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4RMS043 - Odour Management Plan for 4Recycling Ltd

The Old Peat Works
Reading Gate
Swinefleet
Goole
East Riding of Yorkshire
DN17 4BL

Environmental Permit EPR/GB3202XN/A001

September 2018

Scope and Contents of the Plan

This Odour Management Plan (OMP) has been developed in line with the Environment Agency's H4 Odour Guidance and is associated solely with the waste operations at the former peat works near Swinefleet. The OMP will be used to ensure compliance with the environmental permit condition(s) and to ensure a robust monitoring regime is in place to ensure continued compliance.

Odour condition

'Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in an approved odour management plan, to prevent or where that is not practicable to minimise the odour'

The OMP details the following:

1. Site Location and Potential Receptors
2. Site Operations
3. Inventory of Waste Materials
4. Potential Sources of Odour Emissions
5. Control and Prevention of Odour Emissions
6. Odour Management Risk Assessment
7. Monitoring and Management
8. Odour Management Plan Review

1.0 Site location & Potential Odour Receptors

The national grid reference for the centre of the old peat works site is OSR Grid Ref SE 76875,16851.

The site has a remote location and is positioned centrally within approx. 20,000 acres of agricultural land predominantly used for arable enterprises. The main road network forms the boundaries to this block of land. The M18 is approx. 5.3 miles to the west, The A161 is approx. 2.9 miles to the north and 2.4 miles to the east and the A18 is approx. 3.9 miles to the south.

The prevailing wind is from the south west and therefore continues past the site in a north east direction towards the River Ouse as illustrated in Figure 1.0 below. Figure 1.1 illustrates the wind direction as a percentage *per annum* and confirms the prevailing wind is from the south west for the majority of the year.

Table 1.0 Distance from the Old Peat Works site to village/towns

Location	Distance (Miles)	Distance (Meters)
Eastoft	2.24	3610
Crowle	2.53	4060
Swinefleet	3.2	5180
Old Goole	3.67	5910
Luddington	3.7	5950
Moorends	4.74	7620
Adlingfleet	5.3	8540

Figure 1.0 Location map of The Old Peat Works with prevailing wind direction

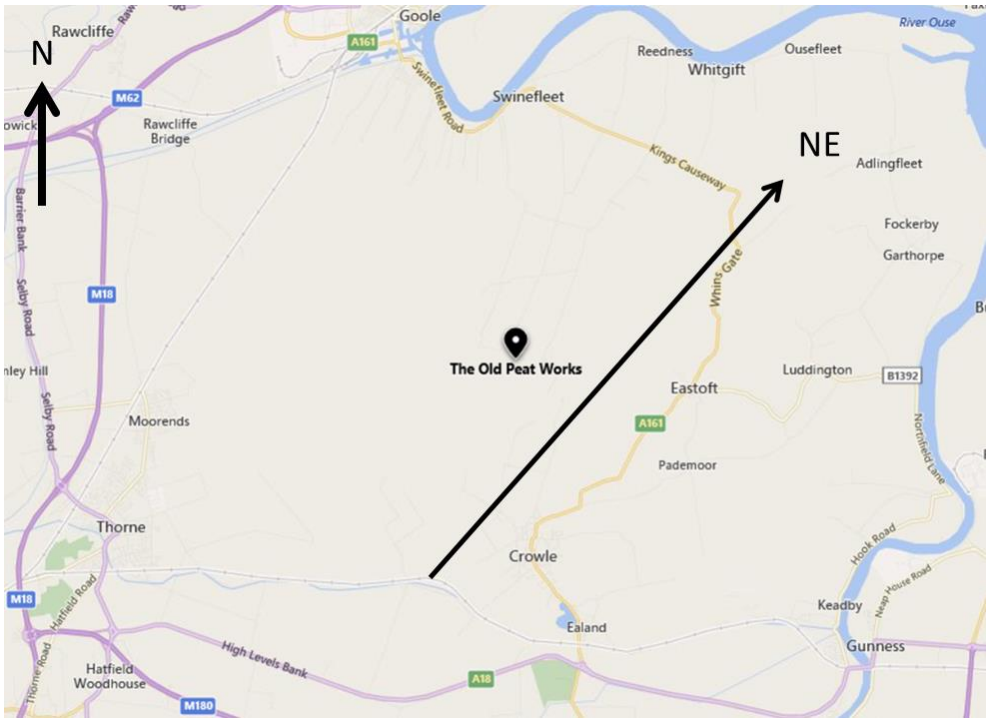
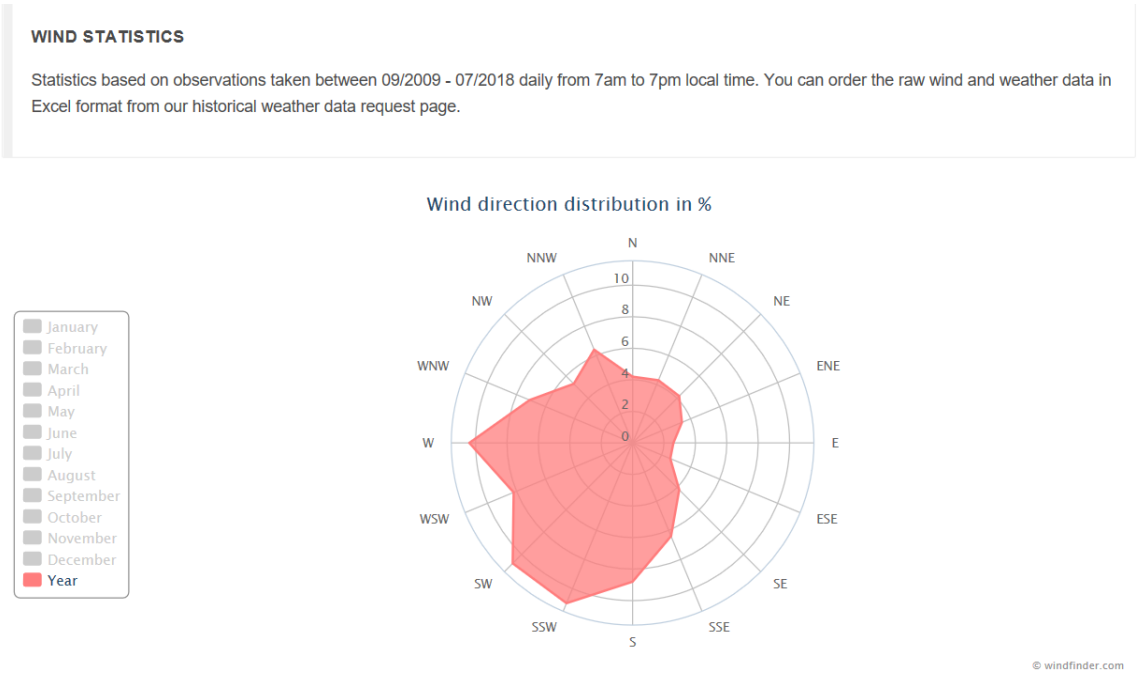


