Brookhurst Wood - Open Windrow Compost Facility

Environmental Permit Variation EPR/AB3700LS/V006
Updated Odour Management Plan for ATRF and OWC

Biffa Waste Services Ltd

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Quality information

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1. Report Context

1.1 Introduction

AECOM has been commissioned by Biffa Waste Services Limited ("the Operator" or Biffa) to prepare an application to develop a new Open Windrow Composting Facility (OWC) at Brookhurst Wood, Warnham, West Sussex. Given the locality of the new development on site, the new OWC will be added as an additional operation to the environmental permit (EPR/AB3700LS) for the Aggregate Treatment and Recycling Facility.

The new OWC facility is being developed to treat up to 60,000 tonnes per annum of green waste and 30,000 tonnes per annum of wood waste.

This document is the Odour Management Plan (OMP) for the site which has been updated to include the new OWC process. The revised OMP will supersede the existing OMP for the site and it should be read in conjunction with other supporting OWC application information.

1.2 Proposed Facility

There are no changes proposed to the existing Aggregate Treatment and Recycling Facility (ATRF) operations although a new crushing operation will be included, and some additional waste codes will be added to the permitted waste list including mixtures of waste from the mechanical treatment of wastes that contain a high proportion of recoverable aggregate .

The proposed facility will comprise new plant to facilitate the receipt, shredding and subsequent composting of green waste and shredding of wood waste. Waste types accepted at the facility will be defined according to their List of Waste (LoW) Code and will generally consist of:

- wood waste;
- green waste;
- leaves;
- grass clippings; and
- horticulture type waste.

The facility will not receive or accept any waste covered by the Animal By-Product (Enforcement) (England) Regulations 2013 (ABPR).

The new plant will be designed to effectively shred the constituent parts of the incoming green waste, which is then transferred to open air windrows for composting and maturation. Green waste will be treated through the composting process while wood waste will only be shredded.

The intention is to produce a PAS 100 compliant compost from the inputs and as such it will be deemed to have reached end of waste criteria and is therefore no longer subject to waste regulatory controls as it has achieved product status. The product can be utilised for a wide range of beneficial after-uses including landfill restoration, community projects within West Sussex, domestic use and for agriculture.

2. Background

2.1 Scope

This OMP has been developed in accordance with the Environment Agency's (EA) Horizontal Technical Guidance Note H4 – Odour Management (April 2011) and the EA's Guidance "Odour Management Plans for Waste Handling Facilities."

Section 4 of the H4 Guidance states that all OMPs should as a minimum contain the following elements:

- an assessment of the risks of odour problems, from normal and abnormal situations, including worst case scenarios, for example of weather, temperature, or breakdowns, as well as accident scenarios;
- the appropriate controls (both physical and management) needed to manage those risks;
- suitable monitoring;
- actions, contingencies and responsibilities when problems arise;
- regular review of the effectiveness of your odour control measures; and
- emission limits where appropriate.

The OMP also requires inclusion of clear statements to demonstrate that the operator understands and accepts its responsibilities. In particular, it should show that the operator Biffa:

- either directly or through its contractors or subcontractors, will ensure that any odour control equipment is designed, operated and maintained such that it operates effectively to control odour at all times;
- is familiar with the characteristics of the processes and equipment on site and have identified the areas of risk of emissions from odour;
- will reduce or cease operations, if necessary, to avoid serious odour pollution;
- will engage with neighbours to minimise their concerns and complaints; and
- will respond to complaints.

The remainder of this OMP follows the outline below – this is in accordance with the Environment Agency OMP Template:

- Section 3 – Overview of process and location;
- Section 4 – Assessment of odour risk;
- Section 5 – Proposed management arrangements;
- Section 6 – Normal operational odour control;
- Section 7 – Routine maintenance and inspection requirements;
- Section 8 – Odour control during abnormal events / maintenance; and
- Section 9 – Monitoring, recording and reporting.

3. Overview of Process and Location

3.1 Existing ATRF Process

The existing ATRF facility is situated on existing hardstanding and treats up to 60,000tpa of street cleansing and similar residues to produce a range of outputs including:

- Aggregate materials;
- Metals;
- Organic materials; and
- Silts.

The ATRF includes:

- Waste reception bays for the receipt of incoming street cleansing residues;
- A recycling plant, comprising a feed system, washing plant, silt removal, dewatering, primary stage water treatment and a filter press;
- Storage bays for product outputs including sand, aggregates, organic and silt materials; and
- Waste storage skips for recovered metals.

A crushing operation will be mobilised on a campaign basis for the crushing of oversize fractions from the ATRF processes and foe processing some specific waste streams that do not require treatment by washing.

Vehicles currently use the weighbridge at the adjacent landfill site but this will change to the new weighbridge and associated office when the OWC facility is constructed. Operators use the landfill site office/welfare facilities and mobile plant refuelling station.

The site is designed with in-built safety systems to ensure that risks associated with:

- on-site traffic movements and tipping are minimised;
- odour associated with handling of waste is minimised and controlled; and
- noise is controlled and minimised.

3.2 Proposed Open Windrow Composting Process

The OWC facility will accept and treat up to 60,000 tpa of green waste to produce a PAS 100 compliant compost through maturation of the waste in open windrows. In addition, the facility will accept up to 30,000 tpa of wood waste which will be processed by shredding.

The OWC facility will comprise mobile and fixed plant located on a concrete pad with storage bays for incoming material and product, and windrows of green waste material being processed. The OWC facility will be supported with a new surface water drainage and collection system.

The components of the new OWC plant include:

- incoming waste reception area which has storage capacity for green and wood waste within designated storage bays;
- high speed tracked shredder that will be used to shred waste. When being used for green waste, the shredder will travel across the treatment pad to directly forms rows of windrows;
- Mobile plant will be used to facilitate the loading and unloading of incoming/outgoing materials as well as facilitating the mechanical turning of windrows during maturation stages;
- a new screening and separation building that will include static plant to facilitate the screening of incoming waste to remove potential contaminants and final product screening to achieve the relevant size fraction of different products.
- output storage area comprising storage bays for the finished;

- A perimeter drainage system, comprising drainage channels, two surface water storage lagoons with pumps, a settlement lagoon and dual water storage tanks – water will be used as irrigation water for the windrows.
- new weighbridges and associated office. Employees will continue to use the welfare facilities at the existing landfill office.

3.3 Acceptance of waste

3.3.1 Hours of Acceptance

Waste will be accepted in accordance with the ATRF facility Planning Permission (WSCC/003/14/NH) as detailed in Table 1 below.

Table 1 Hours of Waste Acceptance

Day of the week	Opening Hours
Monday to Saturday:	07:00 to 18:00
Sunday:	Closed for deliveries
Public Holidays:	07:00 to 10:00

3.3.2 ATRF – Accepted Waste Types

The current waste types accepted are street cleansing residues and similar aggregates which fall under the LoW codes shown in Environmental Permit EPR/AB3700LS (Ref Schedule 2, Table S2.1,). Additional waste codes will be added to the permitted waste list including mixtures of waste from the mechanical treatment of wastes that contain a high proportion of recoverable aggregate.

Plant intake capacity is defined as up to 60,000 tpa and acceptance will be dependent on characteristics of the incoming waste streams.

3.3.3 OWC- Accepted Waste Types

Waste types proposed to be accepted at the OWC facility will be defined according to the relevant LoW Code, which will be shown in Environmental Permit EPR/AB3700LS (Ref Schedule 2, Table S2.2). The site will have a capacity up to 90,000tpa but will generally consist of:

- Wood waste
- green waste;
- leaves;
- grass clippings; and
- horticulture type waste.

. It should be noted that wood waste will not be processed or treated via the windrows.

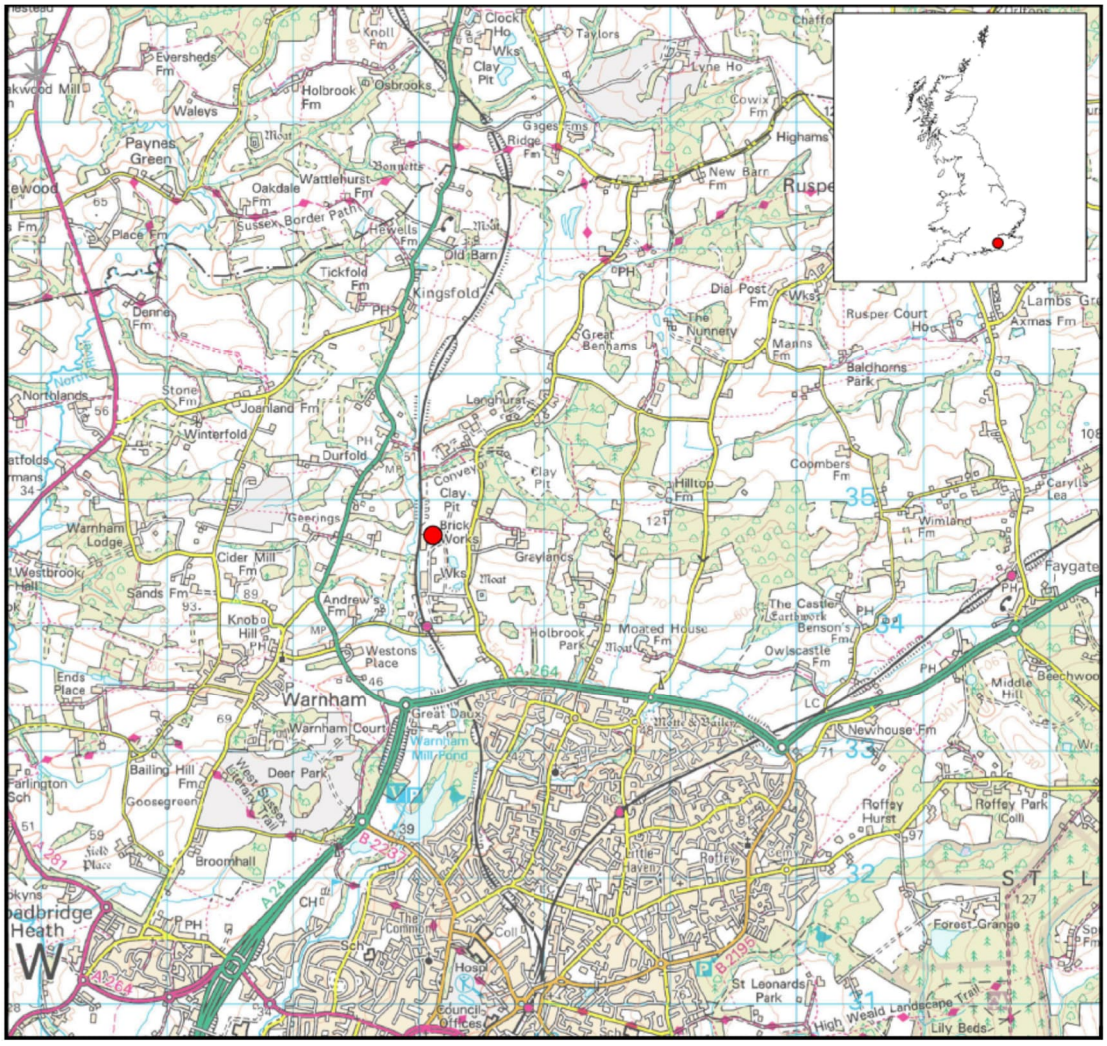
3.4 Site Location

The OWC facility will be operated on a l-shaped area which is to be situated adjacent to the south and east of the existing ATRF operated by Biffa, within the Brookhurst Wood Landfill Site. The Brookhurst Wood site is located approximately 4km to the north of the centre of Horsham. The village of Warnham is 1.5 km to the south-west of the site and Kingsfold is 2km to the north.

The centre of the extended ATRF/OWC area is located at grid reference National Grid Reference (NGR) E517105, N134659 at Brookhurst Wood, Langhurstwood, Horsham, West Sussex.

Figure 1 shows the location of the treatment and recycling site:

Figure 1 Site Location Plan



The setting is regarded as predominantly rural. In the immediate neighbourhood, there are a scattering of farmhouses and other isolated dwellings to the west of the site.

To the east there is a former residential property, known as ‘Greylands’ which has been converted for office use. To the north there is the Broadlands Business Park, which accommodates 11,000 square metres of office development.

To the south are older buildings from the original Warnham Brickworks and the Warnham railway station. The main Dorking to Horsham railway line runs along the western border of the landfill site and the vehicular entrance to the landfill is by the Langhurstwood Road to the east.

Residential communities within 2km of the site include Horsham, Warnham, Kingsfold and Holbrook. These are found to the south, west, north and east respectively. Horsham is the largest community in the Horsham District, with a population of approximately 45,750.

There is a scattering of farmhouses and other isolated dwellings to the north, east and west of the site. These include Greylands Lodge and Greylands Farm to the east of the site boundary, Cox Farm and Andrew’s Farm to the west and Gunbarn/The Nowhere Houses to the northwest. A further dwelling ‘Bramblehurst’ abuts the site to the southeast, adjacent to the site access from Langhurstwood Road. A small row of dwellings lies to the south of this.

There are eight residential properties on the western side of Langhurstwood Road between its junction with the A246 and the site entrance and a recent converted farm building residential development on the eastern side of Langhurstwood Road.

