90E X 2	Diesel	47,320 Litres of diesel
Forklift	Diesel	520 litres
Food Tractor	Diesel	2080 litres

Recommendations Diesel Consumption

- Carry out an investigation on compatibility of machinery on site to use of Bio Fuels (50% VRT refund available)
- Ensure fleet serviced regularly
- Drivers leave engines running whilst on site, turning off engines must be enforced at the facility

4.0 Long Term Capital Projects/ Renewable energy sources

Dry Anaerobic Digestion

We are currently investigating incorporating a dry anaerobic digester. Using this technology we can extract Methane gas from our feedstock and run a CHP plant which would supply enough electricity to run our composting facility and export excess electricity into the national grid.

The technology of “dry fermentation” can generate energy from municipal and agricultural organic matter and waste.



Until now, biogas technology mainly concentrated on “wet fermentation” of agricultural and municipal organic waste, while the recently patented BEKON dry fermentation process allows methane production from organic matter with a high content of dry matter. This kind of energy production is ecologically friendly and financially interesting, while also creating and securing jobs.

A great potential for energy generation from organic matter is found in agricultural by-products and waste, municipal organic waste and cuttings from coppicing and other countryside and forest maintenance work.

The dry fermentation process produces biogas with high energy content that can be converted into electricity, on the one hand, and into heat in block-type thermal power stations, on the other hand.

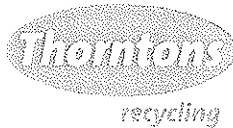
Instead of disposing organic matter from agriculture or municipal waste otherwise, dry fermentation offers a means of turning the waste into a valuable resource and extracting the highest possible benefit from it (in the form of biogas, electricity, heat, compost and fertilizer). The high quality compost resulting from the process of dry fermentation can be used as a valuable fertilizer for agricultural and horticultural purposes.

Combined Heat and Power (CHP) Deployment Programme

At present the Programme includes feasibility studies, to assist investigation into the application of CHP across all size ranges and technologies and investment grant support for small-scale fossil fired CHP with a capacity $\geq 50\text{kWe}$ and $< 1\text{MWe}$. The Programme will ultimately include biomass (anaerobic digestion (AD) and wood residue) CHP, and micro CHP, and these remaining technologies will be launched through specific calls.

5.0 Energy as part of the Environmental Management System

Kilmainhamwood Compost is certified to international standards for Quality ISO 9001, Health and Safety OHSAS 18001 and Environmental ISO 14001. As part of its Environmental Management Programme for its integrated management system (IMS)



alternative energy resources research has been defined as a clear objective and target for the facilities manager to investigate by the end of 2008. Simple procedures incorporating some of the recommendations detailed in this report can be adopted for the management of energy consumption at Kilmainhamwood Compost through its IMS.

Thorntons Recycling will strive to achieve an Irish Energy Management Standard i.e. IS 393 Energy Management System, which will drive energy efficiency and reduce costs. This is a national standard to ensure that energy management becomes integrated into the organisational business structure.

6.0 Summary

Energy Costs for Kilmainhamwood Compost are very high. Fuel spent in 2007 was €45,773 and electricity costs were approximately €99,796.

Energy consumption and costs are currently playing a large role in the financial operation of the Kilmainhamwood compost. No other sites owned by Thorntons Recycling were used as a benchmark as no other site incorporates the same processing and handles the same materials as Kilmainhamwood Compost so it was felt that another site would not be representative to draw comparisons. All recommendations listed above for reduction in consumption should be taken into account and a detailed summary should be produced for 2008 in order to identify trends.

