Odour Management Plan Template - WRC & STC

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Odour Management Plan

1. Odour Management

1.1 Sudbury WRC

The site is located off Brundon Lane, Sudbury, Suffolk, CO10 1XR, its location is shown in Figure 1 of Appendix A.

National grid reference: TL 86163 41196

This OMP is available to all site staff and those involved in the cake storage / delivery operations, there are in an operational document folder on SharePoint.

1.2 Guidance for preparation of Odour Management Plans

Table 8 of the IAQM Guidance on Odours and Planning provides recommended content for the preparation of an OMP, it suggests the main areas to be covered are:

- essential site details,
- routine controls under normal conditions,
- abnormal conditions and additional controls,
- triggers for additional controls, and
- management good practice.

The relevant table from the IAQM guidance is reproduced in Appendix B, which also provides details on the expected content for each section. This structure and content have been followed to produce the details of the OMP.

The OMP has been produced in accordance with the Environment Agency's H4 Odour management guidance published in April 2011 (https://www.gov.uk/government/publications/environmental-permitting-h4-odour-management).

The Appendices to this OMP are as follows:

Appendix A:

Figure 1 Site location plan (Source Google Earth)
Figure 2 Site location Plan with sensitive receptors identified (Source Google Earth)
Figure 3 Main process areas at WRC
Figure 4 Windrose for WRC
Figure 5 Routine odour monitoring locations
Table 1 Contribution of main source categories to odour emissions
Table 2 Receptors within 750m of potential emission sources

Appendix B – for information:

Table from IAQM Guidance

Back to top

2. Site

2.1 Essential Site Details

The site is an operational wastewater treatment works which can be split into nine distinct areas:

- Inlet
- Storm handling
- Primary settlement
- Biological Filtration / Treatment
- Final Settlement Tanks
- Sludge holding
- Cake storage area

These main processes areas are shown in Figure 2 of Appendix A. It is important to recognise that the areas of the site likely to produce the highest amounts of odour are those associated with treating fresh sewage (i.e. the inlet works) or where sludge might be handled.

Table 1 Contribution of main source categories to odour emissions

Process area	**Percentage of total odour emitted***
Inlet Works	30
Primary Settlement Tanks	15
Bio filters	0.5
Final Settlement Tanks	0.5
Sludge storage	40
Digested cake (EWC code 19 06 06) storage	10

*not totaling 100% – miscellaneous sources not included

2.1.2 Cake import export and storage

Digested cake EWC code 19 06 06 will be imported to the Sudbury WRC cake storage facility. The maximum tonnage of cake the storage areas can hold is 1500 tonnes and there are bays or separate areas within the storage areas to ensure the 2 different types of cake are kept separate.

Cake will be imported and exported using rigid bulker lorries which are sheeted.

Days of operation for cake receipt are variable through out the year and are needs based depending on land bank availability and storage capacity, Spring and Autumn are peak periods for imports and exports of cake.

2.2 Odour Modelling

The frequency of wind direction and the distance to the nearest properties are key factors in determining likely odour impacts.

2.2.1 Sensitive Receptors

Receptors sensitive to odour include users of the adjacent land, which may vary in their sensitivity to odour. The level of sensitivity will be defined using the Institute of Air Quality Management guidance2

- High sensitivity receptors e.g. residential dwellings, hospitals, schools/education and tourist/cultural.

- 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 use of the land.

- Medium sensitivity receptor e.g. places of work, commercial/retail premises and playing/recreation fields.
  - users would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home; or
  - people wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.
- Low sensitivity receptor e.g. industrial use, farms, footpaths and roads.
  - the enjoyment of amenity would not reasonably be expected; or
  - there is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.

The magnitude of risk relates to:

- Frequency: How often an individual is exposed to odour
- Intensity: The individual's perception of the strength of the odour
- Duration: The overall duration that individuals are exposed to an odour over time
- Odour unpleasantness: Odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/ intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard nine-point scale it is termed the hedonic score.
- Location/Receptor sensitivity: The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio- economic factors.

There are a number of receptors in relative close proximity to the site. The sensitive receptors 500m of the site are identified in the table 2 below and the location plan in Appendix 1 figure 2.

The closest residential areas are the properties on Bulmer Road. The closest sensitive receptor would be the Brundon Lane industrial estate units. Details of these and other receptors are shown in table 2 below and in Figure 2 Site location Plan with sensitive receptors identified.