4. Assessment of Odour Risk

4.1 Introduction

This section outlines the approach taken to evaluate the odour risks associated with the operation of the ATRF and the proposed OWC facility. The impact evaluation process has referred to the appropriate guidance within:

- Environment Agency Guidance, Risk Assessments for Your Environmental Permit"
- Environment Agency "A Practical Guide to Environmental Risk Assessment for Waste Management Facilities";
- Environment Agency Horizontal Technical Guidance Note H4 – Odour Management- How to Comply with your Environmental Permit (April 2011); and
- IAQM "Guidance on the Assessment of Odour for Planning".

4.2 Odour Risk Assessment Methodology

The evaluation methodology used involves three stages:

a. Source characterisation to identify the potential odour hazards and risks associated with the operation of the treatment and recycling plants at the site;

b. Receptor evaluation to review the receptors that could be impacted by the odour hazards and risks from the operation of the treatment and recycling plant. This covers residential, commercial, and industrial human receptors; and

c. Risk assessment that evaluates the odour hazards and risks in terms of the probability of occurrence and the severity of the impact on the identified receptors. The odour risk assessment also summarises the odour management plan approach that will be used to mitigate the identified risks.

4.3 Source Characterisation

4.3.1 Odour Hazard Identification

The odour hazard identification process draws on AECOM's knowledge of odour impact assessment on similar plants and applications.

4.3.2 Odour Emission and Type

4.3.2.1 Odour Potential Of incoming Wastes

To assist with the preparation of an inventory of odour sources and subsequent risk assessment, given the number of waste codes which can be accepted, the broad groups of wastes and/or raw materials for the site have been classed according to their odour potential as follows:

Table 2. Odour Classes

Odour Class	Risk Description	Waste Codes	Justification
Incoming Wastes			
A	Low	15 01, 17 02, 17 05, 17 09, 20 01	Largely inorganic materials
B	Low - Medium	02 01, 02 03, 02 07, 03 01, 03 03, 04 02, 07 02, 15 02, 16 03, 16 10, 19 12, 19 13	Inorganic/organic materials may contain traces of alcohol, dredging materials and other organic fractions which may be partially degraded.
C	Medium	17 05, 19 02	Dredging material or waste treatment output with organic contaminants with higher degree of degradation
D	Medium - High	19 05, 19 08, 20 02	Waste treatment outputs with large organic fraction or leaves, grass, or similar materials which degradation may have already begun.

E	High	19 06, 20 03	Digestate from waste treatment or municipal sources of waste where degradation is progressing.
Outgoing Waste/Product			
A	Low	Metals and Aggregates from ATRF	Inorganic materials
B	Low - Medium	Wood chips and Compost from OWC	Organic materials where processing and biodegradation has been completed to required standard.
C	Medium	Filter cake from ATRF	Organic material with contaminants from residue washing.
Other Materials			
A	Low	Diesel	Hydrocarbon liquid – although can produce an odour, the material is fully contained within storage tank.

4.3.2.2 Odour Characterisation of Treatment Processes

Both the ATRF and the proposed OWC treatment facility has been designed to operate in such a way as not to generate significant odour levels at the site.

In relation to odour releases at the proposed facility the following have been identified as potential release sources:

- Unloading of incoming waste from collection vehicles;
- Storage of incoming waste for extended periods of time;
- Decomposition during the biological maturation process; and
- Anaerobic decomposition of organic materials separated in the washing sections of the ATRF and shredded/screened in the OWC plant.

Referring to 'Environment Agency Odour Guidance – Internal Guidance for Regulation of Odour at Waste Management Facilities, July 2002, Version 3', the relative offensive nature of an odour is based on its nature and its hedonic tone which can be assessed using:

a. An Odour Wheel which links commonly used descriptors of odours around waste management facilities with the most likely chemical cause and/or origin(s); and

b. Hedonic scores, which provide a score to indicate the relative pleasantness or unpleasantness of the odour as determined by the person(s) making the assessment. Odours which are more offensive will have a negative hedonic score whilst the less offensive will have a positive score.

According to Figure D1 of the above 2002 guidance:

- The existing ATRF has the potential to have a "rotting vegetation" odour associated with the anaerobic decomposition of organic matter which may be present in the incoming waste streams; and
- The proposed OWC process has the potential to have a "rotting vegetation" odour associated with the anaerobic decomposition of organic matter present both in the incoming waste streams and materials being processed in windrows.

Further assessment of the odour types against the hedonic scores in Table D2 of the above reference would give hedonic scores as shown in Table 3 below, making the potential odour offensiveness generated from the wastes moderate – high dependent on the contaminants present.

Table 3 Hedonic Scores for Site Treatment Processes

Odour Source	Descriptors	Typical primary chemical odorants	Potential Hedonic Score
ATRF	Potential for 'rotting vegetation' odour associated with the anaerobic decomposition of organic matter which may be present in the incoming waste stream. Most likely	Esters (e.g., Butanoates), odours directly from volatilisation of chemical from leaves and other organic debris e.g., organic acids.	-2.76

Odour Source	Descriptors	Typical primary chemical odorants	Potential Hedonic Score
	to be present during waste acceptance handling and storage of incoming waste streams.		
	Treatment is a wet process so no expected odour during the treatment process.	None expected	-
	There will be a small amount of separated organic materials as an output of treatment therefore there is a potential for 'rotting vegetation' odour associated with the anaerobic decomposition of organic matter.	Esters (e.g., Butanoates), odours directly from volatilisation of chemical from leaves and other organic debris e.g., organic acids.	-2.76
	Other outputs are primarily aggregate based with a small amount of metals, plastics, and papers.	None expected	-
OWC	Potential for 'rotting vegetation' odour associated with the anaerobic decomposition of organic matter which will be present in the incoming waste stream. Most likely to be present during waste acceptance handling and storage of incoming waste streams.	Esters (e.g., Butanoates), odours directly from volatilisation of chemical from leaves and other organic debris e.g., organic acids.	-2.76
	Treatment of Wood Waste which is a dry shredding process.	None expected	-
	Treatment of Green Waste which has the potential to have a rotting vegetation odour associated with the anaerobic decomposition of organic matter and potential for have a sharp acidic odour associated with the leachate which may occur as part of the open windrow composting process.	Esters (e.g., Butanoates), odours directly from volatilisation of chemical from leaves and other organic debris e.g., organic acids.	-2.76
	Wood outputs – shredded material	None expected	-
	Compost outputs – materials that have been through the maturation and stabilization phases of treatment	Musty earthy odour	-1.94

The addition of the OWC process is unlikely to increase the hedonic score. The application of best practice management measures, described in later sections of this OMP would, however, be capable of eliminating and minimising emissions to an acceptable level.

4.3.2.3 Odour Risk Potential of Site Processes

With respect to the identified odour risks these have been determined on the basis of:

- Nature/source of the incoming material;
- Nature of the potential contaminants that could be present in the incoming waste and how they are bound (e.g., how easily the odorous compounds could be volatised);
- Potential offensiveness of the contaminant should the odorous element be released;
- Size of the area of the source release; and
- Mitigations present and their effectiveness.

This approach is in line with the IAQM odour guidance and is summarised in

Table 4 below.

Table 4 Source Odour Risk Potential

Odour Source Potential	Magnitude	Potential Offensiveness	Mitigation
High	• Area sources of thousands sqm. • Compounds involved are very odorous (e.g., mercaptans). • Where known, compounds have a very low odour detection threshold (ODT)	• Process classed as 'Most offensive' in H4 Guidance; or • Compounds/odours have a neutral (0) to unpleasant (-2) hedonic score	Open air operation with no containment, reliance solely on good management techniques and best practice
Medium	• Area sources of hundreds sqm • Compounds involved are moderately odorous.	• Process classed as 'Moderately offensive' in H4 Guidance; or • Compounds/odours have an unpleasant (-2) to very unpleasant (-4) hedonic score	Some mitigation measures in place but there is potential for significant odour to remain
Low	• Area sources of tens sqm. • Compounds involved are mildly odorous. • Where known, compounds have a relatively high odour detection threshold (ODT)	• Process classed as 'less offensive' in H4 Guidance; or • Compounds/odours have a neutral (0) to pleasant (+4) hedonic score •	Effective, tangible mitigation measures in place leading to little or no residual odour

Taking the above into consideration, we have concluded that the odour source potential for both the ATRF and the OWC would be medium on the basis that:

- While magnitude in terms of source area (sqm) would be high the range of potential contaminants and levels present would be variable and potentially range from low to medium magnitude;
- The potential offensiveness of the odour would be described as moderate with hedonic scores in the range of 0 to -2.76; and
- Based on experience on other facilities internationally the proposed mitigation measures would be effective leading to little or no residual odour.

4.3.3 Inventory of Odour Sources

An inventory of potential odour sources from the site treatment activities in accordance with H4 (April 2011) is provided in Table 5:

Table 5 Inventory of Odour Sources

Source Description				Likely odorous compounds	Containment/Release Point	Odour Description	Intensity at or Near Release Point	Pattern of Release	Potential
Source	Type of Emission	Waste Class	Source Odour Risk						
Waste Acceptance	Fugitive	A - ATRF	Medium	Non-putrescible materials in incoming wastes	Vehicles closed or covered	Odour should be marginal	No odour expected	None expected	None expected
		B, D or E - ATRF		Odours associated with the decay of organic materials contained in incoming waste	Vehicles closed or covered	Variable depending on the composition and age of waste	Odour is expected to be noticeable only in close proximity to vehicle (<1m).	Intermittent release, near to ground level.	Only if load received contains a large proportion of rotting organic material
		A to E – OWC	Medium	Odours associated with the decay of organic materials contained in incoming waste	Vehicles closed or covered	Variable depending on the composition and age of waste	Odour is expected to be noticeable only in close proximity to vehicle (<1m). Odour intensity decreases with distance from waste	Intermittent release, near to ground level.	Dependent on age and type of waste load received, inspected by weighbridge operator to meet specific requirements
Waste Discharge – ATRF process	Fugitive	B, D or E - ATRF	Medium	Odours associated with decay of organic materials in incoming wastes	Vehicles will be discharged to storage bays with sloped floors to allow collection of any leachate that drains from waste. Process water /leachate to be reused on site.	Variable depending on the composition and age	Difficult to characterise	During waste receipt and other waste movement activities.	None expected
		A - ATRF		Non-putrescible materials in incoming wastes	Vehicles will be discharged to storage bays with sloped floors to allow collection of any leachate that drains from waste. Process water/leachate to be reused off-site.	Odour should be marginal	No odour expected	None expected	None expected
Waste storage - ATRF	Fugitive	B, D or E - ATRF	Medium	Odours associated with decay of organic material in incoming waste. Any leachate collected will be reused onsite or tankered off-site for authorised disposal	Waste storage area.	Variable depending on the composition and age	Difficult to characterise	After excessive storage times.	Equipment failures may result in extended holding times for feedstock materials.
		A - ATRF		Non-putrescible materials in street incoming wastes	Waste storage area	Odour should be marginal	No odour expected	None expected	None expected
Handling and treatment in ATRF recycling plant	Fugitive	B, D or E - ATRF	Medium	Odours associated with decay of organic material in incoming wastes	Feeder hopper	Variable depending on the composition and age	Odour is expected to be noticeable only in close proximity to feeder hopper(<1m).	Intermittent release, near to ground level.	Only if load contains a large proportion of rotting material
		A - ATRF		Non-putrescible materials in incoming wastes	As above	Odour should be marginal	No odour expected	None expected	None expected
Waste Discharge OWC	Fugitive	A, B - OWC	Medium	Odours associated with: • the decay of organic materials contained in incoming waste. • leachate run-off	Vehicles will be discharged to storage areas with sloped floors to allow collection of any leachate that drains from waste. Leachate to be reused in the process.	Variable depending on the composition and level of contaminants	Odour is expected to be noticeable only in close proximity to discharge activity (<1m). Odour intensity decreases with distance from waste	During waste receipt and other waste movement activities. .	Dependent on age and type of waste. Monitoring of waste undertaken during receipt process and water/additives added as required
		C, D or E – OWC	Medium				Odour is expected to be noticeable in close proximity to discharge activity (<1.5m) for the majority of the wastes. Odour intensity decreases with distance from waste		
Incoming waste storage OWC	Fugitive	A or B – OWC	Medium	Odours associated with: • the decay of organic materials contained in incoming waste. • leachate run-off	Waste storage area.	Variable depending on the composition and level of contaminants	Odour is expected to be noticeable only in close proximity to material storage area (<1m). Odour intensity decreases with distance from waste	Intermittent release, near to ground level.	Equipment failures may result in extended holding times for feedstock materials.
		C, D or E – OWC					Difficult to characterise , although it is expected to be noticeable in close proximity (<1.5m) for the majority of the wastes. Odour intensity decreases with distance from waste		
Screening/ Shredding/ Mixing/ Transfer of waste	Fugitive	A to E - OWC		Odours associated with decay of organic material in waste	Screening and Separation Building	Variable depending on the composition and level of contaminants	Odour is expected to be noticeable only in close proximity to feeder hopper (<1m). Odour intensity decreases with distance from waste	Intermittent release, near to ground level.	Assessment will be made on windy days, if odour is detected at the nearest receptor within wind direction, processing may cease until wind decreases or direction changes.

