J Witt Ltd

Odour Management Plan

Newbury Works, Coleford, BA3 5RX

April 2024

Odour Management Plan for J Witt Waste Transfer Station including Advetec aerobic Biodigestion Unit

Revision no.	Author	QA	Date Issued
1	SLR Consulting Ltd	Dr Stephen Wise	19.04.23
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3	J W Waste Recycling	AMH	31.01.24
Final v4	Mark Hannan	Dr Stephen Wise (Advetec)	29.04.24

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1 INTRODUCTION

1.1 Background

JW Waste Recycling Ltd, trading as J Witt Ltd, has held a SR2015 No 6 permit for the site at Coleford since early 2017, allowing it to handle and treat up to 75kte of household, commercial and industrial each year.

In a move to continue its initiative to divert waste away from landfill, the Company formed a partnership with Advetec a biotechnology firm that focuses on minimizing the impact of non-recyclable waste on the environment using aerobic composting machines that combine robust engineering with bio-stimulants. Installing one, perhaps two, such Units will enable rapid ***aerobic*** digestion of organic matter found within waste received onto site and considerably reduce its volume too. It is expected that the resulting output will be fit to use as Solid Recovered Fuel (SRF).

The Advetec XO22 Unit already on site (though not being used until permitted) will handle up to 13te of "black bag" waste each day.

This Odour Management Plan considers odours that may arise from the site, and which might affect existing sensitive receptors.

1.2 Site Location and Context

The site occupied by the J Witt Ltd Waste Transfer Station at Newbury Works is a remote location in the middle of the Somerset countryside well away from any potentially sensitive environmental receptors. The nearest house is 0.3km away, and the closest "medical" facility, a retirement home, is 1.2km away. Both are upwind of the prevailing winds (from the SW). The nearest Sensitive Receptor downwind is 400m away.

Being in the middle of the Somerset countryside surrounding receptors are potentially less sensitive to "farming" odours than their counterparts in built-up areas. To date the Company has received no odour complaints from its operation and would assert that it has good relationships with local neighbours which means that it is not operating in ignorance of local perceptions.

The addition of the Advetec Biodigestion Unit(s) might potentially increase any odour arising from site. This OMP considers the size of that increment and concludes that it is not significant.

There will be no appreciable increase in the amount of the only potential malodorous waste arriving on site and remaining after sorting, namely "black bag" waste but it will be handled differently. That is to say that it will no longer be sent off-site but will go through the Advetec process.

This process is relatively novel but worldwide there are, or have been seven Units in operation. It should be stressed that at none of these has sites has any odour complaint been received, despite three of the sites having been in sensitive locations

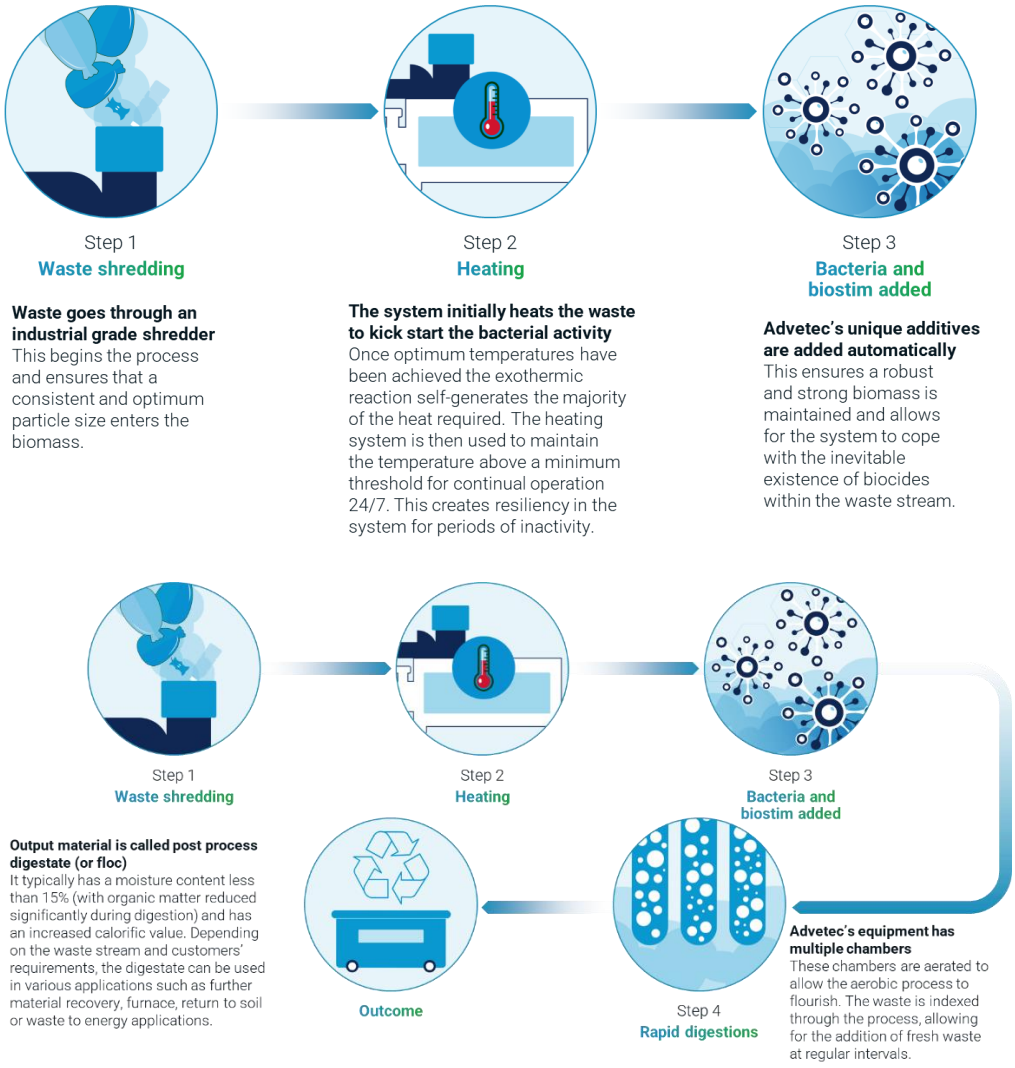
1.3 Plant Description

The Advetec XO22 Unit is a fully enclosed aerobic digestor. Emissions to atmosphere only occur via engineered outlets and fugitive emissions are not possible.