Table 2: Receptors within 500m of potential emission sources from the cake storage operation at the Site

Receptor Type	Potential emission source to receptor (b)	Process	Receptor (a)	Distance (m) from nearest potential emission source (c)	Direction of receptor from closest emission source
Sensitive receptors near the Site (places of work, amenity areas)	Cake Storage Pads	Cake Storage	British Gaskets	140 m	North
			Sandy Lane Industrial Estate	450 m	South South West
			Sudbury Recycling Centre	500 m	South South West
			Brundon Lane Industrial Estate	50 m	South
Residential properties near the Site (residential)	Cake Storage Pads Head of Works Inlet	Cake Storage Sludge Import	Residential Properties on Kitchen Hill	280 m	South West
			Residential Properties on Bulmer Road	175 m	South
			Residential Properties on Ballingdon Street	400 m	South South East
			Residential Properties on Robert Darry Close	200 m	South East
			Residential Properties on Bush Grove	260 m	South
			Residential Properties on Sandy Lane	340 m	South
Amenity area near the Site	Cake Storage Pads	Cake Storage	AFC Sudbury	**175 m**	North East

- For the location of the sensitive receptors please see Appendix A figure 1
- For the location of the emission sources please see Appendix A figure 2
- Distance from source to receptor is rounded to the nearest 5m
- Value in bold represents the nearest potential sensitive receptor within that receptor type

2.3 Routine Controls

Back to top

2.3.1 General Controls

All equipment on-site is serviced regularly to ensure correct operation of the works. There are staff onsite who inspect the site regularly and who would identify if any malfunction had occurred. In addition to this a standby shift operates to ensure availability of resource as required.
General housekeeping measures are in place across the whole site to keep surfaces clean and clear of odorous materials to reduce odour risk.
Before any major planned works on the site that may result in unusually elevated odour emissions, our impact plan procedures must be followed.

2.3.2 Inlet works/Storm tanks

Incoming raw sewage can have higher levels of odour if allowed to become septic. Therefore collaboration with our networks teams is required to ensure the catchment is being managed as required to reduce septicity and to reduce the time raw sewage is entrained within the system before reaching Boston WRC.

Trade effluent is regulated to ensure discharges reduce the risk of odour release, where the waste composition is likely to be highly odorous it is not accepted at the site. Anglian Water consents multiple parameters on trade effluent discharges to minimise the impact of odour on the receiving sewer network and WRC. The following are considered for inclusion in the permit:

- TON (Total Oxidised Nitrogen) to protect crude sewage levels at the WRC inlet
- pH to minimise hydrogen sulphide production in the receiving sewer and WRC
- Temperature will be lowered from standard consent limits if there is an increased odour risk
- Sulphide where odour is an issue in the receiving catchment
- Sulphate to limit the production of hydrogen sulphide

Where limits are set these are monitored through the routine Trade Effluent sample programme.
The septic tanker discharge point is submerged to avoid turbulence and odour release. Imports are only allowed during working day to limit any potential impact on housing during evenings and weekends.

The skips at the inlet works can be potential sources of odour if the contents are stored for long period or contain waste material that is unusually odorous. These skips are changed regularly to reduce the potential for odour emissions, and they are inspected daily by site staff to determine if any further action is required, such as immediate removal of the contents by contractors.

Regular servicing of the screens and compactors is undertaken to ensure that the equipment is operating at optimum performance.

There is no storm capacity on site at Boston WRC.

2.3.3 Primary settlement tanks

Primary settlement tanks (PSTs) contain screened raw sewage and collect primary sludge that can be odorous if not removed regularly. Daily sludge removal (auto and manual) is undertaken to maintain a consistent low volume of sludge within the PSTs. PST sludge blanket target is 2m for optimum operation.
Regular tank inspections are carried out and there is a maintenance plan to keep the equipment operating at its expected performance levels.
Sludge depth testing is carried out 2 times a week. Extra manual de-sludging of a specific PST is carried out if a high level is recorded in that tank.

2.3.4 Activated sludge streams

There is no activated sludge on site at Sudbury WRC.

2.3.5 Trickling filters

The trickling filters are used to treat settled sewage with a biomass growing on the surface of the stone media in the filters. This is an aerobic low-rate process with a low potential for odorous emissions. Visual inspection of the filters will be undertaken daily to identify if there is any process malfunction and corrective action taken if required.

2.3.6 Sludge treatment

Regular servicing of the equipment use is undertaken to maintain optimum performance.

2.3.7 Cake Storage

Limited storage time that digested cake would be stored for. The maximum storage time of 12 months is to ensure that the maximum period of potential storage is covered this would be from one growing season to the next. Normal circumstances would see cake stored for 6 to 8 months. Storage time is dependent on landbank availability. It is endeavored to source landbank outlets that that could accept all of the cake stored and would ensure that the cake pads are emptied.

In order to minimise odour during all cake movements by the front end loader the bucket is kept as low as possible to the ground and a narrow working face as possible is maintained. When loading cake into vehicles with a loading shovel tipping is done at the lowest safe minimum height possible to minimise the release of odour.

Monitoring of the cake storage area is by monthly cake storage facility inspections, cake stocks are monitored weekly and cake is emptied at least annually.

On site capacity is monitored to ensure storage capacity is not exceeded. Cake deliveries and on site storage capacity is managed through Water Recycling Operational Logistics (WROL) by the use of spreadsheets which track the amount of cake already delivered, the amount of cake removed form site to land and thus the total available on site capacity based on the capacity of the cake pads.