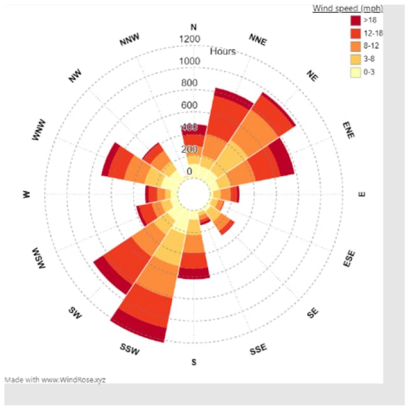
Source Description				Likely odorous compounds	Containment/Release Point	Odour Description	Intensity at or Near Release Point	Pattern of Release	Potential
Source	Type of Emission	Waste Class	Source Odour Risk						
Stabilisation and maturation in open air windrows	Fugitive	A to E - OWC	Medium	Odours associated with: • the decay of organic materials contained in incoming waste. • leachate run-off	Windrows	Variable depending on the composition and level of contaminants	Odour is expected to be minimal, mitigation in place to maintain aerobic conditions	Intermittent release, near to ground level.	Regular monitoring and turning of windrows will reduce potential for anaerobic conditions to develop
Turning of Windrows	Fugitive	A to E - OWC	Medium	Odours associated with: • the decay of organic materials contained in incoming waste. • leachate run-off	Windrows	Variable depending on the composition and level of contaminants	Odour is expected to be minimal, mitigation in place to maintain aerobic conditions	Intermittent release, near to ground level.	Assessment will be made on windy days, if odour is detected at the nearest receptor within wind direction, turning of windrows may be postponed until wind decreases or direction changes
Product Storage and Export	Fugitive	B	Low	Odour associated with decay of organic materials	Output storage area	Variable depending on the composition and level of contaminants	Odour is expected to be noticeable only in close proximity to the lagoon (<1m).	Intermittent release, near to ground level.	Dependent on age of waste, process validation will be undertaken on batches to check compliance with PAS100 before export. Compost which does not meet QP will be used on site or alternative landfill for restoration.
Water drains and water lagoon	Fugitive	N/A	Low	Odours associated leachate draining from incoming waste which is collected in the lagoon.	Water lagoon	Odour should be marginal	Odour is expected to be noticeable only in close proximity to the lagoon (<1m).	Intermittent release, near to ground level.	Water in the lagoon will also include collected rainwater and will be recirculated through the material washing process which means water is unlikely to stagnate.

4.4 Meteorological Conditions

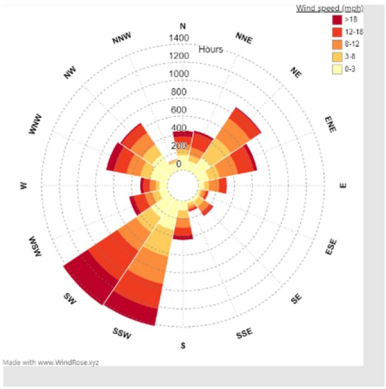
Windrose diagrams for 2018 to 2022 inclusive from the site meteorological system are provided for the site. All years show similar patterns with the predominant wind pattern of winds coming from the southwest and heading northeast. This wind direction also shows the strongest wind speeds recorded over the 5 year period. Wind from the northeast and southeast occur relatively infrequently (<5% of the time).

Figure 2 Windrose

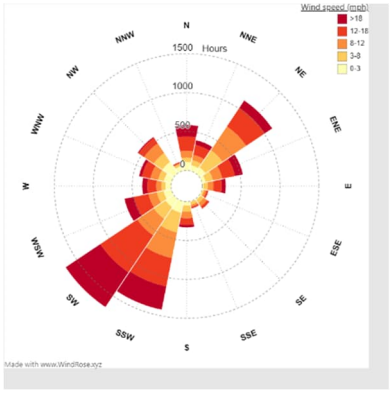
2018



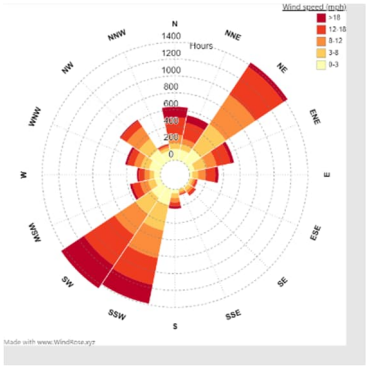
2019



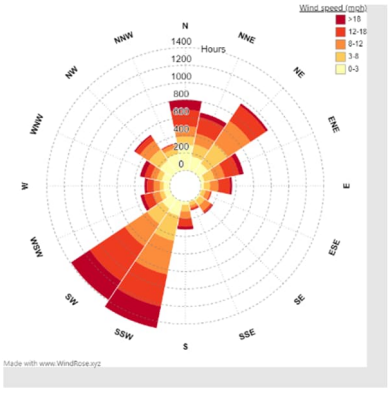
2020



2021



2018



Based on the 5-year average, the percentage of time the wind blows from any single direction is presented in Table 6 below.

Table 6 Percentage Frequency of Wind Direction

Direction Wind From	% Time Wind in Each Direction	Calm 0 – 0.45 m/s	Light 0.45 – 3.9 m/s	Gentle 3.9 – 5.5 m/s	Moderate 5.5 – 8 m/s	Fresh 8 – 10.8 m/s	Strong 10.8 – 13.9 m/s	Near Gale 13.9-17.2 m/s	Gale > 17.2 m/s
N	7.83%	1.82%	1.98%	1.30%	1.25%	1.03%	0.34%	0.07%	0.04%
NNE	6.58%	0.53%	1.76%	1.66%	1.77%	0.74%	0.11%	0.02%	0.00%
NE	12.12%	0.75%	4.22%	4.60%	1.85%	0.56%	0.13%	0.02%	0.00%
ENE	6.89%	0.47%	1.69%	2.18%	1.52%	0.86%	0.15%	0.01%	0.00%
E	3.59%	0.21%	0.91%	1.25%	0.81%	0.36%	0.04%	0.00%	0.00%
ESE	1.29%	0.09%	0.51%	0.50%	0.16%	0.03%	0.00%	0.00%	0.00%
SE	2.35%	0.18%	0.93%	0.87%	0.30%	0.07%	0.00%	0.00%	0.00%
SSE	1.26%	0.14%	0.48%	0.38%	0.16%	0.09%	0.00%	0.00%	0.00%
S	4.43%	0.40%	1.36%	1.33%	0.72%	0.50%	0.11%	0.02%	0.00%
SSW	15.69%	1.13%	4.49%	4.59%	2.65%	1.86%	0.76%	0.17%	0.03%
SW	15.62%	0.92%	3.07%	3.86%	3.65%	2.81%	0.94%	0.28%	0.09%
WSW	4.88%	0.38%	1.43%	1.32%	1.01%	0.60%	0.12%	0.02%	0.01%
W	3.48%	0.31%	1.08%	0.93%	0.69%	0.36%	0.09%	0.02%	0.00%
WNW	5.89%	0.55%	2.11%	1.66%	0.87%	0.47%	0.17%	0.04%	0.01%
NW	6.30%	0.67%	2.86%	1.91%	0.65%	0.19%	0.02%	0.00%	0.00%
NNW	1.79%	0.23%	1.26%	0.23%	0.07%	0.01%	0.00%	0.00%	0.00%

To assist in characterising the susceptibility of neighbouring odour sensitive receptors in relation to prevailing meteorological wind conditions, the potential risk from odour dispersal is classed as high, moderate, low or very low dependant on the length of time the receptor sits within the direction of wind blow and the distance from the site as summarised in Table 7 below.

Table 7 Receptor Sensitivity Based on Meteorological Data and Distance

% Time Receptor in Wind Direction	Sensitivity Based on Distance			
	High (< 250 m)	Moderate (251 – 500m)	Low (501 – 750m)	Very Low (>750m)
Very Low (<5%)	Low	Low	Low	Very Low
Low (6 – 10%)	Moderate	Moderate	Low	Low
Moderate (11 – 15%)	High	Moderate	Moderate	Low
High (> 15%)	High	High	Moderate	Low

4.5 Sensitive Odour Receptors

Sensitive receptors are those individuals which could experience an adverse effect in relation to odour impacts and the IAQM Odour Guidance indicates the following general principles when considering sensitivity:

Table 8 Principles for Determining Receptor Sensitivity

Potential Sensitivity	Principles to Consider
High	Surrounding land use where: • Users can reasonably expect enjoyment of a high level of amenity; and • People would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of land use. As per H4/IAQM Guidance examples may include residential buildings, hospitals, schools/education, restaurants/bars and tourist/cultural.

Potential Sensitivity	Principles to Consider
Moderate	Surrounding land use where: • Users would expect to enjoy a reasonable level of amenity but wouldn't expect to enjoy the same level of amenity as in their homes; or • People wouldn't reasonably be expected to be present here continuously, or regularly for extended periods, as part of the normal pattern of land use. As per H4/IAQM guidance examples may include places of work, commercial/retail premises, industrial premises and plying/recreation fields.
Low	Surrounding land use where: • Enjoyment of amenity would not reasonably be expected; or • There is transient exposure, where people would reasonably be expected to be present only for limit periods of time as part of the normal pattern of land use. As per H4/IAQM guidance examples may include farmland, footpaths and roads.

However, in determining the sensitivity of any individual receptor, consideration also needs to be given to any pathway effects such as proximity to site, prevailing wind direction and the likely dispersion and/or dilution of any odour. Therefore, in our assessment, consideration has been given to:

- Receptor type (e.g., residential, commercial, industrial, etc) and associated occupation rate (e.g., present for extended periods of time, present for shorter periods or transient presence);
- The proximity of the receptors to the source of the odour (i.e., site activities) – in the assessment below a sensitivity factor based on distance is given such that receptors <250m from activity would be considered at a high sensitivity, those between 251 – 500m considered moderate and those between 501 – 750m would be considered low and those greater than 750m considered very low; and
- Direction from site and whether the receptor is located upwind or downwind of the site and the percentage of time the wind direction (see Table 7 above).

Receptors which could be potentially affected by odour from the facility and their associated sensitivity are detailed in Table 9 below. A plan showing the location of the sensitive receptors is attached in Appendix A.

Where a receptor location has more than 1 type of receptor present (e.g., mix of residential and commercial) then the highest H4/IAQM sensitivity will be allocated.

Table 9 Sensitive Odour Receptors

Receptor		Type	H4 / IAQM Sensitivity	Closest Distance from Site Boundary	Direction From Site	Wind Direction (% time wind blowing towards)	Sensitivity Based on Wind and Distance	Overall Sensitivity Rating	Justification
R1	Greylands Industrial Park	Commercial & Residential	High	700m	E	3.48	Low	Moderate	Potentially moderately sensitive receptor, not in close proximity to the site, with wind blowing towards it at a moderately low frequency
R2	Greylands Lodge	Residential	High	450m	E	3.48	Low	Moderate	Potentially moderately sensitive receptor in moderate proximity to the site, with wind blowing towards it at a moderately low frequency
R3a	Greylands Farm	Farmland	Low	750m	SSE	1.79	Very Low	Low	Potentially low sensitivity receptor not in close proximity to the site, with wind blowing towards it rarely
R3b	Greylands Farm Residence	Residential	High			1.79	Very Low	Low	
R4a	Andrews Farm	Farmland	Low	750m	SSW	6.58	Low	Low	Potentially moderately sensitive receptor not in close proximity to the site, with wind blowing towards it at a moderate frequency.
R4b	Andrews Farm Residence	Residential	High				Low	Moderate	
R5a	Lower Chickens Farm	Farm	Low	800 m	WSW	6.89	Low	Low	Potentially moderate sensitivity receptor not in close proximity to the site, with wind blowing towards it at a moderately low frequency
R5b	Lower Chickens Farm Residence	Residential	High			6.89	Low	Moderate	
R6	Cox Farm Lodge	Residential	High	600m	W	3.59	Low	Moderate	Potentially moderately sensitive receptor, in moderately close proximity to the site, with wind blowing towards it at a very low frequency
R7	Cox Farm	Farmland	Low	300m	W	3.59	Low	Low	Potentially low sensitivity receptor which although in close proximity to the site, the wind blows towards it at a very low frequency
R8	Sussex Camper Vans	Commercial	Moderate	343m	NE	15.62	Moderate	Moderate	Potentially moderately sensitive receptor in moderately close proximity to the site, with wind blowing towards it at a moderate frequency
R9	Orchard Lodge	Residential	High	550m	NW	2.35	Low	Moderate	Potentially moderate sensitivity receptor in moderately close proximity to the site, with wind blowing towards it at a moderate frequency
R10a	Durford Hill Farm	Farmland	Low	700m	NNW	1.26	Low	Low	Potentially moderately sensitivity receptor, not in close proximity to the site, with wind blowing towards it at a moderately low frequency
R10b	Durford Hill Farm Residence	Residential	High			1.26	Low	Moderate	
R11	Fisher Clinical Services	Industrial	Low	622m	N	4.43	Low	Low	Potentially low sensitive receptor not in close proximity to the site, with wind blowing towards it at a low frequency
R12	Broadlands Business Centre	Commercial	Moderate	650m	NNE	15.69	Moderate	Moderate	Potentially moderately sensitive receptor, which is moderately close in proximity to the site, with wind blowing towards it at a high frequency
R13	Weinerburger Brickworks and adjacent Business Park	Industrial	Moderate	200m	SSE	1.79	Low	Moderate	Potentially moderate sensitivity receptor in close proximity to the site, wind blows towards it rarely
R14	Warnham Railway Station	Commercial	Moderate	750m	S	7.83	Low	Moderate	Potentially moderately sensitive receptor, not in close proximity to the site, with wind blowing towards it for a moderate frequency
R15	South Lodge	Residential	High	280m	NE	15.62	High	High	Potentially highly sensitive receptor, situated in close proximity to the site, with wind blowing towards it at a high frequency
R16	Boldings Brook Academy	School	High	714m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a moderately low frequency
R17	Langhurst Moat Cottage	Residential	High	452m	SSE	1.79	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a very low frequency
R18	Holmwood	Commercial	Moderate	760m	NNE	15.69	Low	Moderate	Potentially moderately sensitive receptor, which is not in proximity to the site, with wind blowing towards it at a high frequency
R19	Gunborn Crossing Cottages	Residential	High	559m	N	4.43	Low	Moderate	Potentially moderately sensitive receptor, which is not in moderate proximity to the site, with wind blowing towards it at a low frequency
R20	Nowhere House	Residential	High	638m	NNW	1.26	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R21	Richmond House	Residential	High	705m	NNW	1.26	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R22a	Wood Farm	Farmland	Low	860m	NNW	1.26	Very Low	Low	Potentially low sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency

Receptor		Type	H4 / IAQM Sensitivity	Closest Distance from Site Boundary	Direction From Site	Wind Direction (% time wind blowing towards)	Sensitivity Based on Wind and Distance	Overall Sensitivity Rating	Justification
R22b	Wood Farm Residence	Residential	High			1.26	Very Low	Low	
R23	Upper Chickens – Houses and Pet Supply Company	Residential Commercial	High	838m	NNW	1.26	Very Low	Low	Potentially low sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R24	Highland House, The Mount & other residences	Residential	High	558m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a very low frequency
R25	Dog & Duck Pub	Commercial	High	678m	NNW	1.26	Low	Moderate	Potentially moderately sensitive receptor, which is in moderate proximity to the site, with wind blowing towards it at a very low frequency
R26	Geerings	Residential	High	890m	W	3.59	Very Low	Low	Potentially low sensitivity receptor, which is not in close proximity to the site, with wind blowing towards it at a very low frequency
R27	Police House & adjacent residences	Residential	High	978m	SW	12.12	Low	Moderate	Potentially moderately sensitivity receptor, which is not in close proximity to the site, with wind blowing towards it at a very low frequency
R28a	Westons Farm	Farmland	Low	900m	SSW	6.58	Low	Low	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R28b	Westons Place Residences	Residential	High			6.58	Low	Moderate	
R29	Lower Gate House	Residential	High	678m	S	7.83	Low	Moderate	Potentially moderately sensitivity receptor, which is not in close proximity to the site, with wind blowing towards it at a moderate frequency
R30a	Pondtail Farm	Farmland	Low	887m	SSE	1.79	Very Low	Low	Potentially low sensitivity receptor, which is not in close proximity to the site, with wind blowing towards it at a very low frequency
R30b	Pondtail Farm Residence	Residential	High			1.79	Very Low	Low	
R31	Brittania Crest	Industrial	Moderate	245m	SE	6.30	Moderate	Moderate	Potentially moderately sensitivity receptor, which is in close proximity to the site, with wind blowing towards it at a very low frequency
R32	Biffa MMRC	Industrial	Moderate	100m	E	3.48	Low	Moderate	Potentially moderately sensitivity receptor, which is in close proximity to the site, with wind blowing towards it at a very low frequency
R33	Panel 2 Panel & Greens	Commercial	Moderate	645m	S	7.83	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a moderate frequency
R34	Sewage Works adjacent to Farm	Industrial	Low	750m	SSW	6.58	Low	Low	Potentially low sensitivity receptor not in close proximity to the site, with wind blowing towards it at a moderate frequency.
R35	Wealdon	Residential	High	509m	SSE	1.79	Low	Moderate	Potentially moderately sensitivity receptor not in close proximity to the site, with wind blowing towards it at a moderate frequency.
R36	Denhams Auctioneers	Commercial	Moderate	534m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R37	Sussex Health Centre	Nursing Home	High	580m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R38	Male Journey	Commercial	Moderate	660m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R39	White Cottage Cake Company	Commercial	Moderate	640m	NW	2.35	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a low frequency
R40	Houses on Station Road	Residential	High	620m	S	7.83	Low	Moderate	Potentially moderately sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a moderate frequency
R41	Little London Hill	Residential	High	657m	W	3.59	Low	Moderate	Potentially moderately sensitivity receptor not in close proximity to the site, with wind blowing towards it at a negligible frequency.
R42	Vale Stud Riding School	Commercial	Moderate	763m	NNW	1.26	Very Low	Low	Potentially Low sensitive receptor, which is not in close proximity to the site, with wind blowing towards it at a moderate frequency

4.6 Odour Risk Assessment

4.6.1 Introduction

The magnitude of odour impact depends on a number of factors and the potential for complaints varies due to the subjective nature of odour perception. Both the EA H4 Guidance and the IAQM Odour Guidance consider a technique known as FIDOR as a useful reminder of the factors that will determine the degree of odour pollution. In undertaking the risk assessment, we have applied the FIDOR Approach as detailed in Table 10 below.

Table 10 Application of FIDOR

FIDOR Element		Definition	Consideration
F	Frequency	frequency with which odours are detected	Consideration of frequency, intensity and duration has been evaluated by considering: • Nature/source of the incoming material; • Nature of the potential contaminants that could be present in the incoming waste and how they are bound (e.g., how easily the odorous compounds could be volatised). • Potential offensiveness of the contaminant should the odorous element be released; • Size of the area of the source release; and • Mitigations present and their effectiveness. The approach employed is detailed in Section 4.3 above.
I	Intensity	the intensity of the odours detected;	
D	Duration	the duration of exposure to detectable odours	
O	Offensiveness	the level of pleasantness or unpleasantness of odours.	Consideration has been given to the relative offensiveness of the odour released from the key aspects of each process by considering the hedonic scores for each aspect as presented in Section 4.3.2.1, Table 3 above.
R	Receptor	the sensitivity of the location where odours are detected, and/or the proximity of odour reassess to an odour sensitive location	Receptor sensitivity has been evaluated considering the IAQM principles, coupled with the direction and distance of each receptor from site and the frequency that wind blows in the direction of each receptor. This is presented in Section 4.5 above.

4.6.2 Assessment of Odour Impact

Within the assessment odour emissions from the site have been assigned a risk-ranking based on:

Effect = Impact (FIDO) * Receptor Sensitivity

The key factors that will influence the effects of odours are the magnitude of the odour source (s), the effectiveness of the pathway for transporting odours, and the sensitivity of the receptor. The methodology set out in the IAQM guidance describes in detail the Source-Pathway-Receptor approach to odour risk assessment and includes tables and matrices to assist in determining the likely risk of odour effects. The IAQM methodology is outlined below, and it includes an element of professional judgement. The assessment examines the source odour potential of the site and then identifies the pathway effectiveness and receptor sensitivity applied in this assessment.

Table 11 Composition and Characteristics of Odour Sources

Source Odour Potential	Pathways Effectiveness	Receptor Sensitivity
Large Source Odour Potential: Large-scale odour source and/or a source with highly unpleasant odours (hedonic tone is -2 to -4); no odour control	**Highly Effective Pathway:** Very short distance between source and receptor, receptor downwind of source relative to prevailing wind; ground level releases; no obstacle between source and receptor.	**High Sensitivity:** Highly sensitive receptors (e.g., residential properties, schools, etc.)
Medium Source Odour Potential: Medium scale odour source and/or a source with moderately unpleasant	**Moderately Effective Pathway:** Receptor is local to the source; releases are elevated; but	**Medium Sensitivity:**

Source Odour Potential	Pathways Effectiveness	Receptor Sensitivity
odours (hedonic tone 0 to -2): basic control measures	compromised by building effects.	Moderately sensitive receptors (e.g., commercial and retail premises, recreation area, etc.).
Small Source Odour Potential: Small-scale odour source and/or a source with pleasant odours (hedonic tone +4 -0); best practice odour controls	**Ineffective pathway:** Long distance between source and receptor (>500m); receptors upwind of source relative to prevailing wind, odour release from stack/high level	**Low Sensitivity:** Receptors not sensitive (e.g., Industrial activities or farms).

The estimates of the Source Odour Potential (

Table 4 and Table 11 above) along with the pathway effectiveness (Table 11) are considered together to predict the risk of odour exposure (impact) at the receptor location using the matrix in Table 12 below.

Table 12 Risk of Odour Exposure

Pathway Effectiveness	Source Odour Potential		
	Small	Medium	Large
Highly effective	Low	Medium	High
Moderately effective	Negligible	Low	Medium
Ineffective	Negligible	Negligible	Low

Taking this into consideration, the significance of odour impact at a specified receptor location through the interaction between sensitivity and risk can be determined using the IAQM approach as presented in Table 13 below.

Table 13 Significance of Odour Exposure

Risk of Odour Exposure	Receptor Sensitivity		
	Low	Medium	High
High	Slight	Moderate	Substantial
Medium	Negligible	Slight	Moderate
Low	Negligible	Negligible	Slight
Negligible	Negligible	Negligible	Negligible

Applying this to our assessment, the summary of odour effects at the existing sensitive receptors can be summarised as shown in Table 14 below. To ensure a worst case is considered we have completed the assessment on the highest source odour potential.

Table 14 Application of FIDOR

Receptor	Description	Type	Distance	Direction	Overall Receptor Sensitivity	Source Odour Potential	Pathway Effectiveness	Odour Exposure Risk	Likely Odour Effect
R1	Greylands Office Centre	Residential Commercial	700m	E	Moderate	Medium	Ineffective	Negligible	Negligible
R2	Greylands Lodge	Commercial	450m	E	Moderate	Medium	Moderate	Low	Negligible
R3a	Greylands Farm	Farmland	750m	SSE	Low	Medium	Ineffective	Negligible	Negligible
R3b	Greylands Farm Residence	Residential			Low	Medium	Ineffective	Negligible	Negligible
R4a	Andrews Farm	Farmland	750m	SSW	Low	Medium	Ineffective	Negligible	Negligible
R4b	Andrews Farm Residence	Residential			Moderate	Medium	Ineffective	Negligible	Negligible
R5a	Lower Chickens Farm	Farmland	800m	WSW	Low	Medium	Ineffective	Negligible	Negligible
R5b	Lower Chickens Farm Residence	Residential			Moderate	Medium	Ineffective	Negligible	Negligible
R6	Cox Farm Lodge	Residential	600m	W	Moderate	Medium	Moderate	Low	Negligible
R7	Cox Farm	Farmland	300m	W	Low	Medium	High	Medium	Negligible
R8	Sussex Camper Vans	Commercial	343m	NE	Moderate	Medium	High	Medium	Slight
R9	Orchard Lodge	Residential	550m	NW	Moderate	Medium	Moderate	Low	Negligible
R10a	Durford Hill Farm	Farmland	700m	NNW	Low	Medium	Ineffective	Negligible	Negligible
R10b	Durford Hill Farm Residence	Residential			Moderate	Medium	Ineffective	Negligible	Negligible
R11	Fisher Clinical Services	Industrial	622m	N	Low	Medium	Moderate	Negligible	Negligible
R12	Broadlands Business Centre	Commercial	650m	NNE	Moderate	Medium	Moderate	Low	Negligible
R13	Weinerburger Brickworks and adjacent Business Park	Industrial	200m	SSE	Moderate	Medium	Ineffective	Negligible	Negligible
R14	Warnham Railway Station	Commercial	750m	S	Moderate	Medium	Ineffective	Negligible	Negligible
R15	South Lodge	Residential	280m	NE	High	Medium	High	Medium	Moderate
R16	Boldings Brook Academy	School	714m	NW	Moderate	Medium	Ineffective	Negligible	Negligible
R17	Langhurst Moat Cottage	Residential	452m	SSE	Moderate	Medium	Moderate	Low	Negligible
R18	Holmwood	Commercial	760m	NNE	Moderate	Medium	Ineffective	Negligible	Negligible