APPENDIX 6

PM03- F01 Management Programme 2010

COMPLETED		CARRY FORWARD FROM 2009			ON HOLD	STARTED IN 2010		
Ref Number	Date	Type	Objective and Target	Location	Responsibility	Method	Time Frame	Status
ENVIRONMENTAL								
EP 01	Jan '09	Environmental	Site Expansion to 40,000 tonnes	Kimainhamwo	TMCD/MF	1. Meeting with EPA 2. Meeting with MCC re planning 3. Appoint consultants 4. Lodge with EPA and MCC	Dec-10	Started - Work in Progress. Planning received Feb '10. ABP appeal top be completed. Licensee lodge end May '10. Awaiting decision from ABP
EP 02	Jan-09	Environmental	Landscape Plan to be completed at Kimainhamwood Compost re conditions of the planning	Kimainhamwo	TMCD	1. Kimainhamwood landscape plan to be completed as part of the new expansion	Dec-10	Not Started - Plans previously drawn up from initial planning, awaiting new planning conditions from ABP before commence the landscape plan
EP 03	Jan '09	Environmental	Upgrade of odour system - Investigate possibility of scrubber etc	Kimainhamwo	TMCD	1. Quotes for consultants and assess same 2. Appoint Consultant 3. Tender out the installation of technology 4. Assess options available 5. Installation	Jul-10	Simeadeam appointed work to commence end May '10. Works to completed end October 2010. Commissioning and EPA.
EP 04	Jan '10	Environmental	PDM - Permit renewal due in August 2010, council to be informed by May 2010 on intention to renew. Feasibility study to be carried out. Planning to be received for retention	PDM	MK	1. Complete feasibility study on PDM 2. Look at alternatives	Dec '10	Started P & L completed. Met two other wood processors re gate fee final decision week one April '10. Will try and get retention for planning permission on site. MK to do permit and Consultants employed for planning. Both lodged awaiting permit decision and planning response to retention RF) to be sent in by March 2011.
EP 05	Jan '10	Environmental	Anerobic Digestion Study	Kimainhamwo	MK/TMCD/TR	1. Obtain Quotes 2. Carry out Feasibility Study	Dec'10	Started. TMCD project Manager Team internally appointed. Final report end June '10
EP 06	Jan '10	Environmental	Energy Systems/ Natural Resource Consumption	All Sites	MK/DD	1. Energy study to see if we can reduce resource consumption on all sites	Quarterly Review	Started Kimainhamwood, Head Office and Killeen Road. Team appointed internally Jan 10. DD appointed as Project Manager
EP 07	Mar '10	Environmental	Energy Alternative	All Sites	MK	1. SRF use 2. Organic fines use power production	Dec-10	Alternative power plants. Met BEG Oct 2010, deal with lagan till Dec 2011 no spare
EP 08	Jan '10	Environmental	SRF Quality Development - New waste additions. SRF Additional Outlet.	Killeen road	MK/DD	1. Asses developments of additional material to the line and new additions, monitor quality and report. Chloride to be monitored closely on material	Dec'10	Started - Training to be carried out on quality with ground staff. Review local and European Markets for outlets. Lectenberg brought in Sept 2010 to assess engineering and report on SRF production increase and quality. Dec 2010 no other outlet required for volume we are producing in 2011
EP 09	Jan '10	Environmental	SRF Storage Facility - COR/Permit	New Facility	MK/DD	1. Apply to SDCC for COR/Permit for storage building when found. 2. Storage for SRF materials in event of breakdowns, contingency plan	May'10	Lodged with SDCC awaiting permit from SDCC - Permit rejected awaiting decision from PT re same. Decision not to progress on planning as Killeen Road may change and will use B1 for storage of SRF
EP 10	Jan '10	Environmental	Waste Acceptance Procedures - Training Refresher for office staff	All Sites	MK/DD Killeen Road	1. Organise groups for tours of Killeen Road 2. Training to incorporate the importance of attention to detail, show staff how errors affect business and end up as credit notes	Dec'10	Draft presentation and started in 2010 to train on site staff in Killeen road
EP 11	Jan '10	Environmental	ELV Expansion on Permit	ELV	DD/MK	1. Await decision from Garda contract	Dec'10	No tender awarded ELV expansion not required Dec 2010
EP 12	Jan '10	Environmental	Fleet audit	All Sites	DD/MK	1. Review paperwork in trucks in line with new national permit, received on the 26th March 2010	Jun-10	WIP - Student hired for summer to assist in paperwork at Killeen Road audit will be carried out then. Completed
EP 13	Jan '10	Environmental	Environmental Drawings - Update all required	All Sites	Team	1. Hire in Draughtsperson to update all drawings	May-10	Started 29th March 2010. Stephen Smullen employed to update drawings etc. Completed
EP 14	Jan '10	Environmental	EHS Newsletter	All Sites	Team	1. New newsletter to be developed for website, generic	Dec-10	WIP
EP 15	Mar '10	Environmental	Food Regs Newsletter	All Sites	Team	1. Specific mailshot to food producing customers e-mail	Apr-10	Completed - E-mailed with invoices in April. Mailshot saved in Environmental guidance folder on the X Drive
EP 16	Jan '10	Environmental	Repak Studies	Killeen road	MK/DD	1. Repak refresher Studies required later end of 2010	Dec'10	Not Started not requested by Repak in 2010
EP 17	Aug '09	Environmental	Inspector/Sampling Chamber to be created on Surface Water discharge as S3	Dunboyne	TR	1. TR to investigate best sampling method to ensure we obtain a representative sample 2. Purchase additional pipe/supplies 3. Test and ensure works	Jun-10	Completed
EP 18	Aug-10	Environmental	Development of new site for Mixed Dry recyclables - Techrec building	Techrec Building	MK	1. Asses planning and see if covered 2. Meet DCC re planning and permit 3. Permit application internal 4. Planning application through one51 5. Turnec-dong design on plant	Dec-10	Met DCC in Sept 10. Permit application in draft cannot lodge until receive section 5 validation

