

**Carbury Compost Limited**  
**(W0124-01)**  
Drummin  
Carbury  
Co. Kildare

Annual Environmental Report

2008

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## 1.0 Reporting Period

For the Year 2008.

## 2.0 Waste Activities

Carbury Compost Ltd is licensed by the Environmental Protection Agency in accordance with the Fourth Schedule of the Waste Management Act 1996 for

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

Carbury Compost Ltd produces mushroom substrate (compost) at its facility.

## 3.0 Decommissioning and Aftercare

Section 2.5 of Carbury Compost Ltd's Environmental Liabilities Risk Assessment, conducted by WYG Environmental in September 2007 outlines the *Provisions for Site Closure*, and is included below:

### 2.5 Provisions for Site Closure

Operations at the facility are ongoing with an open-ended lifespan. In the event of a decision to close the facility a closure plan will be developed. This plan will allow for removal of all raw materials, intermediate materials and compost from the site and cleaning of all surfaces where materials/compost had been handled or stored. A monitoring programme will be carried out on environmental media including air and water to ensure that all emissions from the facility have ceased.

It is assumed that upon closure of the site, the premises will be suitable for industrial or other use and will have a re-sale value, which will cover the costs of removal of materials/compost, site cleaning and monitoring.

When operations cease at the site it is expected that the bulk of the site infrastructure will be sold on to a prospective buyer as an asset. This will include the site buildings, offices, compost tunnels, fencing, gates, lighting, fire alarms and drainage/sewage infrastructure. The potential buyer may also require other plant equipment. However, if not, these will be sold off to other potential buyers separately or dismantled and disposed off site at a licensed facility. Other plant equipment includes generator, site machinery, oil storage tanks and bunds. All trucks will be removed off site and sold separately or disposed of appropriately.

When Operations cease at the site any residual compost/waste will be removed and disposed at relevant licensed recovery/disposal facilities. The entire site floors and walls will be power swept and washed to clear all debris and dust. Silt traps will be dislodged and interceptors cleaned out. The waste from the cleaning operations will be disposed to relevant licensed facilities. It is not anticipated that any specialist recovery or disposal will be required.

A monitoring programme of all potential emissions including surface water, foul waters and dust will be carried out after this process in order to ensure that emissions from the site have ceased. The monitoring

programme will be designed to include at least two rounds of sampling carried out within two months of the decommissioning of the facility and at least two weeks apart.

Potential nuisances at the site are limited to operational emissions such as odour, dust and noise. After closure and cleaning of the site as described above and when operations have ceased and assuming confirmation from the monitoring programme that all emissions have ceased, it is expected that there will be no requirement for long term aftercare management at the site.

For more details please refer to the ELRA submitted to the EPA on 1<sup>st</sup> October 2007.

#### 4.0 Capacity of the Facility

In 2008 Carbury Compost Ltd produced:

57, 366 Tonnes - Mushroom Substrate (Phase III).

#### 5.0 Waste

##### 5.1 Waste Received:

**Table 5.1.1 Type and quantity of Waste received in Carbury Compost Ltd 2008**

<b>Waste Type</b>	<b>EWC Code</b>	<b>Quantity (Tonnes)</b>
Chicken Manure	02 01 06	12, 381
Horse Manure	02 01 06	21, 648
Gypsum	17 08 02	2, 648

##### 5.2 Waste Recovered:

See **Table 5.1.1** above.

##### 5.3 Waste Disposed:

See 'Onsite treatment & offsite transfers of waste' in Appendix A.

## 6.0 Water Usage

Water is provided for Carbury Compost Ltd by three groundwater wells on site. A total of 79,146 m<sup>3</sup> of water was used in 2008 - an average of 6,596 m<sup>3</sup> of water per month, or 1522 m<sup>3</sup> per week. Water usage was lower in 2008, compared to 2007.

## 7.0 Emissions

### 7.1 Water Monitoring:

Carbury Compost Ltd is required to monitor three types of water i.e. surface water, groundwater and effluent. Surface water sampling locations include SW1, RW1 and RW2. Three groundwater monitoring locations exist; GW1, GW2 and GW3. One effluent monitoring point is situated on site; ETP-1.