Receptor	Description	Type	Distance	Direction	Overall Receptor Sensitivity	Source Odour Potential	Pathway Effectiveness	Odour Exposure Risk	Likely Odour Effect
R19	Gunborn Crossing Cottages	Residential	559m	N	Moderate	Medium	Moderate	Low	Negligible
R20	Nowhere House	Residential	638m	NNW	Moderate	Medium	Moderate	Low	Negligible
R21	Richmond House	Residential	705m	NNW	Moderate	Medium	Moderate	Low	Negligible
R22a	Wood Farm	Farmland	860m	NNW	Low	Medium	Ineffective	Negligible	Negligible
R22b	Wood Farm Residence	Residential			Low	Medium	Ineffective	Negligible	Negligible
R23	Upper Chickens – Houses and Pet Supply Company	Residential	838m	NNW	Low	Medium	Ineffective	Negligible	Negligible
R24	Highland House, The Mount & other residences	Residential	558m	NW	Moderate	Medium	Moderate	Low	Negligible
R25	Dog & Duck Pub	Commercial	485m	WNW	Moderate	Medium	Moderate	Low	Negligible
R26	Geerings	Residential	890m	W	Low	Medium	Ineffective	Negligible	Negligible
R27	Police House & adjacent residences	Residential	978m	SW	Moderate	Medium	Ineffective	Negligible	Negligible
R28a	Westons Farm	Farmland	900m	SSW	Low	Medium	Ineffective	Negligible	Negligible
R28b	Westons Place Residences	Residential			Moderate	Medium	Ineffective	Negligible	Negligible
R29	Lower Gate House	Residential	678m	S	Moderate	Medium	Moderate	Low	Negligible
R30a	Pondtail Farm	Farmland	887m	SSE	Low	Medium	Ineffective	Negligible	Negligible
R30b	Pondtail Farm Residence	Residential			Low	Medium	Ineffective	Negligible	Negligible
R31	Brittania Crest	Industrial	245m	SE	Moderate	Medium	Moderate	Low	Negligible
R32	Biffa MMRC	Industrial	100m	E	Moderate	Medium	Moderate	Low	Negligible
R33	Panel 2 Panel & Green	Commercial	645m	S	Moderate	Medium	Moderate	Low	Negligible
R34	Sewage Works adjacent to Farm	Industrial	750m	SSW	Low	Medium	Ineffective	Negligible	Negligible
R35	Wealdon	Residential	509m	SSE	Moderate	Medium	Moderate	Low	Negligible
R36	Denhams Auctioneers	Commercial	534m	NW	Moderate	Medium	Moderate	Low	Negligible
R37	Sussex Health Centre	Nursing Home	580m	NW	Moderate	Medium	Moderate	Low	Negligible
R38	Male Journey	Commercial	660m	NW	Moderate	Medium	Moderate	Low	Negligible
R39	White Cottage Cake Company	Commercial	640m	NW	Moderate	Medium	Moderate	Low	Negligible
R40	Houses on Station Road	Residential	620m	S	Moderate	Medium	Moderate	Low	Negligible

Receptor	Description	Type	Distance	Direction	Overall Receptor Sensitivity	Source Odour Potential	Pathway Effectiveness	Odour Exposure Risk	Likely Odour Effect
R41	Little London Hill	Residential	657m	W	Moderate	Medium	Moderate	Low	Negligible
R42	Vale Stud Riding School	Commercial	763m	NNW	Low	Medium	Ineffective	Negligible	Negligible

4.7 Risk Mitigation and Management

4.7.1 Introduction

In relation to mitigation and management of the potential odour risks associated with the site activities these have been summarised and are presented in a risk matrix attached in Appendix B. The matrix uses a scoring mechanism, whereby scores are assigned to:

- The probability of the odour hazard occurring without the use of protective measures;
- The consequences of the odour hazard to the environment or human health without mitigation of control in place.

Multiplying these scores together provided an indication to the acceptably of the activity without the control/mitigation measures being employed.

Risk Factor = probability x consequence

The control and mitigations being employed are then detailed and a score for the expected effectiveness of the controls is given. A mitigated risk factor is determined:

Mitigated Risk Factor = Risk factor / mitigation factor.

The lower the mitigated risk, then the more effective the controls and mitigations employed are expected to be.

4.7.2 Scoring Mechanism

The risk assessment methodology has been developed

The scoring system used for the assessment is shown in Table 15 below.

Table 15 Risk Assessment Scoring Mechanism

FREQUENCY OF OCCURRENCE		
Frequency	**Comment**	**Score**
Never	• Incident occurs once every 100 to 10,000 years	1
Very Unlikely	• Incident occurs once every 10 to 100 years	2
Unlikely	• Incident occurs once every 1 to 10 years	3
Somewhat Unlikely	• Incident occurs at least once per year	4
Fairly Probable	• Incident occurs at least once per month	5
Probable	• Incident occurs at least once per week	6
CONSEQUENCE OF HAZARD TO ENVIRONMENT OR TO HUMAN HEALTH		
Consequence	**Comment**	**Score**
Minor	• Vary faint odour • Intermittent release • Onsite nuisance only no outside complaint • No breach of permit	1
Noticeable	• Faint odour • Odour may be noticeable but not unpleasant • Odour unlikely to be strong enough or of sufficient duration to identify or characterise the odour.	2
Significant	• Distinct Odour • Intermittent release • Nuisance may be noticeable off-site • Potential for 1 – 2 complaints • Reportable breach of permit	3
Severe	• Strong odour • Likely to generate off-site complaints • Severe sustained nuisance	4

	• Numerous public complaints • Reportable breach of permit	
Major	• Very strong odour • May be offensive enough to prevent working or playing outside • Dependant of source partial plant shutdown may be required • Replacement of part of plant may be required • Major breach of environmental permit • Regulator (EA/HSE) involved	5
Catastrophic	• Extremely strong odour • Odour capable of causing nausea or headaches so highly objectionable • Full plant shutdown potentially required • Regulatory prosecution likely	6
EFFECTIVENESS OF MITIGATION		
Mitigation Factor	**Comment**	**Score**
Non-existent	• No mitigation in place	1
Ineffective	• Some minor controls in place but mitigation not achieved	2
Partly effective	• Basic controls in place and hazard partly mitigated but significant residual risk remains	3
Effective	• Basic controls in place and hazard mitigated to an acceptable level although moderate level of residual risk may exist	4
Very effective	• Processes fully controlled (basic/advanced) and hazard mitigated to recognised standard. Some minor residual risk may remain	5
Entirely effective	• Processes fully controlled to level in excess of recognised standards. Hazard mitigation entirely effective and no residual risk remains	6

5. Management Arrangements

5.1 Structure

Environmental responsibility for individual operations will be assigned throughout the site management structure and are defined through the management system.

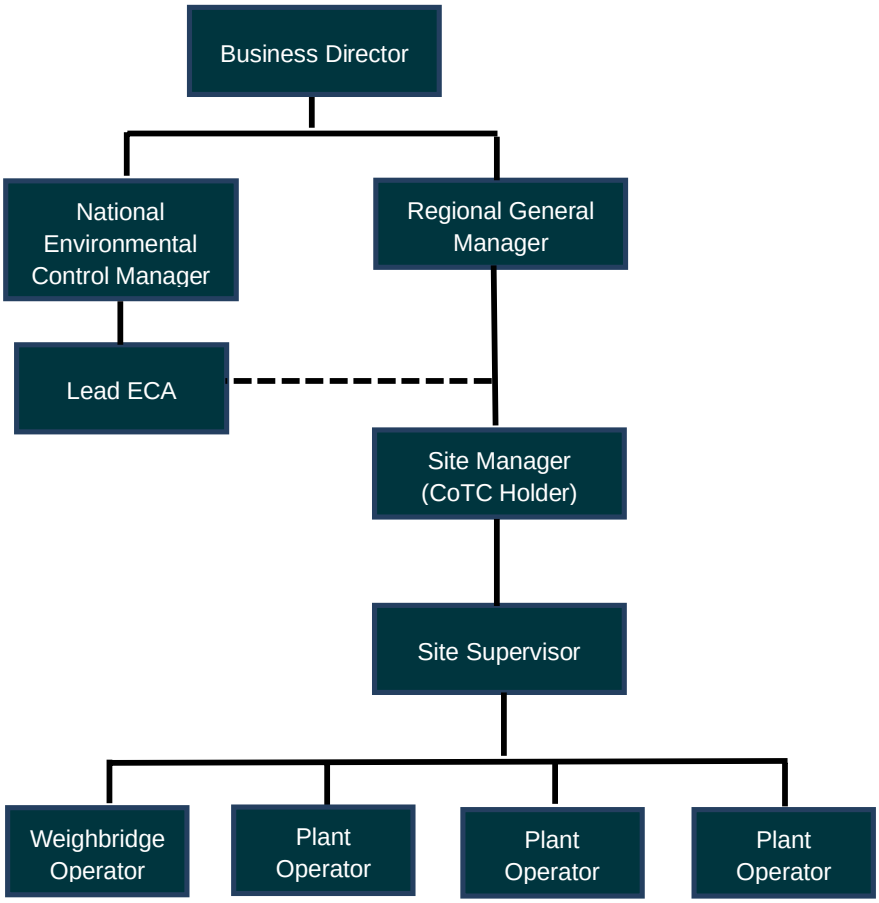
The Site Manager is the designated management representative, with overall control of the management system at the plant including the ability to ensure programmes are realised and translated into activities on the plant. The Site Manager or his nominated Deputy has responsibility for ensuring the requirements of this DEMP is implemented.

Operational staff for the facility are shared with the adjacent landfill/ATRF to provide operational flexibility and line responsibilities of staff are presented in Figure 3 below.

Some brief descriptions of the responsibilities of those staff that are involved in operating the plant are outlined

below.

Figure 3 Site Organogram



Some brief descriptions of the responsibilities of those staff that are involved in operating the plant are outlined in Table 16 below:

Table 16 Responsibility of Role Function

Position	Responsibility
Site Supervisor	The Site Supervisor acting as the day-to-day manager of facility operatives, will have responsibility for ensuring that: • The site is available to receive waste;

Position	Responsibility
	• The site is operating within the parameters of the Environmental Permit and appropriate planning regulations including odour management requirements; • Any odour complaints are fully investigated, and appropriate corrective action is taken as necessary; and • Regular daily 'sniff tests' are undertaken to check for odour. The Supervisor will report directly to the Site Manager of the Brookhurst Wood Landfill and ATRF,
Plant Operator	The Plant Operator will be experienced in operating loading equipment and will be certified as competent via the CITB training scheme or equivalent. The Plant Operator will be responsible for the daily inspection of the equipment, defect reporting, stockpiling and loading operations and maintaining the safety and security of the tipping floor. Liaison with the Weighbridge Operator with regard to incoming and outgoing vehicles will form part of the postholder's duty.
Weighbridge Operator	An experienced Weighbridge Operator will ensure that vehicles entering the site are authorised using the computerised transaction system. In addition, the correct operation of the weighbridge, the computerised transaction recording, duty of care checks and liaising with the Plant Operator by radio will form part of the postholder's duties. The weighbridge operator will be responsible for identifying any particularly odorous waste loads delivered at the point of waste acceptance.

5.2 Technical Competence

A technically competent person will be available on site in accordance with the regulatory attendance requirements. In his absence a nominated deputy will be available. . The technically competent person, or nominated deputy, will be responsible for the control of incoming and outgoing vehicles, checking Duty of Care documentation, inspecting waste to ensure compliance with permit conditions, keeping and maintaining all records. The technically competent person, or nominated deputy, will have overall responsibility for ensuring high standards of housekeeping and odour control are maintained throughout the site as a whole.

5.3 Training Provision

All staff will receive instruction and training, both verbal and documented, in all relevant aspects of operational procedures, permit requirements in relation to operations and the environment, health and safety and general requirements of the site management plan. A copy of the permit and approved site management plan will be kept available on site for reference when required by all site staff carrying out work under the requirements of the permit.

Wherever possible, training will be delivered in the workplace by internal training staff or by managers, although formal training courses will be employed were required.

In relation to odour management, this will be incorporated into the general site operational training and will cover odour awareness in relation to normal, abnormal and maintenance situations and include management of odour complaints.

5.3.1 New Starters

Each position at the site will be covered by a general job description detailing key skills, responsibilities and reporting structure. It will be standard procedure for new process operators to be given comprehensive "on the job" training before they take full responsibility for their post. Supervision will be provided for as long as is necessary to ensure that the required skills have been imparted. In addition, specific full training on key tasks will be given to both new and experienced operators as necessary.

5.3.2 Contractors

Site rules will be provided to all contractors using or visiting the site. These rules will describe basic safety and operational precautions to be observed while at the site.

Instances of drivers or contractors not following site rules or behaving inappropriately will result in warnings. If necessary, requests to leave site and/or barring from future visits to the site will be implemented.

5.4 Management System

Biffa operates an integrated management system which meets the requirements of:

- BS EN ISO 9001:2015– Quality Management Systems
- BS EN ISO 14001:2015 – Environmental Management Systems
- BS OHSAS 45001:2018 – Occupational Health and Safety Management Systems

6. Normal Operational Odour Control

6.1 Waste Pre-acceptance Procedures

Biffa will employ strict control so as to prevent the acceptance of malodourous wastes including where appropriate placing restrictions on individual contracts in respect of the contamination levels present, the amount of organic matter present and age of the waste.

6.2 Waste Acceptance Procedures

All vehicles delivering waste to the ATRF and OWC facility will have to pass the weighbridge facilities.

At the weighbridge, the operator will evaluate the incoming waste load in accordance with site procedures. Providing the incoming waste is acceptable, the driver will be provided with the correct discharge code and will be directed to the relevant discharge area for the ATRF or the OWC facility. In the event that waste does not meet the conditions specified in the Environmental Permit, or is particularly odorous, the load(s) will be rejected in accordance with site procedures.

The vehicle, quantity, type and origin of the waste will be recorded in accordance with the Environmental Permit.

6.3 Waste Composition

The Operator retains the right to reject any waste which is deemed to jeopardise the ability to manage the site and prevent the emission of unacceptable odours. Rejected waste will be diverted straight to an appropriate offsite landfill or treatment facility.

In the event that malodourous waste is identified by the site operators during load discharge/offloading, then the waste will be segregated into an isolation area and then diverted off site as soon as possible for final disposal or further treatment. Controls such as suppression, deodorising sprays or covering of such material will be employed during the period when the material is in quarantine.

6.4 Vehicles

Loads arriving at site will be covered with tarpaulin, sheeting or other suitable cover and these will not be uncovered (other than for the purpose of waste inspection) until immediately prior to deposition on the designated storage area.

All loads of secondary aggregates, compost or treated residues leaving the installation will also be sheeted at the point of loading.

