

**Material Change Limited**

Creeting Composting Facility

**The Watering Farm**

**Creeting St Mary**

**Ipswich**

**IP6 8ND**

**Odour Management Plan**

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# Introduction

This Odour Management Plan (OMP) details the processes on site at the Company’s Creeting compost site and the procedures employed to control odorous emissions, to ensure that the risk of odour nuisance at nearby sensitive receptors is minimised.

The OMP has been prepared using the guidance documents referred to below but also taking into consideration, the Company’s experience within the industry and the operation of the facility since 2011.

* H4 Horizontal Guidance Note: Odour (Environment Agency 2011)
* The Composting Association (2007): An industry guide for the prevention and control of odours at biowaste processing facilities;
* DEFRA (2009): Good practice and regulatory guidance on composting and odour control for Local Authorities;
* How to Comply with your Environmental Permit guidance document

The site is accredited to PAS100:2018 and the Compost Quality Protocol and as such, the site is being operated to the strict requirements and procedures set out in the Scheme Rules.

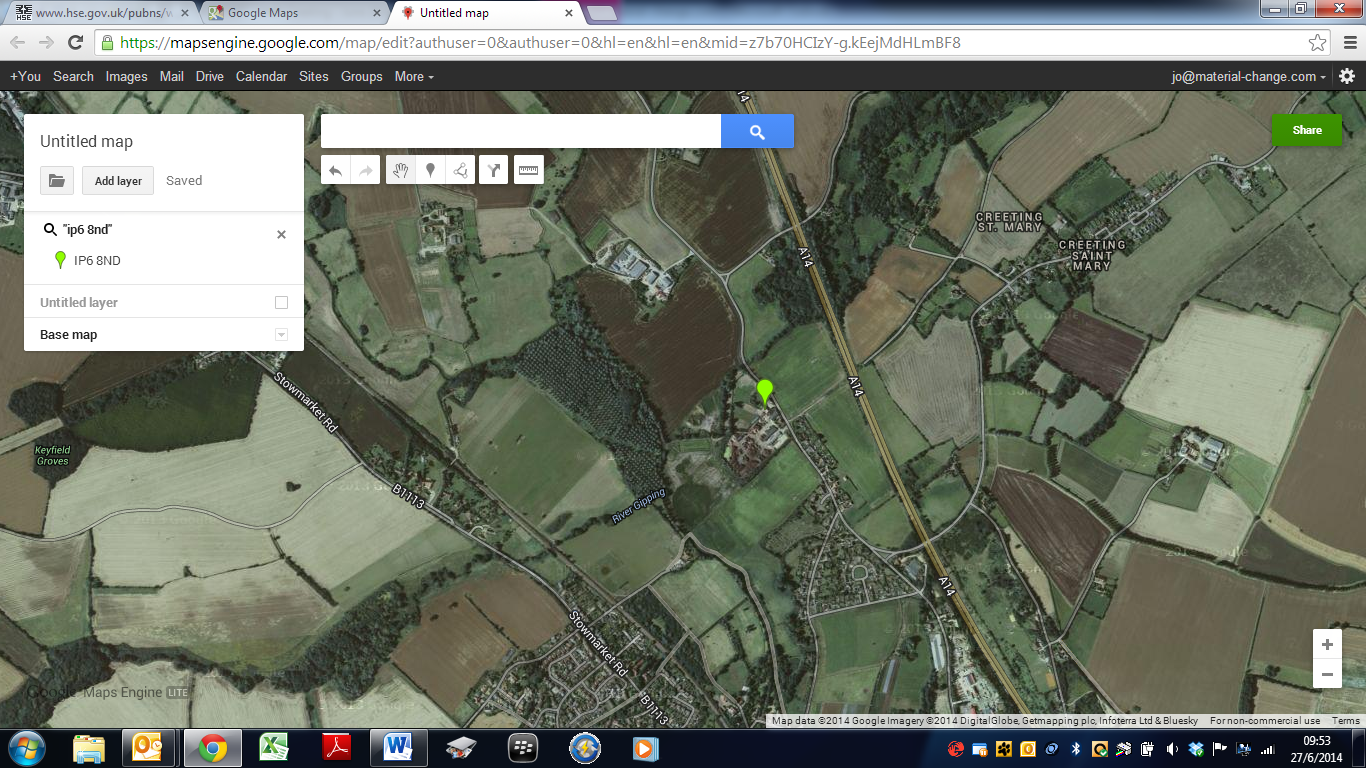
This document is also supported by:

* The Site Environmental Risk Assessment and Management Plan;
* The Odour Risk Assessment;
* The Site Management Plan.

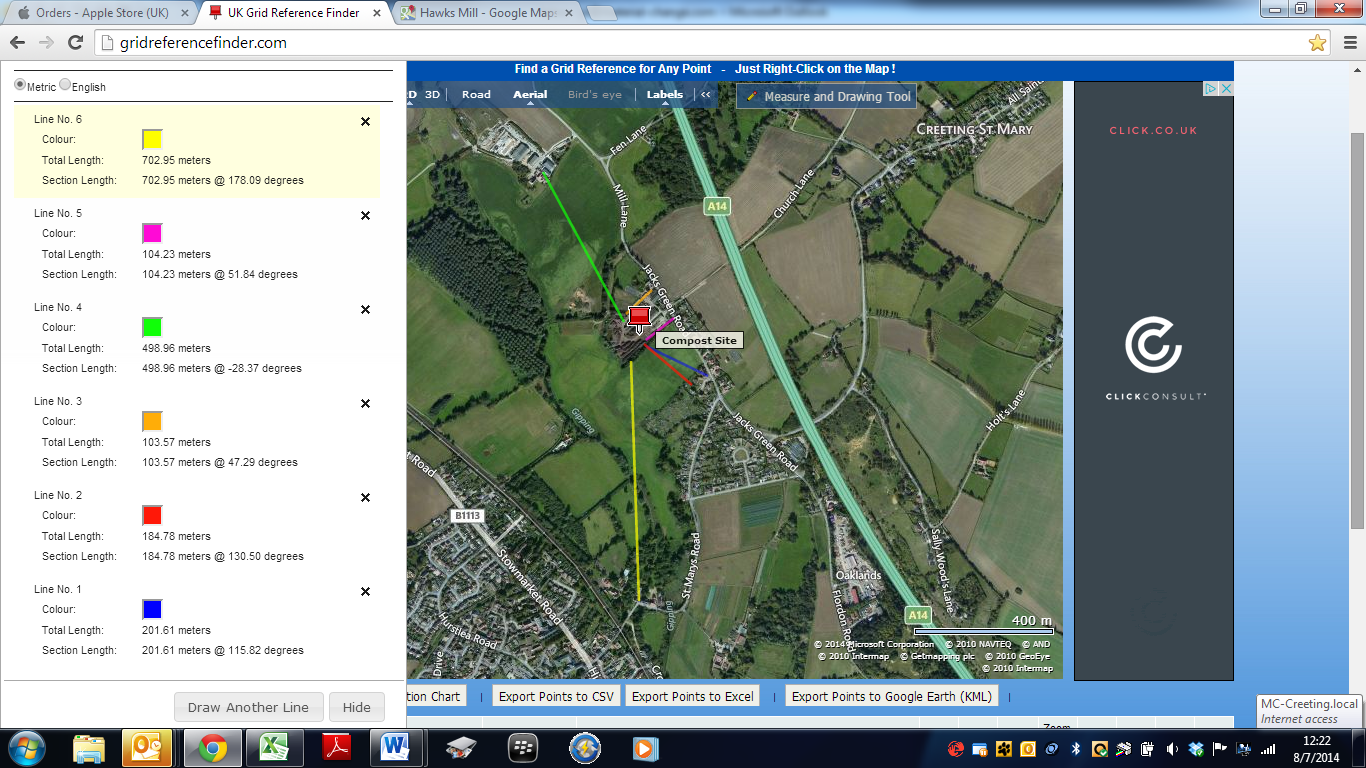
# Review of potential sources, pathways and receptors