Monitoring was carried out:

- on surface waters in January, April, July and October of 2008.
- on effluent in January and May of 2008.
- on groundwaters in February and September of 2008.

### 7.2 Airborne Micro-Organism Monitoring:

Four Airborne Micro-Organism monitoring locations exist on the Carbury site; AB1, AB2, AB3 and AB4. During sampling, four locations are monitored: AB1 located upwind of the facility, with AB2, AB3 and AB4 situated downwind of the facility.

Monitoring was carried out: - July 2008.

### 7.3 Dust Monitoring:

Four dust monitoring locations exist on the Carbury site, D1, D2, D3 and D4. Time period required to complete dust monitoring is 30 (+/- 2) days.

Monitoring was carried out: - July, September and October of 2008.

#### 7.4 Noise Monitoring:

Monitoring was carried out: - April 2008.  
- October 2008.

#### 7.5 Boiler Emissions Monitoring:

Monitoring was carried out: - July 2008.

### 8.0 Results and Interpretation

#### 8.1 Surface waters

**Table 8.1.1 Surface Water Monitoring Results for Carbury Compost Ltd 2008**

	<b>SW1</b>			
	<b>26.02.08</b>	<b>17.04.08</b>	<b>30.07.08</b>	<b>09.10.08</b>
<i>pH</i>	7.60	7.41	7.26	7.22
<i>Conductivity</i>	658	616	590	619
<i>D.O (mg/l)</i>	2.30	0.80	4.06	2.60
<i>Temp (°C)</i>	13.6	10.7	16.0	15.0
<i>Suspended Solids (mg/l)</i>	24.4	16.0	11.4	21.6
<i>BOD (mg/l)</i>	8	16	14	7.4
<i>COD (mg/l)</i>	98	113	82	63.5
<i>Nitrates (mg/l N)</i>	8.2	6.5	4.7	4.92
<i>Total P (mg/l P)</i>	1.08	1.22	1.28	0.93
<i>Ammonia (mg/l N)</i>	2.05	1.63	1.07	1.21
<i>Sulphate (mg/l SO4)</i>	48	45	44	34

**Table 8.1.2 River Water Monitoring Results for Carbury Compost Ltd 2008**

	RW1 d/s				RW2 u/s			
	22.01.08	17.04.08	30.07.08	09.10.08	22.01.08	17.04.08	30.07.08	09.10.08
<i>pH</i>	7.16	7.57	7.54	7.41	7.17	7.56	7.55	7.45
<i>Conductivity</i>	418	387	465	461	411	393	464	460
<i>D.O (mg/l)</i>	2.30	1.60	5.40	4.20	2.50	1.40	5.45	4.50
<i>Temp (°C)</i>	14.0	9.4	15.2	14.9	14.0	9.4	15.2	14.9
<i>Suspended Solids (mg/l)</i>	8.4	8.4	7.2	21.3	8.0	8.4	6.5	15.6
<i>BOD (mg/l)</i>	6	3	4	3.5	7	4	4.2	3.3
<i>COD (mg/l)</i>	73	40	73	51.2	98	47	61	49.7
<i>Nitrates (mg/l N)</i>	1.8	3.4	1.54	1.82	4.6	3.8	1.49	1.71
<i>Total P (mg/l P)</i>	0.08	0.11	0.09	0.11	0.07	0.08	0.09	0.11
<i>Ammonia (mg/l N)</i>	0.09	0.114	0.034	0.061	0.071	0.117	0.039	0.125
<i>Sulphate (mg/l SO4)</i>	39	33	37	18	38	35	37	22

As per Schedule *E.5 Surface Water* of the Waste Licence, surface water monitoring was conducted during 2008. Results are displayed in **Tables 8.1.1 and 8.1.2** above. Water leaving the effluent treatment plant (puroflo) is discharged into the piped stream and enters the Cushaling River at SW1. Sampling points RW1 and RW2 are located 30m downstream and 30m upstream of SW1 respectively.

