

2017 Annual Environmental Report

**On behalf of Greenking Composting Ltd,
Coolbeg,
Co. Wicklow**

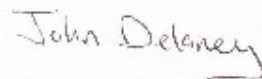
Waste Licence Number: W0218-01

Annual Environmental Report 2017

On behalf of Greenking Composting Ltd,
Coolbeg,
Co. Wicklow



Prepared By: Geoenvironmental Consultants



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On behalf of Greenking Compost Ltd

Date:

29/3/2017

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1.0 INTRODUCTION

Geoenvironmental was commissioned by Greenking Composting Ltd to collate and compile the company's 2017 Annual Environmental Report (AER). The (AER) is prepared for the Coolbeg Composting Facility operated by King Tree Services Ltd., trading as Greenking Composting Ltd. The content of this Annual Environmental Report is based on Schedule G of Waste Licence W0218-01 and follows guidelines set out in the document '*Guidance Note for Annual Environmental Report*' published by the Agency. This AER covers the period from January 16 - December 16.

The composting facility at Coolbeg, Co, Wicklow has with the capacity to accept and process 40,000 tonnes of green waste per annum. King Tree Services Ltd was issued with a Waste License from the Environmental Protection Agency (EPA) on the 25th October 2005. (Ref. No. W0218-01). The facility started its operation on the 6th June 2006.

The license permits the recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes) and the 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 prescribed under Class 2 and Class 13 of the *fourth Schedule of the Waste Management Acts, 1996 to 2003*.

2.0 SITE DESCRIPTION

2.1 Facility Location and Layout

The waste recovery facility is located in the townland of Coolbeg, approximately 4 km south west of Wicklow Town. The site is accessed via a local road running from the N11 Regional Road at The Beehive towards Glenealy; refer to Figure 1 (Site Location Map). The land adjoining the western site boundary is occupied by non-hazardous residual waste landfill. The new M11 motorway when completed will be located close to the eastern boundary of facility.

The existing site layout includes the following facilities:

- a reception office
- a workshop located behind the reception building
- a weighbridge
- parking areas
- the waste reception area
- windrows area
- maturation area
- finished product storage area
- leachate storage lagoon.

The site office and welfare facilities are located at the reception; refer to Figure 2 (Site Layout Plan in Section 11).

2.2 Waste Types and Volume

Waste Licence W0218-01 regulates the operation of the composting facility at Coolbeg, County Wicklow. The green waste accepted at the facility comprises wood wastes generated by the King Tree Services tree surgery business, garden and park waste produced during improvement and maintenance works by landscape gardeners, grass and shrub trimmings produced by individual householders and timber and wood waste

recovered during construction and demolition works. The facility is licensed to accept 40,000 tonnes of green waste annually. GreenKing offers a green drop off facility and collection service.

The composting operations involve pre treatment of green waste, shredding and mixing, composting in open windrows, maturation and post treatment and impurities removal. All operations are carried out externally. The finished product is suitable for a range of further activities which include a range of landscaping, horticultural and agricultural use.

3.0 MANAGEMENT OF THE FACILITY

3.1 Site Management Structure

King Tree Services Ltd. currently employs full time a total of two people at their Coolbeg Facility. The organisation and management structure in Coolbeg Composting Facility is provided below. Mr. Ian Browne, the facility manager is responsible for the day to day operation of the facility.

Table 1: Organisation Structure

Staff Name	Role	Experience
Ian Browne	Facility Manager	Completed FAS Waste Management Course.
Ann Keogh	Facility Administration	Completed FAS Waste Management Course.

3.2 Environmental Management System

In accordance with Condition 2.2.1, King Tree Services Ltd. has prepared and documented a basic Environmental Management System for its Composting Facility at Coolbeg. In March 2010 the emergency response procedures were updated. The schedule of Objectives and Targets for 2017 and proposed schedule of targets for 2018 are outlined below.

Table 2: Schedule of Objectives and Targets for 2017

No	Objective	Target	Progress
1	Reduce the energy /fuel usage at the facility.	Monitor diesel and electricity usage at least annually.	Diesel Usage in 2017 was marginally higher than in 2016 but electricity usage was lower
3	Control litter, dust, odour, and noise nuisances.	Continue daily Facility Inspection Form to ensure any nuisances are identified and managed on a daily basis.	Ongoing
4	Maintain Environmental Management System	Maintain documentation for EMS and implement on site.	Ongoing
		Review the EMP in accordance with the Licence.	Reviewed in March 2015
7	Maintain Regular Schedule of Environmental Training	Carry out training on Environmental Awareness, Emergency Response, Waste Licence W0218-01 for all staff.	Ongoing
8	Identify measures to improve efficiency and minimise waste.	Continue to identify measures to reduce waste and use of water	Ongoing

Table 3: Schedule of Objectives and Targets for 2018

No	Objective	Target	Timescale	Responsibility
1	Reduce the energy /fuel usage at the facility.	Monitor diesel and electricity usage at least annually.	Ongoing	Facility Manager
3	Control litter, dust, odour, and noise nuisances.	Continue daily Facility Inspection Form to ensure any nuisances are identified and managed on a daily basis.	Ongoing	Facility Manager
4	Maintain Environmental Management System	Maintain documentation for EMS and implement on site.	Ongoing	Facility Manager
		Review the EMP and other procedures in accordance with the Licence		
		NB: Review and update the documented Emergency Response Procedure to include a fire prevention control procedure.	Q3 2018	
7	Maintain Regular Schedule of Environmental Training	Carry out training on Environmental Awareness, Emergency Response, Waste Licence W0218-01 for all staff.	Ongoing	Facility Manager
8	Identify measures to improve efficiency and minimise waste.	Continue to identify measures to reduce waste and use of water	Ongoing	Facility Manager

3.3 Environmental Management Programme

A comprehensive Environmental Management Programme for 2017 was implemented at Coolbeg Composting Facility. The environmental monitoring works undertaken included monitoring of dust emissions, surface water and groundwater quality monitoring, bioaerosol monitoring, odour monitoring. Results of the monitoring are provided in Section 4 of this report under Emissions Monitoring.

3.4 Staff Awareness and Training

No staff training was carried out in 2017.

3.5 Public Communications Programme

Records available for public inspection at the site office include:

- Copy of Waste Licence W0218-01
- Licence Application and Review documentation
- Monitoring records
- Complaints file
- Incidents file
- EPA Correspondence file

Visits to the Coolbeg Composting Facility can be arranged in advance by calling the Facility Manager at 0404-62422.

4.0 EMISSIONS MONITORING

An Environmental Monitoring Programme is required at the facility to assess the significance of emissions from site activities. Schedule C of Waste Licence W0218-01 specifies the required level of monitoring at the Coolbeg Composting Facility. All of the monitoring locations are shown on Figure 1 (Site Layout Plan) of this AER.

4.1 Noise Monitoring

No noise monitoring was carried out in 2017 as the licensee is only required to undertake the monitoring every second year. A complete survey will be conducted in 2018.