## Description of site and receptors and understanding of the surrounding community

Creeting Compost facility is a purpose built open windrow compost site set in a semi-rural location (highlighted on the map below as the green marker), situated between the A14 to the north and east and the railway line to the south and west. There is a concrete manufacturing yard to the north west of the site and residential properties from the north east to the south east of the site. Bordering the site are agricultural fields from the north to the south east which receive farm yard manures, sewage sludge and other waste streams of agricultural benefit. These are all identified as other potential sources of odour within the locality. A band of established trees runs down the site border from the east to the south eastern boundary and a public footpath runs through the middle of this tree line.



The nearest sensitive receptors are highlighted below.



## Potential Odour Sources

### Receipt of green waste and offloading

The site is permitted to receive 50,000Tpa of degradable household, commercial and industrial waste but only accepts the following waste streams and quantities:

|  |  |  |
| --- | --- | --- |
| Waste Description | EWC Code | Maximum Quantity (Tpa) |
| Green Waste (kerbside) | 20 02 01 | 30,000 |
| Green Waste (HWRC) |
| Green Waste (via transfer) |
| Wood Waste | 15 01 03 & 20 01 38 | 1500 combined |

Incoming waste vehicles entering the site will report to the weighbridge office. Their details and paperwork will be verified to ensure the waste type being delivered is permissible and matches the waste code on the waste transfer note. The weighbridge operator will check that the carrier is a registered waste carrier and a copy of the certificate will be requested and placed on file.

The larger vehicles which are a combination of Local Authority dustcarts collecting green waste and commercial collections using 40yd bins will be weighed, then directed to the designated reception area for tipping. Small vehicles with landscapers waste/local authority parks and gardens are not weighed (as they are subject to a fixed price payment per load) and are directed to a separate area to the left of the main office block.

Delivery vehicles will deposit waste into the reception area(s) and loads will be visually inspected by staff to check for prohibited/unsuitable material. Staff are suitably trained to identify wastes which are not permitted for treatment under the Environmental Permit (against EWC Codes) and the PAS100 Quality Protocol Appendix B Acceptable Waste Streams. Details of permitted and non-permitted waste identification lists are on display in the site office for staff.

Loads received in the small reception area from landscapers, tree surgeons and local authority parks and gardens collections are generally odour free and have a high C:N ratio.

Loads received from local authorities in dustcarts, RoRo’s and artics have a slightly increased potential to be odorous due to having been held in bins for up to two weeks prior to collection. These loads are assessed for odour on arrival and where possible, prior to tipping. Where a local authority load contains high levels of grass cuttings (and subject to the malodourous load provisions below), this load should be immediately mixed with wood chippings or brashy material to assist in maintaining aerobic conditions and a C:N ratio of between 20:1 – 40:1. To reduce the onset of anaerobic conditions during stockpiling, material awaiting shredding should be mixed at a C:N ratio of between 20:1 – 40:1 by the addition of oversize and aerated through agitation by the mechanical loader to introduce oxygen into the mass and reduce odours.

On delivery of waste to the site, each load will be assessed for odours. The site operator will be responsible for assessing each load in three categories as follows:

1. Acceptable loads which are not likely to cause any odour issues – which have a sniff test factor of 0 – 1;
2. Loads which are slightly odorous on a scale of 2 - 3 on the sniff test, but with blending and proper management can be processed on site without causing odour issues;
3. Loads which are odorous and are likely to cause problems on site, which have a sniff test factor of 4 – 6 and which will not be accepted at the site.

Any loads which qualify with step 1 requirements above will be accepted into the site by the site manager.

#### Any loads which qualify with step 2 requirements above (Potentially odorous loads – managed on site) will be dealt with as follows:

These loads (identified with a sniff test factor or 2 or 3) will not be rejected but may become odorous before shredding and should therefore be dealt with immediately and aerated in the stockpile by moving the load around using the mechanical loader. This will allow air to pass through and reduce anaerobic conditions. Consideration to sensitive receptors should be taken to ensure no nuisance is caused by odour emissions escaping the site.

#### Any loads which qualify with step 3 requirements above (Potentially odorous loads – required to be removed from site) will be dealt with as follows:

Decomposed or odorous loads will be rejected on arrival on the grounds that they are highly likely to cause off site odour nuisance when being moved on site. Prior to unloading the member of site staff receiving the load will carry out a sniff test to determine whether, on an initial assessment, the load is suitable to be tipped. Where malodours are detected the vehicle will be refused to tip where the level of odour is at 4 – 6 on the sniff test. Such loads will be rejected on the grounds of malodour. Where a vehicle has tipped its load, the waste will be reloaded onto the delivering vehicle whenever possible and sent off site immediately. Where this is not possible as in the case of a dustcart being the delivering vehicle, this material will be placed into a designated vehicle or the 40yd3 container on site and covered with a sheet before being sent for disposal at landfill within 24 hours of being delivered. If there is insufficient space in the skip, the load will be isolated and covered with mature compost to prevent release of odours. Records of rejected loads will be kept in the office and noted on the Load Input Inspection sheet as part of the PAS100 procedures. A record will also be made in the site diary.

#### Contamination

Contamination will be removed, either by the crew from the delivering vehicle or the site supervisor.

Any suspicious waste will be rejected (whole or part load as appropriate). The discovery of any prohibited material will be recorded in the site diary. The customer will be traced, informed, and requested to collect the non-conforming load. Corrective actions to minimise repeat events will be formally documented. Customers who make repeat deliveries of non-conforming waste will be prohibited from disposing at the site. All such events will be documented in the site diary and on the PAS100 paperwork.

Any contamination will be stored in the container on site and sent for disposal to landfill once the container is full. The holding of this material is unlikely to cause an odour nuisance as it tends to be contamination such as plastic bags and other non-conforming waste streams.