The cake storage facility will be inspected monthly, during monthly cake storage facility inspections the following will be checked:

- That the storage lego block walls are intact.
- Make sure that the drainage is still working and not blocked.
- Check roof to ensure that there are no leaks onto cake being stored.
- Make sure stored cake is pushed up and stockpiled correctly.

Once a year carry out maintenance on cake storage facility.

All information from monthly and annually inspections is stored on M2i (a performance management database) and reported to relevant persons with a monthly report now going to FLM and senior management board.

2.4 Reasonably Foreseeable Abnormal Conditions

Back to top

The following have been identified as conditions that could give rise to increased levels of odour and the proposed mitigation is detailed:

Potential abnormal condition	Mitigation

Treated sludge storage cake is transported to concrete pad areas	In the event of a breakdown/failure or malfunction on trailer/tractor priority Fleet job will be raised. In the event of a prolonged breakdown cake will have to be stored on the raw cake storage pad
Unusually septic sewage arriving at WRC	Reduce to 2 PST`s for less retention times, increase desludging
PST desludge failure	In the event of a MONO pump failure, PST`S can still be manually desludged.
Unable to desludge Primary Tanks	Tanker direct from PST & utilise mobile thickener
Extended storage of cake	Bio resource team to manage removal. Only digested cake to be stored which is less odorous
PST scraper failure	Tankers can be used to skim the tanks.
Storm tanks full for prolonged period	Manual empty and clean, tankers utilised to assist with emptying and cleaning
Sludge tanks full for prolonged period	utilise mobile thickener & escalate to WROL

2.5 Triggers for Additional Controls

Investigation of the need for additional controls will be triggered if any of the following occurs:

- More than three validated complaints from different locations being received over a one week period.
- Routine odour monitoring with the Jerome monitor carried out by staff indicates levels of odour are present at sensitive receptors are likely to result in complaint.
- Period where the average ambient temperature exceeds 27^{o}C for more than five days.
- Equipment breakdown on the site that leads to treatment process becoming more odorous.

2.6 Routine Monitoring

To manage the day-to-day fluctuations in odour and operations the site has dedicated work technicians who assess for odours daily. This is carried out as part of their routine activities and any highlighted issues will be escalated and mitigated where possible.

The site has access to, and uses the following methods to assess the odours detected on site:

- Operational staff detecting differences in odours compared with normal operation
- Jerome odour meter
- Routine odour surveillance using Jerome monitor completed by site staff and readings logged for reference (minimum x2 per week).

The location of any odour detected, and the wind speed and direction recorded at the time can be used to assist in identifying the general area of the WRC which may be the source of the odours (or show that there is another source in the area).

It is acknowledged that at times it is difficult for operational staff to detect odour changes, however where this occurs, or where the routine investigation highlights an issue, or a complaint is received, the site personnel will investigate. Odour detection findings would be recorded and rectifications if required. All odour reports will be shared with the EA on our incident reporting line – 0800 80 70 60. If the issue is on-going, the Senior Modeller would be contacted to potentially carry out further odour surveys.

2.7 Odour Complaints

There are three routes through which complaints may be received relating to Boston WRC:

- Customer call into the AWS Operational Management Centre (OMC) on 08457 145145 (24hr emergency contact).
- Customers report odour complaints electronically; via a mailbox (CustomerReports@anglianwater.co.uk), via the Anglian water website or via social media.
- Boston WRC treatment manager contacted direct by customers via telephone, mail or verbally at the property.

Complaints received through any of these routes will be handled in the same manner using the following procedures.

2.7.1. Action taken to resolve complaint

The complaint will be initially logged in the AWS SAP database, this system holds records of all customer jobs/complaints received by the company and allows a history of actions taken. The treatment manager will be contacted and will investigate the issue and report back to customer care team or direct to the customer.
Complaints are regularly monitored by the Treatment Manager and compared to actions being undertaken on the site or in the local network.

The treatment manager will be responsible for reporting odour complaints to the Environment Agency in line with the permit conditions and by sharing them with the EA on the incident reporting line 0800 80 70 60.

Should continuing odour complaints be received then this is a trigger for consideration of further odour controls.
The results will be noted in the site odour log book, the complainant will be informed of the outcome of the investigation and any steps required to mitigate the odours.

2.8 Management Responsibilities

Back to top

Responsibility for the implementation and updating of this OMP lies with the Treatment Manager.
This OMP will be reviewed annually and whenever there are major changes in the process. Where new information regarding odours becomes available (for instance though new odour surveys and modelling) the OMP will be reviewed and updated to reflect this information.
Any significant changes, including process changes, plan changes or increase in complaints or odours detected will result in this plan being reviewed.
This plan will be stored on Sharepoint.

