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Odour Management Plan for 4Recycling Ltd

Park Farm
Malthouse Lane
Caerleon
Newport
NP18 3PB

NRW Deployment PAN-016983

March 2022

Background and Contents of the Plan

The OMP is concerned solely with the spreading of potentially odorous materials on deployment PAN-016983 for Park Farm, Malthouse Lane, Caerleon, Newport, NP18 3PB.

The OMP details the following:

1. Site location and potential odour receptors
2. The sources of odours and potentially odorous materials
3. Odour management and control measures
5. Monitoring
6. Actions, contingencies and responsibilities to minimise off-site odours
7. Odour management plan review

1.0 Site location & Potential Odour Receptors

The national grid reference for the centre of the site is 331786 191719.

The A4042 runs to the west of the site along side other minor roads around the town of Caerleon. Odour exposure of potential odour receptors using these roads and will be low or transitory under normal circumstances because users will pass the site quickly, so that the risks of unacceptable odour impact are relatively low.

However, there are a number of residential, amenity and industrial areas around the southern edges of the spreading area (the site) which may be affected by odours from; delivery of materials to the site, stockpiles of materials at the site or by application of materials to land on the site.

Table 1 below summarises the main local area receptor areas surrounding the site.

Table 1 – Key potentially sensitive receptor areas around the overall site

Locations	Description and potential sensitivity to odours	Distance and direction from Site*
Residential Areas around Lodge Wood	Residential Dwelling. Potentially High Sensitivity	270 meters to the South
On-site residential properties (farmhouse and buildings)	Residential Dwelling. . Potentially High Sensitivity	0 meters from site.

- In assessing the distance and direction from the site the closest point of the spreading area has been assessed ***therefore this assessment takes consideration of the worst case scenario***. It should be considered that as the works are completed adjacent to the receptors that those areas are then complete and the works will continue but at a greater distance from the receptors identified.

1.1 Factors Affecting Off-site Odour Impacts

The risks of odour from restoration materials storage, handling, transport and applications in each of these areas is governed by a range of factors including:

a) Distance from the operation (Separation Distances).

b) Wind direction (which varies from time to time).

c) Relative orientation of operation to receptors.

d) The area (and duration) of odorous materials exposed during any particular operation.

e) Ambient temperatures.

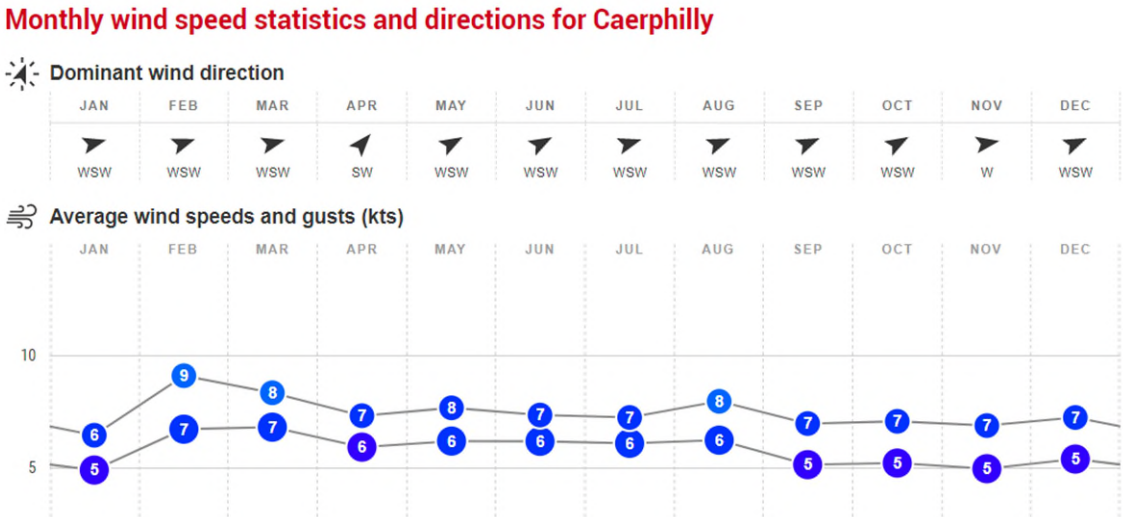
Separation distances are a key factor. It is fairly obvious that the further a receptor is from a particular odorous operation, then the lower the risk of adverse effects. However, the benefits of greater separation distance are greater than being simply proportional to distance, in fact the benefits are approaching an inverse square relationship, so that doubling separation distance provides substantially greater benefit than "halving" of off-site odour impacts. The effects of doubling separation distance approach a factor four reduction in the off-site odour perception. For this reason a very important factor in the control of odours impacts is avoiding carrying out any particularly odorous operations in close proximity to local receptors.