Loads that are rejected on the grounds of containing hazardous waste will be reloaded onto the delivering vehicle and sent off site immediately. Where this is not possible as in the case of a dustcart being the delivering vehicle, this material will be placed into a designated vehicle or the 40yd3 container on site and covered with a sheet before being sent for disposal at landfill within 24 hours of being delivered. Records of rejected loads will be kept in the office and noted on the Load Input Inspection sheet as part of the PAS100 procedures. A record will also be made in the site diary.

A record of correspondence with customers where loads are rejected or are persistently contaminated will be kept in the site office.

Any run-off from the incoming waste is contained on the impermeable pad which drains to the lagoon. The lagoon has the potential to cause odour nuisance if the liquid is allowed to go stagnant. Water from the lagoon will be circulated onto the windrows to minimise levels being exported and to ensure the correct moisture in windrows is being maintained. Any excess or odorous liquid will be removed from site by tanker and taken to a permitted treatment site or spread to land under the discharge consent. This is measured by reference to the yellow mark on the manhole in the lagoon which indicates levels.

All waste vehicles must be sheeted/fully enclosed when delivering waste to site.

### Shredding

Material in the small bunker deposited by landscapers/local authority parks and gardens is moved into the main green waste reception area once inspected. Material awaiting shredding is visually inspected and picked through to ensure no contamination is put through the shredder. The material is then loaded into the high speed Jenz or Beast shredder either by telehandler or loading shovel.

The shredder will be placed to the west of windrows on the western side of the site to form a windbreak and reduce the potential for odour blowing from the process towards sensitive receptors. The shredder is fitted with a misting system which will be used to damp down potential dust and odour emissions during the shredding process.

If the results from the proposed misting system are inadequate and do not sufficiently mitigate odours, the next stage in odour mitigation will be to install further enclosure and misting systems on the shredder.

Green waste should be shredded on a daily basis except in instances where shredding or loading equipment is broken down or during high winds (>20mph) likely to carry litter. In such an event, the Environment Agency will be notified.

Frequent shredding will ensure that the material on site is as fresh as possible when processed and will reduce the risk of odour emissions. The stockpile of unshredded material should not exceed 1000 Tonnes at any one time. In the event of a shredder breakdown, a replacement shredder will be brought to site to enable material to be shred and not held in stockpile for more than 5 days. If it is not possible to mobilise a shredder to site within these timescales, vehicles delivering green waste will be diverted to an alternative facility and the stockpile will be aerated by mechanical loader until it is shred.

### Windrow Formation, Composting & Turning

Once the material has been shredded and any blending with oversize or landscapers wood chippings has been carried out, the material is then placed into a windrow – the size of which will be approximately 3-4m high by 6 – 8m wide by approximately 50m in length. The tonnage in each windrow will be determined by the length of the windrow and the bulk density of the material at the time of formation. Windrows may touch at the base to a maximum of 1m in height.

If the newly formed windrow is slightly odorous, additional oversize will be added during the formation stage and during turning if required. A layer of mature compost may be used to cover the windrow if it is still giving off odour. Off-site odours will be detected using the sniff test set out in Appendix B. A note of the odour potential should be recorded on the windrow batch monitoring sheet so as to warn the operator of this potential nuisance when the windrow is turned. Additional turning of this windrow may be required to be undertaken in order to increase the amount of oxygen intake and decrease the possible onset of anaerobic conditions.

The material will undergo a sanitisation phase of which is dictated by temperatures reaching 65°C - 80°C and moisture being at an index of 3 to 4 for a period of 7 days. During this period, temperature monitoring will be carried out in line with PAS100 monitoring requirements which are kept in a folder on site, on a daily basis using a 1.5m Dry-it-Out Temperature Probe, along with moisture monitoring and recorded on the Batch Monitoring Sheets. Monitoring will be at four points in the length of the windrow, usually at 10m intervals. The probe will be inserted above ground level at a point in the windrow where the end of the probe will reach into the core zone (being 2ft from the outer edge). The windrow should be turned at least once within this sanitisation phase to ensure pathogen kill throughout the windrow. Wind speed, direction and weather conditions will be monitored daily using the weather monitoring station in the office and the windsock in the yard and turning will occur when the risk of odour nuisance to sensitive receptors (refer to Appendix E) is at its lowest. In the event of prolonged wind directions being towards sensitive receptors, operations must continue and contact will be made with the sensitive receptors to inform them of this decision and an apology made in advance.

After the windrow has completed its sanitisation phase, it goes into a stabilisation phase whereby temperatures of between 45°C - 65°C and the moisture index of 3 to 4 is maintained. Temperature and moisture monitoring is reduced to once weekly in line with the requirements of PAS100 and recorded on the Batch Monitoring Sheets. The material continues to be turned as required throughout this process stage – again wind speed, direction and atmospheric pressure will be assessed using the windsock and the weather monitoring system, before any turning is carried out to reduce the risk of odour nuisance. Details of the restricted zones and suitable weather condition requirements are set out in the Table 3.2.1 in this document.

There is an established tree line and an earth bund has been formed on the Eastern boundary of the site to act as a buffer in the aim to reduce odours, dust and noise leaving the site.

### Screening, Storage and End Use

Screening is undertaken using the converted static bark screen which is located on the far western edge of the site. The screen has been modified to enable compost processing and has been fitted with curtains covering the hopper, conveyors and bays. A misting system has been fitted to reduce the potential for dust and odour emissions. This screen is located as far as possible from sensitive receptors and is enclosed, and so reduces the potential for odour release. A mobile trommel screen will only be used as a contingency back up screener in the event that the static screen breaks down. This trommel will be situated adjacent to the static screen. If screening compost, then either a misting system will be used on the screen or the screen will only be used when wind is not in the sensitive zone as set out in Appendix E.

On occasions, it may be necessary to use a mobile starscreen fitted with a windsifter to remove plastic contamination from the product or the oversize material, this will be located as far from the sensitive receptors as possible, with existing processing equipment and enclosures used behind the screens to minimise the potential for windblown odours. If screening compost, then either a misting system will be used on the screen or the screen will only be used when wind is not in the sensitive zone as set out in Appendix E.

Reprocessing and screening of composted oversize material does not cause odours as this material has already completed the whole active composting process. Oversize which cannot be reused/re-processed will be sent for disposal off-site.

The Company trialled the use of mobile odour suppressant systems, but found these to be ineffective. The use of misting and suppressant systems on the processing equipment are more likely to have a positive impact. Regular turning, monitoring of and well structured windrowed material will maintain aerobic conditions which will result in less complaints during the screening process. In the event that the shredder and screen misting systems are insufficient in mitigating odours, further misting systems including a perimeter system would be installed.

Following screening, the 0-40mm product will be stored on the pad within the licensed area awaiting collection by farmers. The 0-12mm product will be moved into the bunkers on the “clean” area awaiting collection by end users. Both these grades are accredited to PAS100:2011 and the Compost Quality Protocol and are therefore classified as product and no longer waste. Odour checks during the loading of finished product have been conducted and identified as “low risk” odour sources.