Figure 1.1 Wind direction distribution in %



Source: (www.windfinder.com)

Figure 1.2 illustrates the number of receptors within a 2000m radius of the site. There are 11 receptors in total within this range, with 3 being in the prevailing wind direction.

Receptors within 2000m of The Old Peat Works

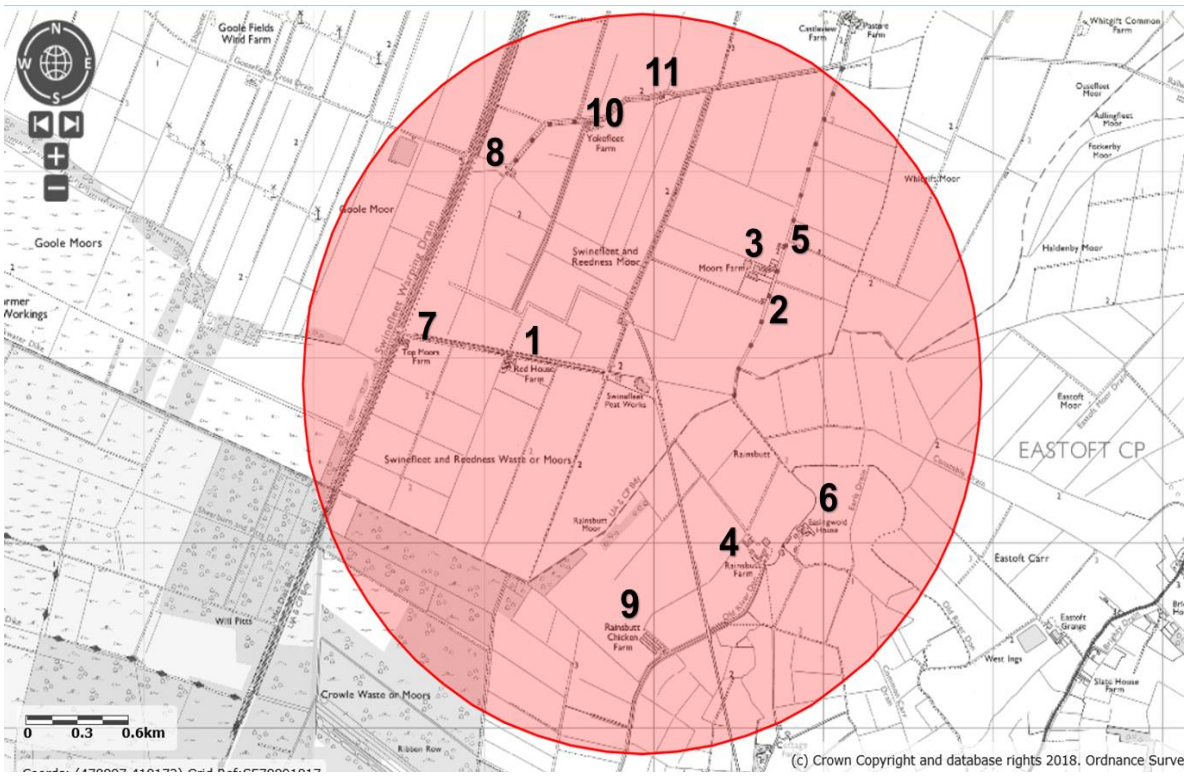


Table 2.0 Distance from the Old Peat Works site to neighbouring receptors

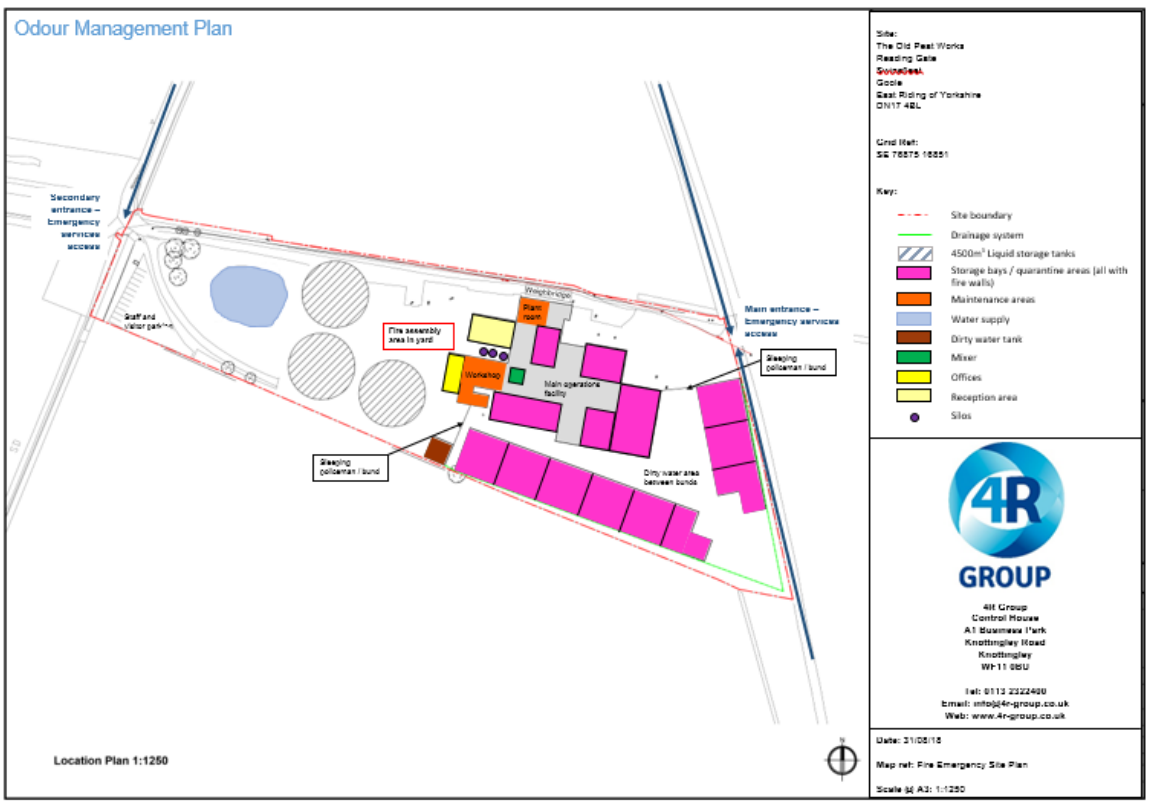
Location	Property Name	Distance from Site Boundary
1	Red House Farm	525
2	The Red Bungalow	770
3	Moors Farm	790
4	Rainsbutt House	890
5	The Bungalow	1029
6	Easingwold House	1044
7	Swinefleet Moor Farm	1164
8	Station House	1203
9	Rainsbutt Chicken Farm	1255
10	Yokefleet Farm	1317
11	Railway Cottages	1510

Separation distances and air dispersion significantly contribute to reductions in odour**.** The further a receptor is from a particular odour, then the lower the risk of adverse effects. However, the benefits of greater separation distance are greater than being 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 of four reduction in the off-site odour perception.

2.0 Site Operations

The site will be used for the processing and storage of organic and inorganic materials which will then be used to incur agricultural benefit on local farms by using them as soil improvers and replacements for artificial/synthetic fertilisers

Figure 2.0 The Old Peat Works Site Plan



Site Operations will be predominantly as follows;

2.1 Delivery of waste materials to site