Ambient temperatures affect the odour emission rates from restoration materials, but perhaps a more important factor is the effect on receptor

sensitivity. House windows more likely to be open in summer than in colder weather and residents are much more likely to be out in their gardens in warm weather, so that odours are more likely to be detected under these circumstances. This means that there are significant benefits from carrying out potentially odorous operations outside the warmer, summer months of the year.

The surface area of emitting material has a large effect on the rates of odour emissions. Odour emissions are minimised by controlling the area of restoration material exposed to the atmosphere during handling and land applications and particularly by effectively covering or incorporating material that has been applied to land. Partial coverage/inversion of surface applied organic materials using cultivation equipment (e.g. cultivation discs) would provide a significant level of emission control.

Wind direction at the time of any material handling or disturbance activity is important in determining if odours will be carried towards sensitive receptors. Prevailing wind directions for this site are from southerly and westerly directions. This means that there is higher proportion of wind blowing from these directions than other wind directions around the compass. It does not mean that the wind does not blow from other directions. See below for a wind rose from the nearby monitoring station at Caerphilly.



[Wind & weather statistics Caerphilly - Windfinder]

2. Inventory of Odorous Materials

Organic materials used in this spreading operation may emit odours when disturbed or exposed to the atmosphere unless they have been fully matured and stabilised. These odours are composed of a complex mixture of organic compounds, rather than any particular compound or group of compounds. This cocktail of compounds can stimulate the olfactory senses. If the olfactory response is strong or adverse then the odour may be perceived as unwanted or

unpleasant.

Typically organic waste /digestate odours include aldehydes, ammonia, amines, ketones, carboxylic acids, esters, hydrogen sulphide and other compounds containing sulphides. The most odorous of these compounds are typically formed under anaerobic conditions. However given that the wastes permitted under this Deployment have been composted and/or digested the probability of them becoming anaerobic under a short period of storage is unlikely.

2.1 Potential Sources of Odour

2.1.1 Delivery

Delivery of the materials is via sheeted vehicles. These are discharged at the stockpile location and then a stockpile is formed by pushing the material up into a pile. During this operation of movement there is potential for generation of some localised odours in the area around the stockpiles from freshly tipped material as any mechanical activity causes the release of odorous compounds from organic waste when it is disturbed. Once the disturbance ceases then the potential for odour generation from stockpiles significantly reduces.

2.2 Controls of Odour

In terms of odour controls and assessment it is proposed that an odour assessor will be deployed from time to time as required by 4Recyling Limited to assess off-site odours in sensitive areas around the site during any delivery, loading, transport and/or land incorporation activity.

Periodic assessments will also be undertaken by an odour assessor during periods when there are no activities going on on-site. This monitoring will allow 4Recyling Limited to proactively react to unacceptable off-site odours by suspending activities generating odours when wind directions and/or operating conditions are unfavourable.

The site will be managed in accordance with the management system. Operations will be overseen by the technically competent site manager. All staff will receive training relevant to their role and a record of this training will be logged.

A key objective of the management controls will be to ensure that any activity which may give rise to unacceptable odours will only be carried out when the wind direction is away from the most sensitive of the receptors. The use of daily weather forecasts will help work to be planned and managed to reduce the impact of odours on sensitive receptors and to make site personnel aware of the wind direction and changes in wind direction.