4.2 Dust Monitoring

Dust deposition monitoring was carried out quarterly at three on site locations in 2016. The objective of the dust stations is to monitor the level of wind blown dust and other small particles which may be generated from on-site activities. The Bergerhoff dust method was used as the dust monitoring medium to obtain dust levels at the site. The Bergerhoff method measures airborne dustfall in milligrams per square metre. The sample is collected in an open plastic jar mounted on a stand.

The dust collecting jars were left in-situ for a period of 30 days. All samples were collected and delivered to ALT Ltd an INAB accredited laboratory located at Unit 4, Newbridge Industrial Estate, Co. Kildare for analysis using a gravimetric in-house method. The result obtained from the Lab with the amount of days the dust jar has been on site once calculated, will give the dustfall per mg/m^2 per day. The dust deposition results are set out in *Appendix A*.

Table 4.0: Summary of 2016 Dust Monitoring Results

Quarter	Period		Deposition (mg/m ² /day)			Dust Deposition Limits
	From	To	D1	D2	D3	mg/m ² /day
Q1	10/4/17	9/5/17	60	43	131	350
Q2	30/8/17	29/9/17	591	31	134	350
Q3	17/10/17	16/11/17	49	33	40	350
Q4	22/11/17	21/12/12	165	25	29	350

The dust monitoring results show that the results were largely compliant with the 350 mg/m²/day limit with only one exceedance during the year. This exceedance was due to a large amount of organic material ie leaf particles & other organic material present in the sample

4.3 Surface Water Monitoring

Surface water run-off from the composting process areas is diverted to the leachate storage lagoon located and is kept isolated from the surface water drainage system. Run-off from non-process paved areas and roof area of the building is collected and diverted through an oil interceptor and silt trap prior to discharge to ground.

A surface water sample taken on the 7th December 2017 showed the levels of nutrients and heavy metals to be low and in the case of the metals below the limit of detection in all instances apart from sodium. The iron level was 309 ug/l was erroneous. The coliform concentration was 0 showing that there are very low levels of bacteria present in the surface water runoff. The Surface Water Certificates of Analysis are set out in *Appendix B*.

4.4 Groundwater Monitoring

A groundwater sample was taken from one monitoring location (PW1), as shown on Figure 2 (Site Layout Plan), on the 7th Dec 2017. The sample was analysed by IAS

laboratories at an INAB accredited laboratory located at Unit 4 Bagnalstown Business Park, Co. Carlow. The certificate of analysis is provided in *Appendix C*. Groundwater was analysed for chemical and biological parameters specified in Schedule C of the waste licence W0218-01. The results of the analysis are summarised in Table 4.3.

Table 5.0: 2017 Groundwater Monitoring Results

Parameter	Unit	PW1 7/12/17	MAC*
Electrical Conductivity	$\mu\text{S}/\text{cm}$	226	
pH	<i>pH Units</i>	7.9	-
Chloride	<i>mg/l</i>	21.06	187.5
Ammonia as Nitrogen	<i>mg/l</i>	0.02	0.175
Total Coliforms	<i>cfu/100m</i>	0	-
Arsenic	$\mu\text{g}/\text{l}$	<10	7.5
Cadmium	$\mu\text{g}/\text{l}$	<20	3.75
Copper	$\mu\text{g}/\text{l}$	21	1500
Lead	$\mu\text{g}/\text{l}$	<20	18.75
Nickel	$\mu\text{g}/\text{l}$	<<20	15
Mercury	$\mu\text{g}/\text{l}$	>10	

MAC Maximum Admissible Concentration

* European Communities Environmental Objectives (Groundwater Regulations, 2010 (S.I. No.9 of 2010) – Overall Threshold Value Range

The results of the groundwater analysis shows that tested parameters are compliant with the overall threshold values for chemical status of groundwater.

4.5 Bioaerosol Monitoring

Bioaerosol monitoring was carried out by Odour Monitoring Ireland on the 8th December 2017, as specified in Schedule C of the waste Licence W0218-01. The results of bioaerosol monitoring are summarised in Table 4.4. The full report is included in *Appendix D*.

Bioaerosol monitoring locations are shown on Figure 2.1 of the Bioaerosol, Odour and Hydrogen Sulphide Impact Assessment Report.

Table 6.0: 2016 Bioaerosols concentration levels

Location ID	Average <i>Aspergillus fumigatus</i> Concentration (CUF m ⁻³) ¹	Average <i>Mesophillic Bacteria</i> Concentration (CUF m ⁻³) ¹	Sampling Count ²
Loc 1	0	226	3
Loc 2	0	80	3
Loc 3	0	109	3

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

² denotes total number of sample counts for each parameter monitored at each location.

The bioaerosol concentration levels were determined at each sampling location in triplicate. Three sampling locations were chosen including Loc 1, 2, 3. The monitoring locations are shown on the schematic plant within the main report. Currently there are no significant bioaerosol impacts in the vicinity of Coolbeg site with all reported bioaerosol ambient air concentrations within the range of the proposed assessment criterion. The report produced by Odour Monitoring Ireland concluded bioaerosol concentrations within lower range for *Aspergillus fumigatus* and in the mid range for total Mesophillic bacteria.

4.6 Odour Monitoring

Odour monitoring was carried out by Odour Monitoring Ireland on the 8th Dec 2017 as specified in Schedule C of the waste Licence W0218-01. The results of odour monitoring are summarised in Table 4.5. The full report is included in *Appendix E*. The odour monitoring locations are shown on Figure 2.1 of the Bioaerosol, Odour and Hydrogen Sulphide Impact Assessment Report.

Table 7.0: 2016 Odour Threshold Concentration and Hydrogen Sulphide Results

Date	Sample Location	Odour threshold concentration (Ou _E m ⁻³)	H ₂ S (ppb)	Comment
19/12/17	Loc 1	53	<3	No Distinct Odour
19/12/17	Loc 2	42	<3	No Distinct Odour
19/12/17	Loc 3	49	<3	No Distinct Odour
19/12/17	Loc 4	29	<3	No Distinct Odour
19/12/17	Loc 5	--	<3	No Distinct Odour
19/12/17	Loc 6	29	<3	No Distinct Odour
19/12/17	Loc 7	--	<3	No Distinct Odour
19/12/17	Loc 8	57	<3	No Distinct Odour

All odour sampling and analyses were performed in accordance with EN13725:2003. All ambient odour threshold concentrations were less than or equal to 57 Ou_E/m³, therefore there is no indication of any significant odour impact. No elevated concentrations of odour or hydrogen sulphide were detected during the survey. All Hydrogen sulphide concentrations recorded at each monitoring location were less than 3 ppb in ambient air.

4.7 Compost Analysis

A sample of final compost from Greenking Composting was consigned to the IAS testing laboratory at Bagnalstown on the 28th Nov 2017. The sample was tested for a range of Standards for Compost Quality as set out in Schedule F Waste Licence W0218-01. A copy of the analysis report is set out in *Appendix E* of this report.