Deliveries of waste materials to site will be via HGV with trailer/container/tanker. Waste materials will be in solid/liquid/granular or powder state. Waste deliveries will be weighed and duty of care documentation exchanged. Waste materials will then be received as follows;

- Solid waste materials transferred directly into the Process Building. Onward transfer will be via mobile plant.
- Liquid waste materials transferred directly to fully enclosed above ground storage tanks. Onward transfer will be via enclosed pipework.
- Granular/Powder waste materials transferred directly to fully enclosed tower silos. Onward transfer will be via enclosed auger/conveyor/pipework.

2.2 Lime treatment of Biosolids.

This process will be to a defined HACCP treatment protocol. The biosolids will be treated with product grade lime via a plough share mixer. Product grade lime will be stored in external storage silos and transferred for mixing inside the Process Building via enclosed transfer auger/conveyor. Biosolids will be loaded into the plough share hopper via loading shovel or telehandler. The biosolids will then move from the feed hopper to the mixing chamber which houses the plough share. As the plough share rotates it turns and folds the biosolids. At the same time the product grade lime is fed into the chamber at a pre-set

application rate. Sufficient mixing is achieved before the treated biosolids are conveyed from the plough share mixer to the discharge bunker. The purpose of this treatment is to raise the pH to over 12 which then causes a dramatic reduction in microbial activity and thus ensures the biosolids have met the protocols defined in the HACCP. This product may then be used on agricultural land.