Aerobic digestion is a natural biological process in which micro-organisms breakdown organic material in the presence of oxygen. Aerobic bacteria contained in the Unit, digest and consume the organic material, typically only producing the by-products of heat, water vapour and carbon dioxide (CO2). The remaining 'floc' is biostabilised, dry and non-odorous.

[Note: *Anaerobic* digestion (AD) is the process in which micro-organisms break down organic material in the *absence of oxygen* and generate methane.]

Following the aerobic digestion process (which is circa. 72 hours) a mass reduction of circa. 50% and a volume reduction of 70%, with a moisture content of circa. 15% is achieved. This results in a floc that is suitable for onward recovery off-site as a Solid Recovered Fuel (SRF). An illustration of the process is provided below.



The only by-products from the aerobic digestion process are heat, water vapour, carbon dioxide (CO2), and the floc. The aerobic digestion process uses exothermic aerobic respiration and therefore generates its own heat, which is channelled internally back into the process, using a closed loop heating system. The process does not use supplemental water.

The XO units are accessed via a regulated cloud-based portal. Alert and alarm levels are programmed into the system to notify in the event of system errors or parameters moving out of range e.g. hydrogen sulphide.

There is also an in-line gas monitoring system which continuously monitors levels of methane (CH_4), carbon monoxide (CO), volatile organic compound (VOCs) and

sulphur dioxide (SO_2), which in the event of detection of any of these parameters, an alarm is raised.

2 LEGISLATION & POLICY CONTEXT

2.1 Regulation of Aerobic Biodigestion Facilities

The management and control of emissions including bioaerosols released from the Biodigestion facility will be regulated by the EA using a Bespoke Permit to complement the SR2015 No 6 permit already in force.

2.2 Odour Legislation and Guidance

The following legislation and guidance has been used in this assessment:

- H4: Odour Management, Environment Agency, April 2011;
- Odour Guidance for Local Authorities, Department for Environment, Food and Rural Affairs (Defra), 2010; (This useful guidance covered many aspects of odour assessment but note that Defra withdrew this guidance in September 2017 and no replacement has been issued: and
- Environmental Guidance "Control and monitor emissions for your environmental permit" updated in November 2022.

Overall both the Environment Agency and the site management will want to ensure that the general H4 "Odour Boundary Condition" is met. That is to say that *"Emissions from the activities (of the site) shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, ….specified in an approved Odour Management Plan, to prevent or where that is not practicable to minimise the odour."* It is therefore recognised that if approved the provisions of this OMP will become part of the site's permit.

[Note: there is no Best Available Techniques Reference Document (BREF) for this technology but the site will do all it can to use Best Available Techniques in odour management at sensible cost commensurate with the perceived environmental threat.]

2.3 Odour Definition

In the much quoted Defra guidance document odour may be defined in the following way:

"An odour is the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of smell. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.

Odours have the potential to trigger strong reactions for good reason. Pleasant odours can provide enjoyment and prompt responses such as those associated with appetite. Equally, unpleasant odours can be useful indicators to protect us from harm such as the ingestion of rotten food. These protective mechanisms are learnt throughout our lives. Whilst there is often agreement about what constitutes pleasant and unpleasant odours, there is a wide variation between individuals as to what is deemed unacceptable and what affects our quality of life."

2.4 Odour Impacts

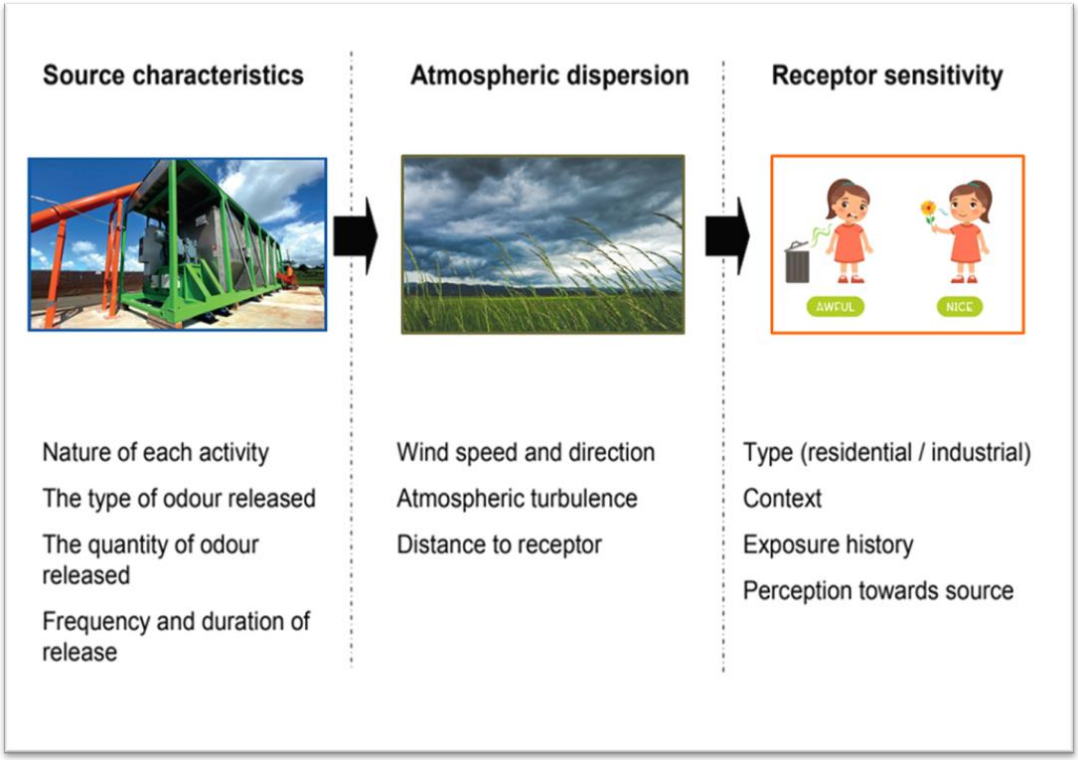
The magnitude of odour impact depends on a number of factors and the potential for adverse impacts varies due to the subjective nature of odour perception. The FIDOR acronym is a useful reminder of the factors that can be used to help determine the degree of odour pollution:

Frequency of detection - frequent odour incidents are more likely to result in adverse impacts;
Intensity as perceived - intense odour incidents are more likely to result in adverse impacts;
Duration of exposure - prolonged exposure is more likely to result in adverse impacts;
Offensiveness - more offensive odours have a higher risk of resulting in adverse impacts; and,
Receptor sensitivity - sensitive areas are more likely to have a lower odour tolerance.