4.8 Pollutant Release and Transfer Register

Under the European Pollution and Transfer Register Regulation King Tree Services Ltd. are required to submit information on emissions and waste annually to the EPA. A copy of the

PRTR Emission Reporting Workbook for 2017 submitted to the Agency via the web- based data reporting system is set out in the *Appendix F*.

5.0 Site Visits and Inspections

There were no EPA site inspections carried out in 2017.

6.0 NUISANCE CONTROL

6.1 Mud, Dust, Litter

Nuisance controls at the facility include inspections of the facility and amenities immediate to the facility boundary for mud, dust and litter. These are documented in the daily facility inspection form to ensure any nuisances are identified and managed on a daily basis.

7.0 Site Developments Works

7.1 Engineering Works

No engineering works were carried out in 2016 and it is not envisaged that any works will be carried out in 2018. The Agency will be notified of future engineering works as per Condition 3.2 of the licence.

7.2 Tanks and Pipeline Testing and Inspection Report

Condition 3.17.5 of the waste licence requires that the integrity and water tightness of all bunded structures be tested by the licensee at least once in three years. All foul and surface water drains on site were cleaned and surveyed in July 2013 by Kelly Environmental Services using high pressure water jetting and IPEC CCTV equipment. All drains were found to be in good condition. The oil storage tanks were assessed by Blanchfield Oil Storage services on the 16th July 2013 and were found to be in good condition and suitable for the storage of of gas oil and kerosene.

8.0 RESOURCE USE AND ENERGY EFFICIENCY

8.1 Energy Efficiency Audit

An Energy efficiency report was submitted as part of the 2006 AER. One of the main recommendations of the report was to install thermostat in the office building. This recommendation has been implemented and currently each radiator is fitted with a thermostatic control valve. There are only two staff members' at the facility full time and the use of energy is very low. The main users of electricity are the office equipment. There is no electricity consumed in the compost production process on site.

8.2 Resource Consumption Summary

Table 8.1 presents an estimate of resources used on-site from January to December 2016. The water supply for the facility comes from an on-site groundwater well and it is not metered, water is used for sanitary and kitchen purposes. The electricity consumed in 2017 was less than in 2016 but volume of diesel increased slightly. There were also a modest increase in the quantity of heating oil and engine oil consumed. The volume of green waste accepted was higher and is reflected in the resource consumption data

Table 8.0: Resource Consumption Summary

Energy Stream	Annual Quantity	Units	Period
Electricity	10403	kWh	2017
Diesel	10000	Litres	2016
Heating Oil	900	Litres	2016
Hydraulic and Engine Oil	40	Litres	2016

9.0 WASTE RECEIVED AND CONSIGNED FROM FACILITY

9.1 Waste Management Records

Table 9-1 shows the total quantities of waste received at the waste facility in 2017. A breakdown of the waste types is provided in accordance with the European Waste

Catalogue and Hazardous Waste List. The total of green waste accepted at the facility between January 2017 and December 2017 was 1,811 tonnes which is a marginal increase on the 2016 figure. Overall the volume of green waste received at the facility has reduced significantly from 3,377 tonnes in 2008 but there has been an upward trend again in more recent years.

Table 10.0: Waste Received in 2017

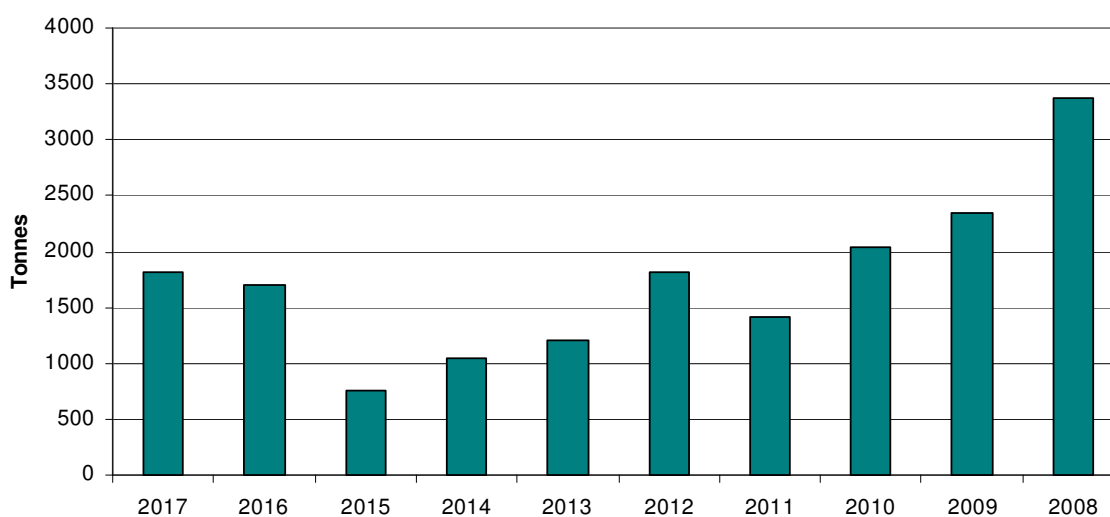
EWC	Description	Waste in (tonnes)
20 02 01	Green Waste	1811
	Total Received	1811

Table 9.2 shows the quantities of waste received in previous years.

Table 11.0: Compost Quantities Consigned in 2017

EWC	Description	Waste (tonnes)
20 02 01	Compost	500
	Total	500

Figure 1: Green Waste Quantities Received 2008 – 2017



9.2 Waste Recovery Report

All waste received at the facility was used to produce compost, therefore the facility had a 100% recovery rate in 2017.

10.0 ENVIRONMENTAL INCIDENTS AND COMPLAINTS

10.1 Incidents Summary

King Tree Services Ltd. maintains register of incidents. There were no environmental incidents during the reporting period of 2017.

10.2 Register of complaints

King Tree Services Ltd. maintains register of complaints. No complaints were received during the reporting period.

11.0 OTHER REPORTS

11.1 Statement of Measures in Relation to the Prevention of Environmental Damage and Remedial Actions

Green waste composting is a relatively low impact waste management activity. The potential sources of environmental damage and the measures employed to prevent pollution are listed below:

Kerosene and Diesel tanks outside the Maintenance Shed – These are self-bunded tanks and are protected from impact by a strong steel fence.

Hydraulic and other oils in the Maintenance Shed – These are stored on bunded pallets.

Waste materials – These are stored and processed on paved surfaces with run-off directed to the leachate lagoon.

Leachate Lagoon – This is contained by a lining system, monitored regularly and serviced as required.