2.7.1 Business management systems

There are various documents and processes within the business management systems for AWS that address odour and the management of complaints. The list below details some of the key processes and how they can be found on Lighthouse:

- POSWASTE – Odour Control holds all the standard documents relating to managing odour.
- Where further investigation is required the Odour Modeller and Process Science team will support with root cause analysis and next steps.
- The current odour model can be obtained from the modelling team, contact Omid Shafibeik.

2.9 Community Engagement

We will communicate planned activities with the potential to cause odours and any other identified issues on-site, to the following:

Organisation	Contact name	Email
Environmental Health		
Environment Agency	General Enquires	enquiries@environment-agency.gov.uk
Anglian Water Customer Service	Customer Issues	CustService@anglianwater.co.uk

2.10 Training of Staff

All staff who have responsibilities under this plan will receive training from the Treatment Manager and an odour e-learning module will be completed by relevant staff when available. This will be updated annually or whenever there are significant changes to the OMP.

2.11 Keeping of Records

A logbook will be maintained which will contain the OMP and the maintenance schedule for the equipment. Records of the cleaning of the extract system will be maintained in the logbook.
The logbook will record:

- Results of the regular Jerome tests.
- Details of any odour complaints received and the outcome of any odour testing.

The site odour logbook will be available for inspection by the local authority environmental health officer.

Appendices

Back to top

Appendix A:
Figure 1 Site location plan (Source: Google Earth)