2.3 Mechanical treatment of waste materials

This process will be used to enhance the quality of waste materials to ensure they meet defined specifications so that they may be spread to agricultural land. There are many mechanical treatments available for the wastes listed in the inventory of waste. It is anticipated that the most likely mechanical treatments to be used at the old peat works site will include the following;

- Screening of compost to remove physical contaminants such as plastic using air separation/classification equipment.
- Screening of compost to remove physical contaminants such as glass using density separation equipment.
- Screening of compost to produce varying grades/sizes using rotating trommel or star screens.
- Treating of waste lime in powder form with water to produce a granular material using controlled blending/mixing equipment.
- Size reduction and screening of plasterboard to separate the gypsum from the paper/cardboard using screening and separation equipment.
- Separation of street sweepings into the fractions of sand, aggregates and water using a combination of rotating trommel screens and density separators.
- Crushing and screening of lime cake

As and when mechanical treatments are required for wastes not listed above then an assessment of odour generating potential will be made and this OMP will be reviewed and updated.

2.4 Storage of organic products

Following successful treatment of waste materials, they will then be stored either internally or externally depending on their nature and characteristics. Storage locations will be assessed via a product storage risk assessment. Products with a higher odour generating potential will be stored internally.

Storage inside will be in defined areas and separated by concrete or sleeper walls. External storage will also be in defined areas and on impervious surfaces with sealed drainage systems to ensure the containment of any leachate.

2.5 Export of organic products

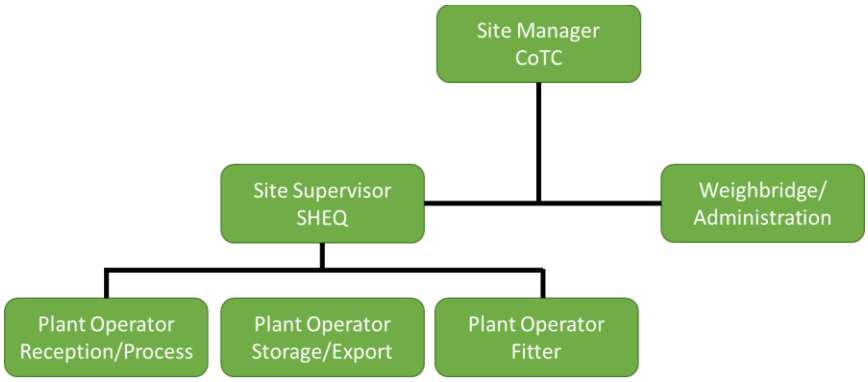
Collection of organic products will be via HGV/Agricultural plant in suitable trailer/container/tanker, trailers and containers will be fitted with a sheeting system. Collection vehicles will be weighed and duty of care documentation exchanged. Collections will be made as follows;

- Internally stored solid product will be loaded within the Process Building via loading shovel or telehandler. The trailer/container will then be sheeted prior to leaving the building.
- Externally stored solid product will be loaded from the yard via loading shovel or telehandler. The trailer/container will be sheeted upon completion of loading.
- Liquid products will be collected via tanker and transferred via enclosed pipework.

2.6 Management of operations

It is anticipated that up to 100,000 tonnes of waste material will be processed at the old peat works site. The following structure will be used to process this volume of waste/size of operation;

The Old Peat Works organisational chart



4R Group will provide technical and operational support to the site via its experienced team of technical and operational staff. The 4R Group head office is located nearby at Knottingley.

3.0 Inventory of Odorous Materials

Table 3.0 below lists the waste materials that potentially may be delivered to the Old Peat Works site for further treatment and that have an odour generating potential. There are waste materials in addition to those in Table 3.0 that do not have odour generating potential and therefore are not included in the inventory of odorous materials. The full list of wastes are referenced in Part B4 of the permit application.

The materials in Table 3.0 have been assessed based upon their odour generating potential using a traffic light system to indicate high, medium and low.

It is important to note that all waste materials will have had some form of pre-treatment prior to delivery. Therefore, the odour generating potential of these materials is already diminished.

Table 3.0 Waste material odour generating potential assessment

List SFA wastes – Taken from Table 2.2 of SR2008No19 75Kte (Std Rules for Sludge Liming Permit)		**Odour Generating Potential**		
Waste Code	**Description**	High	Medium	Low
19	**WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**			
19 08	**waste from waste water treatment plants**			
19 08 01	Screenings			
19 08 02	waste from desanding			

19 08 05	sludges from treatment of urban waste water			
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats			
19 09	**waste from the preparation of water intended for consumption or water for industrial use**			
19 09 02	sludges from water clarification			
19 09 02	sludges from decarbonation			
19 09 06	solutions and sludges from regeneration of ion exchangers			
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPERATELY COLLECTED FRACTIONS**			
20 03	**other municipal wastes**			
20 03 04	septic tank sludge			
20 03 06	waste from sewerage cleaning			
20 03 99	municipal wastes not otherwise specified (cesspool waste and other sewage sludge only)			

02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**	High	Medium	Low
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**			
02 01 03	plant-tissue waste			
02 01 07	wastes from forestry			
02 02	**Wastes from the preparation and processing of meat, fish and other foods of animal origin**			
02 02 03	materials unsuitable for consumption or processing			
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**			
02 03 04	materials unsuitable for consumption or processing			
02 05	**wastes from the dairy products industry**			
02 05 01	materials unsuitable for consumption or processing			
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**			
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials			
02 07 02	wastes from spirits distillation			
02 07 04	materials unsuitable for consumption or processing			