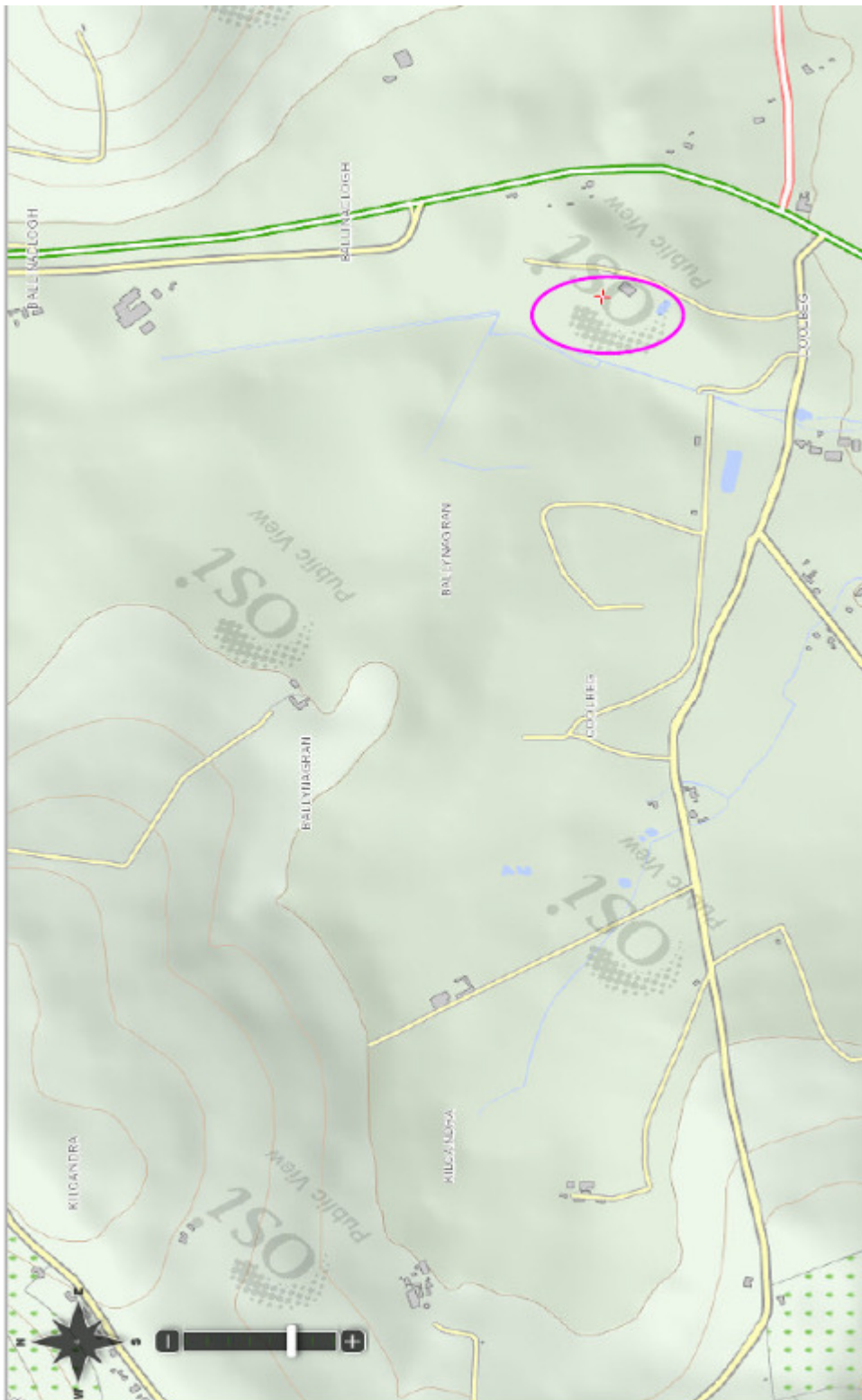
Sewage from the office – Municipal wastewater generated on site is treated by on-site biocycle wastewater treatment unit that is serviced regularly.

Dust and other air emissions – The composting piles are regularly sprayed with water, particularly during dry periods and this prevents excessive wind-blown dust and other material such as spores.

Noise – Noise at the facility is primarily caused by shredding of green waste. This is periodic and is mitigated by the relatively long distance between site operations and the nearest sensitive receptors. There are no noise sensitive receptors within 150m of site boundary.

The site monitoring in 2016 has shown that the prevention measures employed at the site are currently operating effectively.

12.0 FIGURE 2: SITE LOCATION AND ENVIRONMENTAL MONITORING LOCATIONS





13.0 APPENDICES

- Appendix A: Quarterly Dust Monitoring
- Appendix B: Surface Water Monitoring Analysis Results
- Appendix C: Groundwater Monitoring Analysis Results
- Appendix D: Bioaerols and Odour Monitoring Report
- Appendix E: Compost Sample Analysis Results
- Appendix F: PRTR Emissions Submission



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

Report Status: **Final Report**

Date of Issue: **16-May-2017**

Report Number: **349791**

Project: **1-170509-03774**

Page 1 of 3

Attention:

Client: **Geoenvironmental**

Address: Knocklas
Coolcotts
Co.Wexford

Order Number:

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* beside the method or lack of INAB symbol signifies that **Advanced Laboratory Testing** are not INAB accredited for this method.

ALT ID: 876906

Date Received: 09/05/2017

Date Tested: 10/05/2017

INAB P9 Classification: Others: Others

Client ID: Greenking Compost D1

Test	Result	Unit(s)	Method	Technique
Dust deposition	60	mg/m2/day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory

Dylan Keane

Title

**Supervisor – Environmental
Chemistry**

Dylan Keane



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

Client: **Geoenvironmental**

Report Status: **Final Report**

Order Number:

Date of Issue: **16-May-2017**

Report Number: **349791**

Project: **1-170509-03774**

Page 2 of 3

ALT ID: 876907

Date Received: 09/05/2017

Date Tested: 10/05/2017

INAB P9 Classification: Others: Others

Client ID: Greenking Compost D2

Test	Result	Unit(s)	Method	Technique
Dust deposition	43	mg/m ² /day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory

Dylan Keane

Title

**Supervisor – Environmental
Chemistry**

Dylan Keane



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

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Page 3 of 3

ALT ID: 876908

Date Received: 09/05/2017

Date Tested: 10/05/2017

INAB P9 Classification: Others: Others

Client ID: Greenking Compost D3

Test	Result	Unit(s)	Method	Technique
Dust deposition	131	mg/m ² /day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory

Dylan Keane

Title

**Supervisor – Environmental
Chemistry**

Dylan Keane



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

Report Status: **Final Report**
 Date of Issue: **09-Oct-2017**
 Report Number: **408242**
 Project: **1-170928-11174**
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ALT ID: 1020376 **Date Received:** 28/09/2017 **Date Tested:** 29/09/2017
INAB P9 Classification: Others: Others
Client ID: D1 - 30 Day Bergerhoff Dust Sample @ Greenking Compost,Coolbeg,Co.Wicklow.

Test	Result	Unit(s)	Method	Technique
Dust deposition	591	mg/m2/day	ECTM014	In-House

ALT ID: 1020377 **Date Received:** 28/09/2017 **Date Tested:** 29/09/2017
INAB P9 Classification: Others: Others
Client ID: D2 - 30 Day Bergerhoff Dust Sample @ Greenking Compost,Coolbeg,Co.Wicklow.