PM03- F01 Management Programme 2011

COMPLETED									
Ref Number	Date	Type	CARRY FORWARD FROM 2010		ON HOLD	Responsibility	Method	Time Frame	Status
ENVIRONMENTAL									
EP 01	Jan '09	Environmental	Site Expansion to 40,000 tonnes	Kimainhamwood		TMCDMF	1. MCC planning received Feb 2010 2. ABP Appeal lodged March 2010 3. Lodged licence with EPA in May 2010	Jun-11	Started - Work in Progress. Planning received Feb '10. ABP appeal top be completed. Licence lodge and May '10. Finalising decision from ABP and the EPA
EP 02	Jan-09	Environmental	Landscape Plan to be completed at Kimainhamwood Compost re conditions of the planning	Kimainhamwood		TMCD	1. Kimainhamwood landscape plan to be completed as part of the new expansion	Jun-11	Not Started - Plans previously drawn up from initial planning, awaiting new planning conditions from ABP before commence the landscape plan
EP 03	Jan '09	Environmental	Upgrade of odour system and installation of an acid scrubber to improve efficiencies - Investigate possibility of scrubber etc	Kimainhamwood		TMCD	1. Simeadean Appointed	Feb-11	Simeadean appointed commissioning and handover to be completed by Feb 2011.
EP 04	Jan '10	Environmental	PDM - Permit renewal applied for and planning retention for change of use	PDM		MK	1. Planning Lodged 2. Permit lodged	Jun-11	RFI for planning to be sent in by 06/03/11 permit cannot be issued until planning is finalised
EP 05	Jan'11	Environmental	To put up dust curtains on the new roofed area of the CID line	Killeen road		DD	1. Attach dust curtains	Apr'11	Not started
EP 06	Jan '11	Environmental	Energy Systems/ Natural Resource Consumption - Management Systems	All Sites		MK/DD	1. Energy Study completed in 2010 2. Recommendations from study to be implemented on all sites	Quarterly Review	Not Started for 2011
EP 07	Jan '11	Environmental	SRF Development	Killeen road		MK/DD	1. Assess developments of additional material to the line and new additions, monitor quality and report.	Jun-11	Started - Third Party Contractor assisting with development - New procedures etc to be put in place for pre sorting
EP 08	Jan '11	Environmental	Waste Acceptance Procedures - Training Refresher for staff	Head Office		MK/DD Killeen Road	1. Organise groups for tours of Killeen Road - Presentations to groups on different waste types etc 2. Training to incorporate the importance of attention to detail on WIMS, show staff how errors affect business and end up as credit notes	Jun-11	Started - Draft presentation completed
EP 09	Jan '11	Environmental	Waste Collection Permit - Fleet audit	All Sites		DD/MK	1. Review paperwork in trucks in line with national permit	Jun-11	Not Started
EP 10	Jan '11	Environmental	Shredding Permit	Shredding		MK	1. Renewal of Permit notify DCC in Feb 2011	Feb-11	Started
EP 11	Jan '11	Environmental	Dunboyme - Review of Environmental Files on site	Dunboyme		MK	1. Complete Environmental Review of Licence and site issues	Feb-11	Not Started
EP 12	Jan '11	Environmental	Environmental Guidance File for all Staff - Legal register	All Sites		MK	1. Complete Environmental Review of Guidance files and Environmental Legal Register - Required for internal communications and ISO14001 register	Dec-11	Not Started
EP 13	Jan '11	Environmental	ISO Development - successfully pass two certification europe audits for ISO14001	All Sites		MK/DD	1. IMS in place review and ensure all procedure, policies and plans are up to date 2. Management Review to be completed on IMS for 2010	Dec-11	Ongoing
EP 14	Jan-11	Environmental	ELV- Review of Environmental files on site	ELV		DD	1. Complete review fo the files for 2010 on site in Review of the permit conditions	Mar-11	Not started
EP 16	Jan-11	Environmental	Carry out an updated energy audit on Killeen road and incorporate the findings into the Objectives and targets	Killeen road		DD	1. Revise and udate the previous energy audit 2. Update the energy register 3. Incorporate the energy register into the Objectives and targets	Jun-11	Started
EP 17	Aug-10	Environmental	Development of new site for Mixed Dry Recyclables - Techrec building	Techrec Building		MK	1. Meet DCC re planning and permit 2. Permit application Internal completed and lodged 3. Planning re lodge	Apr-11	Started Permit Lodged- Planning in process to be lodged Feb 2011. New systems to be put in place for MDR on receiving Permit and Planning