### Lagoon Water (Storage and Use of)

The open lagoon collects water run-off from the compost pad as well as falling rain water. The water can be used to add moisture to freshly shredded green waste and to windrows during the sanitisation phase. Water can also be used as a dust suppressant on site and is sprayed using the on-site bowser.

A depth marker is located in the lagoon on the manhole and once the water level reaches the first of the identifying lines, water will be extracted.

If odours are detected from the lagoon during monitoring using the sniff text in Appendix B, an aeration pump will be fitted in the lagoon and should be used to introduce oxygen into the water initially on a daily basis and then reassessed for frequency.

The lagoon has a discharge consent to enable it to be emptied as and when required in agreement with the Environment Agency. Water in excess of the identifying marker on the lagoon manhole or malodorous water will be tankered off site for disposal.

## Pathways

Odours emitted from the sources identified above are emitted to air and have the potential to be conveyed to the nearby receptors noted in Section 2.1 and Appendix E, via transfer through the atmosphere.

The extent to which odour is detectable downwind and the intensity and character of such odours is dependant upon the following factors:

* The nature and magnitude of odorous emissions released from the source;
* Wind direction and wind speed;
* Atmospheric turbulence (vertical and horizontal) and the level of dilution and dispersion odours undergo as they travel downwind.

All of these factors can exhibit substantial variation over time and for this reason good meteorological monitoring is required at the site.

# Risk assessing the potential for odours

## Odours generated from the process

The generation of odours from a composting process is unavoidable whether this is open windrow or in-vessel composting but with good management can be minimised. Odours can arise at several points in the process; from receipt of feedstock whether fresh or malodorous through to the final screening, loading out of the finished product and from the lagoon containing water run-off. Most feedstock materials naturally contain odorous chemical components such as limonene from citrus fruits or pinene from woody materials. Most of these chemicals are not considered to be odorous and most people do not find these odours offensive.

The early stages of composting involve the breakdown of larger molecules such as fats, carbohydrates and proteins into smaller molecules which are then used as a food source for the micro-organisms. This stage of the process tends to be when the odorous molecules such as amines, fatty acids, hydrogen sulphide, ammonia and dimethyl disulphide are released.

The characteristics of the odour generated from the composting process, in terms of intensity and offensiveness, will depend upon the age, type and quality of feedstock and the process applied. Where anaerobic conditions are left untreated, the stronger and more offensive the odour emissions will be; therefore it is paramount that aerobic conditions are maintained throughout the process and that turning of windrows is not restricted.

## Odour Risk Assessment & Control Measures

Table 3.2.1 below identifies the areas and processes where odours are most likely to occur. The control measures put in place to reduce or eliminate where possible are highlighted with actions identified to mitigate the nuisance in the event that an odour is caused.

An odour suppression system has been installed on the southern end of the site. This is a ‘Cobra Hydro’ Dry Vapour System which relies on blowing air at high pressure over an essential oil which is then driven out of perforated tubes suspended along the southern bank. The intention is that odours are obscured by the essential oil odour.

Utilisation of the OMS is intended in the following circumstances:

1. When the wind direction is from the North, north west or due west

*The system will be manually activated in these conditions*

1. Low atmospheric pressure as measured by environmental conditions whereby there is little wind (< 5mph), high potential odour generation (explained below) and warm conditions whereby odour is likely to be carried southwards and remain in a static situation.

*The system will be manually activated in these conditions*

1. Overnight dry, warm and static wind conditions whereby odour has the potential to be carried southwards or eastwards from the site during non-operational hours.

*The system will be left running from end of operating hours the previous night to start of operations the next day until an odour assessment can be carried out. The system will only be shut down if odour is not detected in sensitive locations adjacent to the site.*

