OFFICE OF LICENSING & GUIDANCE

INSPECTORS REPORT ON A LICENCE APPLICATION

To:	Board of Directors
From:	Donal Grant - **LICENSING UNIT**
Date:	29TH MAY 2007
RE:	APPLICATION FOR A WASTE LICENCE REVIEW FROM CARBURY COMPOST, LTD., LICENCE REGISTER W0124-02

Application Details	
Type of facility:	Waste Composting Facility
Class(es) of Activity (**P** = principal activity):	3rd Schedule: Not Applicable 4th Schedule: (2(**P**), 4, 11, 13)
Quantity of waste managed per annum:	160,000 tonnes of organic waste will be used in the composting process to produce 109,000 t of Phase II/III mushroom compost
Class of Waste:	Recyclable organic compounds
Location of facility:	Drummin, Carbury, Co. Kildare
Licence application received:	29-Nov-2006
Third Party submissions:	Four
EIS Required:	Yes
Article 14 Notices sent:	13-Dec-2006
Article 14 compliance date:	24-Jan-2007
Article 16 Notices sent:	Not applicable
Article 16 Compliance date:	
Site Inspection:	09-Feb-2007

1. Facility Details and Reason for Licence Review

Carbury Compost Ltd. currently operate a waste composting facility at Carbury, Co. Kildare, producing compost for the mushroom industry. The current facility has been in operation for over 37 years and it supplies compost to mushroom producers across the country. It operates as an independent entity under the ownership of Monaghan Middlebrook Ltd., having previously operated as Carbury Mushrooms until its purchase by Monaghan Middlebrook in 2004. According to the applicant the facility is currently operating under the conditions set out in Waste Licence 124-01 which was granted by the Agency in August 2004. In November 2006, the applicant applied for a review of their current waste licence. This review mainly deals with a proposed expansion of the operations at the facility. The applicant plans to completely upgrade the whole facility to cater for the production of 109,000 tonnes

per annum of Phase III mushroom compost, approximately doubling the production volumes compared to existing levels.

One of the proposed changes is that the applicant intends to completely enclose all Phase I composting and operate this building under negative air pressure. The resulting odour will then be drawn out through a single stack in the roof of the building.

The applicant has also stated that they do not intend to treat the extracted air from the Phase I composting process. The dispersion modelling assessment submitted by the applicant concludes that the adopted odour annoyance criterion of $\leq 6.0 ouE/m^3$ for the 98_{th} percentile will not be perceived at any sensitive receptor beyond the site boundary including the nearest sensitive receptor located at the north-west of the site. They conclude by reporting that the impact of odorous emissions from the proposed Phase I composting process will not be of significance.

It should be noted that the complete enclosure of the Phase I process was one of the main recommendations in the 2002 Odournet UK report which was commissioned by the Agency. For the Carbury site they concluded:

The most significant improvement to the management of site odour emissions can be achieved by enclosing the Phase I composting process, which enables better control of ventilation and leads to a ducted extraction flow that can be treated in a suitable odour abatement facility.

Odour abatement for enclosed Phase I mushroom compost production is technically available and is proven technology in a number of facilities. Typically, these installations consist of an acid scrubber, followed by a biofiltration unit.

Condition (3.11.3) of their existing licence provided for this infrastructure to be installed but the applicant has failed to complete the necessary infrastructure specified in that licence.

The other significant improvement measure proposed by the applicant is that Phase I compost will be produced on aerated pads in specially designed bunkers. This should result in the production of mushroom compost with reduced odours. This was one of the main recommendations of Prof. Ralph Noble, who acted as a consultant to the Irish mushroom compost industry and who prepared a report entitled 'Index of Measures for the Reduction of Odours from Mushroom Composting Sites in Ireland'. Prof. Noble's recommendation was incorporated into the applicant's existing licence when it was granted in 2004 as Condition 3.11.1 however the licensee never installed the required infrastructure.