It is important to note that even infrequent emissions of odours may cause loss of amenity if odours are perceived to be particularly intense or offensive.

The FIDOR factors can be further amplified to consider the following issues with respect to the potential for an odour emission to cause adverse impacts:

- The rate of emission of the compound(s).
- The duration and frequency of emissions.
- The time of the day that this emission occurs.
- The prevailing meteorology (wind direction, wind speeds etc.).
- The sensitivity of receptors to the emission i.e. whether the odorous compound is more likely to cause annoyance, such as to the sick or elderly, who may be more sensitive.
- The odour detection capacity of individuals to the various compound(s) in odours.
- The individual perception of the odour (i.e. whether the odour is regarded as unpleasant). This is quite subjective, and may vary significantly from individual to individual. For example, some individuals may consider some odours as pleasant, such as petrol, paint and creosote, whilst others find them less tolerable.



2.5 Odour Measurement

The concentration at which an odour is just detectable to a human nose is referred to as the detection threshold. This concept of a threshold concentration is the basis of olfactometry in which a quantitative sensory measurement is used to define the concentration of an odour. Standardised methods for measuring and reporting the detectability or concentration of an odour sample have been defined by European standard BS:EN 13725:2003. The concentration at which an odour is just detectable by a panel of selected human odour assessors is defined as the detection threshold and has an odour concentration of 1 European odour unit per cubic metre (1ouE/m3).

At the detection threshold, the concentration of an odour is so low that it is not recognisable as any specific odour at all, but the presence of some, very faint, odour can be sensed when the "sample" odour is compared to a clean, odour-free sample of air.

For a simple, single odorous compound such as hydrogen sulphide, the concentration of odour present in a sample of air can be expressed in terms of ppm, ppb or mg/m3. More usually, odours are complex mixtures of many different compounds thus the concentration of the mixture is expressed in ouE/m3.

An odour at a strength of 1ouE/m3 is the concentration at which 50% of the population can detect the odour and 50% cannot within the controlled environment of an odour laboratory. As an odour becomes more concentrated, then it gradually becomes more apparent. Some guidance as to concentrations when this occurs can be derived from laboratory measurements of intensity. The following guideline values were stated by Defra to provide some context for discussion about exposure to odours:

- 1ouE/m3 is the point of detection;
- 5ouE/m3 is a faint odour; and,
- 10ouE/m3 is a distinct odour.

It is important to note that these values are based on laboratory measurements and in the general environment other factors affect the sense of odour perception, such as the following:

The population is continuously exposed to a wide range of background odours at a range of different concentrations, and usually people are unaware of there being any background odours at all due to normal habituation. Individuals can also develop a tolerance to background and other specific odours. In an odour laboratory the determination of detection threshold is undertaken by comparison with non-odorous air, and in carefully controlled, odour-free, conditions. Normal background odours such as those from traffic, vegetation, grass mowing etc., can provide background odour concentrations from 5 to 60ouE/m3 or more.
The recognition threshold may be about 3ouE/m3, although it might be less for offensive substances or higher if the receptor is less familiar with the odour or distracted by other stimuli.
An odour which fluctuates rapidly in concentration is often more noticeable than a steady odour at a low concentration.

2.6 Odour Benchmarks

There are no statutory odour annoyance criteria in the UK although the Environment Agency (the Agency) has published guidance for processes regulated under the Environmental Permitting Regulations (EPR) 1, i.e. H4 Odour Management document referred to above.
This provides a range of benchmark levels for assessing odour annoyance depending on the perceived offensiveness of the process undertaken. These are all based on the 98th percentile of hourly mean concentrations modelled over a year. Expressing air quality standards as percentiles is common in the UK and has been applied to the odour offensiveness criteria as the Agency recognises that there are circumstances when it is difficult to avoid off-site odour (e.g. extreme meteorological conditions).

The Environment Agency benchmarks are as follows:

- 1.5 ouE/m3 for most offensive odours;
- 3.0 ouE/m3 for moderately offensive odours; and
- 6 ouE/m3 for less offensive odours.

Offensiveness of the odour takes into account the sensitivity of the receptor (e.g. residential receptors would be considered more sensitive). The Environment Agency provides examples of processes that fall within each of the offensiveness categories. For most offensive odours, these include: decaying animal or fish

remains; processes involving septic effluent or sludge; and biological landfill odours. Less offensive odours include bakeries, coffee roasting, breweries etc. These criteria are not compliance limits as it would not be possible to monitor compliance with the criteria. Therefore, they may be used for assessing the acceptability of a process (where it is possible to model emissions) or for developing stack emission limits such that compliance with a criterion can be demonstrated.

There has been much debate about the most appropriate odour benchmark to be applied to industrial and other developments that may give rise to odours.

In 2012 the Chartered Institution of Water and Environmental Management (CIWEM) published a policy position statement (PPS) relating to the control of odour. The purpose of their PPS was to:

'to outline the main issues relating to odours arising from industrial premises, wastewater treatment plants, sewers and pumping stations, waste management facilities and agricultural activity, taking account of legislation, regulators, the public and other stakeholders and emerging best practice, particularly in a UK context.'

