

Attachment C1: Air

Refer to Chapter 6 of the EIS for details of the existing environment with regard to air quality.

Since the publication of the EIS, baseline bioaerosol monitoring has been carried out. The report is attached.

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Baseline bioaerosol monitoring

Introduction

This section sets out the methodology and results of a baseline bioaerosol monitoring survey undertaken in the vicinity of the proposed composting facility at Pass of Kilbride. The study assessed levels of bioaerosols (as total bacteria and total fungi) at two locations at the proposed site boundary and four off-site Air Sensitive Receptors (ASRs) in the vicinity of the proposed composting site.

Sampling locations

Samples of bioaerosols were obtained from six sampling locations. Two locations were assigned at the proposed boundary of the proposed development site to represent 'upwind' and 'downwind' sampling locations. In addition samples were obtained from the four nearby air sensitive receptors (ASR), ASR1, ASR2, ASR3 and ASR4 (See Figure 6.1 of the EIS for monitoring locations).

Methodology

There is currently no standard methodology for undertaking field sampling of bioaerosols. However, the Environment Agency for England and Wales (Ref. 1) sets out a number of appropriate methodologies for sampling of bioaerosols and based upon these recommendations, the sampling was undertaken using the methodology set out below. The methodology was identified as the most appropriate for this situation in which the monitoring locations are remote from mains power supply.

- Samples of bioaerosols in ambient air were obtained using battery operated SKC pumps. A sample time of approximately 15 minutes per sample was used and the pumps were set to a flow rate of approximately 2 litres per minute, giving a total sample volume of approximately 30 litres. Sampling was carried out on the 20th July 2004;
- Sterilised Micropore filters of pore size 0.4µm, stored in sterile Petri dishes, were used to collect samples of total bacteria and total fungi. Samples for bacteria and fungi were collected from each location, giving a total of 12 samples from the six sites of interest. In addition one 'field blank' and one 'box blank' were also collected. The field blank is a filter which is handled in the same manner as the sample filters but not exposed to ambient air to assess any bacteria or fungi picked up during handling and transport, and the box blank is a filter that is not handled, but is used to assess levels of bacteria and fungi pre-present on the filters before exposure. Where bacteria and fungi were identified on the blank samples, these levels were subtracted from the sample bioaerosol levels;
- After sampling the filters were placed in the Petri dishes and sent to LAW laboratories for analysis. The samples were placed upon selective growing media for bacteria or fungi and the total numbers of colony forming units were recorded for each sample;
- The results were analysed and the numbers of colony forming units per cubic meter of ambient air were calculated.

Benchmarks

Currently no statutory limits exist for acceptable levels of bacteria and fungi in ambient air. However, a research report prepared for the Environment Agency for England and Wales proposed tentative benchmarks for acceptable levels of bioaerosols in air (Ref. 2). These are set out in table 1.

Table 1 Benchmarks for bacteria and fungi used in the study

Bioaerosol	Benchmark (cfu/m ³)
Total Bacteria	1000
Total Fungi	1000

Note: cfu- colony forming unit

Results

The results of the baseline monitoring survey are set out in Table 2

Table 2 Results of baseline bioaerosol monitoring

Bioaerosol	Receptor	Benchmark (cfu/m ³) (Ref. 2)	Monitored levels (cfu/m ³) ¹
Bacteria	On-site 1	1000	33
	On-site 2		36
	ASR1		996
	ASR2		107
	ASR3		71
	ASR4		633
Fungi	On-site 1	1000	0
	On-site 2		0
	ASR1		133
	ASR2		712
	ASR3		0
	ASR4		0

Notes: cfu- colony forming unit

1: Results are based upon one sample per site.

Conclusions

The monitoring results indicate that the levels of bioaerosols in the vicinity of the proposed plant are within the tentative benchmarks at all locations. The results indicate that existing baseline bioaerosol levels are highly variable between sites. The variation is not unexpected (Ref. 2, 3), and may be dependant on a number of factors including nearby agricultural activities and removal of peat. If anything, levels of bacteria and fungi were found to be lower at the site than at the nearby receptors.

References

1. The Environment Agency for England and Wales (2004) Monitoring of particulate matter in ambient air around waste facilities: Technical guidance document (monitoring) M17
2. The Environment Agency for England and Wales (2000) The health effects of composting: A study of three compost sites and review of past data, EA R&D Technical report P1-315/TR