Location Plan showing Sudbury WRC

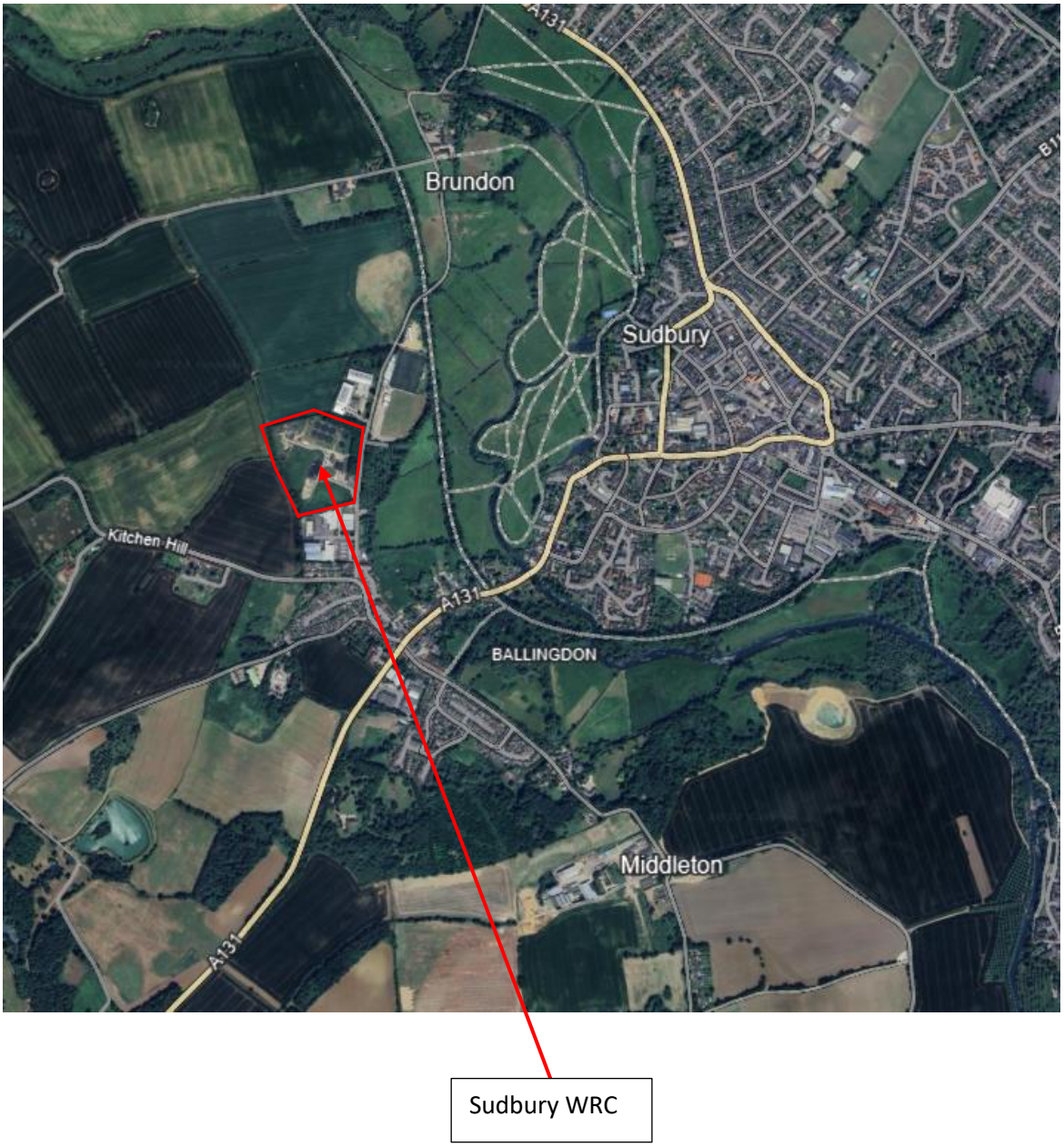


Figure 2
Site location Plan with sensitive