2.2.1 Improving Dispersion - The stockpile locations are fixed, so that is no ability moving the stockpiles to improve dispersion of odours by increasing separation distances. However the location of the Stockpiles are crosswind of potentially high risk receptors i.e. its location with regard to the prevailing winds is beneficial for odour control.

2.2.2 Minimising annoyance of neighbours – In order to minimise annoyance to neighbouring properties then stockpile disturbance until the stockpiles are to be

moved will be avoided and if necessary suspending out-loading activities if there are unfavourable wind conditions and if unacceptable odours are detected off-site in residential areas by 4Recyling Limited's odour assessor. Proactive monitoring is seen as a key measure in identifying when additional odour control measures may be needed, such as suspending activities until conditions are more favourable.

2.2.3 Emergencies or incidents – There are no obvious emergencies or incidence which might adversely affect odour emissions from the materials other than those set out in section 3 below.

2.3 Loading Out from Stockpiles

2.3.1 Containment and Controlling/Preventing Odorous Emissions and Evaporation - The single most important odour control measures will be to minimise the exposed surface area of disturbed materials by limiting the working face of the out-loading activity. This will be achieved by out-loading from one end of each stockpile and maintaining a clean working face and keeping the surrounding area clean and tidy. This will help ensure that as much as possible of the settled stockpiles volume is covered within an undisturbed area until that portion is moved.

If deemed necessary portable odour misting equipment may be used with an odour counteractant solution in "upwind" locations in close proximity to loading activities to attempt to increase humidity in the area of the stockpile working faces and to thereby reduce the evaporation of odorous compounds.

Containment within buildings or structures is not feasible in such locations.

2.3.2 Improving Dispersion - The stockpile locations are fixed, so that is no ability moving the stockpiles to improve dispersion of odours by increasing separation distances. However the location of the Stockpile is down wind of potential receptor i.e. its location with regard to the prevailing winds is beneficial for odour control.

2.3.3 Minimising annoyance of neighbours – 4Recyling Limited will monitor odours in the areas around the site during out-loading operations involving the stockpiles, and also periodically when there is no activity.

The most critical factor in minimising annoyance will be avoiding stockpile disturbance until the stockpiles are to be moved and if necessary suspending out-loading activities if there are unfavourable wind conditions and if unacceptable odours are detected off-site in residential areas by 4Recyling Limited's odour assessor. Proactive monitoring is seen as a key measure in identifying when additional odour control measures are needed, such as suspending activities until

conditions are more favourable.

2.3.4 Emergencies or incidents – There are no obvious emergencies or incidents which might adversely affect odour emissions from the bio-solids stockpiles other than those set out in section 3 below.

If there are significant off-site odour complaint episodes, then out-loading activities will be suspended, providing that such a suspension would not be in contravention of any permit obligations.

2.4. Control of Emissions from Incorporation of Organic Restoration materials Into Spoil on Site

2.4.1 Containment and Controlling/Preventing Odorous Emissions and Evaporation - Odour control measures to prevent odorous emissions during spreading/ incorporation onto site will be as follows:

Organic amendments will be a spread at the appropriate application rate by agricultural, low trajectory spreaders when weather conditions are suitable for the operation and odour nuisance will be minimised.

Portable odour misting equipment may in the worst case be considered for use with an odour counteractant solution in “upwind” locations near to incorporation activities if there are unacceptable off-site odours. Such equipment would be used in an attempt to increase humidity in the area of the land application and to thereby reduce evaporation of odorous compounds, but the benefits are unlikely to be significant because the spread material will be covered with soil very shortly after spreading.

2.4.2 Improving Dispersion - The land application and incorporation locations are flexible, within the constraints of areas already in receipt of wastes, so that there will be scope to move application activities to more remote areas as a means of improving dispersion of odours by increasing separation distances if required.

If this movement of application areas was unsuccessful in mitigating odours then the application activities could be suspended if the wind is blowing towards residential receptors within close proximity <150m (or any other agreed distance) radius. If more favourable winds (to aid dispersion away from the most sensitive areas) are forecast or likely to occur, then it may be feasible to suspend application and incorporation activities until there are more favourable wind directions.