19	WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	High	Medium	Low
19 01	**Wastes from incineration or pyrolosis of wastes**			
19 01 12	bottom ash and slag other than those mentioned in 19 01 11 - ash from the incineration of pig and poultry carcasses at premises used for agriculture only			
19 05	**wastes from aerobic treatment of solid wastes**			
19 05 03	off-specification compost			
19 05 03	compost from source segregated biodegradable waste only			
19 05 03	compost from source segregated biodegradable waste and sludges from treatment of urban waste water only			
19 08	**waste from waste water treatment plants**			
19 08 01	Screenings			

List SFDa wastes – Taken from Table 2.2 from SR2010No17		High	Medium	Low
Waste Code	**Description**			
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**			
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**			
02 01 06	farmyard manure and slurry, horse manure and soiled bedding made from plant tissue only			
02 01 99	slurry and manure and soiled bedding from any premises except abattoirs, soiled biodegradable bedding not made from plant tissue, soiled bedding desiccants only			
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**			
02 02 01	untreated wash waters and sludges from washing and cleaning from abattoirs, poultry preparation plants, rendering plants or fish preparation plants only			
02 02 01	wash waters and sludges from secondary food processing or the cook chill sector			
02 02 02	egg shells from hatcheries, processing plants and similar premises			
02 02 02	shellfish shells from which the soft tissue or flesh has been removed			
02 02 02	cooked shellfish shell which is not completely free of flesh			
02 02 02	blood and gut contents from abattoirs, poultry preparation plants, rendering plant or fish preparation plants only			
02 02 04	sludges from on-site effluent treatment plant from abattoirs, poultry preparation plants, rendering plants or fish preparation plants only			

02 02 99	slurry and manure and soiled bedding from abattoirs including soiled biodegradable bedding not made from plant tissue and soiled bedding desiccants only			
02 02 99	washwaters from animal by-product handling and processing plants that meet the waste water treatment requirements in the ABPR			
02 02 99	processed animal by-product material from rendering plants			
02 02 99	catering waste			
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**			
02 03 01	sludges from washing and cleaning produced during food preparation and processing only			
02 03 01	wash waters and sludges from secondary food processing or the cook chill sector			
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation			
02 03 03	wastes from solvent extraction			
02 03 04	biodegradable materials unsuitable for consumption or processing only			
02 03 05	sludges from on-site effluent treatment			
02 03 99	biodegradable wastes not otherwise specified from the processing of such materials including those from secondary food processing or the cook-chill sector			
02 05	**wastes from the dairy products industry**			
02 05 01	biodegradable materials unsuitable for consumption or processing			
02 05 02	sludges from on-site effluent treatment			
02 05 99	biodegradable wastes not otherwise specified derived from the processing of dairy products			
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**			
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials			
02 07 02	wastes from spirits distillation			
02 07 03	wastes from chemical treatment			
02 07 04	materials unsuitable for consumption or processing			
02 07 05	sludges from on-site effluent treatment			
02 07 99	biodegradable wastes not otherwise specified from the processing of the raw materials used in the production of such beverages only			
04	**WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES**			
04 01	**wastes from the leather and fur industry**			
04 01 07	sludges from on-site effluent treatment free of chromium			
04 02	**wastes from the textile industry**			
04 02 10	organic matter from natural products only			

04 02 15	biodegradable wastes from finishing other than those containing organic solvents only			
04 02 20	sludges from on-site effluent treatment other than those mentioned in 04 02 19			
05	**WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL**			
05 01	**wastes from petroleum refining**			
05 01 10	activated sludges from on-site oil refinery biological effluent treatment plants other than those mentioned in 05 01 09			
07	**WASTES FROM ORGANIC CHEMICAL PROCESSES**			
07 07	**wastes from the manufacture, formulation, supply and use of fine chemicals and chemical products not otherwise specified**			
07 07 12	sludges from on-site biological effluent treatment plant at chemical manufacturing sites other than those mentioned in 07 07 11 only			
16	**WASTES NOT OTHERWISE SPECIFIED IN THE LIST**			
16 10	**aqueous liquid wastes destined for off-site treatment**			
16 10 02	washwaters from animal by-product intermediate plants that meet the waste water treatment requirements in the ABPR			
19	**WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**			
19 05	**wastes from the aerobic treatment of waste**			
19 05 99	compost derived from non-source segregated biodegradable waste			
19 05 99	liquor and digestate from aerobic treatment of source segregated biodegradable waste only			
19 06	**wastes from anaerobic treatment of waste**			
19 06 03	liquor from anaerobic treatment of non-source segregated biodegradable waste			
19 06 04	whole digestate and fibre digestate from anaerobic treatment of non-source segregated biodegradable waste			
19 06 05	liquor from anaerobic treatment of source segregated biodegradable waste			
19 06 06	whole digestate and fibre digestate from anaerobic treatment of source segregated biodegradable waste			
19 06 06	whole digestate and fibre digestate from anaerobic treatment of source segregated biodegradable waste and sludges from treatment of urban waste water only			
19 08	**waste from waste water treatment plants**			
19 08 02	washed sewage grit (waste from desanding) only			
19 08 05	treated sludges from treatment of urban waste water			
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**			
19 12 12	recycled gypsum from plasterboard			

List SFDb wastes – Wastes listed in SR2010No4/No5 but not covered by SR2010No17	High	Medium	Low

Waste Code	Description			
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**			
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**			
02 01 03	plant-tissue waste			
19	**WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**			
19 05	**wastes from the aerobic treatment of waste**			
19 05 03	compost from source segregated biodegradable waste only			
19 05 03	compost from source segregated biodegradable waste and sludges from treatment of urban waste water only			