6.5 Storage of Waste and Process Outputs

During normal operational periods, incoming waste will be stored for time periods in accordance with Section 3.6.1 of the Site Management Plan, so as to maintain the availability of waste for short periods of non-delivery (e.g. Bank Holidays).Incoming waste for both areas will be stored in designated storage bays comprising 3-sided bays formed from concrete block walls. Bays will be sited so that bay openings avoid the prevailing wind direction and minimise wind whipping. Waste within the bays will be kept to around 0.5m below the height of the bay walls.

6.5.1 ATRF Outgoing Product

The organic fraction recovered at the ATRF will be retained within a designated storage bay and will where possible, be loaded and transferred for further treatment to minimise site storage time. In the event that the organic fraction has to be stored on site then this will be limited to a maximum of 3 working days before it is removed.

Other ATRF products comprise:

- Silt/Fines which will be stored in 3-sided storage bays.
- Metals which will be stored in designated skips or RoRo containers; and

- Aggregate Fractions which will initially be stored in small bays associated with the ATRF separation plant and once tested and confirmed as products are moved to onsite storage stockpiles.

6.5.2 OWC Outgoing Product

The final compost products achieving the required grades will be stored in designated 3-sided bays and then loaded into bulk loaders for transport to third party end users. Vehicles used to transport compost off-site will be sheeted. After sheeting each vehicle will proceed to the weighbridge where it will be weighed off and issued with a weighbridge ticket.

Up to 60,000 tonnes of compost will be produced each year which complies with the Publicly Available Specification 100 (BSI PAS 100) (2018) for composted materials and the Compost Quality Protocol.

6.6 Cleaning

Operational areas and wheeled loaders within the facility, external roads and drainage channels will be regularly cleaned to prevent the build-up of odour from old degrading material. The frequency and procedure for the cleaning activity will be implemented in accordance with the Site Inspection and Housekeeping Procedure e.

6.7 OWC Operational Controls

6.7.1 Initial Processing

Once the waste has been accepted, it will be offloaded in the OWC waste receipt and shredding area. The driver would be directed to the wheel wash and weighbridge where the vehicle would be weighed off and issued with a weighbridge ticket.

The volume of waste received and held in stockpile prior to processing will be managed in order to keep stockpiled material to a minimum. No material will be stored for longer than 4 days. The site will be operated on a first in, first out (FIFO) basis.

After offloading, all unsuitable/oversized material will be placed in the isolation area for onward transportation to a suitably licensed recovery or disposal facility.

The remaining feedstock materials would be placed in the shredder by a front-end loading shovel and/or a 360° excavator. Moisture checks would be carried out and adjusted by adding water or fibrous material and/or structuring agents, as required. The water will be sourced from the drainage lagoon to be provided in each of the composting areas.

6.7.2 Screening and Separation

The green waste will either be pre-screened prior to composting or screened following maturation using a trommel screen to produce two product grades:

- 40mm down - defined as the Principal Grade used principally in landfill restoration, and
- 10mm down - defined as an Additional Grade which would be used to meet PAS100 standards and sold to third parties.

Compost product over 40mm will be blended with incoming feedstock and reprocessed.

The site would operate an information management system that provides batch data records for types, quantities, sources of waste received at the site, shredding and processing data (temperature and moisture for each batch) and final end product screening and quality characterisation.

Compost not achieving the required size would be blended with incoming feedstock and reprocessed if visual assessment confirms that physical contaminants would not adversely affect the composting process. If the oversize material is too heavily contaminated for re-composting, it would be taken offsite and disposed of to a suitable licensed facility.

6.7.3 Stabilisation, Maturation and Monitoring

Shredded waste will be transferred to the open air windrow composting area. The windrows will be around 8m wide at the base and up to 4m high. The waste material will naturally start to decompose reaching temperatures of 65-80°C. After an initial two week period, temperatures are maintained above 45°C until the end of the stabilisation phase.

The maturation phase will occur at a minimum of 6 weeks and will dispatched no earlier than 12 weeks.

Each windrow will be turned once every 2 weeks to maintain aerobic conditions and prevent the development of anaerobic conditions and the associated malodour. The temperature and moisture content of the windrow will be monitored and recorded once a week by use of a probe inserted into a minimum of 0.5m depth into the windrow.

During the subsequent final maturation stage, the feedstock will either be retained in windrows or be formed into separate stockpiles and the temperature will further decrease. The end of the maturation phase is reached when batch temperatures remain within critical limits for a specified minimum period. At this point each batch will be marked as complete by recording the completion date on a 'Batch Appraisal Record Sheet.'

6.8 Odour Management Sprays

Atomisers will be provided at the site and will be operated at the discretion of the Site Manager or other trained person during periods of dry and dusty conditions, high temperature or in the unlikely event that odour is detected at the site boundary. The atomisers will comprise a water spray and the time periods for operation will be tailored to address the weather conditions and any odour prevalent at the time.

It is not intended to use a deodoriser for day to day operation of the OWC facility. The rapid turnaround of waste and distance to nearest receptors will minimise the exposure to odours. However, a deodoriser will be deployed on specific occasions where additional control is required. The unit, when used, will be located downwind of any potential odour source.

The deodoriser will be operated at the discretion of the Site Manager or other appropriately trained person depending on the weather conditions and any odour prevalent at the time. Its use will be kept to the minimum period necessary to manage any odour from the site.

6.9 Planned Temporary Odorous Activity

If it is necessary to complete planned temporary activities at the site that have an associated high risk of off-site odour impact (e.g., removal of odorous unauthorised waste from site), the site manager or other technically competent person will ensure that the Environment Agency is contacted to advise them of:

- The operation being undertaken;
- The reason(s) for doing so;
- Planned additional odour mitigation measures; and
- Timescales for completion.

Consideration shall be given to the prevailing weather conditions when undertaking such activities in order to minimise any potential off-site odour impact. If the weather conditions are likely to lead to odour issues, the work will be postponed until conditions are favourable. Where it is essential to complete works in order to minimise emissions from the site, prevent another emission or accident, control measures will be deployed to minimise the risk e.g., use of a temporary odour treatment spray.

Weekly checks will be made on weather conditions to allow forward planning. Daily observations of weather conditions including wind speed, direction and temperature will also be recorded so that operations at the facility can be optimised.

Unplanned temporary odorous activities will be addressed in accordance with the Odour Action Plan set out in Section 8.

7. Maintenance and Inspection Requirements

7.1 Plant and Equipment

Site infrastructure and plant will be inspected regularly for damage and wear by the site manager or other appointed responsible person. All plant items and equipment (e.g., loading shovels, ATRF and OWC processing plant) will be serviced and maintained according to manufacturer's schedules and recommendations in order to minimise the risk of breakdown.

Plant and equipment will be inspected and serviced by Biffa utilising a plant inspection pro-forma.

Critical items will be identified and sourcing of standby equipment including delivery time will be identified. Where necessary critical spares will be held on site.

Records of inspections will be maintained in a site log. All maintenance on the plant is programmed into the company's planned preventative maintenance (PPM) system which generates work orders for the up-coming maintenance and logs when maintenance has been completed.

Trained maintenance staff can carry out plant repairs quickly where required. Mobile plant repairs can be undertaken within one working day, dependant on the availability of spares.

7.2 Waste Storage Areas

External storage skips, stockpiles and storage bays will be inspected routinely to ensure that, where odorous material is present, effective odour mitigation continues to be employed.

7.3 Defect Reporting and Reactive Maintenance

Mobile and fixed plant will be subject to a first use check on a daily basis to facilitate defect detection and reporting. Defects will be logged and reported to the Biffa maintenance team so that repairs can be scheduled.

7.4 Surface Water/Leachate Management

7.4.1 ATRF Area

All storage, loading and processing activities for the ATRF takes place on an impermeable concrete pad connected to a sealed drainage system. Incident rainfall drains into yard and perimeter drainage

Clean water, (i.e., from the non-process related areas of the site), is drained under gravity flow, to the existing surface water management system.

Potentially dirty water, (i.e., from around the plant, and as intercepted adjacent to the storage bays), will form an input into the closed-loop process system, with excess discharged to off-site to an appropriated treatment plan if required.

7.4.2 OWC Area

All storage, shredding, loading and composting activities take place on an impermeable concrete pad, connected to a sealed drainage system. Incident rainfall will drain into a new lined perimeter ditch system, which in turn will drain to one of the new lined lagoons. Collected surface water and leachate will be primarily used for conditioning of the windrows. In the event that collected water can't be reused, then it will be pumped to one of the water storage tanks and from there it will be discharged to foul sewer or removed by tanker for offsite treatment.

Drainage systems and lagoons will be visually inspected at weekly intervals for signs of sediment build up, in the event that there are signs of build up the Site Supervisor or other trained members of staff will arrange for the drains to be cleaned.

7.5 Emergency

In the event of a site emergency, the site manager will be notified immediately. The emergency measures will be implemented as a priority to mitigate the incident, as appropriate and are detailed in Section 8.

8. Odour Control During Abnormal Events

This section outlines a summary of foreseeable situations which may compromise the operator's ability to control and / or minimise odorous emissions and summarises the actions to be taken to minimise the impact.

8.1 Abnormal Situations

The following scenarios have been identified that may affect odour control:

- Storage of waste over long periods of time due to plant shutdown;
- Accidents resulting from leakage of any leachate;
- Delivery of malodorous waste;
- Plant and equipment malfunction/breakdown; and
- Unusual weather conditions.

The risk assessment approach used for assessment of odour impact during normal operations has also been employed in the assessment of odour control techniques during abnormal situations. The risk and mitigation matrix is presented in Appendix B and includes an appraisal of abnormal conditions where odour control may be compromised, the potential impact or consequences and how the conditions may be prevented and / or mitigated and controlled.

8.2 Mechanical Repairs and Breakdowns

Mechanical problems or breakdowns may require the replacement or repair of component parts and render plant/equipment required for odour control ineffective or non-operational.

- To minimise and mitigate the potential impact of such breakdowns the following will be in place:
- A preventative maintenance schedule will be developed to reduce the risk of plant breakdown;
- A list of suppliers or contractors for critical equipment and/or standby equipment will be maintained; and
- Biffa maintenance personnel can be called to the site within a few hours in the event of any breakdown of critical plant.

8.3 Maintenance

Where planned and emergency maintenance of plant or equipment is required, and there is a likelihood of odour being released to atmosphere in quantities sufficient to result in detection of odour by offsite receptors, a detailed risk assessment of the activity will be conducted to assess potential for odour generation, release and control – the risk assessment will detail any additional odour controls that will be required. The detailed risk assessment methodology and accompanying forms for carrying out unplanned works form part of the management system.

8.4 Abnormal Events Management Plan

Although the site does not fall within the COMAH regulatory regime, the site accident management plan will still reflect the broad principles of the COMAH guidelines, in that:

- Major accident hazards/abnormal events will be identified including those where generation of significant odour could occur;
- The measures necessary to prevent such accidents/events will be identified including those necessary to limit their consequences for people and the environment;
- Adequate safety and reliability will be incorporated into the design, construction, operation and maintenance of the plant; and
- An on-site abnormal events management plan will be developed.

Environmental accident prevention, including odour controls, will be managed within the overall site health, safety, quality and environmental management programme. Management and procedures relating to such emergency preparedness and response will be documented within an Emergency Procedure.

In respect of odour management individual elements of the abnormal events management plan are outlined below.

- Defect reporting procedures – maintained in the site Operations Manual covering all reasonably foreseeable incidents, the procedure will detail how to report the defect, communication routes and mechanisms for corrective and mitigating action;
- Investigation and reporting procedure – this will deal with the reporting, investigation and recording of any incidents relating to odour control at the site including those associated with external complaints;
- Incident Controller – this will normally be a site supervisor identified in the plan, who will have the responsibility to mobilise and co-ordinate a response team and will be responsible for all communications with external stakeholders and the regulator as necessary;
- Emergency equipment – including critical spares and standby plant arrangements; and
- Contingency tipping – the plan will detail the alternative tipping arrangements that can be made available in the event that the recycling operation has to cease.

9. Monitoring, Recording and Reporting

9.1 Overview of the Monitoring Plan

To ensure that odorous emissions from the facility do not result in nuisance at sensitive receptors, Biffa will monitor odour emissions by:

- Daily site inspection, using 'sniff tests' to assess odour;
- Daily monitoring of meteorological information and weather forecasts;
- Monitoring of odour complaints; and

If a sustained period of justified odour complaint should arise, Biffa will review existing procedures and other management and control techniques as necessary. Consideration will be given to the use of other monitoring measures such as odour diaries and dynamic olfactory monitoring in these instances.

9.2 Monitoring Plan

9.2.1 Sniff Testing

Sniff testing (sensory field odour assessment) is the most common form of odour monitoring and can provide evidence of an odour problem. Sniff testing will be undertaken as follows:

- As part of a daily inspection at the site boundary during normal operational conditions;
- At the site boundary during weather conditions that could contribute to poor dispersion of odours; and
- At sensitive receptor locations if necessary (e.g., in the event of a complaint being received).

Sniff tests will be undertaken in accordance with Appendix 1 of the latest EA H4 (April 2011), and an example report form is attached in Appendix C.

9.2.2 Monitoring of Meteorological Information

Monitoring of meteorological information and weather forecasts can assist in the management of odour emissions from the site. Some meteorological conditions can exacerbate the risk of odour annoyance at sensitive receptors, for example low odour dispersion caused by cold temperatures and low wind speed.