All results for SW1 (**Table 8.1.1**) were within specified limits. Results downstream of SW1 were quite consistent with results upstream of SW1 (**Table 8.1.2**), indicating no adverse impact from the discharge point on the quality of the Cushaling River.

## 8.2 *Effluent*

**Table 8.2.1 Effluent Monitoring Results for Carbury Compost Ltd 2008**

	ETP1	
	30.01.08	29.05.08
<i>pH</i>	6.59	7.17
<i>BOD</i>	7	18
<i>Suspended Solids</i>	22	32
<i>Total Ammonia (mg/l N)</i>	2.48	4.76
<i>Orthophosphate (as P)</i>	0.82	1.36
<i>Total P (mg/l P)</i>	0.87	1.8
<i>Oils, Fats, Grease</i>	3	7



As per Schedule *E.8 Effluent Treatment Monitoring* of the Waste Licence, Effluent Treatment Plant discharge monitoring was conducted during 2008. Results of which are displayed in **Table 8.2.1** above. All results fall within licence limits with the exception of suspended solids on 29.05.08, which was slightly over the 30 mg/l limit. A full service inspection was conducted on the sewage treatment system in December 2008. Following implementation of the recommendations a sample taken in January 2009 showed all results to be within the limits.

For total discharge loadings for 2008 see 'Releases to Water' in Appendix A.

### 8.3 Ground water

**Table 8.3.1 Groundwater Monitoring Results (GW1) for Carbury Compost Ltd 2008**

	<b>GW1</b>	
	<b>26.02.08</b>	<b>25.09.08</b>
<i>pH</i>	7.38	7.19
<i>TOC</i>	<5	<5
<i>Ammonia (mg/l N)</i>	0.139	0.110
<i>Nitrates (mg/l N)</i>	0.7	0.93
<i>Sulphate (mg/l SO4)</i>	22	22
<i>Conductivity</i>	396	549
<i>Total Coliforms (per 100ml)</i>	Absent	Absent
<i>Faecal Coliforms(per 100ml)</i>	Absent	Absent

**Table 8.3.2 Groundwater Monitoring Results (GW2) for Carbury Compost Ltd 2008**

	<b>GW2</b>	
	<b>26.02.08</b>	<b>25.09.08</b>
<i>pH</i>	7.26	7.25
<i>TOC</i>	<5	<5
<i>Ammonia (mg/l N)</i>	0.134	0.368
<i>Nitrates (mg/l N)</i>	6.1	6.83
<i>Sulphate (mg/l SO4)</i>	49	43
<i>Conductivity</i>	539	560
<i>Total Coliforms (per 100ml)</i>	Absent	Absent
<i>Faecal Coliforms(per 100ml)</i>	Absent	Absent

**Table 8.3.3 Groundwater Monitoring Results (GW3) for Carbury Compost Ltd 2008**

	<b>GW3</b>	
	<b>26.02.08</b>	<b>25.09.08</b>
<i>pH</i>	7.33	7.18
<i>TOC</i>	<5	<5
<i>Ammonia (mg/l N)</i>	0.323	0.096
<i>Nitrates (mg/l N)</i>	0.2	0.64
<i>Sulphate (mg/l SO4)</i>	26	21
<i>Conductivity</i>	433	721
<i>Total Coliforms (per 100ml)</i>	Absent	Absent
<i>Faecal Coliforms(per 100ml)</i>	Absent	Absent

As per Schedule *E7 Groundwater Monitoring* of the Waste Licence Groundwater monitoring was conducted on two occasions during 2008 – February and September. Results are displayed in **Tables 8.3.1, 8.3.2 and 8.3.3** above. All samples were found to have satisfactory results; not exceeding specified limits. It is planned to drill a fourth borehole in the NE corner of the site.