receptors identified

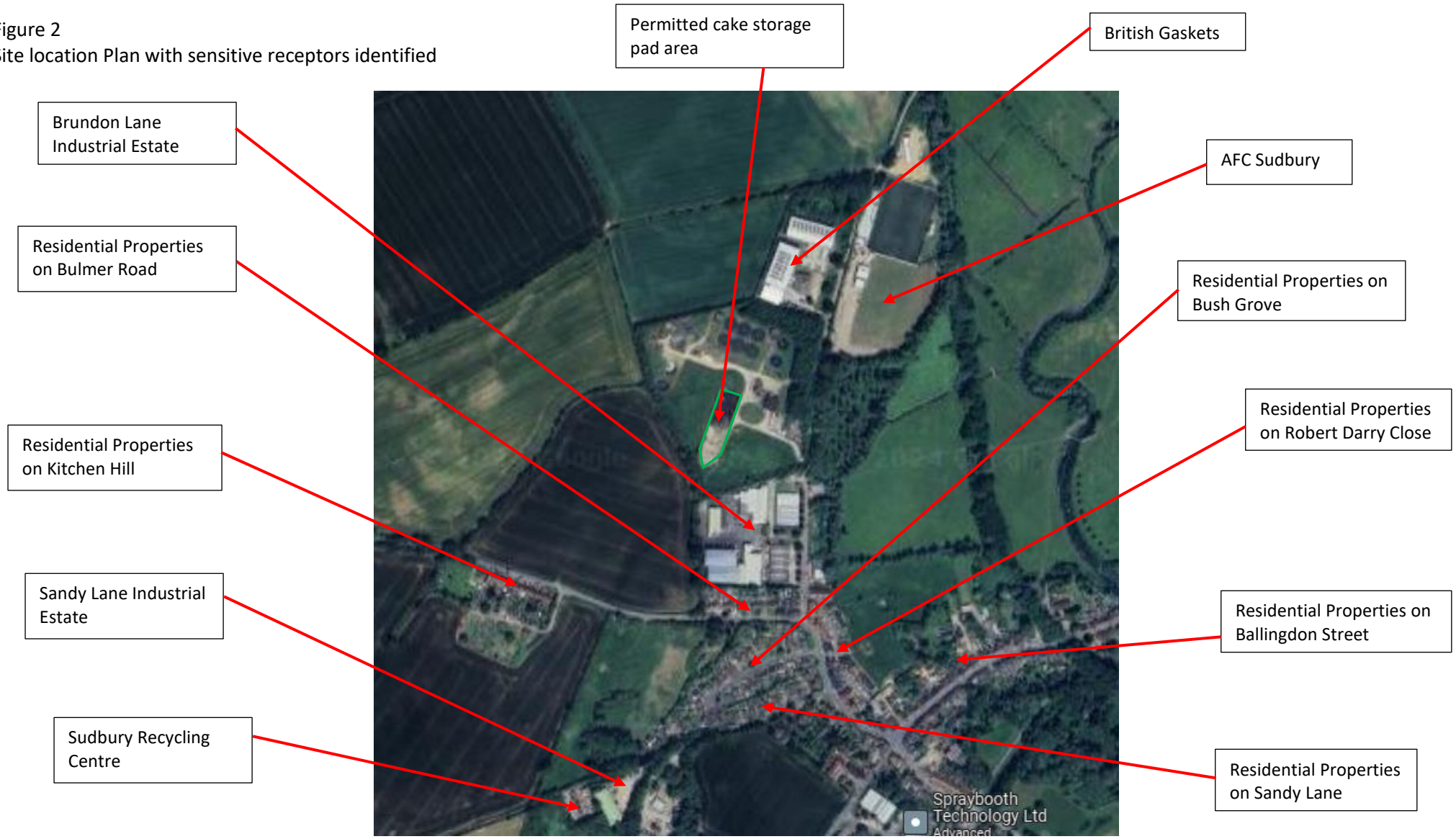


Figure 3 Main process areas at Sudbury WRC