The waste materials to be accepted at the facility include horse manure (proposed 45,000 tpa), poultry manure (proposed 36,000 tpa), straw (proposed 36,000 tpa) and gypsum (proposed 5,000 tpa). Water will make up the balance of the process input and will consist of recycled goodie water (liquid that has drained/leached from the windrows of material during the composting process) and collected surface water.

The site upon which the compost processing activity is located also includes two other activities (contract mushroom growing and a mushroom processing area) which are to be reduced in size and capacity by 45% to allow for the expansion of the composting operation.

There are currently 133 staff employed at the existing facility. Working hours are staggered and change on a weekly basis according to demand, but shifts generally start every hour from 05:00 to 08:00 and continue until 22:00. The applicant expects staffing levels to drop to 115 personnel after the redevelopment of the site.

2. Operational Description

The production process for mushroom growing substrate is divided into three phases:

Phase I – Composting of the raw mix of bulk materials (horse manure, poultry manure, straw, gypsum & water).

Phase II – Pasteurisation and conditioning of the mixture.

Phase III – Spawning and final conditioning.

Under the terms of its current waste licence the existing facility processes a maximum of 41,600 tpa of horse manure and 15,000 tpa of poultry manure to produces approximately 55,000 tpa of compost. The facility is required to hold a waste licence as >1000m^3 of material is being composted at the facility at any one time and is currently licenced for Class 2 of the Fourth Schedule of the Waste Management Acts, 1996 - 2005.

The proposed redevelopment of the facility will allow for an expansion of the quantity of raw materials accepted, upgrading of the entire composting process, and an increase in the output of finished product to approximately 109,000 tpa. This redevelopment will see composting operations carried out within new infrastructure at the site, comprising a raw materials reception hall, new purpose built Phase I bunkers and Phase II / Phase III composting tunnel complexes which will replace the existing windrow composting processes which have been in operation since the 1960's.

The proposed composting process will be as follows: raw materials are imported to the site for processing and are received, weighed and verified at the entrance. The materials are then directed to the reception hall where they are stockpiled in dedicated bays prior to processing. The imported straw bales are dipped in a vat of goodie water and stored for up to three days to allow biodegradation to commence. This wetted straw is then broken down and blended with the premixed poultry manure and gypsum. This mixture is stored for two days under forced aeration in one of the Phase I bunkers before being removed and mixed with horse manure. This process is repeated three times and takes approximately one week to complete. The Phase I process is completed by allowing the mixture to stand for 4-5 days, with the addition of water on a regular basis. The material from the Phase I bunkers is removed to the tunnels in the Phase II complex where it is left for six days for pasteurisation at 59°C through forced aeration. After Phase II is completed, the material is removed and spawned with mushroom spawn and placed in Phase III tunnels where it remains for 14-17days during which forced aeration occurs periodically but no more water is added.

The main emission points identified during this review include:

- Odour – from the Raw materials handling area, Phase I, II & III complexes and goodie/process water storage tanks.
- Noise – from operational machinery such as boilers, conveyors, etc.
- Air – Dust from the straw storage area, boiler emissions, and extracted air from the Phase I, II & III complexes.
- Surface Water – surface run-off on the site.
- Ground Water – possible leachate through fractured/cracked concrete.

These, and other possible emissions, will be dealt with in section 5 below.

3. Compliance Record

The OEE conducted an audit of the facility on the 6th of April 2006 and reported on 10th July 2006. The report identified a high number of significant non-compliances with the licence, Register No. W0124-01. The main points raised in the report relate to:

1. Infrastructure not installed as required by the licence
2. Little or no monitoring of emissions
3. Non preparation and submission of reports to the Agency

1. *Infrastructure not installed as required by the licence*

Of the twenty significant non-compliances identified in the audit of 06-Apr-2006, six related to essential infrastructure which was required by the licence but which was not installed at the facility. All of these non-compliances relate to individual conditions in the licence. This essential infrastructure forms the majority of the proposals now being put forward by the applicant in this licence review application. These included:

- Provision of aerated pads for the Phase I composting process (this was required under Condition 3.11.1(i) of the existing licence).
- Enclosing the bale breaking and blending line (this was required under Condition 3.11.1(ii) of the existing licence).
- Enclosing the goodie water storage tank and provision of an odour filtration system (this was required under Condition 3.11.1(iv) of the existing licence).
- Enclosing the Phase I production process (this was required under Condition 3.11.3(i) of the existing licence).
- Provision of an enclosed building for the dry storage of horse manure, poultry manure and gypsum (this was required under Condition 3.7.1 of the existing licence).
- Installation of a high level alarm on the goodie water storage tank (this was required under Condition 3.13.1(e) of the existing licence).
- Installation of a number of monitoring systems (this was required under Condition 3.16.1 of the existing licence).

2. *Monitoring of emissions*

The findings of the audit of 06-Apr-2006 indicate that the applicant has shown little regard to the monitoring requirements of their existing licence. The following are the main non-compliances identified by the audit team which relate to monitoring of processes and emissions and the maintenance of critical sampling equipment at the facility:

- Labelling of sampling and monitoring locations not carried out (required under Condition 4.6.2 of the licence).
- Non submission of a proposal to the Agency on trigger levels for Hydrogen Sulphide and Dimethyl Sulphide for agreement (Condition 5.7.1).
- No monitoring of water usage on site (Condition 7.5.1).
- Failure to carry out a manure monitoring programme and submit it to the Agency for agreement (Condition 7.6.1).
- Failure to submit an interpretation of monitoring results (Condition 10.1(g)).

3. *Preparation and submission of reports to the Agency*

The applicant has only submitted one report to the Agency since the licence was granted its licence in 2004. The audit report notes that the reports/proposals/studies/assessments listed below have either not been carried out or the relevant report has not been submitted to the Agency in accordance with a number of conditions specified in their licence:

- Environmental Management System (Condition 2.3.1)
- Sewage Treatment Report (Condition 3.14.2)
- Contamination Assessment Report (Condition 3.17)
- Groundwater Wells Monitoring Suitability Report (Condition 3.18.1(ii))
- Environmental Liabilities Risk Assessment (Condition 11.2.1)
- Emergency Response Procedure (Condition 8.2)
- Biological Assessment Report (Condition 7.9.1)
- Landscaping Proposal (Condition 4.3)

Several other significant non-compliances were reported in the audit with regard to preparation of reports and essential documentation. These include the following:

- Failure to report on odour control measures (required under Condition 3.11.2)
- Failure to provide a documented communication programme (Condition 2.4.1)

- Failure to carry out a survey of the facility roads and surfaces (Condition 3.5.1)
- Failure to carry out bund integrity testing (Condition 3.10.5)

The licensee was also required to provide the Agency with an up-to-date map showing site details outlined in Condition 10.3 and also to provide a fund to cover the costs of closure, restoration and aftercare of the site, were it required. The provision of this fund is a requirement under Condition 11.2.2 of their existing licence.

A letter, dated 15-Aug-2005, was sent to the licensee by the OEE detailing the reports which were outstanding at that time and requesting the licensee to submit the named reports immediately. The OEE inspector has yet to receive a reply to this letter.

Following the licensee's failure to reply to either the letter of 15-Aug-2005 or the audit report of 10-July-2006, and taking into account the findings of that audit, the Agency decided to prosecute Carbury Compost Ltd. This matter is before the court at present.

The OEE conducted a further audit on 12-Apr-2007 in order to determine any progress made by the company since the previous audit in terms of correcting the non-compliances identified and overall assessment of compliance with the conditions of the licence. I understand that this audit has revealed several further non-compliances and that the operation of the facility is of serious concern having regard to environmental performance and impacts. I understand that the majority of the additional non-compliances identified relate to non-submission of reports required in response to the initial audit report of 10-Jul-2006.