| **Table 3.2.1** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Source of the odour** | **Receptor** | **Likelihood** | **Control measures** | **Actions if odour starts causing a problem** | **Who is responsible for taking action** |
| Receipt of fresh green waste (most commonly received from landscapers/ tree surgeons/local authority parks and gardens | On-site workers; site visitors; neighbouring community | Moderate on site  Unlikely off site | Assess waste streams prior to and on discharge from vehicle for acceptance (visual and olfactory assessment to be carried out by experienced employees) and ensure correct C:N ratio is achieved ) by adding in carbon rich (woody) material if identified as required by assessment. | Introduce additional carbon rich material into the mix during stockpiling to achieve C:N ratio of 20:1 – 40:1. | Site supervisor |
| Receipt of odorous /malodorous waste – managed on site | On-site workers; site visitors; neighbouring community | High on site  Low off site | Assess material and decide if it can be managed on site or if it needs to be rejected and disposed of off site. If off site, the material will be dealt with in accordance with the next line of the table below.  Utilise odour suppression system in accordance with clause 3.2.  Investigate source of odour and make contact with customer.  Prioritise processing of manageable material quickly, mix in carbon rich material ie. Oversize or landscapers wood chippings.  Aerate potentially odorous material on receipt through agitation by mechanical loader, if wind blowing outside of the restricted zone (see Appendix E)and mix in oversize material to allow air to pass through freely and maintain aerobic conditions.  Conduct off site monitoring using the sniff test set out in Appendix B during this process to ascertain if process is causing a nuisance.  Inform the EA if odorous waste has been received and is going to be dealt with on site and timescales for handling. | Introduce carbon rich material into the mix during stockpiling if load is deemed to be manageable and not rejected.  Contact customers and advise that delivery of odorous loads is not acceptable, terminate contract if this is a repeat occurrence.  Stop agitation of material if causing odour nuisance off site during this process and cover with a layer of compost or oversized material to prevent odour release. Review rejection procedure in respect of the load to ascertain whether additional staff training is required. | Site supervisor  Office staff  Site supervisor  Site supervisor |
| Receipt of odorous /malodorous waste – removed from site | On-site workers; site visitors; neighbouring community | High on site  Low off site | Assess material and decide if it can be managed on site or if it needs to be rejected and disposed of off site in line with the assessment requirements set out in paragraph 2 above.  Utilise odour suppression system in accordance with clause 3.2.  Investigate source of odour and make contact with customer.  Isolate load and remove from site within 24 hours (1 day) except if delivered on a Friday afternoon or Saturday when removal will be on Monday.  If possible reload onto delivery vehicle, if not then load the material into the 40yd3 container on site and cover with a sheet until load is sent for disposal.  If there is insufficient space within the 40yd3 bin to contain the rejected waste, cover the non-contained waste with mature finished product until removal.  Conduct off site monitoring following the sniff test procedure in Appendix B during this process to ascertain if process is causing a nuisance.  Inform the EA of rejected load and removal timescale. | Contact customers and advise that delivery of odorous loads is not acceptable, terminate contract arrangement if necessary | Site supervisor  Office staff  Site supervisor |
| Stockpiling of waste prior to shredding | On-site workers; site visitors; neighbouring community | Moderate to high both on and off site. | Assess waste streams on discharge from vehicle for acceptance (visual and olfactory assessment to be carried out by trained site staff) and ensure correct C:N ratio is achieved ) by adding in carbon rich (woody) material if identified as required by assessment.  Utilise odour suppression system in accordance with clause 3.2.  Process material within 48 hours of it being received. Friday and Saturday delivery will be shredded the following week.  Monitor stock levels through tonnages received over the weighbridge. Do not exceed stock levels of 1000 Tonnes awaiting shredding (equivalent to two day’s shredding) at any one time without shredding.  Record breakdowns in site diary and notify EA of stockpiling requirements.  In the event of a shredder breakdown, aerate the stockpiled material daily using the loader to avoid anaerobic conditions setting in.  Mobilise replacement shredder to site if repairs cannot be undertaken within 5 working days.  Advise the EA of the breakdown and timescales for the repairs to be carried out. Record details in the site diary. | Anaerobic material will be covered with mature compost or oversized material to prevent odour release. If the material cannot be processed on site without releasing odours, it will be removed from site. | Site supervisor assisted by office staff  Site supervisor  Site supervisor  Ops manager  Site supervisor |
| Waste shredding | On-site workers; site visitors; neighbouring community | Moderate to Low on and off site | Placement of behind windrows will reduce the risk of material being caught by the wind and odorous particulates being transported to sensitive receptors by air.  Utilise odour suppression system in accordance with clause 3.2.  Plan weekly activity with reference to metcheck weather data and recheck weather information on a daily basis to ensure that operations are still suitable taking into account all meteorological conditions. All meteorological information to be recorded in the site diary or logged on the site computer.  Check wind direction (see Wind Direction zone in Appendix E) and speed daily and during day using the on-site windsock and the weather monitoring station prior to shredding either fresh or identified potentially odorous material.  Conduct off site odour checks during shredding in line with the sniff tests in Appendix B.  Prioritise odorous material through shredder to enable this material to be placed into windrows quickly and covered with mature compost or oversized material if odorous. Grab small loads and cover with fresh material or oversize whilst in the feed hopper.  Assess moisture levels against PAS100 criteria and record assessment of feedstock on batch monitoring sheets. Follow HACCP for corrective actions if moisture levels are outside of the Index 3 or 4.  Wet grass cuttings should be blended with woody material to ensure the correct C:N ratio is achieved, reduce moisture levels and the risk of anaerobic conditions setting in. This blending is determined by visual inspection with a target ration of 20:1 – 40:1. | Mobilise additional resources ie. Staff /machines to process material quicker.  Delay processing if material is odorous and wind blowing in the direction of sensitive receptors (refer to Appendix E).  Investigate additional misting measures and propose scheme to EA within 14 days. Implement within 28 days on trial basis. | Site supervisor  Site supervisor  Ops manager |
| Formation of Windrows | On-site workers; site visitors; neighbouring community | Low to Moderate on site and off site | A retaining wall, earth bund and established tree line is situated along the eastern boundary to reduce fugitive emissions from site.  Utilise odour suppression system in accordance with clause 3.2.  Check wind speed and direction using the on-site windsock and weather monitoring station prior to forming windrows. If the eastern windrow is being formed, this should not be carried out if the wind is in the wind window in Appendix E in the direction of sensitive receptors. If additional receptors are identified, appropriate changes to Appendix E wind zone would be made.  Undertake offsite odour check during activity.  Windrows are formed by the loader. The material will be assessed at the point of shredding to ensure odour nuisance is minimised.  Material will be placed into position as close to the ground or existing material as possible so as not to stir up odours by dropping from a height.  The most eastern row will only be inserted or moved when the wind is blowing outside of the restricted zone as set out in Appendix E and in accordance with clause 3.2. | Stop operations and conduct odour monitoring assessment on and off site and record outcome on Odour Complaint Form and in site diary. | Site supervisor |
| Turning of Windrows | On-site workers; site visitors; neighbouring community | Moderate on site  Moderate off site depending | An earth bund and established tree line is situated along the eastern boundary to reduce fugitive emissions from site.  Utilise odour suppression system in accordance with clause 3.2.  Assess wind speed and direction before carrying out turning, if windrows are odorous, operate in accordance with clause 3.2.  Ensure correct C:N ratio of material is maintained during turning and add additional oversize material if assessment identifies this need. This is measured by visual assessment to achieve a ratio of 20:1 – 40:1.  Check Batch Monitoring Records to ensure temperatures & moisture levels are being met as this will highlight potential odour issues.  In the event that temperatures are outside the PAS100 parameters, turning will be required but should be undertaken with consideration to sensitive receptors and wind direction.  Material will be placed into position as close to the ground or existing material as possible when turning so as not to stir up odours by dropping from a height.  Carry out off site odour checks during turning at sensitive receptor locations. | Stop operations and conduct odour monitoring assessment off site and record outcome in site diary. | Site staff to assess liaise with Ops Manager/TCM |
| Screening of Compost | On-site workers; site visitors; neighbouring community | Low to Moderate on site  Low to Moderate off site | Check windrow temperatures and batch sheets to ensure windrow has completed its stabilisation process before screening.  Utilise odour suppression system in accordance with clause 3.2.  Assess suitability for screening in relation to wind speed, direction, weather conditions and sensitive receptors and monitor windsock during the process to check for directional changes.  Use static screen at the western boundary fitted with canopy as the default screener.  Operate the misting system on the screening plant to suppress dust leaving the screening process as this will prevent airborne odours being carried in the direction of the wind.  A mobile trommel or starscreen is used if the static screen is not operational due to breakdown, to assist with a backlog of material or if cleaning up oversize material. It is proposed that this screener be partially covered if odour is detected from this process.  Conduct off site odour monitoring during screening and follow OMP if odour is detected. | Stop operations and conduct odour monitoring assessment off site and record outcome in site diary.  Investigate a partial cover for the mobile screen if odour is detected from this screening process. | Site supervisor  Ops Manager |
| Loading of compost out | On-site workers; site visitors; neighbouring community | Low to Moderate on and off site from 40mm bay and Low from 12mm bay. | Only load mature compost which has completed the stabilisation process.  Utilise odour suppression system in accordance with clause 3.2.  Check wind direction, and speed using the on-site windsock and weather monitoring station in the office. Record meteorological data in the site diary or on the site computer. | Stop operations, conduct odour monitoring assessment off site and record outcome in site diary. | Site supervisor |
| Lagoon | On-site workers; site visitors; neighbouring community | Low both on and off site depending on volume contained | Daily checks for odours downwind of lagoon.  Maintain levels at reasonable capacity so as not to breach containment. This is measured by the marker on the manhole in the lagoon.  Monitor expected rainfall and remove liquid to maintain capacity where the marker on the manhole is exceeded.  Utilise odour suppression system in accordance with clause 3.2.  Use discharge consent to remove water. | If odour is detected, fit aeration pump into lagoon to aerate the water daily when blowing away from sensitive receptors (refer to Appendix E).  Reassess after one week of aeration.  Arrange tankers to reduce the levels in the lagoon. | Site supervisor |
| Dampening roadways and surface areas with lagoon water | On-site workers; site visitors | Low on and off site Lagoon water is significantly diluted by rain water and is unlikely to smell. | Carry out sniff test when spraying water onto surface areas to check for detectable odours.  Use low level sprayer to reduce risk of airborne emissions.  If odours detected, only carry out this process if wind is not blowing towards sensitive receptors. | Stop operations and assess process. Only continue once wind direction has changed or use fresh water if dampening needs to continue. | Site supervisor |
| Management of oversize stockpile | On-site workers; site visitors; neighbouring community | Due to the large diameter of this material and the lack of fines retained following the screening process, it is of low odour risk both on and off site. | Oversize material is the screened by-product of material that has completed its sanitisation and stabilisation process and therefore will no longer be decomposing on its own without further processing.  Stockpiling of oversize material will create large air pockets which will allow the free movement of air and eliminate the risk of anaerobic conditions setting in.  Oversize material is regularly reprocessed by blending in with green waste and so reduces the risk of stockpiled material being held on site for any length of time. | Dispose of oversize to landfill or energy recovery if it is causing odour issues on site. | Site supervisor |
| General housekeeping | On-site workers; site visitors | Low to Moderate | Daily checks to ensure site concrete and roadways are clean at the end of each day.  Check drainage gullies daily to ensure free flowing of water off the pad into the lagoon.  Sweep up spillages throughout the course of the day and ensure area is clean before leaving site. | Contract sweeper to undertake further sweeping.  Use clean water to wash down odorous surfaces. | Site supervisor |