Test	Result	Unit(s)	Method	Technique
Dust deposition	31	mg/m2/day	ECTM014	In-House

ALT ID: 1020378 **Date Received:** 28/09/2017 **Date Tested:** 29/09/2017
INAB P9 Classification: Others: Others
Client ID: D3 - 30 Day Bergerhoff Dust Sample @ Greenking Compost,Coolbeg,Co.Wicklow.

Test	Result	Unit(s)	Method	Technique
Dust deposition	134	mg/m2/day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory	Title
Dylan Keane	Supervisor – Enviromental Chemistry



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

Report Status: **Final Report**
Date of Issue: **23-Nov-2017**
Report Number: **424974**
Project: **1-171116-06228**
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Samples are retained post analysis for a period of 10 days. Samples are stored frozen by default except in the case of M&S and customer requirements.

ALT ID: 1068480 Date Received: 16/11/2017 Date Tested: 17/11/2017

INAB P9 Classification: Others: Others

Client ID: D1 - 30 Day Bergerhoff Dust Sample @Greenking Compost, Coolbeg, Co.Wicklow. Q3

Test	Result	Unit(s)	Method	Technique
Dust deposition	49	mg/m ² /day	ECTM014	In-House

ALT ID: 1068481 Date Received: 16/11/2017 Date Tested: 17/11/2017

INAB P9 Classification: Others: Others

Client ID: D2 - 30 Day Bergerhoff Dust Sample @Greenking Compost, Coolbeg, Co.Wicklow. Q3

Test	Result	Unit(s)	Method	Technique
Dust deposition	33	mg/m ² /day	ECTM014	In-House

ALT ID: 1068482 Date Received: 16/11/2017 Date Tested: 17/11/2017

INAB P9 Classification: Others: Others

Client ID: D3 - 30 Day Bergerhoff Dust Sample @Greenking Compost, Coolbeg, Co.Wicklow. Q3

Test	Result	Unit(s)	Method	Technique
Dust deposition	40	mg/m ² /day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory	Title
Dylan Keane	Supervisor – Environmental Chemistry

Dylan Keane



ENVIRONMENTAL CHEMISTRY TEST CERTIFICATE

Report Status: **Final Report**
Date of Issue: **04-Jan-2018**
Report Number: **439287**
Project: **1-171221-08352**
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Results reported as cfu/cm2 are calculated based on information supplied by the relevant customer regarding the specific area swabbed.
* beside the method or lack of INAB symbol signifies that **Advanced Laboratory Testing** are not INAB accredited for this method.
Samples are retained post analysis for a period of 10 days. Samples are stored frozen by default except in the case of M&S and customer requirements.

ALT ID: 1105424 **Date Received:** 21/12/2017 **Date Tested:** 22/12/2017

INAB P9 Classification: Others: Others

Client ID: D1 30 day Bergenhoff Dust Sample from Greenking Compost Ltd, Coolbeg, Co.Wicklow

Test	Result	Unit(s)	Method	Technique
Dust deposition	165	mg/m2/day	ECTM014	In-House

ALT ID: 1105425 **Date Received:** 21/12/2017 **Date Tested:** 22/12/2017

INAB P9 Classification: Others: Others

Client ID: D2 30 day Bergenhoff Dust Sample from Greenking Compost Ltd, Coolbeg, Co.Wicklow

Test	Result	Unit(s)	Method	Technique
Dust deposition	25	mg/m2/day	ECTM014	In-House

ALT ID: 1105426 **Date Received:** 21/12/2017 **Date Tested:** 22/12/2017

INAB P9 Classification: Others: Others

Client ID: D3 30 day Bergenhoff Dust Sample from Greenking Compost Ltd, Coolbeg, Co.Wicklow

Test	Result	Unit(s)	Method	Technique
Dust deposition	29	mg/m2/day	ECTM014	In-House

The results in this report were authorised by:

Authorized Signatory	Title
Dylan Keane	Supervisor – Environmental Chemistry

Dylan Keane



Independent Analytical Supplies

Test Report

Lab Report Number: 8392J01	Analysis Number: 99A/109413
-----------------------------------	------------------------------------

Customer ID:	GREE.K2	Analysis Type:	Misc. Tests (99A)
Contact Name:	IAN BROWNE	Delivery By:	Customer
Company Name:	GREENKING COMPOSTING LTD/KING SERVICE	Sample Card Number:	071717J/1
Address:	COOLBEG WICKLOW	Sample Condition:	Acceptable
Sample Type:	Surface Water	Date Sample Received:	07/12/2017
Sample Reference:	SURFACE WATER 07/12/17	Date Analysis Commenced:	07/12/2017
Sample Description:	SURFACE WATER	Date Certificate Issued:	14/12/2017

Parameter	Method	Result	Unit
Aluminium	ICP-MS	35	ug/l
Arsenic*	ICP-MS	<10	ug/l
Boron*	ICP-MS	0.02	mg/l
Cadmium	ICP-MS	<20	ug/l
Chloride	Konelab Aquakem SOP 2065	20.95	mg/l
Colour	Konelab Aquakem SOP 2063	5.6	Pt Co
Conductivity	Electrometry SOP 2076	217	µS/cm 20°C
Chromium	ICP-MS	<20	ug/l
Copper	ICP-MS	29	ug/l
E. Coli*	Quanti-tray SOP 2090	0	MPN/100ml
Iron	ICP-MS	309	ug/l
Fluoride	Konelab Aquakem SOP 2069	0.06	mg/l
Total Hardness	Ca & Mg Hardness SOP 2024	76.8	mg/l CaCO3
Enterococci @ 44 C*	Membrane Filtration SOP 2039	17.8	cfu/100 ml
Manganese	ICPMS	<20	ug/l
Sodium	ICP-MS	18.7	mg/l
Ammonium	Konelab Aquakem SOP 2057	0.01	mg/l NH4
Nickel	ICP-MS	<20	ug/l
Nitrite	Konelab Aquakem SOP 2059	<0.03	mg/l NO2
Nitrate	Konelab Aquakem SOP 2060	30.40	mg/l NO3
Lead	ICP-MS	<20	ug/l
pH	Electrometry SOP 2004	8.0	pH units
Antimony*	ICP-MS	<10	ug/l
Selenium*	ICP-MS	<10	ug/l
Sulphate	Konelab Aquakem SOP 2062	6.70	mg/l SO4
Total Coliforms*	Quanti-tray SOP 2090	0	MPN/100ml

* = not INAB Accredited ^ = Subcontracted

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Test Report

Lab Report Number: 8392J01	Analysis Number: 99A/109413
-----------------------------------	------------------------------------