#### 8.4 Airborne Micro-Organisms

**Table 8.4.1 Airborne Micro-Organism Results for Carbury Compost Ltd 2008**

Monitoring Location	Mesophillic Bacteria cfu/m <sup>3</sup>		Aspergillus fumigatus cfu/m <sup>3</sup>	
	Sample 1	Sample 2	Sample 1	Sample 2
AB1 Upwind	1.17 x 10 <sup>2</sup>	1.2 x 10 <sup>1</sup>	0	0
AB2 Nearest Sensitive Receptor Downwind	2.7 x 10 <sup>1</sup>	1.8 x 10 <sup>1</sup>	0	0
AB3 Downwind of Bale Breaking Line	2.3 x 10 <sup>2</sup>	2.6 x 10 <sup>2</sup>	1.06 x 10 <sup>1</sup>	0
AB4 Downwind	2.8 x 10	7.8 x 10	0	0
Control Sample	0	-	0	-
Typical Reported Concentrations at Compost Facilities	10 <sup>3</sup> - 10 <sup>6</sup>		0 - 10 <sup>3</sup>	

As per Schedule *E.3 Airborne Microbes* of the Waste Licence, Airborne Micro-Organism monitoring was conducted on 30.07.08. Results of which are displayed in **Table 8.4.1** above.

A Southerly wind was evident on the day and four sampling locations were chosen accordingly, one upwind of the facility (AB1), and three downwind of the facility (AB2, AB3 and AB4). At each sample location two samples for Mesophillic Bacteria analysis and two samples for Aspergillus fumigatus analysis were taken. At location AB3, a control sample was also taken.

Upwind of the facility (AB1) a small concentration of Mesophillic Bacteria was present in both samples. No Aspergillus fumigatus was recorded at this location. These results give an indication of the presence of bioaerosols naturally in the environment. AB2, downwind at the nearest sensitive receptor also showed the presence of a small concentration of Mesophillic Bacteria; Sample 1 – 270 cfu/m<sup>3</sup> and Sample 2 - 180 cfu/m<sup>3</sup>. Again no Aspergillus fumigatus was recorded at this location. A higher concentration of Mesophillic Bacteria was recorded at AB3, with results of 2,300 cfu/m<sup>3</sup> and 2,600 cfu/m<sup>3</sup>. This sampling location was downwind of the bale breaking line in the Phase I working area. A small concentration of Aspergillus

fumigatus; 106 cfu/m<sup>3</sup> was recorded at this location also. Finally, at AB4 a small concentration of Mesophilic Bacteria was recorded; Sample 1 – 28 cfu/m<sup>3</sup> and Sample 2 - 78 cfu/m<sup>3</sup>. As can be seen from Table **Table 8.4.1**, all concentrations present are lower than typical levels recorded at compost facilities. Therefore it can be assumed that Carbury Compost Ltd is not adversely impacting on the environment in relation to airborne micro-organisms. For more details please refer to monitoring report submitted to the EPA on 25 August 2008.

### 8.5 Dust

**Table 8.5.1 Dust Monitoring Results for Carbury Compost Ltd 2008**

<b>Monitoring Location</b>	<b>Survey Period 16/09/08 - 14/10/08</b>	<b>Dust Deposition (mg/m<sup>2</sup>/day)</b>
D1	28 Days	17.2
D2		5.7
D3		442.1 <sup>(1)</sup>
D4		40.2

Note 1: Leaves and other organic matter present in jar

**Table 8.5.2 Dust Monitoring Results for Carbury Compost Ltd 2008**

<b>Monitoring Location</b>	<b>Survey Period 16/10/08 - 13/11/08</b>	<b>Dust Deposition (mg/m<sup>2</sup>/day)</b>
D1	28 Days	321.5
D2		45.9
D3		1108.2 <sup>(1)</sup>
D4		287.1

Note 1: D3 contained organic material

**Tables 8.5.1 and 8.5.2** above display dust deposition results from monitoring conducted at Carbury Compost Ltd in September/October 2008 and October/November 2008 by White Young & Green Environmental Ltd. During the course of monitoring several jars became contaminated with leaves and other organic matter, therefore determination of the dust deposition at these locations on these occasions was not possible. All remaining results however fell within licence limits of 350 mg/m<sup>2</sup>/day. For more details please refer to the monitoring reports submitted to the EPA on 12 December 2008.