The CIWEM considered the following framework to be the most reliable that can be defined on the basis of limited research in the UK (all expressed as the 98th percentile of hourly mean values); and this provides some "colour" for the Environment Agency values and amplifies Defra's quoted above:

- > 10 ouE/m3 – complaints are highly likely and odour exposure at these levels represents an actionable nuisance;
- > 5 ouE/m3 – complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance;
- <3 ouE/m3 – complaints are unlikely to occur and exposure below this level are unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature.

Given that the site's waste acceptance procedures actively exclude any excessively odorous waste, it is concluded that remaining potential odour sources from the Advetec operation might be classified as 'moderately

offensive'. Therefore, the 3.0 ouE/m3 benchmark is likely to be the most appropriate in accordance with the criteria provided in the EA's H4 guidance.

3 ASSESSMENT of SOURCES, RELEASES AND IMPACTS

3.1 Approach

The proposed Advetec plant may result in odour emissions during normal operations whether from shredding of the infeed material, from use of the XO22 Unit itself, or the dry storage of the Solid Recovered Fuel (SRF) floc. However, no installed odour abatement is proposed, based on Advetec unit operations elsewhere, and due to the low odour potential of the SRF. Therefore, this assessment has been conducted using known emission data and a basic dispersion model ("R91" Gaussian Plume Model) to predict the maximum likely odour emission that could arise to avoid an off-site annoyance.

As part of the application preparations for the now EA permitted Advetec installation at Cribbs Causeway, Bristol, Alkali Environmental Ltd., were commissioned to do a study that monitored the emissions from that Unit. Arguably as the infeed for that Unit comprises mostly restaurant waste then it will start with a higher organic component than the Unit at Newbury works, and therefore have a higher odour potential. However, the average exit odour concentration at observed at Cribbs Causeway was 13,695 ouE/m3 (down from 16,863 ouE/m3 at the inlet).

Given that R91 under the most unfavourable weather stability conditions for a (near) ground level release of exhaust gas predicts a 10^{-4} dilution at the half mile radial boundary shown in Figure 1, then it is reasonable to assume that at this point or further away then an odour concentration of <1.5 ouE/m3 might be observed.

3.2 Odour Sources

These may arise from receipt of wastes onto site from Refuse Collection Vehicles for sorting, from shredding of the residual material ("black bag" waste) for

infeed to the Advetec Biodigestion Unit, from use of the XO22 Unit itself, or the dry storage of its output, Solid Recovered Fuel (SRF) floc.

The sources of odour in most composting operations are ammonia and Volatile Sulphur Compounds (VSCs) (including hydrogen sulphide). The most significant effect on their production is the oxygen content of the local environment in the compost. For example, increasing the content should promote oxidation of ammonia, and thereby reduce its release.

Similarly since high VSC concentration is a characteristic of insufficient oxygen supply, then increasing this should reduce production and subsequent release of VSCs.

Important in the process is the role of bacteria. Organic sulphides in raw materials mainly include sulphur-containing proteins, sulphur-rich amino acids, thiamine, as well as other compounds. As the compost process progresses, these organic sulphides are mineralised under the action of enzymes, such as arylsulphatase. Generally, in aerobic composting, the final product of the organic sulphide mineralisation should be sulphate. However, in the most frequently occurring aerobic composting processes, local anaerobic zones exist, which favour propagation of anaerobic bacteria. Sulphate-reducing bacteria are anaerobic, and organic matter will be degraded to generate hydrogen sulphide under their action. Additionally, during the formation of hydrogen sulphide, other reduced sulphur compounds will also be produced, such as methanethiol (MeSH) which is quite malodorous (and in humans is responsible for bad breath and the smell of flatus.) So again, it is vital to maintain an oxygen rich environment in ***all*** zones of the material being composted.

3.3 Description of Operations & Potential Odour Generation

Odours may arise from receipt of wastes onto site from Refuse Collection Vehicles for sorting, from shredding of the residual material (“black bag” waste) for infeed to the Advetec Biodigestion Unit, from use of the XO22 Unit itself, or the dry storage of its output, Solid Recovered Fuel (SRF) floc.

Waste received onto site is checked as it is received and if any extremely malodorous wastes are identified then these are returned to the consignor. The throughput of accepted waste is invariably within 24hrs, thus the possibility of putrefaction in storage areas is reduced considerably. Storage bays have been

designed so that waste and debris do not build up in inaccessible areas such as corners. All such areas are cleaned regularly.
Referring to the XO22 Biodigestion Unit; both this and its associated shredder are located externally. Site loading vehicles will be used to transfer residual municipal waste resulting from sorting operations in the Main Building into Unit's hopper to be first shredded and then processed by the Digester.

The drop height of the waste into the hopper will be kept as low as possible so as to minimise "scattering" of waste which would otherwise increase potential for odour.

Due to the small scale of the aerobic Biodigestion Unit(s) operation (this permit variation application seeks to allow the treatment of no more than 13 tonnes, and later no more than 26 tonnes, of non-hazardous waste per day), the risk of odour from the operation is inherently low.

Further, during the digestion process the waste fed into the Unit is continuously (24/7) turned in a large rotating drum with four chambers, each with an internal mass of 22m3 at any given point, through which the waste is moved for digestion. Movement is by a centralised shaft with engineered paddles that rotate according to pre-programmed algorithms. The paddles allow the system to stay aerobic while ensuring residence, and index mass throughout the process. Such constant agitation ensures that the process remains entirely aerobic and no anaerobic "hot-spots" can develop. As the process is reliably aerobic, odour generation is low for this reason alone.

The only by-products of the aerobic digestion system are water vapour, carbon dioxide and a post-process residue (floc). The process uses exothermic aerobic respiration; therefore, it generates its own heat which is channelled internally back into the process, using a closed loop heating system. The process does not use water.
The entire process takes approximately 72 hours to complete,

Following digestion, there will be anticipated an approximate output of 5 tonnes per day of floc suitable for onwards recovery off-site as Solid Recovered Fuel (SRF). This will be directly augered into an adjacent, covered, concrete "Lego" block, holding bay where it will be dry stored until collection from Site. There will be no opportunity for putrefaction.