Customer ID: GREE.K2	Analysis Type: Misc. Tests (99A)
Contact Name: IAN BROWNE	Delivery By: Customer
Company Name: GREENKING COMPOSTING LTD/KING SERVICE	Sample Card Number: 071717J/1
Address: COOLBEG WICKLOW	Sample Condition: Acceptable
Sample Type: Surface Water	Date Sample Received: 07/12/2017
Sample Reference: SURFACE WATER 07/12/17	Date Analysis Commenced: 07/12/2017
Sample Description: SURFACE WATER	Date Certificate Issued: 14/12/2017

Parameter	Method	Result	Unit
Turbidity	Turbidimetric SOP 2022	<0.02	NTU

Signed: Wendy McCall
Wendy McCall - Laboratory Manager

Date: 14/12/2017

* = not INAB Accredited ^ = Subcontracted

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Test Report

Lab Report Number: 8394J01

Analysis Number: 99A/109414

Customer ID:	GREE.K2	Analysis Type:	Misc. Tests (99A)
Contact Name:	IAN BROWNE	Delivery By:	Customer
Company Name:	GREENKING COMPOSTING LTD/KING SERVICE	Sample Card Number:	071217J/1
Address:	COOLBEG WICKLOW	Sample Condition:	Acceptable
Sample Type:	Ground Water	Date Sample Received:	07/12/2017
Sample Reference:	GROUND WATER 07/12/17	Date Analysis Commenced:	07/12/2017
Sample Description:	GROUND WATER	Date Certificate Issued:	14/12/2017

Parameter	Method	Result	Unit
pH	Electrometry SOP 2004	7.9	pH units
Cadmium	ICP-MS	<20	ug/l
Chloride	Konelab Aquakem SOP 2065	21.06	mg/l
Conductivity	Electrometry SOP 2076	226	µS/cm 20°C
Chromium	ICP-MS	<20	ug/l
Copper	ICP-MS	21	ug/l
E. Coli*	Quanti-tray SOP 2090	0	MPN/100ml
Mercury*	ICP-MS	<10	ug/l
Nickel	ICP-MS	<20	ug/l
Lead	ICP-MS	<20	ug/l
Total Coliforms*	Quanti-tray SOP 2090	0	MPN/100ml
Zinc	ICP-MS	276	ug/l
Ammonia Nitrogen	Konelab Aquakem SOP 2057	0.02	mg/l NH3-N

Signed: Wendy McCall
Wendy McCall - Laboratory Manager

Date: 14/12/2017

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**YEAR 2017 - BIOAEROSOL, ODOUR AND HYDROGEN SULPHIDE IMPACT ASSESSMENT AT
GREEN KING COMPOSTING LTD, COOLBEG, CO. WICKLOW**

PREPARED BY:	Dr. Brian Sheridan
ATTENTION:	Mr. Ian Browne
DATE:	08 th Dec. 2017
REPORT NUMBER:	20171223(1)
DOCUMENT VERSION:	Version 1
REVIEWERS:	


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Document Amendment Record

Client: *Kings Trees Limited*

Title: Year 2017 - Bioaerosol, Odour and H₂S Impact Assessment at Green King Composting Ltd, Coolbeg, Co. Wicklow

Project Number: 20171223(1)			Document Reference: Year 2017 - Bioaerosol, Odour and H ₂ S Impact Assessment at Green King Composting Ltd, Coolbeg, Co. Wicklow		
20171223(1)	Document for review	B.A.S.	JMC	B.A.S	22/12/2017
Revision	Purpose/Description	Originated	Checked	Authorised	Date
					

1. Introduction

Odour Monitoring Ireland was commissioned to perform a bioaerosol, odour and hydrogen sulphide (H₂S) assessment in the vicinity of Green King Composting Ltd, Coolbeg, Co. Wicklow. 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 was performed at each of the three identified sampling locations within and in the vicinity of Green King Composting facility located at Coolbeg, Co. Wicklow.

The odour assessment was carried out in accordance with EN 13725:2003. Hydrogen sulphide (H₂S) sampling and analysis was carried out using a Gold leaf Jerome ppb analyser.

The bioaerosol concentration levels were determined at each sampling location in triplicate. Three sampling locations were chosen including Green 1, 2 and 3. Currently, there are no significant bioaerosol impacts in the vicinity of Green King Composting facility located at Coolbeg, Co. Wicklow with all reported bioaerosol ambient air concentrations within the range of the assessment criterion. All odour sampling and analysis was performed in accordance with EN13725:2003. All ambient odour threshold concentrations were less than 57 Ou_E/m³. Hydrogen sulphide concentrations recorded at each monitoring location were less than the lower level of detection of 3 ppb in ambient air.

1.1 Aims 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 Coolbeg, Co. Wicklow. These are the two most frequently requested bioaerosols to be monitored for composting plants.
- To ascertain ambient odour and H₂S concentrations levels in the vicinity of the composting facility.

2. Materials and methods

This section describes in detail the materials and methods used throughout the study period.

2.1 Sampling locations and residential locations

Figure 2.1 and Table 2.1 illustrates the location of the facility in relation to local residents.

Table 2.1. Monitoring locations and parameters monitored.

Location ID	Parameter monitored	Location details
Loc 1	Total Mesophilic bacteria and <i>Aspergillus fumigatus</i> , Odour ¹ , H ₂ S	Upwind of site
Loc 2	Total Mesophilic bacteria and <i>Aspergillus fumigatus</i> , Odour ¹ , H ₂ S	Beside green waste, downwind of site
Loc 3	Total Mesophilic bacteria and <i>Aspergillus fumigatus</i> , Odour ¹ , H ₂ S	Downwind of site at entrance
Loc 4	H ₂ S, Odour ¹	Western boundary
Loc 5	H ₂ S	Upwind of site
Loc 6	H ₂ S, Odour ¹	Upwind of site
Loc 7	H ₂ S	Downwind of site
Loc 8	H ₂ S Odour ¹	Downwind on entrance road