APPENDIX 7

Ref. CE08014/DMcD/DM

Mr Tom McDonnell,
Kilmainhamwood Compost,
Kilmainhamwood,
Kells,
Co Meath

22nd January 2010

RE: Integrity Test on Underground Leachate tank

Dear Tom,

In December 2009, Padraig Thornton Waste Disposal Limited, (PTWDL) requested WYG Environmental and Planning (Ireland) Ltd (WYG) to undertake integrity testing on the Underground Leachate Tank at its composting facility at Kilmainhamwood, Kells, Co Meath.

The test involved filling the tank with a known volume of water and monitoring any losses over a defined monitoring period. Where applicable the British Standard "BS 8007 - The British Standard Code of Practice for the Design of concrete structures for retaining aqueous liquids" was used as closely as possible in carrying out the test. However some amendments to the test were made to allow for operational constraints imposed by site processes.

1.0 Context of the Test

It is recommended by BS 8007 that integrity testing take place over a standard seven day period with a soakage period of the same order. However due to plant operational constraints, the test could only occur over a three day period. The tank was filled on the morning of the test for a period in the order of six hours prior to testing allowing any soakage effects from the concrete to be minimised. Under the British Standard it is also recommended that a visual inspection of the structure be undertaken for any defects prior to testing. For safety reasons, given the confined space risks involved, it was decided that the tank should only be visually inspected if the integrity test failed.

As the tank is located underground and all inputs and outputs were sealed for the duration of the test, climatic conditions i.e. rainfall, evaporation are unlikely to have had any significant effect on the water levels recorded and as such were not monitored.