List SFDc wastes - wastes for storage, not listed in SR2010No17, SR2010No4 or SR2010No5		High	Medium	Low
2	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD, PREPARATION AND PROCESSING**			
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**			
02 01 07	wastes from forestry			
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**			
02 02 03	materials unsuitable for consumption or processing			
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**			
17 08	**gypsum-based construction material**			
17 08 02	gypsum-based construction materials other than those mentioned in 17 08 01			
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE**			
19 05	**wastes from aerobic treatment of solid wastes**			
19 05 03	off-specification compost			
19 08	**wastes from waste water treatment plants**			
19 08 01	screenings			

The remaining sections of this OMP will set out the control measures and monitoring programme in place to ensure that the waste materials identified in Table 3.0 do not give rise to off-site odour emissions.

4.0 Potential Sources of Odour

Below is a list of potential sources of odour attributable to the old peat works and its operations;

1. **Importing of waste materials to site** – waste materials delivered to site via HGV movements.

2. **Reception of waste materials**. – the tipping of waste materials from delivery trailer/container to site Reception Area.

3. **Moving and handling of waste materials** – the mechanical movement of waste material from Reception Area to Process Area and from Process Area to Storage Area.

4. **Processing and treatment of waste materials** – the mechanical handling, mixing and agitation of waste materials to form organic products.

5. **Storage of resulting product** – the controlled storage of organic product within pre-defined Storage Areas, internally and externally.

6. **Loading of product for export from site** – the mechanical movement of organic product from the pre-defined Storage Areas to trailer/container for export from site.

7. **Management of site operations** – the process, procedures and monitoring implemented to ensure efficient movement through steps 1 – 6 above.

5.0 Controlling and Prevention of Odour Emissions

The below sections/tables detail the control measures in place to prevent odour emissions from the potential sources identified in section 4.0. The sections are divided into day to day operations and emergency/incidents to ensure that all potential risks of odour emissions have been identified and that appropriate measures are in place to control or prevent these.

5.1 Importing of waste materials to site

Day to day operations

Control	Outcome
Haulage contractors to use trailers/containers/tankers that are fit for purpose e.g. fully sheeted, sealed tailgates	Control of fugitive emissions during transportation to site
A delivery schedule will be in place to distribute deliveries evenly throughout the operational day to avoid congestion, peak volumes, tipping delays	Reduce the potential for odour emissions
Haulage contractors will be prohibited from overnight parking on the site access roads	Control of fugitive emissions during transportation to site.
Only approved haulage contractors will be used, regular auditing will ensure quality, compliance and safety standards are maintained.	Reduce the potential for odour emissions

Emergency/Incident

Emergency/Incident	Control	Outcome
HGV breakdown when on site	Haulage Contractor to arrange recovery or repair.	Minimise breakdown time and reduce the potential for odour emissions
Failure to trailer/container/ tanker resulting in spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Fire to HGV on site	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

5.2 Reception of waste materials

Day to day operations

Control	Outcome
Delivery drivers will receive a site induction and sign safe systems of work to ensure compliance with procedures.	Reduce the potential for odour release
Traffic management plan will be implemented to ensure efficient turnaround times thus minimising time on site	Reduce the potential for odour emissions
Compliance monitoring will be undertaken by site staff to ensure drivers adhere to procedures	Reduce the potential for odour emissions

Bulk Deliveries

Day to day operations

Control	Outcome
The Reception Area will incorporate 2 Reception Doors to allow for receipt of 2 deliveries in quick succession and to allow receipt in the event that 1 door experiences a downtime event.	Reduce the potential for odour release.
The Reception Area will have storage capacity for approx. 100 tonnes, therefore deliveries can continue in the event of unplanned downtime to the loading shovel or process equipment.	Reduce the potential for odour emissions.
Trailers/containers will only remove sheet when tipping is ready to commence.	Reduce the potential for odour emissions.
When load ejected into Reception Area the vehicle will exit and the roller door will be closed thus preventing fugitive emission.	Control of fugitive emissions.

Liquid Deliveries

Day to day operations

Control	Outcome
Liquid deliveries will be via enclosed tanker preventing fugitive emissions.	Control of fugitive emissions
Purpose built above ground storage tanks incorporating a roof system thus preventing fugitive emissions	Control of fugitive emissions
Tankers to position next to storage tanks and transfer of liquid to be via enclosed pipework	Control of fugitive emissions

Powder/granular deliveries

Day to day operations

Control	Outcome
Powder/granular deliveries will be via enclosed trailer/container preventing fugitive emissions	Control of fugitive emissions
Purpose built above ground storage silos adjacent to the	Control of fugitive emissions

Process Building to protect from wind.	
Delivery vehicles to position next to storage silos and transfer of powder/granules to be via enclosed pipework to prevent fugitive emissions.	Control of fugitive emissions

Emergency/Incident

Emergency/Incident	Control	Outcome
Failure to trailer/container/ tanker during delivery process resulting in spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Impact/collision between delivery vehicle and storage vessel causing spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Fire to delivery vehicle during transfer of material to storage vessel	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