## 8.6 Noise

**Table 8.6.1 Noise Monitoring Results for Carbury Compost Ltd April 2008**

### **Day-time Results - 3rd April 2008**

<b>Monitoring Location</b>	<b>Survey Start Time</b>	<b>L<sub>Aeq</sub>, 30 mins dB</b>	<b>L<sub>A10</sub>, 30 mins dB</b>	<b>L<sub>A90</sub>, 30 mins dB</b>	<b>Main Noise Sources</b>
NSL 1 N12	15.59 - 16.29	68.9	72.5	54.1	Passing traffic on R403. Machinery in operation on site.

### **Night-time Results - 5th April 2008**

<b>Monitoring Location</b>	<b>Survey Start Time</b>	<b>L<sub>Aeq</sub>, 15 mins dB</b>	<b>L<sub>A10</sub>, 15 mins dB</b>	<b>L<sub>A90</sub>, 15 mins dB</b>	<b>Main Noise Sources</b>
NSL 1 N12	22.14 - 22.27	68	71.5	51.5	Passing traffic on R403.

**Table 8.6.2 Noise Monitoring Results for Carbury Compost Ltd October 2008**

**Day-time Results - 14th October 2008**

<b>Monitoring Location</b>	<b>Survey Time</b>	<b>L<sub>Aeq</sub>, 30 mins dB</b>	<b>L<sub>A10</sub>, 30 mins dB</b>	<b>L<sub>A90</sub>, 30 mins dB</b>	<b>Main Noise Sources</b>
NSL 1 N12	14.15 - 14.45	58.6	62.2	50	Regular traffic, fans and compressor.

**Night-time Results - 14th October 2008**

<b>Monitoring Location</b>	<b>Survey Time</b>	<b>L<sub>Aeq</sub>, 30 mins dB</b>	<b>L<sub>A10</sub>, 30 mins dB</b>	<b>L<sub>A90</sub>, 30 mins dB</b>	<b>Main Noise Sources</b>
NSL 1 N12	22.02 - 22.32	55	57	44	Intermittent traffic, fans and compressor.

Noise monitoring was carried out in April 2008 and October 2008 by White, Young and Green Environmental Ltd. Results are displayed in **Tables 8.6.1 and 8.6.2** above respectively. The similarity between the L<sub>Aeq</sub> and L<sub>A10</sub> indicates the influence of non site related traffic on noise levels at NSL1. In April 2008 the main noise source was passing traffic on the R403 and White, Young and Green concluded that noise generated from within the Carbury Compost site was not proving to be an environmental nuisance. In October 2008 however, White, Young and Green concluded that during the night-time monitoring, a compressor on-site led to the noise limit of 45dB being exceeded, to a level of 48.6dB. They recommended reducing the noise breakout from the compressor.

For more details please refer to the monitoring reports submitted to the EPA on 06 May 2008 and 18 February 2009. It is planned to assess the situation further by completing the required monitoring in 2009.

## 8.7 Boiler Emissions

**Table 8.7.1 Boiler Emission Results for Carbury Compost Ltd, July 2008.**

	<b>Low Fire</b>	<b>High Fire</b>
<b>Efficiency</b>	86.8%	86.3%
<b>Oxides of sulphur</b>	183 mg/m <sup>3</sup>	186 mg/m <sup>3</sup>
<b>Nitrogen oxides</b>	441 mg/m <sup>3</sup>	455 mg/m <sup>3</sup>
<b>CO</b>	36 mg/m <sup>3</sup>	39 mg/m <sup>3</sup>

Results in **Table 8.7.1** above shows that SO<sub>2</sub> concentration was measured at 186 mg/m<sup>3</sup> at high fire (Limit: 1700 mg/m<sup>3</sup>), with NO<sub>x</sub> measured at 455 mg/m<sup>3</sup> at high fire (Limit: 750 mg/m<sup>3</sup>) and CO measured at 39 mg/m<sup>3</sup> (Limit: 200 mg/m<sup>3</sup>). For total boiler emissions for 2008 see 'Releases to Air' in Appendix A.