2.0 Tank Capacity

The Leachate Processing Tank as shown on Figure 1 is constructed of precast concrete and has an internal diameter of 2.710m (2.996m externally) and a depth of 3.035m indicating a total capacity of 15.9m³ or 3500 gallons. For the test the tank was filled to an arbitrary level close to the top of the tank and 0.722m below the manhole cover. Therefore approximately 2.313m or 13.33m³ of water were pumped into the tank (or just over 83.8% of the tank capacity). It is reported by PTWDL that in normal operating conditions the tank is filled to a level of no greater than 75% of the capacity of the tank.

3.0 Results

Figure 1 shows the construction of the Leachate Processing tank. Test water was pumped into the tank on the morning of the 16th of December 2009 under PTWDL supervision. The test commenced at 15.30 on the 16th of December 2009.

The tank was monitored over a three day test period by a combination of WYG and PTWDL staff on a daily basis measuring from the top of the manhole to the water level at a fixed location. Table 1 below presents the levels recorded in the tank over this period.

Table 1 Integrity Test Results

Date	Time	Monitored level
16/12/09	15:30	0.722
16/12/09	15:45	0.722
16/12/09	16:00	0.722
16/12/09	16:15	0.722
17/12/09	09:00	0.722
17/12/09	11:00	0.722
17/12/09	13:00	0.722
17/12/09	15:30	0.722
18/12/09	09:05	0.722
18/12/09	13:20	0.722
18/12/09	15:40	0.722
19/12/09	12:35	0.722
19/12/09	13:15	0.722
19/12/09	15:30	0.722

As can be seen on the table a steady water level of 0.722m below the measuring point was recorded over the three day period. This confirms there were no losses from the tank and it is concluded that the tank has passed the integrity test.

4.0 Summary and Recommendations

The Leachate Process Tank is deemed to have passed the integrity test. All tanks require testing every 3 years.

Yours Sincerely,



David McDermott
Principal Environmental Scientist
For and on behalf of WYG



Donal Marron
Regional Director
For and on behalf of WYG

APPENDIX 8

Procedures Manual		Reference	PM08
Title: Complaints		Date issued	17/05/2010
		Revision	04

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

Purpose and Scope

The purpose of this procedure is to ensure that all complaints are recorded and actions initiated. The important function of this procedure is to justify the complaint. This will ensure that only legitimate and justifiable complaints are dealt with and corrected.

Complaints refer to third parties raising issues of environmental, health and Safety or customer services.

Environmental complaints are recorded separately by the environmental team.

Responsibility

It is the responsibility of all persons that receive a complaint to document it and forward it to the appropriate Department Manager and the relevant Mrep that the complaints refer to. The department manager must ensure that the complaint is solved and logged in the relevant folders on the IMS Drive. All complaints must be acted on.

Environmental Complaints are the responsibility of each Site Environmental Manager. The Managing Director, or his nominated representative, is ultimately responsible for ensuring appropriate actions are taken to investigate all environmental complaints documented in accordance with this procedure, and that where necessary, communications are held with the relevant interested parties (in compliance with the appropriate procedure).

The Environmental Manager is responsible for ensuring that environmental complaints are documented and resolutions forwarded to the complainant as soon as practicably possible and within 5 working days.

All employees are responsible for contributing to the planned resolution of complaints, in so far as they relate to matters within their control.

Associated Documentation

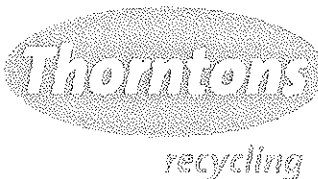
PM08- F01, General Complaints Form

PM08- F02, Environmental Complaints Form

PM08-F03 Environmental Complaint Recording Form.doc

PM08-F04 Environmental Complaint Recording Form Out of Hours
Kilmainhamwood.doc

PM09, Non conformance, corrective and Preventive action procedure

Procedures Manual		Reference	PM08
Title: Complaints		Date issued	17/05/2010
		Revision	04