The XO22 is accessible via a regulated cloud-based portal. Data points are collected, logged and stored at programmable intervals, including temperature, humidity, rotational speeds, emissions monitoring, power consumption, maintenance schedules. Alert and alarm levels are programmed into the system to notify in the event of system errors or parameters moving out of range. There is also an in-line gas monitoring system which continuously monitors levels of methane (CH4), carbon monoxide (CO), volatile organic compound (VOCs) and sulphur dioxide (SO2), which in the event of detection of any of these parameters in exhaust air, ensures an alarm is raised. There is also process monitoring for hydrogen sulphide to ensure that the process remains aerobic.

As part of routine operation, storage areas and the perimeter of the site are monitored daily for any unacceptable levels of odour. However, in recognition that olfactory adaption might occur in staff whilst on site (that is to say habituation, or a decreased behavioural response, to odours is created by repeated exposure) then on the way into work one day each week a trained member of staff or a regular visitor will be assigned to check for odour in the locality of receptors listed in Table 1. (Appendix A below, details the methodology). Any odour identified detected on site in the daily check is recorded in the site diary, investigated by the Site Manager and remediated as soon as possible. Any odour identified in the region of a receptor location will be immediately reported, an Odour Assessment Form (Appendix B) completed and action taken in line with the Contingency Measures section below.

Figure 1: North End Site Plan for J Witt Ltd at Coleford, BA3 5RX

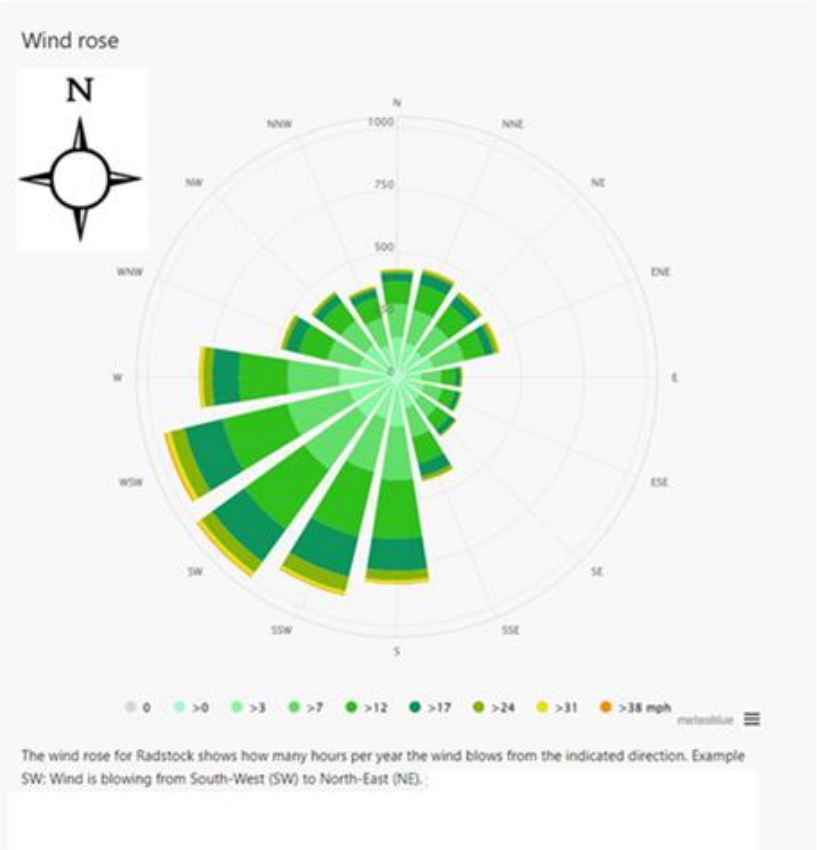
Advetec XO22 Biodigestion Unit is shown just above its dedicated (yellow) shredder

3.4 Pathway

The pathway by which odours may impact upon receptor locations is via atmospheric dispersion. In general, high wind speeds lead to emitted odour being rapidly dispersed and diluted due to turbulence, and conversely low wind speeds inhibit the dilution of odours.

Prevailing wind directions are considered in assessing the likelihood and management of emission risks. Wind speed and direction data for the site location is presented in Figure 1. It shows the prevailing wind to be from the west south west. As a result, the potential impact of emissions is likely to be greater to the east north east of the site.