4. Use of Resources

Fuel:

The applicant has estimated that some 400,000 l/yr of light fuel oil will be required to run the two boilers on site. One small boiler is to be located close to the site offices for heating purposes, while an existing boiler is used for sterilisation in the Phase II tunnels and runs for approximately 12 hours a week.

It is also estimated that some 450,000 l/yr of diesel will be used to operate forklift trucks, wheel loaders, etc.

These fuels are to be stored in two existing 46,500 l storage tanks located on the site, with an additional 37,500 l fuel storage tank proposed for the storage of road going fuel for the site trucks.

Electricity:

The applicant has estimated that up to 10,000,000 kW of electricity will be required at the redeveloped site to facilitate the operation of both the composting and mushroom growing facilities.

Water:

The applicant proposes to collect all rainfall on the site and reuse it in the composting process. Estimates of rainfall, in conjunction with the surface area of the site suggest that there will be a shortfall in terms of the proposed water requirements on site. There are three on-site water wells and two of these will be used to supply the remaining water requirements. The facility is also connected to the mains water supply network provided by the local authority.

5. Emissions

5.1 Air

Odour Emissions to Air:

The main odour generating activities include the mixing and blending of materials in the reception hall and the turning of compost in the Phase I bunkers. Both these proposed buildings will be designed to minimise the escape of odours and to maximise their collection by the foul air extraction system (negative pressure). As mentioned earlier in this report the applicant also proposes that the reception

hall will be kept under negative pressure to ensure a negative draught whenever the doors to the vehicular entrance are opened. Another significant improvement to the control of odours at the facility will come from the forced aeration of the compost in the Phase I bunkers. This will maintain the compost in an aerobic state and should reduce odours that were prevalent in the old system where anaerobic conditions sometimes developed. The extracted foul air is to be vented through a 17.5m stack at the southern side of the Phase I building, at the furthest point from the nearest sensitive receptor. The applicant does not intend to put any form of treatment system in place for the removal of odours from the extracted air, other than dispersing it through the ventilation stack.

It should be noted that Phase II and Phase III composting processes produce much lower odour levels. It is proposed that these processes will not have a foul air extraction system but will be housed indoors, with ventilation openings in the roof.

Boiler Emissions to Air:

There are two on-site boilers (rated @ 2.8MW). The applicant stated that normally one boiler is operational at any one time (to provide steam for sterilisation). The modelled ground-level concentrations submitted in the application for waste licence Register No. 124-01 for NOx, SOx & CO were below the corresponding acceptable levels required in the EU Air Quality Directive 1999/30/EC. These are required to be tested on an annual basis.

Dust emissions to air:

The existing waste licence stipulates a limit value of 350mg/m^2/day at the four nominated sampling locations on site. The recorded results to date at all these locations are well below this limit value. The applicant proposes to continue monitoring at these locations on a bi-annual basis.

5.2 Emissions to Sewer

There are no emissions to sewer from the site. A septic tank and Puraflo waste treatment system is currently in operation for treating all sewage produced from the offices, canteen and toilets. This system is outlined in Section 5.3 below.

Sewage generated in the offices, canteens and toilets in the southern part of the site is collected and pumped to a septic tank located in the northwestern corner of the site. From here the effluent is pumped to the main septic tank located midway along the northern boundary and near to the Puraflo wastewater treatment plant.
Sewage effluent generated in the offices located in the existing mushroom growing houses in the eastern part of the site is collected and pumped directly to the main septic tank on the northern boundary.
Effluent from the main septic tank is pumped to the Puraflo wastewater treatment plant where it is treated and discharged to the small stream that drains along the northern boundary (tributary of the Cushaling river). The Puraflo treated effluent discharge is carried out under a discharge licence granted by the local authority and is designed to treat the effluent to such a degree that there will be no significant impact on the local receiving waters.