## 9.0 Resource and Energy Consumption

Electricity consumption in 2008 was 6,502,729 kw units. There was an increase of 858,949 kw units in 2008 from the 2007 figure of 5,643,780 kw units (15% increase).

## 10.0 Proposed Development of Carbury Compost Limited

A new facility is currently under construction at Carbury Compost Ltd.

The new development consists of:

- New enclosed bunkers for the production of phase I mushroom substrate
- A new building to facilitate the indoor storage of chicken litter, horse manure and gypsum
- A new building to facilitate the production of phase 2 and phase 3 mushroom substrate
- A telemetry system for the continuous monitoring required under Condition 3.16.1
- New systems for dealing with roof water, yard water and foul water
- New hard surfaced area for manoeuvring of vehicles and storage of straw

**Section 11.0** below outlines the work carried out in 2008. It is planned to have the new Phase I area in operation in 2009.

### **11.0 Development works completed during 2008**

A lot of site infrastructural work has been completed. This includes upgrading of electrical services, upgrading of drainage and upgrading of concrete surfaces.

Nine new Phase 2/3 tunnels, a new office block and new workshop have been constructed.

### **12.0 Environmental Objectives and Targets for 2008**

Several targets for 2008 were completed during the year, whilst progress was made on others.

- Work continued on the re-development of the site.
- The required monitoring of water, dust, noise, odour, airborne micro-organisms and boiler emissions were completed.
- Various assessments and reports were completed; Groundwater Wells Suitability Report, Sewage Treatment Plant Report.
- A new weather station was erected for monitoring local meteorological conditions.
- An information sheet was devised as part of a communication programme. Visits were made to nearby residents, with the information leaflets in July 2008.

Outstanding targets have been carried through to 2009.

### **13.0 Environmental Objectives and Targets for 2009**

Our environmental objectives were formulated as part of our EMS. These objectives include:

- Prevent pollution of land and waterways
- Use natural resources efficiently
- Reduce odour from the site
- Reduce waste and handle waste responsibly
- Improve management of chemicals and oils on-site



- Manage on-site air emissions and noise generated on-site
- Improve sub-contractor awareness and control

Targets have been set. Environmental Management Programmes are in place to meet our targets and achieve our objectives.

The new development, outlined in **Section 10.0** will provide for improvement in all areas outlined in our objectives.

Other targets, specifically relating to our waste licence, that we plan to achieve in 2009 include:

- Complete the construction of the Phase I area of the new facility.
- Construct a second goodie water storage tank, with a sub floor leak detection system in place.
- Complete the required monitoring of water, dust, noise, odour, airborne micro-organisms and boiler emissions.
- Complete the Firewater Risk Assessment required as part of the company emergency response procedure.
- Drill a fourth groundwater monitoring well in the NE corner of the site.

## 14.0 Complaints and Incidents

Approx. 37 complaints were received in 2008, all regarding odour emissions from the facility.

**Table 14.1 Complaint details for Carbury Compost Ltd 2008**

<b>Complainant</b>	<b>No. of complaints received</b>
William & Marie Cassidy	19
Mary Griffin	7
Paul Kelly	7
Moyra Melia	1
Jim Connelly	1
Catherine Cox	1
Anita Cox	1

No incidents occurred during 2008.

## 15.0 Nuisance Controls

A pest control system is in place in Carbury Compost, run by Ecolab. Ecolab conduct regular checks on the vermin controls on the site, and a maintenance record is updated accordingly.

All Vehicles entering and leaving the site are inspected to ensure that they are appropriately covered.

Other nuisances are assessed and recorded daily.

## 16.0 Costs

Costs for environmental reports and monitoring completed in 2008 was c. €39,000+VAT.

Cost of new development to date is c. €7.6 million+VAT.

## **17.0 Staff Training**

Staff training is on-going. Training is conducted to maintain awareness with employees of our environmental objectives and targets and how they can be achieved. Posters and procedures have been erected in target areas for consultation if required.

The company environmental manager also completed the FAS Waste Management Training course in May 2008.