Figure 2 Wind Rose for JW Waste Recycling Site

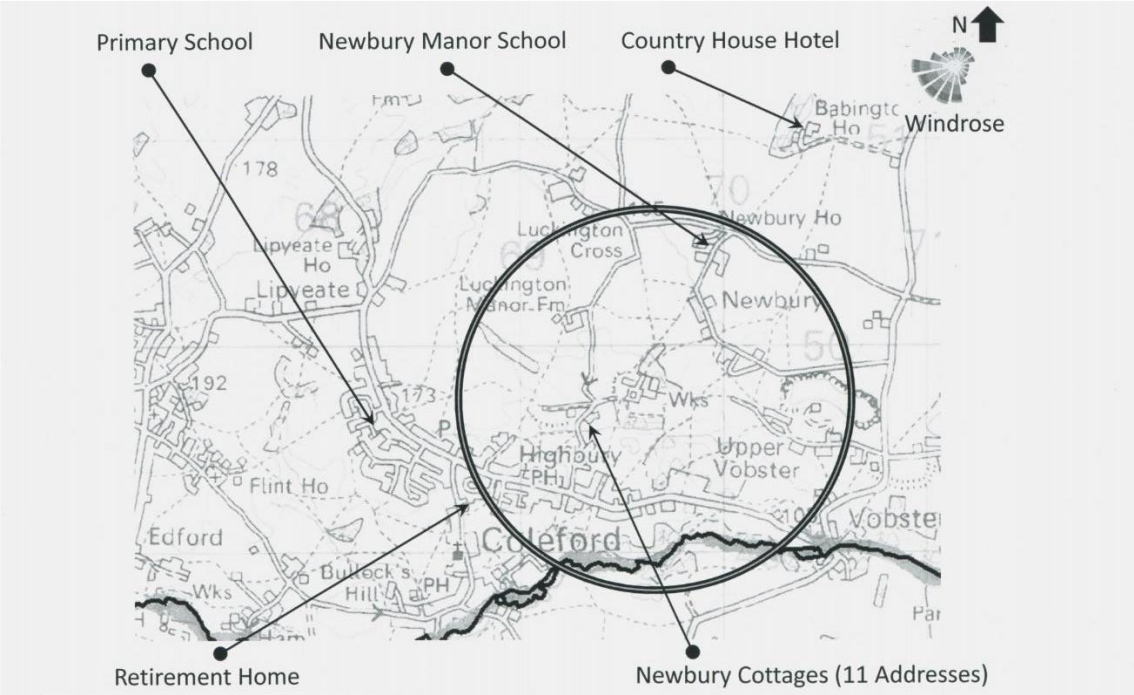


3.5 Sensitive Receptors

The likelihood and frequency of exposure to odour arising from the facility is determined by the magnitude of release, the prevailing meteorological conditions, and the distance and direction of receptors in relation to the facility. Potentially sensitive receptor locations for odour are typically defined as locations where people spend time and expect a reasonable level of amenity. Therefore, residential properties are generally regarded as the most potentially sensitive locations and recreational areas being of medium sensitivity. Receptor locations sensitive to odour tend to be locations where people are present for prolonged periods of time and expect a high level of amenity e.g. residential properties. The H4 guidance gives example that 'domestic residences, or a pub with a beer garden are more likely to be sensitive than an industrial complex or passers-by'. Those locations in the surrounding area where receptors

are considered likely to be odour sensitive are indicated in Figure 3 and Table 1 below.

Figure 3 Potential sensitive receptors for JW Waste Recycling Site



The circle drawn is half a mile (0.8km) radius around the site.

Table 1- Sensitive Human Receptor Locations				
ID	Receptor	Sensitivity to Odour	NGR-X	NGR-Y
DR1	Newbury Cottages	High	369351	149666
DR2	Residential properties within Highbury	High	369464	149414
DR3	Page House Farm	High	370090	149721
DR4	Luckington Manor Farm	High	369270	150130
DR5	Residential properties within Newbury	High	369903	150094

4 ODOUR CONTROL MEASURES

This section presents the principles of controlling odour generation and release at the facility and the specific control and management measures employed. This includes measures to control the generation and release of odorous chemicals from the above inventory of sources, abatement and dispersion of releases, and plans for mitigation of community impacts.

The overall aim in the operation is to apply Best Available Techniques (BAT). For this reason the facility will be operated and managed in accordance with the accepted hierarchy of preferred controls i.e. to:

- effectively manage waste inventory
- control odour at source to prevent the formation or emission of malodorous compounds in the first place;
- where this is not practicable, to minimise the release of odour through containment in some way;
- abate excessive emissions should they be found to occur; then

- dilute any residual odour by seeking to maximise effective dispersion in the atmosphere.

4.1 Waste Acceptance Procedures

Please refer to the JW Waste Environmental Management System for a description of waste acceptance procedures followed.
Black bag waste is tipped onto the floor of the Waste Transfer Unit, from where recyclables or materials to be quarantined are identified, sorted and removed. [The Advetec unit will only process residual municipal waste.]

4.2 XO22 Aerobic Digestion Process

Aerobic conditions are maintained within the XO22 to ensure there is active aeration. A Continuous Emissions Monitoring System (CEMS) is in place for continual monitoring of CO2, VOCs, methane and sulphur dioxide. Importantly for odour control, process monitoring is also continuously undertaken for hydrogen sulphide. The waste is also continually rotated during treatment to avoid stagnation.

4.3 Storage of Output Floc

The output floc is biostabilised during the aerobic digestion process, reducing the potentially odorous nature of the waste. The floc will be stored within a dedicated, covered, external holding bay pending transfer off-site.

4.4 Odour Abatement System

If during initial operation of the Biodigestion Unit(s) monitoring around the site and close to receptor locations reveals unacceptable levels of odour then steps will be taken in mitigation. Consideration will be given to the odour profile and a suitable method of mitigation chosen. Thought would also be given to increasing the height of emission to maximise atmospheric dispersion.

4.5 Dispersion

Little else can be done to influence atmospheric dispersion but it is noted that in the majority of downwind sections immediately off-site and adjacent to the Unit there is a good stand of trees which may, in a limited way, increase air turbulence produced directly by eddies shed from them as the air passes through and over them.

[It is recognised that cold drainage flow near the Unit might occur on clear, still nights, when cooled air flows downhill, and that this might concentrate odour in a low-lying area on the industrial estate just 100m or so to the southwest. This will be taken into account when sniff testing around site.]

4.6 Maintenance

All plant and machinery is well maintained in line with a maintenance schedule. Requisite maintenance is therefore regularly undertaken, and will be for the XO22 Biodigestion Unit(s).

4.7 Monitoring Ambient Odour

Monitoring ambient odour provides a broad indication of the effectiveness of the odour management as a whole. This is a reactive process and should be considered as a final indicator of odour control effectiveness.
The assessment is "sensory" in that the human nose is used as the detector – a sound approach considering that no analytical instrument can give unified measure of a complex mixture of compounds in the same way that a human experiences odour.
Sniff testing is employed for the following reasons:

- as part of a survey at the site boundary during normal operations, to confirm the effective performance of odour control measures in place;
- at the site boundary during periods of adverse meteorological conditions, breakdowns or during other abnormal events to evaluate the effectiveness of the control measures in place and the likelihood that odour complaints will be received; and
- at the locations of sensitive receptors each week, or in the event that complaints are received, as part of the complaint investigation procedure outlined below and amplified in Section 5.7.

'Sniff tests' will follow the procedure detailed within Appendix B and be undertaken weekly by trained site staff with any issues observed then recorded in the Site Diary.

4.8 Complaint Logging

As stated in H4 "Complaints are a direct indication that odours may be causing pollution." All such complaints will therefore be logged and investigated using the complaint form (reproduced in Appendix C).

(This procedure ties in with the general JW Waste Complaints Procedure within JW Waste's Environmental Management System).