5.3 Emissions to Surface Waters

Surface water quality has been monitored at four locations including the discharge from the Puraflo wastewater treatment plant (ETP-1), the outfall of the drain that flows along the northern boundary to the Cushaling river (SW1) and at two stations on the Cushaling river 30m upstream of the outfall (RW2) and 30m downstream of the outfall (RW1).
Monitoring at ETP-1 was carried out on four occasions between 4/10/04 and 10/01/06. The results have been compared to the emission limit values stipulated in their existing waste licence, Register No. W0124-01). The results indicated elevated levels of total ammonia (ranging from 3.31 to 47 mg/l), orthophosphate (ranging from 1.4 to 4.82 mg/l) and total phosphorous (ranging from 2.65 to 4.3 mg/l) on three of the four sampling events. There were no exceedances on sampling event 11/07/05 and no exceedances of pH or BOD on any occasion. The Puraflo treatment plant appears to be operating satisfactorily in reducing the levels of some parameters but is not effectively treating others. The applicant proposes to overhaul the system and to have it regularly serviced in the future to ensure that its performance meets the requirements of the Waste licence (Register No. W0124-02). The applicant

states that the proposed new development allows for reuse of all effluent generated on site in the composting process and no discharges to the local surface water network are expected.
The results from SW1 indicated slightly elevated levels of total nitrogen ranging from 18.6mg/l to 36 mg/l on the two sampling occasions and orthophosphate (1.54 mg/l) on 10/10/05. It is expected that maintenance and improvements to the wastewater treatment plant will improve the quality at SW1.

5.4 Storm Water Runoff

The applicant has stated that the collection and storage of all surface water is a priority on site as it is planned to use it in the Phase I process. It is planned to cover the entire site in an impermeable concrete surface to collect all rainwater and direct it to the existing water storage tank (Tank A).
Only in exceptional circumstances (such as periods of prolonged heavy rainfall) is there expected to be an excess of surface water. This water will comprise rain collected from the building roofs only and will not come into contact with any other surface or process water before entering the stream.
Condition 3.12.1(a) of the existing licence required infrastructure to be put in place whereby the roof water can be diverted to the local stream network. Neither this infrastructure nor the provision of an impermeable concrete surface (Condition 3.5.2) for the collection of surface water were constructed.

5.5 Emissions to ground/groundwater

The existing waste licence, Register No. 124-01 states that the three on-site boreholes and a private well, which is within 250m of the site boundary, are to be monitored bi-annually.

5.6 Wastes Generated

Any waste generated on site is to be disposed of using approved and appropriately licenced/permitted recovery/disposal contractors.

5.7 Noise

The main sources of noise associated with the existing facility are from vehicles loading and unloading materials and from the plant and equipment operating on site. These include wheel loaders, forklift trucks, electric fans, etc. As part of the proposed expansion the bulk of the materials handling activities will be confined within the reception hall and within the Phase I compost bunkers and the Phase II / III compost tunnels. Therefore, the bulk of the noise generating activities will be carried out inside contained buildings.

A noise survey conducted by the applicant in June 2005 found the daytime and nighttime noise levels to be 67 and 57dB $L_{(A)\ EQ}$ respectively at the nearest noise sensitive receptor. These noise levels exceeded the limits as set down in Schedule E of the existing licence but the applicant states that the readings were dominated by background noise from traffic on the R403, unrelated to site activities. The $L_{(A)\ 90}$ which is indicative of background noise was recorded as being below the day time noise level and exceeded the night time level by 1dB.

5.8 Nuisance

- Litter
  The applicant proposes to conduct daily litter patrols around the site.

- Dust
  Control measures for possible dust generation have been addressed in Section 5.1 above.

- Vermin
  The applicant has stated that rodent control specialists will be contracted to inspect and control rodent populations at baseline level.

- Flies, birds, pests
  The materials handled on site should not attract scavenging birds. This risk is further diminished by the housing of all raw materials, except straw, indoors.

The control of these nuisances was required under Condition 6 of the existing licence.