2.4.3 Minimising annoyance of neighbours – 4Recyling Limited will monitor odours in the areas around the site during land application and incorporation, and also periodically at times when there is no activity.

The most critical factor in minimising annoyance will be moving, or if necessary suspending, land application activities if there are unfavourable wind conditions and if unacceptable odours are detected off-site in residential areas by 4Recyling Limited's odour assessor. Proactive monitoring is as a key measure in identifying when additional odour control measures are needed, such as suspending activities until conditions are more favourable.

2.4.4 Emergencies or incidents –
There are no obvious emergencies or incidents which might adversely affect odour emissions from the restoration materials and application activities other than those set out in section 3.

If there are significant off-site odour complaint episodes, then land application activities will be suspended, providing that such a suspension would not be in contravention of our permit requirements.

2.5 Application Equipment - The application activity will be actively managed to reduce and minimise the odour risk.

Wind speed and direction are potentially difficult to predict as these conditions can change frequently during the day and the operation has to be managed effectively from a cost point of view. If possible application and incorporation will be moved to a different area of the site to reduce the risk of affecting potential receptors, but as site works are completed this option is significantly reduced.

Table of Control Measures and Odour Risks
The following odour management risk assessment has been drawn up using the Environment Agency H1 "Environmental Risk Assessment" guidelines and based on the approaches outlined above.

Table 2a. Out-loading from Stockpiles for On-site Land Application – Controls and Risks

Hazard	Receptor	Field	Pathway	Control Measures	Probability of exposure	Consequence	Overall risk
Odours due to the out-loading of wastes from existing stockpiles for land application	Neighbouring residential and other receptor areas surrounding the site	All fields	Air Winds blowing odours towards residential properties	Minimising areas of wastes exposed at stockpile by restricting the disturbed working face area to reduce rates of odour generation and evaporation. Use of misting equipment to help reduce evaporation by generating high humidity near stockpile Off-site monitoring of odours during operations so that out-loading activities can be suspended or modified if odours are detected until wind and other conditions are more favourable. Cleaning the area around stockpiles of any spills during and after each work shift.	Possible, but will be limited by managing the duration and timing of operations with respect to any detection of off-site and weather conditions	May cause odours to be detected at sensitive receptors for intermittent periods.	Not significant if managed carefully with appropriate off-site monitoring and reactive control measures

Table 2b. On-site Land Application – Controls and Risks

Hazard	Receptor	Field	Pathway	Control Measures	Probability of exposure	Consequence	Overall risk
Odours due to the land application and incorporation of restoration materials	Neighbouring residential and other receptor areas surrounding the site	All fields	Air Winds blowing odours towards residential properties	Incorporation 24 hours following spreading Off-site monitoring of odours during operations so that application and stockpile out-loading activities can be suspended or modified if odours are detected until wind and other conditions are more favourable. Keeping the soil area around the application area clear of any spills during work and at the end of each work shift.	Possible, but will be limited by managing the duration and timing of operations with respect to any detection of odours off-site and weather conditions	May cause odours to be detected at sensitive receptors for intermittent periods.	Not significant if managed carefully with appropriate off-site monitoring and reactive control measures, including suspension of activities during unsuitable wind/weather conditions.

3.0 Odour Monitoring and Overall Control Measures

3.1 Management controls

The site will be managed in accordance with a management system. Operations will be overseen by the technically competent site manager. All staff will receive training relevant to their role and a record of this training will be logged.

The objective of the management controls will be to ensure that any activity which may give rise to unacceptable odours will only be carried out when the wind direction is away from the most sensitive of the receptors. The use of daily weather forecasts will be used to help reduce the impact of odours to sensitive receptors and to make site personnel aware of the wind direction and changes in wind direction so that operations can be suitably managed.