4.9 Recording of Results and Reporting

Records are maintained and include the following details (where applicable)

- results of inspections and any olfactory monitoring carried out by site personnel;
- operational problems including date, time, duration and cause of problem;
- complaints received, including address (if available);
- details of corrective actions taken and any subsequent changes to operational procedures; and
- results from the Continuous Emissions Monitoring System (CEMS) which will be in place and recording data for CO2, VOCs, methane and sulphur dioxide.

The weekly sniff tests undertaken will be made on the Odour Monitoring Form presented in Appendix B which will be filed and kept on site for inspection by the EA as and when required.

In the event that odour is detected at the site boundary, this will be noted in the site diary and the Site Manager will be informed to allow for appropriate steps to be taken to mitigate the odour. The results of the daily odour monitoring will not be reported to the EA unless required by the Permit.

4.10 Notifying the EA

In the event that an environmental accident or incident occurs that has the potential to cause odour, the Operator will notify the EA as soon as practicably possible. The Site Manager for the facility will also notify the EA local Site Inspector should any complaints be received directly to the site, and advise what remedial measures have been undertaken. Copies of any complaints will be made available for the EA to review.

5 CONTINGENCY MEASURES for INCIDENTS

In accordance with H4, contingency plans have been defined to react to situations where monitoring indicates that a potential odour source is not completely under control or observations indicate odour pollution may occur.

This section details the actions that would be undertaken in case of incidents which would result in the loss of control of odorous substances and could have an unacceptable short term impact on the local community.

5.1 Detection of odour at the site boundary or off-site during routine odour surveys or response to complaints

The following actions will be taken on receipt of an odour complaint:

- The Site Manager will be informed of the odour complaint as soon as possible, including the location, time and date (if reported) of the complaint being lodged;
- The Site Manager (or any appointed representative) will undertake the following assessment process:
- Review of the site operations and control systems at the site prior to and at the time of the complaint to:
- determine if waste was being received in the intake building at the time of the complaint;
- determine if highly odorous waste was being treated at the time of the complaint;
- determine if any abnormal operating conditions occurring;
- determine if any accidents or incidents requiring contingency actions were being undertaken (Section 5 of OMP);
- determine if any emergency situations existed at the time (Section 6 of OMP).
- Review of the meteorological conditions (wind speed) prior to and at the time of the complaint – to establish whether a pathway can be established between the site and the complainant; and
- Review the previous history of complaints at the location identified.

If an odour at a level which is likely to cause pollution is likely to leave the site boundary, or has already, the Site Manager or representative will be notified immediately. The EA will be informed in line with Permit requirements.
The Site Manager (or appointed representative) will visit the complaint location as soon as is possible in order to subjectively determine odour presence/absence and, if present, odour characteristics and intensity in accordance with the procedure detailed in Appendix A and complete the complaint form (reproduced in Appendix C).
The olfactory survey will be repeated on consecutive days after initiation of corrective actions, until odour has reduced to an acceptable level.

5.2 Receipt of Abnormally Malodorous Wastes

It is considered unlikely that any waste received would be of sufficient magnitude to cause unacceptable odour impacts outside the site boundary and any abnormally odorous waste would be returned to the consignor, or, at least passed forward for priority treatment.
Acceptance of further consignments from that particular waste producer would be put on hold pending further investigations and identification of a solution.

5.3 Odour Mitigation Proving Ineffective

In a situation where odour mitigation methods are not perceived as effective, as identified through on-site and / or external monitoring ('sniff testing'), JW Waste will take the following steps:

- the EA and neighbours will be notified of the investigations and actions being taken;
- review the more odorous activities and suspend them as appropriate to minimise odour; and
- minimise the presence of odorous materials by e.g. processing existing waste or transferring offending waste off the site.

Odour surveys will be undertaken daily until an effective fix is implemented. If odour detected during surveys is considered likely to lead to unacceptable impacts then JW Waste will investigate the source of the odour and cease operation of the relevant process area until such a time that a resolution can be identified and implemented.

5.4 Waste Feedstock Build-Up

Breakdown of plant or maintenance to plant may lead to reductions in the rate of processing and consequently build-up of waste feedstock. Trained and experienced fitters are on-site each day, and for the XO22 Unit, are available under contract with Advetec to cope with standard equipment breakdowns and standard maintenance.
Each day a review is carried out of the stock. This determines the available capacity and the ability to receive waste.
In the event that the storage area is not considered to have sufficient capacity, the Site Manager will divert waste off-site to prevent build-up of waste beyond capacity.

6 EMERGENCY PLANS

6.1 Fire

Emergency Action Plans are detailed within the site's Environmental Management System and Fire Prevention Plan. These include procedures for handling fires.

With regard to management of odour impact, the key principals are prompt responses that contain the fire and attempt to extinguish it, minimise damage to containment and extraction infrastructure.

The EA are to be informed of any such an occurrence, information made available to local residents if requested by the EA with regard to the measures being taken and the timescale to completion.

6.2 Flooding

Please refer to the JW Waste's Procedure for Severe Weather Conditions and Other Similar Emergencies including within the site's Environmental Management System as this covers flooding and failure of electricity on the Site.

6.3 Plant Breakdown

JW Waste have their own mechanical staff and are also provided with 24 hours, 7 days a week remote support by Advetec. In the event of a plant breakdown, Advetec can investigate an incident involving their XO22 remotely and attend the Site within 24 hours if necessary to instigate repairs. If a repair cannot be made, the operations would be suspended. Contingency arrangements for diversion of the waste would be implemented.

6.4 Staff Absence

Short-term staff shortages (such as a few days illness) will not affect the ability of the site to operate effectively as other staff members can be reassigned to critical operations. In the event of prolonged absence of staff members, temporary staff will be recruited and appropriately trained to fulfil noncritical roles whilst other more experienced staff members are reassigned.

7 DOCUMENT UPDATES and REVIEWS/ MANAGEMENT

The site has a well-defined and formally documented management structure for managing the impacts of odour from the Advetec unit. The Site Manager is responsible for managing the impacts of odour from all operations on site. If it is apparent that intervention is required then the Site Manager will seek the support of environmental professionals, to identify environmental risks that are relevant to the site and determine if a particular activity or service is environmentally significant.
Once identified, it will be the responsibility of the manager to highlight the significant aspects to all relevant employees and contractors.