5.3 Moving and handling of waste materials

Day to day operations

Control	Outcome
The Process Building will be constructed of concrete walls and profiled high level wall and roof sheets. Access doors will be purpose built industrial roller doors. Therefore, the Process Building will be fully enclosed.	Control of fugitive emissions
All moving and handling of liquids and powders/granules will be via enclosed pipework/augers/conveyors.	Control of fugitive emissions
All moving and handling of waste materials to create organic products will be undertaken within the fully enclosed Process Building	Control of fugitive emissions
Planned Preventative Maintenance schedule in place to maintain equipment. Critical spares stored on site. Workshop facilities and site-based engineer/fitter. Sub-contractor call out arrangements.	Repair equipment, minimise downtime event and reduce the potential of fugitive emissions

Emergency/Incident

Emergency/Incident	Control	Outcome
Failure to transfer pipework/ /auger/conveyor resulting in spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Impact/collision between vehicle and pipework/ /auger/conveyor causing spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Fire to pipework/ /auger/conveyor causing spillage on site	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

5.4 Processing of waste materials

Day to day operations

Control	Outcome
The Process Building will be constructed of concrete walls and profiled high level wall and roof sheets. Access doors will be purpose built industrial roller doors. Therefore, the Process Building will be fully enclosed.	Control of fugitive emissions
All processing that incorporates agitation, mixing and blending of waste materials to create organic products will be undertaken within the fully enclosed Process Building	Control of fugitive emissions
The processing/treatment of waste materials to create organic products will change the characteristics and nature of the materials and in turn reduce their odour generating potential	Reduce the potential of fugitive emissions
The processing of waste materials that have a higher odour generating potential will take place without undue delay	Reduce the potential of fugitive emissions
Planned Preventative Maintenance schedule in place to maintain equipment. Critical spares stored on site. Workshop facilities and site based engineer/fitter. Sub contractor call out arrangements.	Repair equipment, minimise downtime event and reduce the potential of fugitive emissions

Emergency/Incident

Emergency/Incident	Control	Outcome
Severe weather conditions including lightening and or gale force winds cause damage to Process Building	Suspend treatment activities until weather event has passed. Assess damage and repair before recommencing operations	Control the event, minimise the duration and reduce the potential for odour emissions
Impact/collision between vehicles and Process Building causing damage and loss of integrity	Suspend treatment activities until damage has been repaired	Control the event, minimise the duration and reduce the potential for odour emissions
Fire to Process Building	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

5.5 Storage of resulting product

Day to day operations

Control	Outcome
Following treatment products will be stored in designated storage areas. Whilst in storage the products will not be moved, agitated or mixed to minimise odour generating potential.	Reduce the potential of fugitive emissions.
After a short time a crust typically forms over the surface area of the stockpiles which will further reduce odour generating potential.	Reduce the potential of fugitive emissions.
An odour assessment of stockpiles will be made each day and form part of the site odour monitoring regime. In the event that a particular batch of organic product stored externally is found to be generating odour emissions then it will be moved to internal storage.	Reduce the potential of fugitive emissions.

Emergency/Incident

Emergency/Incident	Control	Outcome
Impact/collision between vehicle and storage vessel causing spillage on site	Deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

Fire that damages storage vessel	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Severe weather conditions including lightening and or gale force winds cause damage to storage vessel	Suspend treatment activities until weather event has passed. If safe deploy spill control procedure. Contain spillage until stable and transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions
Severe weather conditions, prolonged heavy rain, deluge creates excessive levels of leachate	Ensure that storage tanks have capacity for this event. 24hour emergency callout arrangement with haulage contractor and access to water treatment works.	Control the event, minimise the duration and reduce the potential for odour emissions

5.6 Loading of product for export from site

Day to day operations

Control	**Outcome**
Haulage contractors to use trailers/containers/tankers that are fit for purpose e.g. fully sheeted, sealed tailgates	Control of fugitive emissions during export from site
A collection schedule will be in place to distribute collections evenly throughout the operational day to avoid congestion, peak volumes, loading delays	Reduce the potential for odour emissions
Loading of product will take place by positioning the collection vehicle adjacent to the stockpile designated for collection to minimise loading times	Reduce the potential for odour emissions
Loading of organic product from stockpile and its tipping into trailers/containers has the potential to generate odour emissions. Therefore, when loading is planned from external storage an assessment of wind conditions will be made. If wind direction is towards receptors and wind speed is high then loading from external storage will be suspended and instead loading will take place from internal storage within the fully enclosed Storage Area.	Control of fugitive emissions during loading of product.
Haulage contractors will be prohibited from overnight parking on the site access roads	Control of fugitive emissions during transportation to site.
Only approved haulage contractors will be used, regular auditing will ensure quality, compliance and safety standards are maintained.	Reduce the potential for odour emissions

Emergency/Incident

Emergency/Incident	Control	Outcome
HGV/Agricultural plant breakdown when on site	Haulage Contractor to arrange recovery or repair.	Minimise breakdown time and reduce the potential for odour emissions
Failure to trailer/container/ tanker resulting in spillage on site	Deploy spill control procedure. Contain spillage until stable and load product onto another collection vehicle	Control the event, minimise the duration and reduce the potential for odour emissions
Fire to HGV/Agricultural plant or loading shovel on site	Deploy Fire Prevention Plan. Fire Marshall to assess fire and extinguish if safe. Contact emergency services if required. When situation made safe transfer material to designated storage area	Control the event, minimise the duration and reduce the potential for odour emissions