Notes: ¹ denotes duplicate odour samples taken

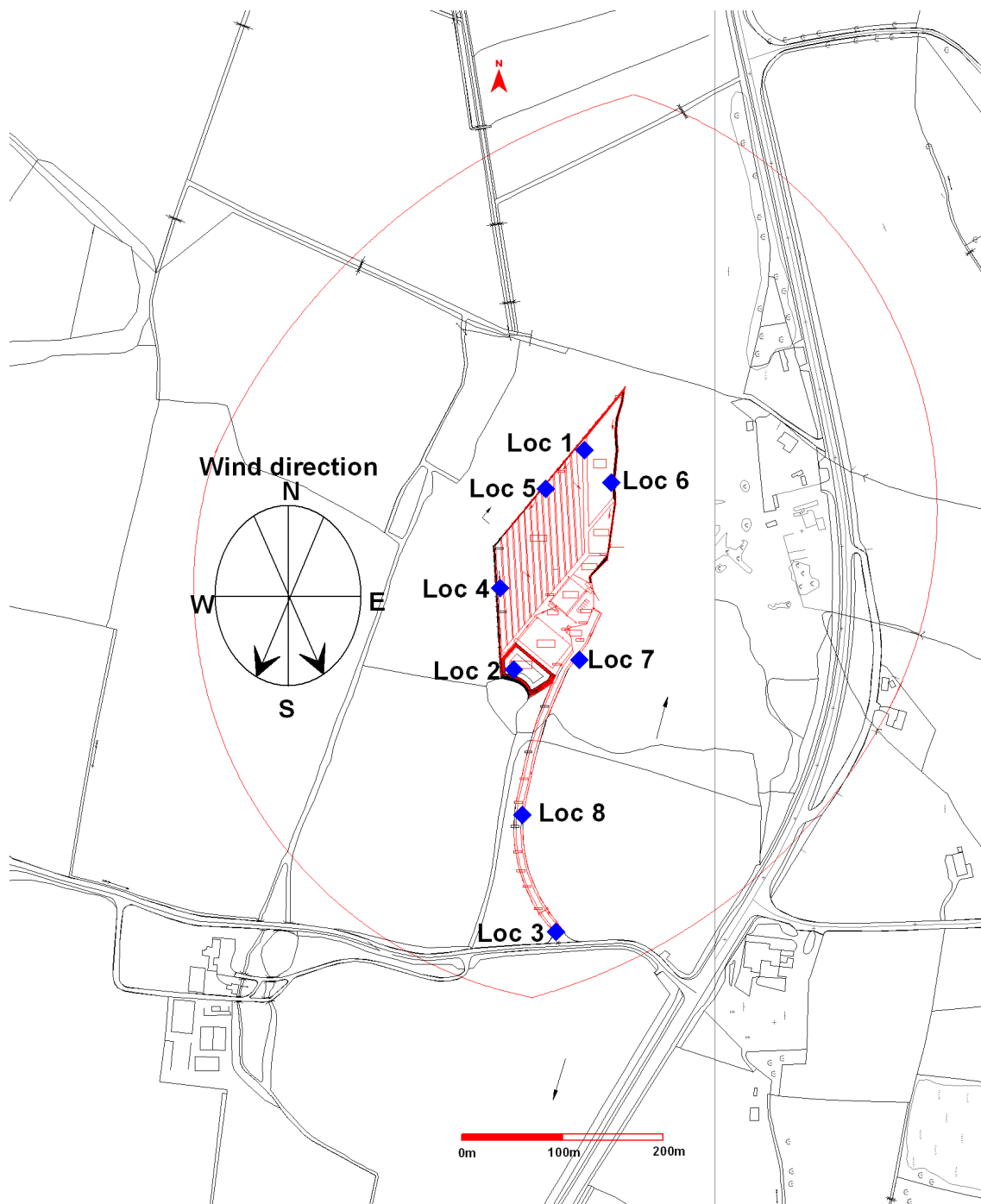


Figure 2.1. Schematic overview of Bioaerosol, Odour and H₂S monitoring locations.

2.2 Meteorological data

Table 2.2 illustrates the average wind direction during the one-day monitoring period. Average wind speed was low during the monitoring. Barometric pressure was approximately 1009 mbar. Relative humidity was 80% while temperature was low from 6 degrees Celsius. This would be typical for this time period of the year in Southern Ireland.

Table 2.2 Meteorological conditions during the one-day monitoring period.

Parameter	Monitoring event 08/12/2017
Wind direction (From)	NW
Wind speed (km/hr)	12
Barometric pressure	1009
Temperature (°C)	6
Relative humidity (%)	80

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 0.40 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 days following sampling.

2.5. Odour sampling

In order to obtain air samples for odour assessment, a static sampling method was used where air samples were collected in 60 litre pre-conditioned Nalophan^{NA} bags using a vacuum sampling device over a ten to twenty minute period. The sampler operates on the 'lung principle', whereby the air is removed from a rigid container around the bag by a battery powered SKC vacuum pump at a rate of 3 to 5 l min⁻¹. This caused the bag to fill through a stainless steel and PTFE tube whose inlet is placed in ambient air, with the volume of sample equal to the volume of air evacuated from the rigid container. All odour-sampling bags were pre-conditioned and flushed with odourless lab air to remove any interference from the sample material.

2.6. Olfactometry

Olfactometry using the human sense of smell is the most valid means of measuring odour (Dravniek et al, 1986) and at present is the most commonly used method to measure the concentration of odour in air (Hobbs et al, 1996). Olfactometry is carried out using an instrument called an olfactometer. Three different types of dynamic dilution olfactometers exist:

- Yes/No Olfactometer
- Forced Choice Olfactometer
- Triangular Forced Choice Olfactometer.

In the dynamic dilution olfactometer, the odour is first diluted and is then presented to a panel of screened panellists of no less than four (CEN, 2003) Panellists are previously screened to ensure that they have a normal sense of smell (Casey et al., 2003). According to the CEN standard this screening must be performed using a certified reference gas *n*-butanol. This screening is applied to eliminate anosmia (low sensitivity) and super-noses (high sensitivity). The odour analysis has to be undertaken in a low odour environment such as an air-conditioned odour free laboratory. Analysis should be performed preferably within 8 to 12 hours of sampling.

2.7. Odour measurement in accordance with EN13725:2003

An ECOMA TO8 dynamic yes/no olfactometer was used throughout the measurement period to determine the odour threshold concentration of the sample air. The odour threshold concentration is defined as the dilution factor at which 50% of the panel can just detect the odour. Only those panel members who pass screening tests with n-butanol (certified reference gas, CAS 72-36-3) and who adhered to the code of behaviour were selected as panellists for olfactometry measurements (CEN, 2003). Odour measurement was carried out in an odour free laboratory in accordance with EN13725:2003.

2.7.1 What is an odour unit?

The odour concentration of a gaseous sample of odourant is determined by presenting a panel of selected screened human panellists with a sample of odourous air and varying the concentration by diluting with odourless gas, in order to determine the dilution factor at the 50% detection threshold. The Z_{50} value (threshold concentration) is expressed in odour units ($Ou_E m^{-3}$).

The European odour unit is that amount of odourant(s) that, when evaporated into one cubic metre of neutral gas (nitrogen), at standard conditions elicits a physiological response from a panel (detection threshold) equivalent to that elicited by one European Reference Odour Mass (EROM) evaporated in one cubic meter of neutral gas at standard conditions. One EROM is that mass of a substance (n-butanol) that will elicit the Z_{50} physiological response assessed by an odour panel in accordance with this standard. *n*-Butanol is one such reference standard and is equivalent to 123 μ g of n-butanol evaporated in one cubic meter of neutral gas at standard conditions (CEN, 2003).

2.8. H₂S measurement

A Jerome real time data-logging H₂S gold leaf analyser (measurement range 3 ppb to 50ppm) was also used for the measurement of ambient hydrogen sulphide levels in order to ascertain any elevations in ambient H₂S concentrations. This was used, as H₂S is commonly associated with composting operations and is a good indicator gas for the assessment of significant odour nuisance in the vicinity of compost facilities.