7.1 General Procedure for Training on Odour Issues

The company identifies training requirements of its employees and provides suitable resources to ensure they have the required knowledge, skills and expertise to carry out their duties.
Staff competency and the need for training is continually assessed by site management and supervisors and formally recorded within the Management System.
Staff will be briefed on what odour is and why it is important. Those chosen to conduct sniff-testing will be encouraged to understand their own sensitivities, and increase familiarity with odours that might be expected to occur.
They will be made aware that:

- it is often difficult for assessors to witness odour anomalies that are episodic and short-lived.
- emissions are generally greatly diluted from their point of release,
- peaks in exposure can occur due to changing dispersion conditions such as wind direction, turbulence, cold flow drainage etc.
- it can be difficult to work out where an emission comes from or to distinguish it from other sources.

7.2 Odour Management Plan Review

This OMP is a controlled document and a comprehensive record of the results of the monitoring and inspection programme contained within this OMP will be kept for inspection.

The specification for the periodic review and update of the OMP will, in line with the recommendations of the H4 Odour Guidance, take place on an annual basis, as a minimum.

However, the OMP is intended to be a live document which serves as a reference during daily operations, and as such should be updated should the following occur:

- significant changes are made to the plant or operational practices;
- there is a change to the management structure, designation of responsibility or training provision;
- the EA requests that the OMP is updated, in their role as regulator; or
- complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this OMP.

APPENDIX A - ODOUR SURVEY METHODOLOGY

The daily monitoring check will be extended to the surrounding locality if odour likely to cause annoyance is detected at the site boundary.

The exact locations for weekly offsite monitoring are selected based on the prevailing wind direction and proximity to receptors. (See Table 1)

At each location observations shall be made concerning odour intensity, persistence and character, time, date, weather conditions and any 'abnormal' site operating conditions at the time of the survey. Surveys shall be carried out taking into account EA Technical Guidance Note H4.

For the daily check, the odour assessor should not be subject to significant site odour in the 30 minutes prior to the assessment. This is to ensure that assessors are not suffering from odour fatigue and will be sensitive to site odours. Furthermore the following exclusions shall apply:

- staff members that are regularly exposed to site odours for longer than 30 minutes; and
- any staff members known or suspected of having a very poor sense of smell should not be used for odour monitoring routinely.

The inspections shall be undertaken as follows:

1. The person should walk slowly and breathe normally and begin their assessment at areas of expected low odour concentration, i.e. upwind of the site, and should move to areas of high odour concentration. If odour is detected while walking, the intensity should be recorded as at least 3 (distinct), or higher.
2. If an odour cannot be detected whilst walking, the person should periodically stand still and inhale deeply facing upwind. If odour is then detected, but can only be detected in this manner, the odour 'intensity' should be recorded as 2 (faint).
3. Following detection of any odour of intensity 3 or above at the site boundary during an odour inspection, the following measures will be taken:

    - the olfactory survey will deviate to determine the extent of plume downwind (at or above an intensity level 3) and at potential receptors affected. Contingency measures outlined in the Section above (Contingency Measures for Incidents) will be followed; and

    - an on-site inspection shall be carried out seeking to trace any observed odour back to source so that the appropriate corrective and/or preventative action can be taken (with regard to Contingency Measures for Incidents detailed above).

The Site Manager shall be notified ***immediately*** of any odours detected that are considered to have the potential to give rise to significant off-site odour impact (intensity 3 at a receptor location), or which are actually observed at such a location during the weekly check. The procedures for Contingency Measures for Incidents detailed above will be followed.

Appendix B – Odour Assessment Form

Background Information			
Person Undertaking Survey (& Position)			
Date		Time	
Description of Wind Strength e.g. strong & gusty			
Wind Direction			
Weather (i.e. sunny, overcast)			
Temperature (deg Celsius)			

Survey Results

Location (area of)	**Intensity (1-5) (see below)**	**Persistence (A-E) (see below)**	**Characteristic (see below)**
Newbury Cottages			
Residential properties within Highbury			
Page House Farm			
Luckington Manor Farm			
Residential properties within Newbury			

If odour is strong / persistent additional information to be detailed below

Intensity

1	No detectable odour
2	Faint odour (barely noticeable)
3	Moderate odour (odour easily detected)
4	Strong odour (bearable but offensive)
5	Very strong odour (instinct to walk way)

Persistence		
A	Occasional	Less than 10% of the time
B	Intermittent	10-30% of the time
C	Frequent	30-50% of the time
D	Persistent	50-75% of the time
E	Constant	>75% of the time
Characteristic	Floral / Fruity / Vegetable / Earthy Offensive / Fishy / Chemical / Medicinal	

If during the survey the odour is strong or persistent at any location on the site boundary, the following information requires completion regarding plant operation.		
Waste Delivery	Has waste recently been delivered to site?	
	If yes, were the correct procedures followed?	
Waste Storage pending removal from site	Does this derive from waste recently been delivered to site?	
	If yes, were the correct procedures followed?	
Aerobic Digester Batches	What waste was added to the Advetec unit in the last 12 hours?	
Digestate (SRF)	Has output floc recently been removed from the site?	
	If yes, were the correct procedures followed?	

Appendix C – Odour Complaints Reporting Form

Installation to which complaint relates:	Date recorded:	Ref No:
Name and address of caller:		
Tel No. of caller:		
Location of caller in relation to installation:		
Time and date of complaint:		
Date, time and duration of offending odour:		
Caller's description of odour, e.g. comparison with other odours, strong/weak, continuous, fluctuating:		
Has the caller any other comments about the offending odour?		
Weather conditions (e.g. dry, rain fog, snow):		

Wind strength and direction (e.g. light, steady, strong, gusting):	

Any previous complaints relating to this odour?	
Any other relevant information:	
Potential odour sources that could give rise to the complaint:	
Operating conditions at the time offending odour occurred – e.g. removing manure from housing, deliveries, feeding:	
Follow up Date and time caller contacted:	
Action taken:	
Amendment required to Odour Management Plan:	

Form completed by:		Signed:	