# Odour & Control Measure Monitoring

All site personnel will be responsible for immediately reporting any odour problems detected to the Site Supervisor or Operations Manager on an ongoing basis. In addition, the following formal monitoring regime will be implemented:

* On approach to the site, the site/office staff should assess whether any odours are present and report any findings to the Site Supervisor and record these in the site diary and on the Notable Odours form (Appendix A).
* The company has identified a reputable member of the public being the postman, to carry out odour checks whilst completing his round in the village. The findings from the odour checks will be recorded on the Notable Odours form (Appendix A). If an odour has been reported, this will be investigated in accordance with the procedure set out in section 6 of this OMP and recorded following the procedure below.
* A daily walk-around of the entire site and perimeter will be conducted and observations made concerning the type and nature of any odours detected, including the likely source. The inspection will pay particular attention to any issues or areas of concern raised by Environment Agency Officers or Local Environmental Heath Officers. In the event of any significant change in meteorological conditions, additional odour tests will be undertaken.

The results will be recorded on the Notable Odours form (Appendix A), and immediate investigation/remedial action undertaken where necessary. The forms will be inspected by the Operations Manager on a weekly basis to ensure actions have been identified and implemented as required. These will be retained on site for further review if needed.

Any notable odours detected from other premises and activities in the vicinty of the site will also be noted on this form and in the site diary.

* Operate the odour suppression system in accordance with clause 3.2.
* The windsock will be marked with two arrows pointing in the direction of the “no processing zone”. The zones are as set out in Appendix E to this OMP.
* A “sniff testing” exercise will be conducted, as required, the protocol for which is presented in Appendix B. Personnel conducting the testing will be selected by the Site Manager and should comply with the criteria defined in the protocol. The results are recorded on the Sniff Testing Report Form (Appendix B3) and immediate investigation/remedial action undertaken where necessary – see Action Plans below.
* Personnel not normally based at site, when coming to the site, should carry out odour checks and report any odour detected on appraoch to the Site Supervisor.
* Meteorological conditions will be constantly measured and logged by an onsite weather station. Parameters measured will include temperature, wind speed and direction, rainfall and humidity. The data will be used to assist in complaint investigation and analysis and to anticipate times of increased offsite odour impact risk in order to reschedule potential increased odour generation risk events.

Process Control Measures

|  |  |  |  |
| --- | --- | --- | --- |
| Process/Plant | Control Measure | Frequency | Corrective Action |
| Jenz Misting System (Trial) | Visual check that misting system is working effectively | Daily | Investigate failure immediately, repair or arrange fitter within 5 days |
| Screen Misting System & cover | Visual check of tarpaulin and ensure misting system is working effectively | Daily | Investigate failure immediately, repair or arrange replacement cover within 5 days |
| Odour suppression system | Visual check that misting system is working effectively | Daily | Investigate failure immediately, repair or arrange fitter within 24 hours |
| Carbon rich material | Ensure sufficient stockpile for blending in with nitrogen rich material | Daily | Arrange for woody material inputs before stockpile becomes depleted to less than 100 tonnes |
| Mature compost | Maintain stockpile to use if required for covering odorous material | Daily | Replenish stock as required where stock falls before 100 tonnes |
| Weather monitoring station, windsock & metchecks | Print off metcheck data at beginning of week to identify forecasted wind directions and weather.  Check on site weather monitoring station throughout the day and record in site diary.  Visual checks of windsock throughout the day whilst processing. | Weekly  Daily  Daily |  |

**Emergency Action Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Impact** | **Material/Operation** | **Mitigation** | **Mitigated Impact** |
| Screener Breakdown | Material awaiting screening | Use other static screen or bring in trommel screen. | Replacement machine will have a misting system and be located as far west on the site as possible. |
| Shredder Breakdown | Green waste stockpile | Bring in replacement shredder within 5 days. | MCL have their own equipment so no external mitigation required. |
| Telehandler/Loading Shovel Breakdown | All site operations | Replacement machine to be delivered by Mervyn Lambert. | Machines under contract so sufficiently mitigated as replacement machine provided under contract terms. |
| Flooding on site | Site Operations | Hire in tankers or pump water into lagoon using separate pump.  Flood defence scheme approved by EA. | Additional operational cost and potential disposal cost. |
| Lagoon Leaking | Site Operations | Breach of licence. Drain lagoon using tankers or discharge consent. | Repair lagoon and notify EA immediately. Cost of repair and disposal of water. |
| Staff Shortages | Site Operations | Internal cover from another Material Change operator. | None. |
| Power Failure | Weighbridge Operations | Back-up generator on site. | Increase in cost although short term. |

We will review monitoring information weekly, or more frequently if necessary, and amend OMP and site procedures accordingly to ensure that odours are minimized.

# Odour Complaints

In the event of an odour being reported, an immediate investigation will commence as per the sniff testing protocol set out in sections 4 and 6 of this OMP.

The complaint will be logged in the site diary and on the Odour Complaint Report Form (Appendix C).

The odour suppression system will be switched on and off site checks carried out and recorded as above.

In the event that the odour complaint has been received after the event, checks will be made against the weather records for the day of the complaint and any actions taken. Where weather records show that the compost site cannot be the reported odour source, this information will be passed to the reporting body ie. Environment Agency.