3.2 Interaction with neighbours

A board will be located at the site entrance detailing permits and contact details during periods of out-loading for off-site delivery or land application

A formal complaints form, as per the 4R Group QMS system, will be used to record and investigate any odour reports or complaints from the Environment Agency or other third parties. The Environment Agency will be further encouraged to provide details of any off-site odour complaint as quickly as possible so that any incidents can be actively investigated.

3.3 Monitoring

An odour monitoring programme may be implemented, during periods of land application to ensure that any odour problems will be promptly identified and mitigated. Off-site and boundary odours will be monitored as required at various points around the site by a member of staff of 4Recycling Ltd. The presence of odour will be determined by sniff test and recorded in a site odour diary. Weather data (wind speed and strength, temperature, sunshine and rainfall) will be recorded at the time of odour monitoring.

Additional odour monitoring at the site boundary and off-site will be undertaken if there is a significant change in the weather or wind direction. In the event of an odour complaint the odour records will be compared to the weather records to help determine the origin of the odour and to determine appropriate remedial action.

The odour monitoring will report 3 outcomes:

1. No detectable odour, no action required.

2. Faint odour; Re-examination of the site to determine source followed by a second odour assessment and a record of the odour incident and remedial action taken.

3. Moderate, strong or very strong odour requiring additional management or odour control actions. Immediate notification to the site operations manager followed by a site examination and boundary tour to determine whether the odour originates from site or external source. An incident report and remedial action taken will be recorded in the site diary.

The monitoring personnel will adopt the following guidance:

a) The first observations shall be made by sniffing the upwind side of the site to detect any off-site odours blowing across the site, followed by downwind assessment at an equidistance of the nearest receptor and the site boundary. The source of any higher intensity odours will be identified and recorded.

b) Periodic assessments should also be undertaken during weather conditions which are most likely to carry odours with the minimal atmospheric mixing and dispersion. Typically such conditions will occur in the evening after sunset with low or calm wind speeds. These assessments are particularly important during warmer summer weather when neighbours are most likely to have windows open.

c) A full upwind and downwind odour assessment should be carried out as soon as practicable at any time when local residents or other receptors complain of off-site odours. Prompt assessments and investigation at the time of the complaint provides the best opportunity to identify the cause of the off-site odour. The Regulator will be further encouraged to report any complaints at the time that the complaints are received so that timely investigations can be carried out.

d) The location of the off-site assessments will depend on wind direction and whether it is a response to a complaint or checking the state of compliance at sensitive receptors or trying to establish a source of an odour.

3.4 Actions contingencies and responsibilities

Land applications and soil incorporation operations will be stopped if the control measures outlined in the plan do not satisfactorily control off-site odours within sensitive off-site receptor areas. Application operations will not be resumed until the cause of the problem has been mitigated or the weather conditions giving rise to the problem have abated.

3.4.1 Odour control in the event of accidents and emergencies

An attempt has been made to identify possible events that could lead to accidents and emergencies and their impact on odour control. Mitigation measures have been identified for each scenario identified to minimise the impact of odour.

Severe weather

Severe weather conditions can range from high rainfall to low temperature leading to frozen ground and snow cover. These conditions will prevent the application and incorporation of organic materials.

During very hot conditions spreading of waste will be suspended to reduce evaporation of odour from the applied surface of the restoration materials.

Odour complaints procedure

The following complaints procedure will be adopted in the event of receiving a complaint alleging potential odour from the site. Firstly, the investigation will determine whether the odour complaint is associated with activities carried out by 4Recycling Ltd. Secondly, the investigation will determine what action is required to prevent or minimise the probability of it reoccurring.

To facilitate the investigation, local receptors and the Environment Agency will be encouraged to contact 4Recycling Ltd directly at the time when any odours are detected off-site so that events leading up to the off-site odours can be investigated as soon as practicable. A representative of 4Recycling Ltd will respond as quickly as possible after receiving any complaints to allow an effective appraisal to be carried out at the location of the complaint.

The complaint details and investigation shall be recorded in the site diary. Where abnormal operations or accidents occur, they will be noted in the site diary and the site operation manager informed immediately.

3.5 Odour management plan review

The odour management plan will be reviewed regularly and also if any complaints are received.