2.9 Bioaerosol assessment criteria

Table 2.2 illustrates the assessment criterion which is used for comparison of results during operation to ascertain ambient bioaerosol air quality in the vicinity of the Green King Composting facility located at Coolbeg, Co. Wicklow.

Table 2.2. Assessment criteria for the ambient bioaerosol air quality in the vicinity of Green King Composting facility Coolbeg, Co. Wicklow.

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

2.10 Ambient Bioaerosol air quality

Table 2.3 illustrates the results from bioaerosol air quality monitoring. Both *Aspergillus fumigatus* and Total Mesophilic bacteria were assessed on the day of sampling 08th December 2017.

Table 2.3. Bioaerosols concentration levels within and in the vicinity of the recycling facility

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	0	226	3
Loc 2	0	80	3
Loc 3	0	109	3

Note: 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.

Table 2.3 illustrates the ambient bioaerosol air quality within and in the vicinity of the Green waste composting facility. As can be observed, *Aspergillus fumigatus* concentrations are low and at expected ambient concentration levels. Total mesophilic bacteria concentration levels at monitored location Loc 2 were elevated but dissipated rapidly with distance to monitoring location Loc 3 (approx. 50 to 90m downwind). The dissipation in concentrations of total mesophilic bacteria from Loc 2 to Loc 3 would be indicative of results obtained from international literature where 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.

In accordance with the assessment criteria reported in Table 2.2, bioaerosol concentrations within lower range for *Aspergillus fumigatus* and in the mid range for total Mesophilic bacteria.

2.11. Odour and H₂S results

Table 2.4 and 2.5 illustrates the odour threshold concentration and hydrogen sulphide results obtained during the monitoring period. All sampling and analysis for odour was performed in accordance with EN13725:2003. No elevated concentrations of odour or hydrogen sulphide were detected during the survey.

Table 2.4. Odour threshold concentration and Hydrogen sulphide results following monitoring of Green King Composting Ltd, Coolbeg, Co. Wicklow.

Date	Sample Location	Odour threshold conc. (OuE m ⁻³)	H ₂ S (ppb)	Comment
08/12/2017	Loc 1	53	<3	No distinct odour
08/12/2017	Loc 2	42	<3	No distinct odour
08/12/2017	Loc 3	49	<3	No distinct odour
08/12/2017	Loc 4	29	<3	No distinct odour
08/12/2017	Loc 5	--	<3	No distinct odour
08/12/2017	Loc 6	29	<3	No distinct odour
08/12/2017	Loc 7	-	<3	No distinct odour
08/12/2017	Loc 8	57	<3	No distinct odour

3. 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, 2, 3. Currently, there are no significant bioaerosol impacts in the vicinity of Green King Composting facility located at Coolbeg, Co. Wicklow with all reported bioaerosol ambient air concentrations within the range of the proposed assessment criterion.
2. All odour sampling and analysis was performed in accordance with EN13725:2003.
3. All ambient odour threshold concentrations were less than 57 Ou_E/m³, therefore there is no indication of any significant odour impact.
4. All Hydrogen sulphide concentrations recorded at each monitoring location were less than 3ppb in ambient air.



Test Report

Lab Report Number: 8006J01 **Analysis Number:** 99A/109072

Customer ID:	GREE.K2	Analysis Type:	Misc. Tests (99A)
Contact Name:	IAN BROWNE	Delivery By:	Customer
Company Name:	GREENKING COMPOSTING LTD/KING SERVICE	Sample Card Number:	39164/1
Address:	COOLBEG WICKLOW	Sample Condition:	Acceptable
Sample Type:	Compost	Date Sample Received:	28/11/2017
Sample Reference:	COMPOST SAMPLE	Date Analysis Commenced:	28/11/2017
Sample Description:	COMPOST SAMPLE	Date Certificate Issued:	06/01/2018

Parameter	Method	Result	Unit
Cadmium*	ICP-MS	1.5	mg/kg DM
Carbon Nitrogen Ratio*	Calculation	16:1	R
Chromium*	ICP-MS	28.7	mg/kg DM
Copper*	ICP-MS	102.9	mg/kg DM
Dry Matter*	Drying @ 105°C	56.8	%
Presumptive E-Coli**	Based in ISO 7251 (2005)	2	mpn/g
Mercury*	ICP-MS	0.33	mg/kg DM
Impurities-Gravel & Stone>5mm*		<0.1	%
Impurities >2mm*		<0.1	%
Potassium*	ICP-MS	8538	mg/kg DM
Kjeldahl Nitrogen*	Kjeldahl Nitrogen	1.2	% DM
Ammonium Nitrogen**	Subcontracted	<10	mg/kg
Nickel*	ICP-MS	20.3	mg/kg DM
Organic Matter*	Dry Ashing @ 500 SOP 2007	35.5	%
Total Phosphorus*	ICP-MS	8095	mg/kg DM
Lead*	ICP-MS	34.3	mg/kg DM
pH	Electrometry SOP 2001	7.7	pH units
Salmonella**	Based on RayAL ELISA	Not Detected	/25g
Zinc*	ICP-MS	226	mg/kg DM
Nitrate**	Subcontracted	23.0	mg/kg

Signed: Wendy McCall
Wendy McCall - Laboratory Manager

Date: 06/01/2018

* = not INAB Accredited ^ = Subcontracted

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[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2017
-----------------------	------

1. FACILITY IDENTIFICATION

Parent Company Name	Kings Tree Services Limited
Facility Name	Kings Trees Services Composting Facility
PRTR Identification Number	W0218
Licence Number	W0218-01

Classes of Activity

No.	class name
-	Refer to PRTR class activities below

Address 1	Coolbeg
Address 2	Wicklow
Address 3	
Address 4	
	Wicklow
Country	Ireland
Coordinates of Location	-6.09863 52.9559
River Basin District	IEEA
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Ian Browne
AER Returns Contact Email Address	ian@greenking.ie
AER Returns Contact Position	Facility Manager
AER Returns Contact Telephone Number	040462433
AER Returns Contact Mobile Phone Number	086 8382004
AER Returns Contact Fax Number	0404 68846
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	2
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General
50.1	General

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	No
Have you been granted an exemption ?	No
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE

[Guidance on waste imported/accepted onto site](#)

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	No
--	----

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

[PRTR# : W0218 | Facility Name : Kings Trees Services Composting Facility | Filename : W0218_2017.xls | Return Year : 2017]

05/03/2018 10:13

Please enter all quantities on this sheet in Tonnes

3

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility	Non	Haz Waste : Address of Next Destination Facility	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)
						Haz Waste : Name and Licence/Permit No of Recoverer/Disposer	Non Haz Waste: Address of Recoverer/Disposer						
Within the Country	20 02 01	No	1811.0	biodegradable waste	R3	M	Weighted	Onsite of generic,W0218-01	King Tree Services Ltd.		Coolbeg,Coolbeg,Wicklow,Co Wicklow,Ireland		

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

[Link to previous years waste data](#)

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

[Link to Waste Guidance](#)