# Odour Complaint Investigation

The following actions will be taken immediately on receipt of an external odour complaint or if an odour is identified during the monitoring process as per Section 4 of the OMP:

* Any complaint received at the site will be logged in the site diary and on an odour complaint report form (Annex B). The Environment Agency will be informed immediately that a complaint has been received if not the advisor.
* The site supervisor will be given the details of the odour complaint as soon as possible including the location, nature, time and date of the complaint.
* If complaints are recent/current, a member of the office staff will do a drive round to check on the odour in the area from which the complaint is received in order to assess the presence /absence of any odour and the odour character and intensity. Where possible, the cause of the odour will be identified
* For all complaints, reference will be made to the the site activities at the time of the complaint and the Notable Odours Form (Appendix A) and further onsite investigations conducted to determine whether any abnormal operations are/were occuring (failure in odour critical plant, notable odours identified, process paramaters out of optimal range etc). The following key potential causes of abnormal odour emissions will be investigated:
* Has waste arriving at the site from sources been correctly assessed by the site staff once tipped?
* Are there any unusual characteristcs evident in the waste on-site (composition, age, condition, etc)?
* Is waste reception, preparation and composting processes occurring as per normal?
* What are/were the weather conditions (eg. Low or high pressure, wind strength, direction)?
* Is the odour suppression system operating?
* Are/were screening or loading activities causing odour release?
* Are/were there any unusual activities taking place off-site e.g. agricultural operations or any other potential sources of odour?
* Once the cause has been established, appropriate actions (see below) will be immediately implemented and actions devised to prevent a reccurrence of the incident.
* In all cases the data from the on-site weather station from the time of the complaint will be reviewed and forwarded to the Environment Agency in addition to details of any unusual events conducted onsite. All data will be monitored and reviewed by the Site Manager on a weekly basis.
* Feedback will be given to complainants on the findings of these investigations and a summary will be provided of any remedial measures taken to rectify odour problems and ensure that the problem has been suitably resolved. The complainant will be asked if the perceived problem is still occurring to measure any improvement achieved.
* The Operations Manager will submit a short factual response to the Environment Agency; detailing the complaint(s) received, the investigations conducted, the findings of those investigations, whether the complaint was substantiated, any remedial measures implemented and any ongoing improvement actions to be implemented with a target period of seven days from receipt of the complaint.
* Complaint trend analysis will be conducted to identify any trends and patterns in complaints to assist in identification of possible casuses and solutions.
* Records of all complaints, subsequent investigations, and remedial actions will be kept for at least five years. The Site Manager shall ensure they are readily retrievable, and maintained as fit for retention. As applicable, records will be stored in accordance with the Data Protection Act 1998.

# Odour action plans

In the event that an odour complaint is proven to be justified and attributable to site odours, or a ‘non-conformance’ occurs, a defined action plan (below) will be implemented. The following odour ‘non conformances’ have been identified for the site:

* Abnormal odour emissions occur;
* Significant odour is detected onsite that is believed to pose a risk of offsite odour impact;
* Significant site odour is detected off-site during the weekly “sniff testing” exercise (eg odour intensity 3 or above detected near residential receptors) as set out in Appendix B.

In the event that any of the above occurs, the following actions shall be taken:

* If not previously undertaken, a walk-around of the entire site and a review of the Notable Odours form will be conducted in order to identify the likely cause(s) of the odour.
* Switch on the odour suppression system if not already operating.
* Upon identification of the likely odour source(s), appropriate corrective and preventative measures shall be identified and implemented, depending on the outcome of the investigations. The measures will consider, but not be limited to:
  + Investigate the pollution incident and its cause
  + Assess odour at the site boundary;
  + Stop operations and cover any odorous material with compost or oversized where this will assist with odour prevention;
  + Suspension of any future receipt of any specific waste product until confirmed acceptable;
  + Review of the effectiveness of feedstock handling and amendments procedure to avoid the formation of anaerobic conditions in windrows;
  + Review of all process parameters (temperature, moisture, oxygen availability) to ensure all composting processes are under control. Implementation of corrective actions as per the PAS100 HACCP to restore parameters to desired levels.
  + Review all control measures to ensure these are effective at minimising odour emissions;
  + If anaerobic conditions are found to exist and excessive odours are generated, increase the frequency of turning and blend in additional oversize or remove the material from site;
  + If odours are generated from the lagoon, fit an aeration pump and ensure it is working effectively. Aerate daily for one week and then reassess. Remove liquid via tankers and dispose to an authorised facility off site if unable to reduce odours from lagoon.

Details of any odour ‘non-conformances’ including the nature of the incident, results of investigations, action taken and any required amendments to the OMP will be made available to the Environment Agency on request.

# Liaison and document review

## Liaison

Material Change will ensure that established clearly defined and accessible communication channels are set up for residents to report odour issues. These will include:

* Contact details (including telephone number and address), displayed on the main site notice board (positioned at entrance to site).
* Ability for residents to report odours in person at the site weighbridge.
* Website giving relevant contact details: email, telephone, postal address etc.
* Contact details will include an emergency “out of hours” contact number for use when the site is un-manned.

If deemed necessary, a formal local liaison group will be established and regular meetings will be held to which Environment Agency Officers, Environmental Health Officers, local residents and councilors will be invited. The frequency of these meetings will be regularly reviewed to ensure that they occur at appropriate times.

Local residents and the Environment Agency will be informed of any imminent events (resulting from planned or unplanned activities) that pose a risk of offsite odour impact at offsite locations, including an explanation of why the occurence is unavoidable.

## Review requirement and timescale

This odour management plan is a living document and will be formally reviewed on an annual basis as a minimum or more frequently as required to ensure that the controls described are effective and reflect best available techniques. In addition the OMP will be reviewed following any relevant changes in site operations or procedures that are likely to have implications from an odour generation/impact perspective.

Any required changes to the conditions set out within this document shall be formally agreed with the Environment Agency prior to implementation.

# Appendix A: Notable Odours

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Day | Location of odours detected | Intensity | Duration | Possible Source | Action Required | Weather Conditions | Comments |
| Mon |  |  |  |  |  |  |  |
| Tues |  |  |  |  |  |  |  |
| Wed |  |  |  |  |  |  |  |
| Thurs |  |  |  |  |  |  |  |
| Fri |  |  |  |  |  |  |  |
| Sat |  |  |  |  |  |  |  |

# Appendix B: Sniff testing protocol

## B1. Procedure

A subjective sniff testing exercise will be conducted if required. The exercise will utilise human assessors (site personnel) who use their sense of smell to “sniff” odours detectable in the vicinity of the site and identify their sources.

The person(s) undertaking the assessment will be trained in this procedure and a record of this training kept in the site office. The understanding and competence of the assessor will be reviewed prior to the testing being carried out. The assessor will be a non-smoker, avoid food or drinks (except water) for at least half an hour before undertaking the assessment. Strongly scented toiletries should be avoided by the assessor. As colds, sinusitis or sore throat can affect the sense of smell, planned assessments should be re-scheduled if possible or undertaken by someone else.

To ensure that assessors are not suffering from odour fatigue and will be sensitive to composting odours on the day of the assessment, they will not be subject to compost odours prior to conducting the assessment.