Monitoring of meteorological information (temperature, wind speed, wind direction and precipitation) and checking of weather forecasts will be completed daily by the Site Manager or nominated deputy.

The information will be used in the following ways:

- To predict when weather conditions are likely to cause poor odour dispersion, to enable site controls to be amended if required;
- To plan where monitoring of the site boundary should take place during normal operations in order to correctly assess odour impacts;
- To predict the areas where potential odour impacts may occur during abnormal events; and
- During the investigation of odour complaints to ascertain complainant's observations.

9.2.3 Complaints Monitoring

Biffa recognise that complaints data is probably the most direct and reliable form of monitoring whether odours beyond the site boundary are causing an annoyance. Therefore, Biffa will record complaints, respond to them and communicate with the complainants.

Complaints will be collected, registered and investigated as described in Section 9.3 below.

9.2.4 Dynamic Olfactory Monitoring

Dynamic olfactory monitoring (e.g., EN 13725 or EN 16841-1 or -2) or suitable alternative will be undertaken in the event that substantiated odour complaints are received. This will be agreed with the Environment Agency at the time,

9.3 Complaints Procedure and Communication

9.3.1 Complaints Procedure

Biffa's complaints procedure will be incorporated into the site management system to ensure that odour complaints are handled correctly and systematically and acted upon. The complaints procedure will be maintained as part of the IMS system, and will outline how Biffa will;

- Respond to odour complaints;
- Investigate odour complaints, take appropriate steps and actions and communicate with relevant stakeholders; and
- Communicate to appropriate bodies routinely and in response to any abnormal events or planned maintenance.

Initial details of the complaint will be recorded in the compliance database (example form in Appendix D); which will ensure data is collected and recorded in a systematic way.

The compliance database is accessible by the Site Manager and other Senior Managers and will be reviewed at least quarterly for trend analysis.

In order to assist with complaints monitoring the following additional information should be collected either by observation or further investigation:

- Meteorological conditions at the time of the complaint (e.g., wind direction, speed);
- Operational incidents at the time of the complaint; and
- Any off-site activities ongoing at the time of complaint (e.g., agricultural operations).

Initial screening of the complaint will be undertaken by the Duty Supervisor in order to establish if an odour incident has actually taken place. Screening will consider:

- Knowledge of potential odour sources at the facility;
- Knowledge of operational issues or plant defects that could contribute to odour release;
- Consideration of potential external odour sources;
- Location and distance of complainant from the site; and
- Results of any site monitoring already taking place.

If no such odour incident can be confirmed, then further investigation will not be required. However, if an odour incident is confirmed a more detailed investigation will occur. If the communication is significant, the Duty Supervisor shall notify the Site Manager or nominated deputy as soon as possible.

Once screening has been completed the Site Manager or nominated deputy will provide feedback to the complainant including details of any action that has/will be taken. The output of all complaints investigation and associated corrective actions will be logged into the compliance database.

The local community via a liaison group have access to both an email and the phone number of the control room at the adjacent Biffa MBT facility which is manned 24/7 with which to raise concerns relating to the operation of the landfill, MBT or ATRF/OWC. In the event, the control room is contacted out of hours, regarding a complaint relating to the ATRF/OWC facility, then the Duty Supervisor would contact the 'on-call' Manager so the necessary actions can be taken. Additionally an emergency contact number (0800 9176896) is displayed on the signage at the site entrance.

9.3.2 Proactive Engagement of Stakeholders

Biffa meet with the local community liaison committee on a regular basis (at least 2 per annum) to provide an update on site operational performance including issues related to odour. In the event that a change is planned to the site operations, treatment processes or nature of the wastes being accepted at the site then Biffa will convene additional liaison meetings as necessary to proactively engage the community.

9.4 Recording Results, Reporting and Actions

9.4.1 Recording Results and Reporting

Records of all odour monitoring undertaken, as described in this OMP, will be maintained by Biffa. Records will be retained as stipulated in the Environmental Permit.

9.4.2 Reporting

Biffa will report monitoring results as stipulated by the Environmental Permit. Odour complaint reports will be reported to the EA in line with permit requirements.

Records will be retained for a minimum of 6 years.

9.4.3 Actions in the Event of Abnormal Emissions

In the event that daily odour monitoring indicates abnormal emissions from the facility are occurring, the site management team will implement the following actions:

- Check relevant items of odour control equipment in order to identify likely cause of abnormal emission;
- If possible, take immediate steps to eliminate the cause of the abnormal situation including contacting the maintenance operative if necessary - to obtain telephone support / advice or to request attendance on site; and
- Record response to abnormal emission and remedial action taken.

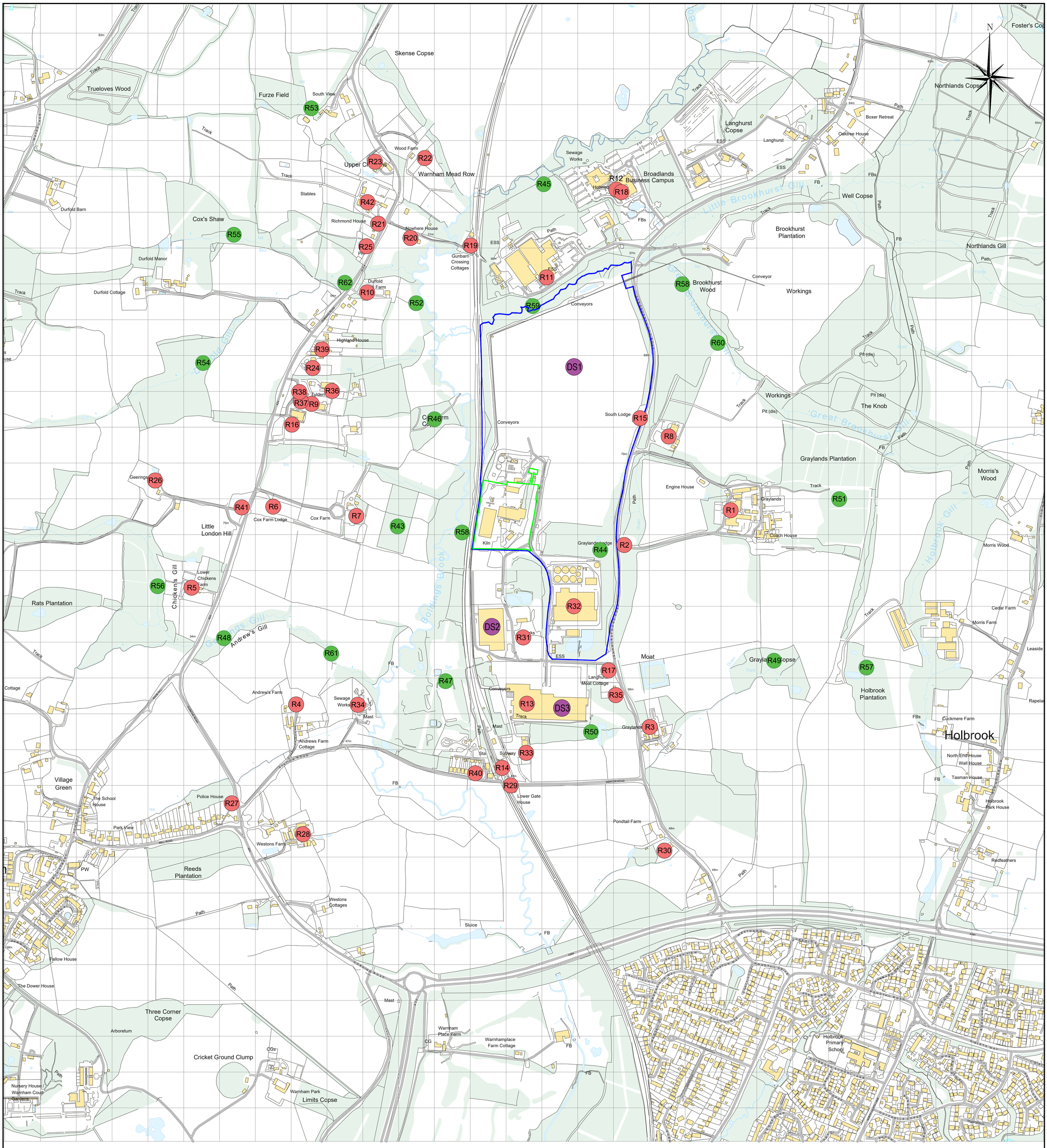
Details of the trigger parameters and associated contingency actions for odour control are presented in Appendix E.

9.5 Odour Management Plan Review

The effectiveness of the OMP will generally be reviewed at least once per annum based on a review of the odour complaints recorded and upheld during the previous 12 months. The review of the OMP may be undertaken at a frequency of less than 1 year in the event of:

- A sustained period of justified odour complaints; or
- Following the introduction of new treatment processes or changes to existing processes; or
- Acceptance of waste from new sources where the pre-acceptance checks indicate that that additional odour controls may be necessary based pre-acceptance checks.

Appendix A Site Drawings and Plans



KEY

- INSTALLATION BOUNDARY
- LAND IN BIFFA CONTROL
- TEMPORARY ACCESS FOR CONSTRUCTION

SENSITIVE HUMAN RECEPTORS

R1 Greylands Industrial Park
R2 Greylands Lodge
R3 Greylands Farm
R4 Andrews Farm
R5 Lower Chickens Farm
R6 Cox Farm Lodge
R7 Cox Farm
R8 Sussex Camper Vans
R9 Orchard Lodge
R10 Durford Hill Farm
R11 Fisher Clinical Services
R12 Broadlands Business Centre
R13 Weinerburger Brickworks and adjacent Business Park
R14 Warnham Railway Station
R15 South Lodge
R16 Boldings Brook Academy
R17 Langhurst Moat Cottage
R18 Holmwood
R19 Gunborn Crossing Cottages
R20 Nowhere House
R21 Richmond House
R22 Wood Farm
R23 Upper Chickens - Houses and Pet Supply Company
R24 Highland House, The Mount & other residences
R25 Dog & Duck Pub
R26 Geerings
R27 Police House and other adjacent residences
R28 Westons Farm & Westons Place Residential Properties
R29 Lower Gate House
R30 Pondtail Farm
R31 Brittaniacrest Recycling
R32 Biffa ATRF
R33 Panel 2 Panel & Greens
R34 Sewage Works adjacent to Farm
R35 Wealdon
R36 Denhams Auctioneers
R37 Sussex Health Centre
R38 Male Journey
R39 White Cottage Cake Company
R40 Houses on Station Road
R41 Little London Hill
R42 Vale Stud Riding School

SENSITIVE ENVIRONMENTAL RECEPTORS

R43 Unnamed Woodland
R44 Unnamed Woodland
R45 Unnamed Woodland
R46 Cox Farm Copse
R47 Unnamed Woodland
R48 Unnamed Woodland
R49 Graylands Copse
R50 Unnamed Woodland
R51 Graylands Plantation
R52 Unnamed Woodland
R53 Unnamed Woodland
R54 Unnamed Woodland
R55 Cox's Shaw
R56 Rat's Plantation
R57 Holbrook Plantation
R58 Brookhurstwood
R58 Boldings Brook
R59 Little Brookhurst Gill
R60 Great Brookhurst Gill
R61 Geerings Gill
R62 Durfield Gill

POTENTIAL SOURCES OF DUST

DS1 Adjacent Landfill
DS2 Britannia Crest Waste Transfer Station
DS3 Wienerberger Brickworks

REV.	DATE	DRAWN	DESCRIPTION

Biffa Waste Services Ltd
Redhill Landfill Site
Cormongers Lane,
Nutfield, Redhill
RH1 4ER
Tel. 01737 765042
Mob: 07921 386021

E-mail phil.mumford@biffa.co.uk

PROJECT	COMPOSTING SITE DEVELOPMENT	DRAWN	AAO
LOCATION	BROOKHURST WOOD LANDFILL SITE	DATE	07/23
DRAWING TITLE	RECEPTOR PLAN	SCALE(S)	1:500 @ A1
DRAWING No.		COMPUTER REF.	BA236000