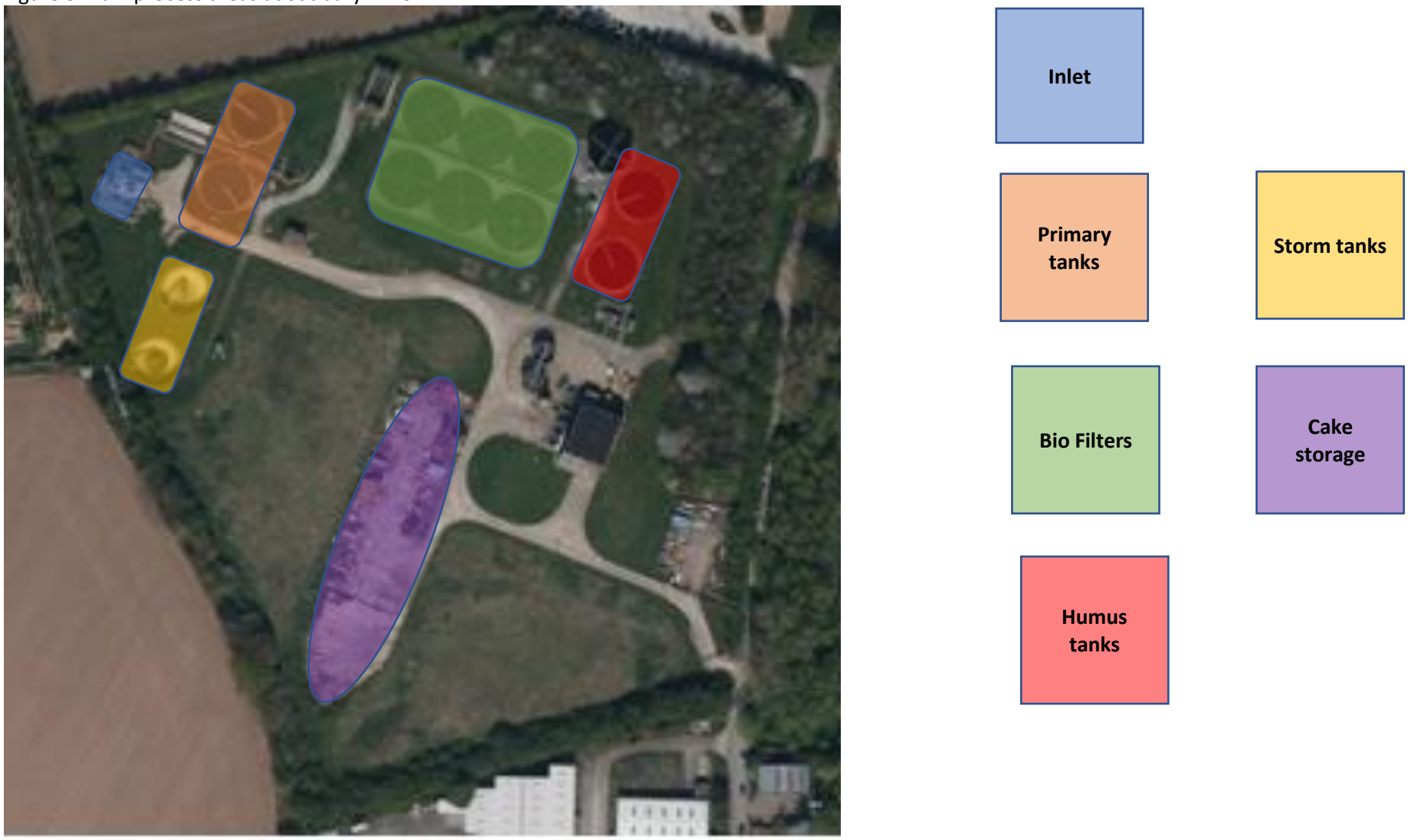
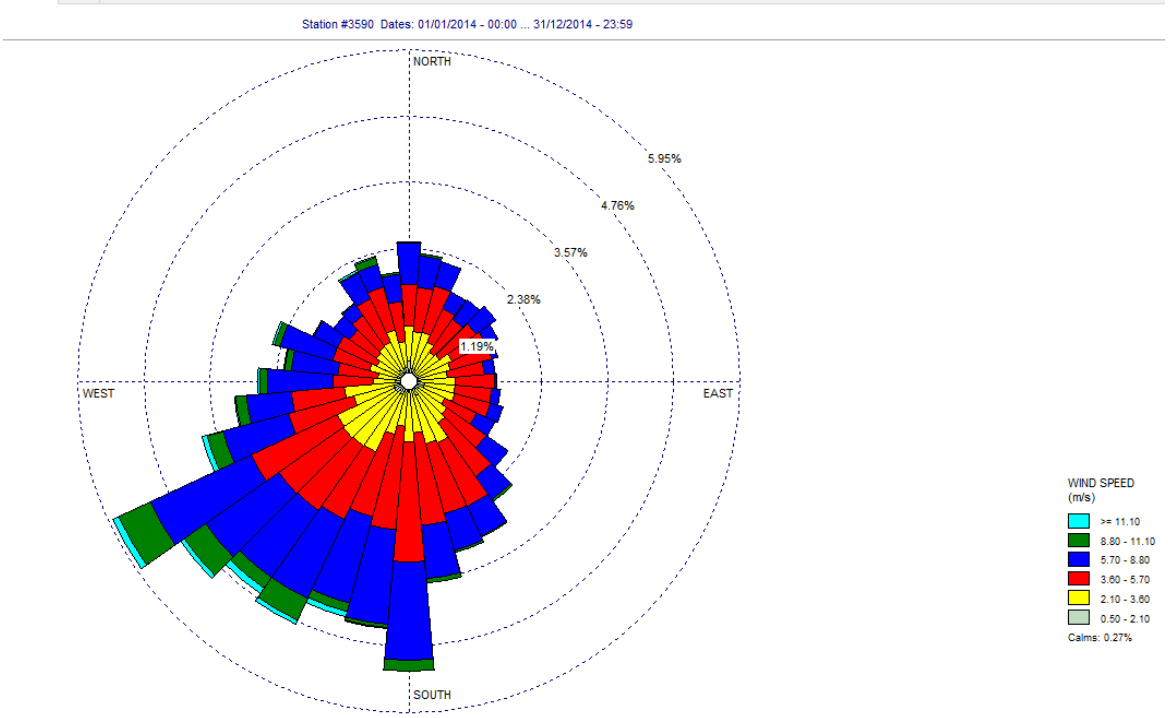
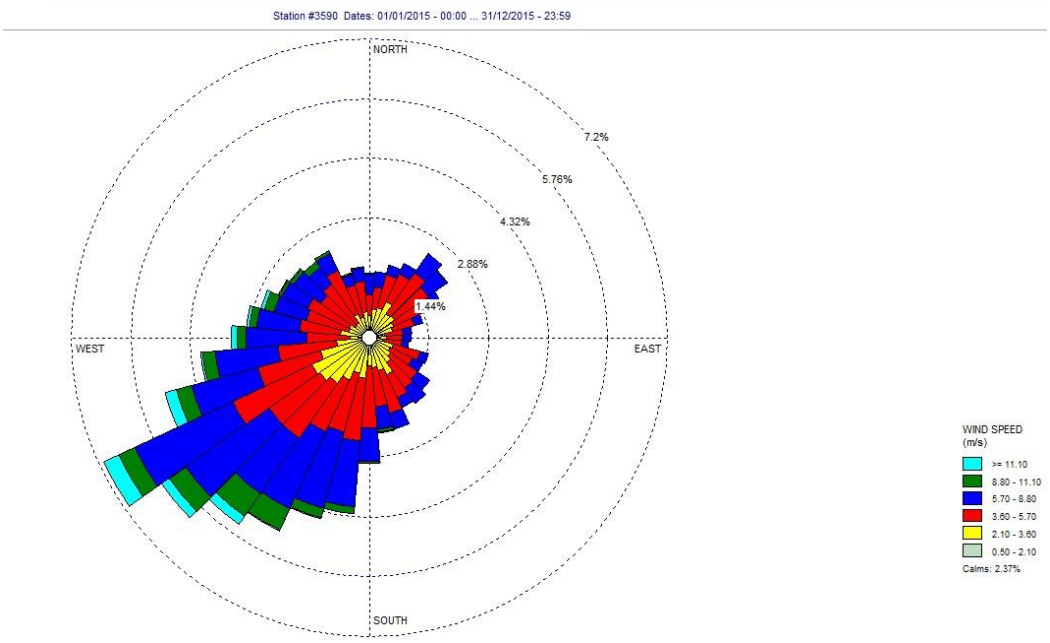