6. Restoration

Operations at the facility are on-going with an open-ended lifespan and to date a closure plan for the site has not been developed. As stated previously, one of the significant non-compliances identified in the audit report of 10-Jul-2006 was the absence of a fund specifically set up to provide for the closure and restoration of the site.

7. Cultural Heritage, Habitats & Protected Species

There are no known sites of archaeological importance protected under Section 12 of the National Monuments (Amended) Act 1994 on or in the vicinity of the site. The nearest archaeological features within the surrounding area are 600m & 1200m away respectively.
There are two designated pNHA's in the locality. Carbury Bog is listed as a NHA in the Kildare County Development Plan and the Grand Canal is also a proposed Natural Heritage Area and is located 1.2km from the site.

8. Waste Management, Air Quality and Water Quality Management Plans

The Kildare County Council Waste Management Plan (2005 – 2010) recommends the promotion of biological treatment facilities within the private sector.

9. Environmental Impact Statement

I have examined and assessed the EIS and having regard to the statutory responsibilities of the EPA, I am satisfied that it complies with Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (SI 600 of 2001) and Waste Management (Licensing) Regulations (SI 395 of 2004, as amended).

10. Compliance with Directives/Regulations

The existing and proposed facilities do not fall under the scope of either the Landfill Directive or the IPPC Directive. In relation to the Groundwater Directive the facility will have no direct emissions to groundwater. The applicant shall be required to be in compliance with the EU Animal By-Products Regulations, 2002.

11. Submissions

Submission 1: *William & Maree Cassidy, Kilkeaskin, Carbury, Co. Kildare. 15th February 2007*
Submission 2: *Mr Paul Kelly, Kilkeaskin, Carbury, Co. Kildare. 19th February 2007*
Submission 3: *Mr John Kelly, Ticknevin, Carbury, Co. Kildare 22nd February 2007*

These submissions all relate to the odours generated at the facility and their scepticism as to the effectiveness of the proposed odour abatement technology used at the facility. All three feel very strongly about the operation of facility and its detrimental effects on their quality of life.

Response: The above named residents all live in close proximity to the facility. It is my view that the applicant has shown little regard for the local residents or their opinions and has not given them due consideration when carrying out their licensed activity.

Submission 4: *Ms Angela Kinsella, Drummen, Ballinakill, Carbury, Co. Kildare 27th February 2007*

Ms Kinsella submitted a petition, which was signed by approximately 450 local residents, objecting to the granting of a licence to the applicant. She claims the air emissions from the facility have contributed to her health problems and the health problems of other members of her household. She has also previously complained to both the Agency and Kildare County Council without satisfaction.

Response: Historically the facility has received many complaints, the majority regarding bad odour and given the nature of the processes carried out there and the lack of appropriate infrastructure on the site, one would expect some odours to be generated on site and perceived past the site boundary. Regarding potential effects of air emissions from the facility on human health, I am satisfied that these concerns will be negligible as the applicant proposes to use appropriate measures including the complete enclosure of the Phase 1 composting and the use of negative air pressure which will control the release of air flow from the facility which can be treated. This process will mitigate against potential health concerns pertaining to air emissions from the facility.

12. Overall Assessment and Recommendation

The applicant's non-compliance with several conditions of their existing licence are matters of very serious concern. The company appear to have scant regard for the operation of the facility in accordance with the conditions of the existing licence. There is little or no evidence that they have addressed the issues raised during audits of the facility or the complaints made to it by the local community. Given that the existing licence was granted on 20-Aug-2004 the company has had ample opportunity to operate the facility under the conditions of their existing licence. There is also little evidence of measures taken to comply with issues raised in letters of non-compliance issued by the Agency.

Having considered the application, compliance record and following a site inspection on 09-Feb-2007 it is my opinion that the Agency cannot be satisfied that the requirements of Section 40 (4) subsections (b), (c) and (d) will be met.

I recommend that a revised licence be refused for Classes 2, 4, 11 and 13 of the Fourth Schedule as applied for in the licence review application.

Signed

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Donal Grant
Inspector, Licensing Unit