A record is made of the meteorological conditions prevalent during the assessment, and any relevant installation-specific information is recorded (such as activities being undertaken, deliveries made, process operating parameters, any departures from “normal” operating conditions or activities). A note is also made of any activities conducted at, or odours noted from, any agricultural or industrial sources in the area in which the observations are being made.

The exact locations for monitoring will be dependent on the meteorological conditions on the day, but in general terms will always be conducted downwind of the site using the following sequence of assessment, with areas of weaker strength inspected prior to stronger.

Source

Wind Direction

Sequence of Assessment

Observations are made over a standard time of 5 minutes per location. During this time the nature of any odours detectable (in terms of detectability/intensity, extent/persistence and sensitivity of location – see below) are noted and recorded.

## B2. Data collection and recording

At each location scores are allocated against the following parameters:

INTENSITY

0. No odour

1. Very faint odour
2. Faint odour
3. Distinct Odour
4. Strong Odour
5. Very strong odour
6. Extremely strong odour

SENSITIVITY OF RECEPTOR WHERE ODOUR DETECTED (assuming detectable, if not then 0)

Low (eg footpath, road)

Medium (e.g. industrial or commercial workplaces)

High (e.g. housing, pub, school etc)

Results are recorded on the Report form (below).

## B3. Sniff Testing Report form

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Material Change Ltd – Creeting Compost Site - Weekly Odour Sniff Testing Report Form | | | | | | | |
| Assessor details | | | Meteorological details | | | | |
| Name |  | | Wind speed | |  | | |
| Date |  | | Wind direction | |  | | |
| Start/finish time |  | | Temperature (oC) | |  | | |
| Signature |  | | Cloud cover (%) | |  | | |
|  | | | Pressure (Pa) | |  | | |
| Site activities ongoing at time of assessment | | | Precipitation | |  | | |
|  | | | | | | | |
| Sniff test observations | | | | | | | |
| Location (map reference point) | Intensity (0-6) | Constant or intermittent, persistent? | | Receptor sensitivity (High, medium, low) | | What does it smell like? | Is source evident? / Other comments |
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# Appendix C: Odour complaint report form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Material Change Ltd – Creeting Compost Site – odour complaint form | | | | |
| Time and date of complaint: | Name and address of complainant: | | | |
| Telephone number of complainant: | | | | |
| Date of odour: | | |  | |
| Time of odour: | | |  | |
| Location of odour, if not at above address: | | |  | |
| Weather conditions (i.e., dry, rain, fog, snow): | | |  | |
| Temperature (very warm, warm, mild, cold or degrees if known): | | |  | |
| Wind strength (none, light, steady, strong, gusting): | | |  | |
| Wind direction (eg from NE): | | |  | |
| Complainant's description of odour:  What does it smell like? | | |  | |
| Atmospheric pressure: | | |  | |
| Intensity (see below): | | |  | |
| Duration (time): | | |  | |
| Constant or intermittent in this period: | | |  | |
| Does the complainant have any other comments about the odour? | | |  | |
| Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure): | | |  | |
| Any other relevant information: | | |  | |
| Do you accept that odour likely to be from your activities? | | |  | |
| What was happening on site at the time the odour occurred? | | |  | |
| Operating conditions at time the odour occurred  (eg flow rate, pressure at inlet and pressure at outlet): | | |  | |
| Actions taken: | | | | |
| Form completed by: | | Date | | Signed |

**Intensity**

0 No odour 1 Very faint odour 2 Faint odour 3 Distinct odour 4 Strong odour

5 Very strong odour 6 Extremely strong odour

# Appendix D: Odour diaries form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Material Change Ltd – Creeting Compost Site – Odour diary form | | | | |
| Name and address |  | | | |
| Date of odour |  |  |  |  |
| Location of odour, if not at above address: |  |  |  |  |
| 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 (eg from NE): |  |  |  |  |
| What does it smell like? How unpleasant is it? |  |  |  |  |
| Do you consider this smell offensive? |  |  |  |  |
| Intensity – How strong was it? (see below 1-6): |  |  |  |  |
| How long did it go on for? (time): |  |  |  |  |
| Was it constant or intermittent in this period? |  |  |  |  |
| What do you believe the source/cause to be? |  |  |  |  |
| Any actions taken or other comments: |  |  |  |  |

**Intensity (Detectability)**

0 No odour

1 Very faint odour

2 Faint odour

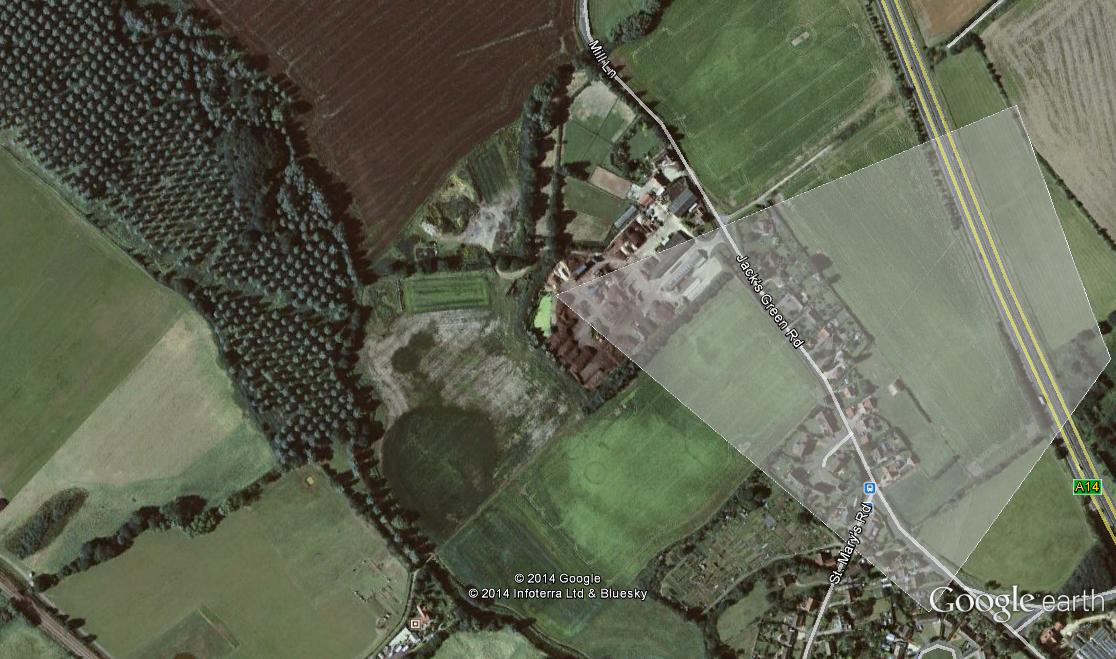
3 Distinct odour

4 Strong odour

5 Very strong odour

6 Extremely strong odour

# Appendix E - Creeting Receptor Zone



# Appendix F – Machinery/Plant Location

