

# Wingmoor Farm East: Integrated Waste Management Facility

## Introduction

All elements of the site are continuously evaluated in the context of any potential impacts both on the environment and the local community.

The waste-related operations are controlled by Environmental Permits issued by the Environment Agency (EA) under the Integrated Pollution Prevention and Control Directive. There are separate Permits for the Materials Recovery Facility, the treatment plant, the hazardous waste landfill and the non-hazardous waste landfill. All Permits can be seen on the EA website. The EA regularly inspects and audits the site to ensure the conditions of the Permits are being met.

The Environmental Permits are structured around risk assessments, which are based on a rigorous examination of:

- Source - the potential cause of the risk, eg waste, landfill degradation products, noise
- Pathways - how that risk could be transferred into the environment or to the local community, eg surface water, groundwater, in the air
- Receptors - the potential recipients of the risk, eg the aquatic environment, soils, flora and fauna, local residents.

The current or proposed site operations closest to the western edge of Bishops Cleeve are:

- hazardous landfill – 1000 metres – historically 600 metres
- non-hazardous landfill – 600 metres – historically 240 metres
- treatment plant – 950 metres
- MRF building – 400 metres.

## Environmental Monitoring

**38,580 samples are currently taken from 309 monitoring points on and around the site every year. Each sample may be monitored for ten or more parameters.**

### Dust Monitoring

Wingmoor Farm East is one of the most monitored waste sites in the country and is one of the very few where the Permit requires continuous dust monitoring. There are six dust monitors within the site, including some downwind of the hazardous waste disposal cell. The dust monitors run 24 hours a day, 365 days a year and work by sucking air through a laser beam to detect and quantify any dust. They transmit data to a computer in the site office and are calibrated and maintained to the manufacturers specification. The results of this monitoring show the dust emissions from the site are well below the numerical limits in the site Permit.

As well as the continuous dust monitors, Grundon has an array of passive (sticky pad) dust monitors that provide valuable information on dust creation – both on and off site. The EA also has eight sticky pad monitoring sites both inside and outside the landfill. These are independently analysed and do not form part of the Grundon monitoring network, although the EA has released data to Grundon when requested.

An on-site weather station means the dust monitoring results can be put into context by identifying other sources of off-site dust (such as the railway, roads or other landfill facilities). The data collected over several years demonstrates the site is emitting so little dust it is impossible to distinguish it from levels of common dust in the air. The numerical dust limits in the Permit are set by the EA and are based on the National Air Quality Strategy 2000. There are no health risks associated with dust emissions from the site.



**Wingmoor Farm IWMF**  
Summary of environmental monitoring

Type	Number of monitoring points	Frequency	Total number (per annum)
Leachate levels	21	Monthly	252
	2	Weekly	104
Leachate quality	4	Quarterly	12
	12	Annually	24
Surface water quality	2	Monthly	108
Groundwater quality	9	Monthly	28
	7	Quarterly	336
Groundwater levels	28	Monthly	636
Gas quality perimeter	53	Monthly	1248
Gas quality internal	48	Fortnightly	12
Spike Point monitoring	3	Quarterly	17,520
Perimeter Dust PM <sub>10</sub>	6	30 minutes	17,520
Perimeter Dust TSP	6	30 minutes	36
Asbestos fibres	3	Monthly	50
Raw APC residues	5 x 5 samples	6 months	24
Conditioned APC residues	6	Quarterly	12
APC plant leachate	1	Monthly	5
APC moisture %	8	Monthly	60
	5	Annually	73
Occupational Dust	5	Monthly	
Landfill gas surface flux	73	Annually	
<b>Total</b>			<b>38,580</b>



All dust monitoring results are provided to the EA.

Routine assessments of occupational dust levels within the site are also carried out to ensure our staff are not exposed to unacceptable dust levels.

### Water Monitoring

Groundwater, surface water and leachate (rainwater contaminated by contact with waste) are regularly monitored. Grundon produces an annual site report to demonstrate compliance with the Permits.

### Landfill Gas Monitoring

The gas management system continuously collects landfill gas (methane and carbon dioxide), produced as a result of waste decomposition. This gas is turned into electricity on-site using a 330 KW gas engine. This 'green' energy is then distributed into the National Grid. The site generates enough power for approximately 500 homes and generating capacity will be doubled over the next few years.

### Environmental Management

Following the successful introduction of the Grundon Environmental Management System, the British Standards Institute audited the Wingmoor East complex and the site was accredited to ISO14001:2004 in June 2008.

### Amenity Management

Although all landfill sites have the potential to generate nuisances such as birds, vermin and flies, they are usually only attracted to food sources and so are not present at all on the hazardous waste disposal areas. A regular fly spraying programme ensures any flies elsewhere are immediately controlled.

Potential odours from waste deposited at the site are controlled by a detailed evaluation of the waste, an assessment of the waste on delivery and immediate cover of potentially odorous wastes. Landfill gas is controlled by the dedicated extraction system. This is constantly monitored and calibrated to ensure the suction is applied to all restored areas of the site.

All landfill sites generate some odours and during natural temperature inversions, which trap cold air close to the ground, natural odour dispersion patterns can be disrupted and localised odours can occur.

### Health Impacts

The design, operation and monitoring of waste management facilities is continuously reviewed and upgraded. For example, the Permits themselves will be reviewed as alternative technologies become available on a commercial scale. Each Permit requires a risk assessment, to ensure the individual processes most accurately reflect the circumstances of the individual facility and the use of Best Available Technology for waste treatment facilities. These risk assessments are checked and verified by the EA.

**There have been several investigations into the impact of waste management activities on the environment and human health. None of them has demonstrated any causal relationship between landfill activities and health problems.**

Grundon regularly commissions independent research and health risk assessments and is one of the industry leaders in this field. The Health and Safety Executive has also conducted independent tests on worker exposure as part of a multi-industry survey. The results confirm the Wingmoor Farm East site is safe for employees – and therefore – by extrapolation – for local residents.