Figure 4 Windroses for Sudbury WRC

Sudbury WRC Windrose 2014



Sudbury WRC Windroses 2015



Sudbury WRC Windroses 2016

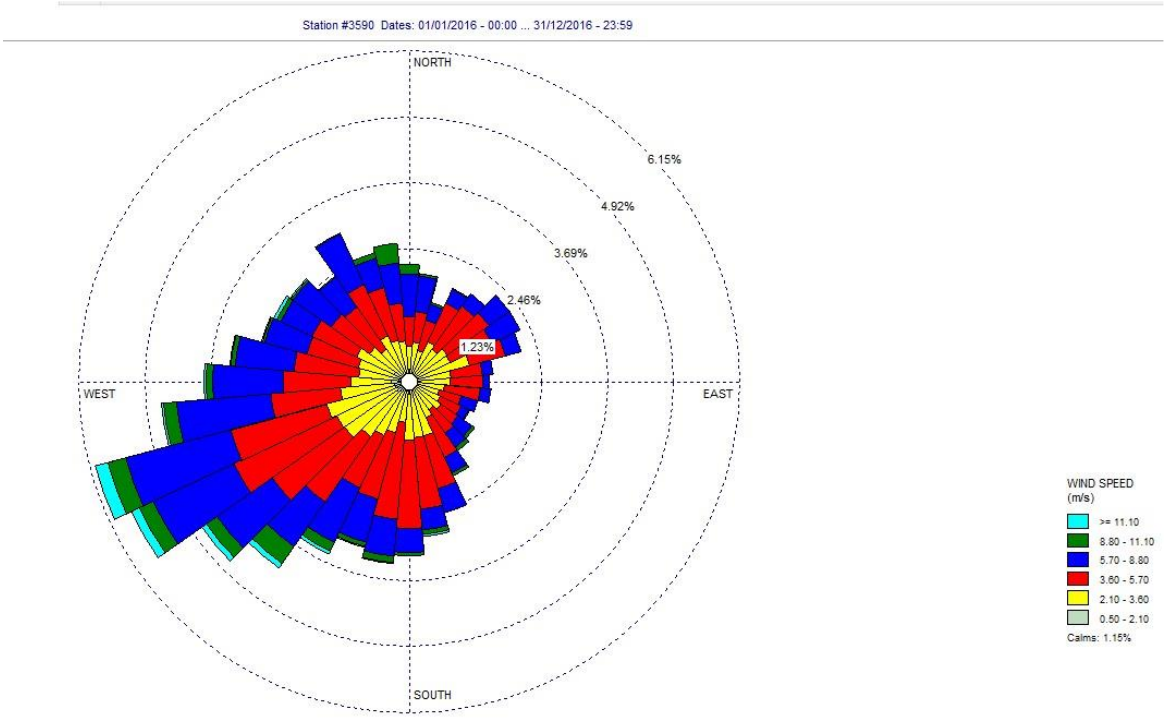


Figure 5 Routine odour monitoring locations

Routine site visits checking sludge levels, skip levels(and contents)

Appendix B: Extract from IAQM Guidance

Table 8: Recommended content of an OMP for planning purposes

ESSENTIAL SITE DETAILS
A process description, particularly describing odorous, or potentially odorous, activities or materials used (inventory)
Identification of all the release points for each of the activities (plan/map)
Identification of the sensitive receptors within the area of influence that could be impacted (plan/map)
A description of the meteorological conditions prevailing at the site, especially wind direction. A wind rose (from a nearby representative meteorological station or from site sensors if installed) is an ideal format.
ROUTINE CONTROLS UNDER NORMAL CONDITIONS
A description of the *routine* mitigation/control measures that would be used day-to-day under normal operating conditions in the absence of any unusual risk factors. Examples of routine control measures include receipt, inspection, acceptance/rejection of materials, storage, containment, handling, treatment and timing of activities.
A list of the actions in detail and who is responsible for carrying them out.
REASONABLY FORESEEABLE ABNORMAL CONDITIONS AND ADDITIONAL CONTROLS
Identification of possible risk factors (e.g. adverse weather conditions) and anticipation of resonably foreseeable odour-related incidents and accidents (e.g., abnormal situations, spillages, power failure, breakdown of doors, equipment or abatement) and a listing of the consequences for odours of these risk factors.
A description of the *additional* measures (e.g. additional control measures and modifications to site operations, such as diverting odorous waste loads to facilities with less sensitive surroundings during adverse weather conditions) that will be applied during these periods to deal with these risks and any reasonably foreseeable incidents and accidents. It should be stated that if all the measures are shown not to be sufficient, then they will need to be tightened further or else, possibly ceasing/reducing odourous operations.
A list of the actions in detail and who is responsible for carrying them out
TRIGGERS FOR ADDITIONAL CONTROLS AND CHECKS ON EFFECTIVENESS
A description of what would trigger this further action/additional measures, such as: – the results of planned routine checks/inspections/surveys on site; – the results of on-site measurements of process parameters and surrogate measurements for odour (e.g. pH, temperature, oxygen, etc) exceeding defined trigger levels; – other metrics, such as particular meteorological conditions (e.g. temperature above a certain value, wind blowing in a particular direction, or calms); and – odour monitoring on- and/or off-site, including: • odour complaints monitoring (which should be carried out for all sites); • monitoring carried out on-site, showing non-compliance with any emission limit values (ELVs) set for controlled point source releases; and • monitoring carried out off-site (e.g. by sniff testing, odour diary surveys, etc), showing non-compliance with any action levels for ambient odour levels.
MANANGEMENT GOOD PRACTICE
A description of: - the roles and responsibilities of personnel on site (e.g. organisational chart); and - the training and competence of staff in odour-critical roles
Details of how the following will be carried out, and who has been assigned managerial and operational responsibilities for them: – implementing and maintaining the OMP; – responding to odour-related incidents and any elevated odour levels from the aforementioned checks/inspections/surveys, monitoring, or on receipt of complaints of odour nuisance; including carrying out investigations and taking appropriate remedial action to prevent recurrence; – planned maintenance and repair and the keeping of essential odour-critical spares; – regular review (at least once per year) of the effectiveness of odour controls - including the OMP itself – taking account of complaints, monitoring results, inspections, surveys and other information and feedback received. This interval may be shorter if there have been complaints or relevant changes to your operations or infrastructure; – engaging with your neighbours and communicating with relevant interested parties (e.g. local community and local authority) to provide necessary information and minimise their concerns and complaints, including methods used, content and frequency of communication; and – keeping records of all activities and actions relating to odour and the OMP.

26