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

Procedure

General complaints

1. Complaints can be received by fax, email, letter and verbal (telephone, meeting). All faxed, email, letter and minutes of meetings must be sent to the department manager. Verbal complaints must be recorded and emailed to the Department Manager.
2. If a complaint is received by phone the following must be recorded in the email to the Department Manager;
 - a. Contact details
 - b. Description of complaint
 - c. Date of complaint
3. The information above must be sent to the department manager with the word 'Complaint' in the subject bar of the email.
4. Each Department Manager is responsible for recording the complaint in the complaints spreadsheet PM08-F01. All the required information must be placed into the spreadsheet.
5. Complaints must be justified. It is the responsibility of the Department Manager to determine the relevance of a complaint.
6. When entering complaints into the Spreadsheet the following information must be included;
 - a. **Date** - date complaint received
 - b. **Dept/Area** - the complaint relates to
 - c. **Category** - (see explanation below)
 - d. **Description** - all details of the complaint, (If the complaint is received by post of fax, it is not necessary to enter all details into the spreadsheet. However there must be a reference to the letter/ fax and it must easily retrievable)
 - e. **Corrective action required (Y/N)** - if the problem is deemed significant and it requires time, money or persons to solve or it is a reoccurrence then documented corrective action is required this is carried out using PM09, Corrective action procedure. All complaints may require some form of

Procedures Manual		Reference	PM08
Title: Complaints		Date issued	17/05/2010
		Revision	04

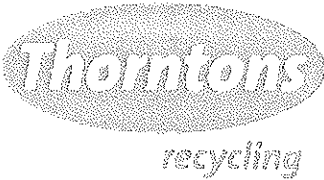
Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

corrective actions, minor complaints that have 'quick fixes' do not have to be formally documented in the corrective action procedure.

- f. **Comments**, if the person filling in the spread sheet wants to add additional notes they can enter into the comments section.
7. The categorisation of complaints is carried out to determine if there are any trends developing and to help in the justification of the complaint. the following categories are used;
- i. Financial(inc pricing/inv error, a/c's on stop etc)
 - ii. Delivery / Collection Service
 - iii. Property Damage
 - iv. Personnel
 - v. Data Input Error
 - vi. Other
8. All complaints will be discussed once a month at the Interdepartmental meeting and also included in the Management Review.

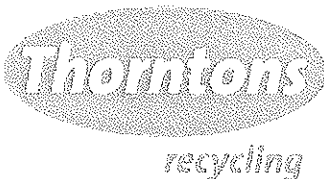
Environmental Complaints

9. All environmental complaints are recorded in the Environmental Complaints Spreadsheet PM08-F02.
10. Complaints can be received by fax, email, letter and verbal (telephone, meeting). All faxes, emails, letters and minutes of meetings must be sent to the Environmental Manager. Verbal complaints must be recorded and emailed to the Environmental Manager.
11. If a complaint is received by phone the following must be recorded in the email to the Environmental Manager;
- a. Contact details
 - b. Description of complaint
 - c. Date of complaint
12. The information above must be sent to the Environmental Manager with the word 'Complaint' in the subject of the email.
13. Each Environmental Manager is responsible for recording the complaint in the complaints spreadsheet PM08-F02. All the required information must be placed into the spreadsheet.
14. The Environmental Complaints Spreadsheet PM08-F02 is self explanatory. All the headings in the spreadsheet must be completed.

Procedures Manual		Reference	PM08
Title: Complaints		Date issued	17/05/2010
		Revision	04

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

15. **Corrective action.** If the problem is deemed significant and it requires time, money or persons to solve or it is a reoccurrence then documented corrective action is required. This is carried out using PM09, Corrective action procedure. All complaints may require some form of corrective actions, minor complaints that have 'quick fixes' do not have to be formally documented in the corrective action procedure.

Procedures Manual		Reference	PM04
Title: Communications		Date issued	03/09/10
		Revision	02

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

Purpose and Scope

The purpose of this procedure is to ensure effective and timely communication of information related to Environment, Health & Safety and Quality affairs. This procedure describes processes for internal communications and reporting to relevant regulatory bodies, interested parties and safety representatives.

The communications procedure also applies to contractors.

Environmental aspects will not be reported to any third party.