Appendix B Risk and Mitigation Matrix

Operating Status	Odour Source	Most Sensitive Receptors	Likelihood			Control Measures	Mitigation Factor	Residual Risk	Action if odour causes problem	Responsibility
			Probability	Consequence	Risk					
Normal Operations	Delivery and weighing of incoming wastes	R2, R7, R9, R13 and R15	6	3	18	• Any waste deemed to be particularly malodorous will be rejected from the site. • Rejected waste would be diverted directly to landfill or further treatment	5	3.6	• Rejection of waste from site. • Ensure vehicles use covers when travelling to site.	Weighbridge operator to make initial assessment.
	Waste Discharge and Storage at ATRF	R2, R7, R9, R13 and R15	6	4	24	• Storage of incoming waste will be for up to 10 days. • Good housekeeping standards will ensure that the site areas are kept clean to prevent build-up of spillage waste. • Water suppression to be used when ambient conditions and material require it.	5	4.8	• Reject or isolate and transfer malodourous waste as soon as possible to disposal or further treatment. • Review housekeeping procedures. • Review handling procedures.	Operator to ensure unloading, handling, storage and loading procedures are adhered to.
	ATRF Treatment	R2, R7, R9, R13 and R15	6	4	24	• Plant designed to minimise drop heights at points of transfer. • Feed hopper and loading shovel matched to minimise spillage when loading. • Wet process which minimises the risk of fugitive emissions. • Plant is subject to pre-use checks and a PPM schedule in accordance with manufacturer's recommendations	5	4.8	• Review the materials being treated – adjust the treatment schedule if necessary (e.g., if an odorous source identified ensure this is processed first). • Inspect the processing plant for issues//defects such as material spillage or build up at drumheads, etc. Repairs to be completed as a matter of priority. • Mobile suppression sprays to be deployed for use around the plant if necessary.	Operator to ensure loading, operation and maintenance procedures are adhered to.
	ATRF Residue Storage	R2, R7, R9, R13 and R15	6	4	24	• Organic fraction from the ATRF will be stored for a maximum of 10 days • Storage of metals from the washing plant will take place externally in separate skips which are secured. • Aggregate materials will be stored in designated bays or stockpiles and odour potential is negligible.	5	4.8	• Review housekeeping procedures. • Review handling procedures.	Operator to ensure unloading, handling, storage and loading procedures are adhered to.
	OWC Discharge and Storage	R2, R7, R9, R13 and R15	6	3	18	▪ Good housekeeping standards will ensure that the site areas are kept clean to prevent build-up of spillage waste. Wheel washing shall be employed. ▪ OWC area has falls that allow collection of any leachate that drains from the waste into the sealed lagoon. • Excess leachate which can't be used in the OWC process will be discharged to sewer via water storage tanks or tankered offsite if required	5	3.6	▪ Reject or isolate and transfer malodourous waste as soon as possible to disposal or further treatment. ▪ Review housekeeping procedures. ▪ Review handling procedures • Discharge to sewer or tanker excess leachate offsite if required	Operator to ensure unloading, handling and storage procedures are adhered to.
	Screening, Mixing, Shredding and Transfer of waste	R2, R7, R9, R13 and R15	6	4	24	• Assessment will be made on windy days, if odour is detected at the nearest receptor within wind direction, operations will cease until wind decreases or direction changes	5	3.6	• Review activity procedures	Operator to ensure loading, operation and maintenance procedures are adhered to.
	Stabilisation and maturation in open air windrows - ammonia	R2, R7, R9, R13 and R15	6	4	24	• Regular monitoring of windrows • Regular turning of windrows to maintain aerobic conditions	5	3.6	• Review process for stabilisation and maturation • Increase monitoring to reduce anaerobic conditions developing	Operator to ensure regular monitoring of conditions
	Turning of windrows	R2, R7, R9, R13 and R15	6	4	24	• Assessment will be made on windy days, if odour is detected at the nearest receptor within wind direction, operations will cease until wind decreases or direction changes	5	3.6	• Review process and procedures	Operator to ensure loading, operation and maintenance procedures are adhered to.
	Hardstanding, areas and paths	R2, R7, R9, R13 and R15	6	2	12	• Good housekeeping standards will ensure that the site areas are kept clean to prevent build-up of spillage waste. • Incident rainfall will drain into the lined perimeter drainage system, which in turn will drain to one of two surface water lagoons with the excess being pumped to a new water storage tank to the north– this water will be reused as irrigation water for the windrows.	5	2.4	• Increased removal of water by road tanker.	Competent person to decide if increased removal of water is required.
	Product storage and export	R2, R7, R9, R13 and R15	6	3	18	• Export of product off site from both areas will be undertaken by sheeted vehicles/skips.	5	3.6	• Ensure vehicles use covers when travelling off site.	Weighbridge operator
	Management of potential leachate	R2, R7, R9, R13 and R15	6	2	12	• Storage time will be reduced by recirculating through the ATRF and composting processes. • Leachate will be pumped to the leachate treatment plant or removed off site by road tanker. • If recirculation is not possible removal from the dirty water catchment chamber will be by foul sewer or by road tanker. This will reduce the risk of water stagnating.	5	2.4	• Increased removal of water off-site by road tanker or in future more frequent discharge to foul sewer	Competent person to decide if increased removal of water is required.

Operating Status	Odour Source	Most Sensitive Receptors	Likelihood			Control Measures	Mitigation Factor	Residual Risk	Action if odour causes problem	Responsibility
			Probability	Consequence	Risk					
Abnormal Conditions	Delivery of large volume of incoming waste over a short period of time	R2, R7, R9, R13 and R15	2	4	8	Biffa will exercise the following with regards to their waste suppliers: • Define maximum tonnages that can be accepted on a daily basis. • Agree delivery schedule with consideration of public holidays; • Stipulate the remit for the rejection of wastes if the facility is over supplied and daily recording of quantity of waste accepted into facility; • Contingency plan for management of over-supply of waste, including possible diversion to other facilities to accept rejected loads and options to return to supplier.	5	1.6	• Rejection of wastes and implementation of contingency plan.	Management team to negotiate supplier policy and contingency plan Weighbridge operator to record quantity of waste accepted daily. Competent person to decide if waste should be rejected and whether it should be returned to supplier, sent to another licensed waste facility or disposed of direct to landfill.
	Delivery of malodourous waste	R2, R7, R9, R13 and R15	3	5	15	• Weighbridge operative to identify malodourous waste. Load to be rejected. • Plant operative to identify delivered malodourous waste. Malodourous waste to be reloaded onto delivery vehicle or isolated and prioritised for onward transport to disposal facility.	5	3	• Waste rejected at the weighbridge. • Waste rejected upon discharge and reloaded on to delivery vehicle for off-site disposal. • Waste isolated and prioritised for onward transport to disposal facility.	Competent persons as weighbridge operator and plant operative.
	Plant and equipment malfunction / breakdown	R2, R7, R9, R13 and R15	2	4	8	• Planned preventative maintenance and regular inspections. • Availability of maintenance operatives - could be on site within a few hours. • Stand by parts / equipment to be available	5	1.6	• Repairs to be undertaken as quickly as possible.	Competent person to ensure plant / equipment is repaired as quickly as possible
	Unusual weather conditions e.g., extreme atmospheric temperature, extreme wind turbulence	R2, R7, R9, R13 and R15	3	5	15	• Meteorological information / forecasts received from the Met Office. • Job planning to mitigate the impact of unusual weather conditions.	5	3	• Monitor odour emissions using site procedures. • Review site procedures in relation to weather conditions to establish if modification will mitigate odour emissions.	Competent person to ensure meteorological information / forecast is reviewed daily. Competent person to exercise monitoring procedures.
	Closure of offsite landfill or treatment facility preventing transfer of organic fraction waste from facility	R2, R7, R9, R13 and R15	1	4	4	• Alternative disposal sites to be identified and used when necessary. If no alternative site available waste acceptance will be ceased.	4	1	• Use alternative disposal sites	Competent person to identify and authorise the use of alternative disposal sites.

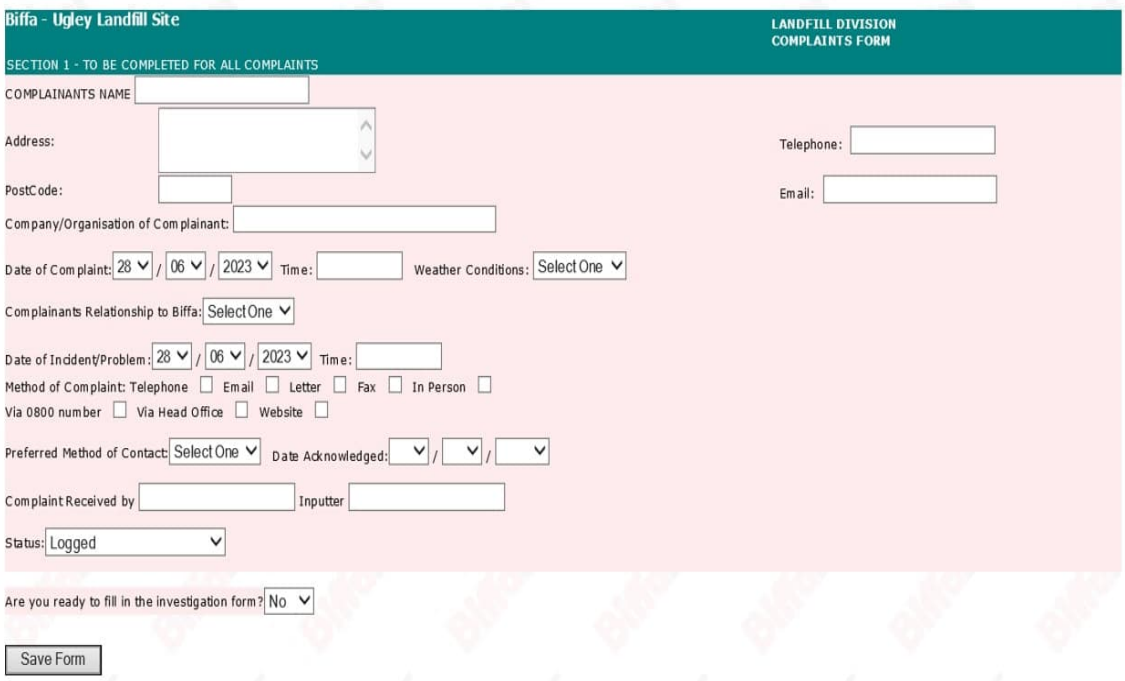
Appendix C Example of Sniff Testing Reporting Form

Odour Report Form					Date
Time of test					
Location of test e.g., street name etc					
Weather conditions (dry, rain, fog, snow etc):					
Temperature (very warm, warm, mild, cold, or degrees if known)					
Wind strength (none, light, steady, strong, gusting)					
Wind direction (e.g., from NE)					
Intensity (see below)					
Duration (of test)					
Constant or intermittent in this period					
What does it smell like?					
Location sensitivity (see below)					
Is the source evident?					
Any other comments or observations					
Sketch of Odour Monitoring Locations/Potential Odour Sources				**N**	

Intensity (Detectability)	Location sensitivity where odour detected
1 No detectable odour	0 not detectable
2 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Remote (no housing, commercial/industrial premises or public area within 500m)
3 Moderate odour (odour easily detected while walking & breathing normally)	2 Low sensitivity (no housing, etc. within 100m of area affected by odour)
4 Strong odour	3 Moderate sensitivity (housing, etc. within 100m of area affected by odour)
5 Very strong odour (possibly causing nausea depending on the type of odour)	4 High sensitivity (housing, etc. within area affected by odour)
	5 Extra sensitive (complaints arising from residents within area affected by odour)

Note the above is an example of the format which may be used to record odour – actual site records may take the form of handwritten log or electronic record (e.g., in Word, Excel or similar)

Appendix D Example Complaints Log



Biffa - Ugley Landfill Site

LANDFILL DIVISION
COMPLAINTS FORM

SECTION 1 - TO BE COMPLETED FOR ALL COMPLAINTS

COMPLAINANTS NAME

Address:

Telephone:

PostCode:

Email:

Company/Organisation of Complainant:

Date of Complaint: 28 / 06 / 2023 Time: Weather Conditions: Select One

Complainants Relationship to Biffa: Select One

Date of Incident/Problem: 28 / 06 / 2023 Time:

Method of Complaint: Telephone Email Letter Fax In Person

Via 0800 number Via Head Office Website

Preferred Method of Contact: Select One Date Acknowledged: / /

Complaint Received by Inputter

Status: Logged

Are you ready to fill in the investigation form? No

Save Form

Appendix E Trigger Values and Controls

Trigger	Frequency	Trigger Measure	Responsible	Control/Contingency Measure
Site Inspection	Daily – actions taken same day		Site Manager	
		Material overflowing the ATRF/OWC reception areas		Material to be moved back into storage area by site mobile plant; If material can't be processed (e.g., breakdown) then temporarily suspend waste acceptance
		Spillage evident in yard		Identify source and nature of spillage Mobilize the road sweeper for mud/litter spillage Utilise spills kit to contain and remove liquid spillage
		Water accumulation in yard		Check drains and silt drop-out chambers for signs of build-up / blockage Arrange for drain cleaning using gully washer or similar
		Residue/outputs overflowing the storage area		Use mobile plant to move into correct storage area Arrange for removal of material from site to end destination If material can't be removed in timely manner consideration of temporarily ceasing waste acceptance for further treatment,
		Build-up evident in the ATRF or OWC process		Processing to be stopped and if necessary, waste acceptance to be temporarily ceased to allow the process drain to be drained and cleaned.
Meteorological Monitoring			Site Manager	In the event that temperature increases above defined level then additional checks will be undertaken on incoming waste stockpiles with portable PID analyser to check for fugitive releases of organics – materials to be placed under cover if results are indicative of unacceptable vapour release. In the event of dry and windy conditions water suppression to be employed.
	Temperature	> 25OC		
	Rain	No		
Sniff Testing	Daily – within same day	Odour score >3 at 4 or more boundary locations	Site Manager	Additional sniff checks to be undertaken at local community receptors dependent on wind direction; Checks around the process to be undertaken to determine if source is located on site – using PID if necessary, dependent on the nature of the odour.
Complaints Monitoring	As received	Response to complaint	Site Manager	Immediate checks around the process to be undertaken to determine if source is located on site – using PID if necessary, dependent on the nature of the odour in response to individual complaints. Offsite sniff checks at complainant location and other appropriate receptors. Complaints to be reviewed monthly for adverse trends. Introduction of odour diaries with community receptors in the event of prolonged odour nuisance in order to establish pattern/source
Dynamic Olfactory Monitoring	TBC	Period of prolonged and justified complaints	Site Manager	In the event of prolonged, justified odour complaints dynamic olfactory monitoring will be implemented in line with a programme agreed with the regulator.