When to use this procedure

1. Communicating non-compliances to regulatory bodies
2. Communicating accident reports to regulatory bodies
3. Communicating new legislation
4. Communicating on performance

Responsibility

It is the responsibility of all employees who are engaging in regulatory reporting.

It is the responsibility of the employees who are communicating information relating to changes or new activities.

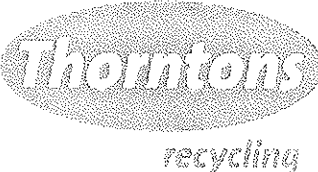
Associated Documents

EP01 Communications Programme

PM08, Complaints

Procedure

1. The Management Representatives are responsible for communicating the organisation's environment, health & safety and quality policies and procedures to all employees.
2. Department Managers are responsible for communicating procedures (and any changes to the procedures), results of accident and "near miss" investigations in their areas, and other significant information related to environment, health and safety and quality issues.
3. The selection of the most appropriate mechanism(s) used for internal communication is left to the discretion of the Department Manager e.g. Toolbox Talks. Mechanisms that are used for various types of communications include, but are not limited to:

Procedures Manual		Reference	PM04
Title: Communications		Date issued	03/09/10
		Revision	02

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

- All employee meetings, Daily Weekly and monthly.
 - Area environment, health and safety meetings,
 - Bulletin boards and posters,
 - Memoranda and employee letters.
 - Email, company Intranet
4. All employees are responsible for reporting environment, health and safety incidents or emergencies (including spills and fires), and quality issues immediately upon discovery. Such incidents are reported to the Department manager or any of the Management Representatives.
 5. Environmental or Health & Safety issues, such as incidents should also be reported to the appropriate emergency contacts as identified in the site specific emergency response plans.
 6. Consultation with employees is carried out on an ongoing basis. Employees are informed on changes to the management system, policies and procedures via their Department Manager.

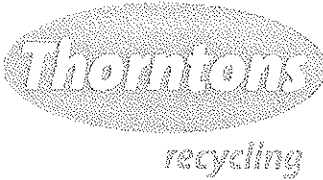
External Communications

Health and Safety

7. External communications of a Health and Safety nature must be sent to:

Health and Safety Authority,
Metropolitan Building,
James Joyce Street,
Dublin 1.

8. Reporting accidents and dangerous occurrences is the responsibility of the Health and Safety Manager.
 - a. Accidents are reported to the HSA online at www.hsa.ie. All previous accidents and incidents are recorded online.

Procedures Manual		Reference	PM04
Title: Communications		Date issued	03/09/10
		Revision	02


Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√	√	√	√	√	√	√

Environmental Regulatory reporting

9. Sites that operate and maintain a waste licence or waste permit are subject to reporting procedures detailed in the particular licence or permit.
10. Each site Environmental Manager must be aware of the reporting protocol.

Third Party Environmental Communications

11. This refers to Environmental communications between Thorntons Recycling and local community groups, key interest groups, local residents and members of the public. The means for communication is detailed in EP01, Communications Programme.

Environmental Procedures Manual		Reference	EP01
Title: Environmental Communications Programme		Date issued	03.09.10
		Revision	07

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√		√				

PURPOSE AND SCOPE

The purpose of this communications programme will ensure that effective and responsive communication measures are in place at Thorntons Recycling to allow any local community groups, key interest groups, local residents, customers and members of the public to obtain information concerning the environmental performance of the facility, as required under the conditions of each sites waste Licence.

Procedure only relates to licensed facilities by the Environmental Protection Agency (EPA).

RESPONSIBILITY

The Environmental Manager for each site is responsible for ensuring that all requests from members of the public or customers on environmental information relating to the facility are dealt with in a quick and professional manner.

Associated Documentation

Environmental Guidance

Licences, WCP's, Scanned Docs and Licences for Sites

PM08-F03 Environmental Complaint Recording Form.doc


PM08-F02 Environmental Complaints 2010.xls

COMMUNICATION TEAM AND OBJECTIVES

The Public Relations representative will be the main channel of information between Thorntons Recycling Centre and local residents, businesses and interest groups/organizations.

The Environmental Department will perform the following objectives;

- Manage consultation with local residents, businesses and local interest/representative groups
- Investigate complaints in relation to the Thorntons Recycling and complete PM08 F03
- Encourage liaison between Thorntons Recycling and local residents
- Ensure the general public is aware of how to contact the facility
- Make available Environmental Performance data relating to waste transfer and recycling information available to members of the public and customers at all reasonable times

Environmental Procedures Manual		Reference	EP01
Title: Environmental Communications Programme		Date issued	03.09.10
		Revision	07

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√		√				

PROGRAMME IMPLEMENTATION

The communication programme will consist of the following elements:

(a) Site Notice Board

A site notice board has been erected at the entrance of all Thorntons Recycling Licensed sites. This clearly displays:

1. Name and telephone number of the facility
2. The normal hours of opening
3. Name of licence holder
4. An emergency out of hours contact telephone number
5. The licence reference number
6. Location of environmental information relating to the facility.

(b) Queries or Requests for Environmental Information

Environmental information including annual environmental reports, quarterly reports, environmental policy and waste licence, in relation to Thorntons Recycling can be viewed at;

- The Main Reception of Thorntons Recycling facility offices at Killeen Road, Dunboyne and Kilmainhamwood, between the hours of 09:00 and 17:00 only. All visitors must sign a visitor's book at reception at site offices.
- Office of Environmental Enforcement, EPA, McCuminskey House, Richview, Clonskeagh, Dublin 14 on request between the hours of 09:00 and 17:00 only.

(c) Main Contacts


Local resident groups and businesses can contact the PR Representative or Environmental Manager or Deputy Manager of the facility. If issues arise local residents may contact the PR representative to ensure that issues are dealt with effectively and efficiently by Thorntons Recycling.

(d) Site Visits

Thorntons Recycling maintain an "open door" policy to neighbors' and customers that may wish visit the facility at reasonable times. Site visits and tours can be arranged by writing to the Environmental Department of the site which you wish to visit. The written request must detail the date and time of the proposed visit, number of visitors and the purpose of such a visit.

(e) Complaints Register

1. All complaints concerning the performance of the facility will be logged in the PM08-F03 environmental complaints recording form completed for record tracking purposes PM08-F02.
2. The Environmental Department will have regard to the corrective action procedure and liaise with the complainant to ensure that impacts have been alleviated.
3. The environmental department will respond to all written complaints within ten days.

Environmental Procedures Manual		Reference	EP01
Title: Environmental Communications Programme		Date issued	03.09.10
		Revision	07

Relevant to:-	Killeen Road	Kilmainhamwood	Shredding	Dunboyne	PDM	ELV	HQ	Tankering
	√	√		√				

(f) Meetings with Interested parties/organisations

Interested parties/organizations can submit a written request for a member of Thorntons Recycling management to attend meetings. The written request must detail the date and time of the proposed meeting and the purpose of the meeting. Thorntons Recycling management will do their best to honour such requests.

(g) Newsletters

Thorntons Recycling Centre will produce as required newsletters which will be available at all EPA licensed sites.

(h) Thorntons Recycling Website

Information in relation to the company including the companies' EHS policy is available to download from Thorntons Recycling Website at <http://www.thorntons-recycling.ie/>

(i) Internal Communications

Information in relation to common environmental queries can be obtained for internal use at the following link [Environmental Guidance](#). Should you require more detailed information please contact the environmental department.

COMMUNICATION POLICY

“Thorntons Recycling is committed to maintaining open and clear channels of communication with local residents and other interested parties with regards to the environmental performance of all of Thorntons Recycling facilities. It is intended that the communication programme will help address any concerns and certainly help avoid any misunderstandings about the operation of Thorntons Recycling”.

All original completed records of request for information or any complaints received in relation to Thorntons Recycling will be filed in the communications file or the complaints file in the Environmental department, of each Thorntons Recycling site and will be available for inspection by the EPA at all reasonable times.