5.7 Management of site operations

Day to day operations

Control	Outcome
The site will be managed in accordance with an Environmental Management System which will incorporate Standard Operating Procedures.	Reduce the potential for odour emissions
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 maintained on file	Reduce the potential for odour emissions
The site, its operations and procedures will be routinely audited by 4R Group Technically Competent staff to ensure continued compliance.	Reduce the potential for odour emissions
The objective of the management system will be to ensure that all site operations are carried out in a safe manner and that they incorporate the odour control measures identified in section 5.0. In addition a site monitoring regime will be in place and is detailed in section 7.0.	Reduce the potential for odour emissions

5.8 Maintenance

All process equipment will be subject to a Planned Preventive Maintenance ('PPM') schedule in order to reduce unplanned downtime events. Each month PPM tasks are issued to the site workshop and completed during that month. The schedule covers all items of plant and equipment

used on site including roller doors, mobile plant, etc. Tasks for each item of equipment are generated by assessing site staff and manufacturers recommendations. If during the task or at any other time during the month a fault is detected then a breakdown sheet will be issued and the fault rectified. Breakdown sheets will allow the monitoring of plant and equipment and for areas for improvement to be identified.

On site workshop facilities will enable repair and maintenance works to be undertaken by site staff to minimise unplanned downtime. Critical spares will be kept on site in the workshop.

For larger repair jobs a network of sub contractors will be available on a call out basis.

Arrangements will be in place for the replacement of mobile plant in the event that it will be down for longer than 12 hours.

6.0 Odour Management Risk Assessment

The following odour management risk assessment has been completed using the Environment Agency H1 “Environmental Risk Assessment“ guidelines and based on the approaches outlined above.

The Old Peat Works Site Odour Risk Assessment

		Control Measures					
Hazard	**Likelihood of Occurrence**	**Managing Inventory**	**Controlling Evaporation**	**Containment**	**Dispersion**	**Reduce Impacts**	**Revised Likelihood of Occurrence**
Import of waste materials to site Hazards identified in section 5.1	High	Delivery schedule to be implemented to ensure even distribution of deliveries to site throughout the working day.	Fully enclosed and/or sheeted deliveries	Fully enclosed and/or sheeted deliveries	Weather station used to determine wind direction and speed and to inform site operations.	Sub-contractor monitoring programme in place to assess performance of haulage companies and suitability of equipment.	Low
Reception of waste materials Hazards identified in section 5.2	High	Wastes with odour generating potential given priority status	Transfer via enclosed Reception Area for bulk materials and pipework for liquids and granules.	Storage in fit for purpose, fully enclosed; Tanks for liquids Silo for powder/granules Process Building for solids	Enclosed transfer and storage	Enclosed transfer and storage	Low
Moving and Handling of waste materials Hazards identified in section 5.3	Medium	Wastes with odour generating potential given priority status	Transfer via enclosed Reception Area/Process Building for bulk materials and pipework for liquids and granules.	Transfer via enclosed Reception Area/Process Building for bulk materials and pipework for liquids and granules.	Enclosed transfer and handling of wastes with odour generating potential Weather station used to determine wind direction and speed and to inform site operations.	Enclosed moving and handling of waste. Daily monitoring programme to assess odour at the site boundary.	Low
Processing of waste materials	High	Wastes with odour generating potential given priority status	Processing via enclosed Reception Area/Process Building	Processing via enclosed Reception Area/Process Building	Enclosed processing and handling of wastes with odour generating potential Weather station used to determine wind direction	Enclosed processing and handling of waste. Daily monitoring programme to assess odour at the site boundary.	Low

Hazards identified in section 5.4					and speed and to inform site operations.		
Storage of organic products Hazards identified in section 5.5	Medium	Organic products with odour generating potential stored within Process building storage area.	Storage in fit for purpose, fully enclosed; Tanks for liquids Silo for powder/granules Process Building for solids	Storage in fit for purpose, fully enclosed; Tanks for liquids Silo for powder/granules Process Building for solids	Storage in fit for purpose, fully enclosed; Tanks for liquids Silo for powder/granules Process Building for solids Organic Product with low odour generating potential stored externally with daily monitoring programme.	Daily monitoring programme to assess odour at the site boundary	Low
Export of products from site Hazards identified in section 5.6	Medium	Export schedule to be implemented to ensure even distribution of collections from site throughout the working day.	Fully enclosed and/or sheeted collections	Fully enclosed and/or sheeted collections	Use weather station data to determine wind direction and speed and to inform site operations.	Sub-contractor monitoring programme in place to assess performance of haulage companies and suitability of equipment.	Low
Management of site operations Hazards identified in section 5.7	High	Wastes received as per permitted waste list set out in Environmental Permit Wastes assessed for odour generating potential Wastes monitored and assessed for suitability for site/process.	Continued monitoring of all stages of the site operations to include; Delivery vessel integrity Storage vessel integrity Building integrity Processing Techniques Storage Locations	Continued monitoring of all stages of the site operations to include; Delivery vessel integrity Storage vessel integrity Building integrity Processing Techniques Storage Locations	Daily monitoring programme to assess odour at the site boundary. Weather station used determine wind direction and speed and to inform site operations.	Continued monitoring and auditing to ensure continued compliance and opportunities for improvement identified.	Low

7.0 Odour Monitoring and Overall Control Measures

7.1 Monitoring

A daily site monitoring programme will be implemented as part of the management system. The monitoring will include site boundary odour checks and upwind/downwind odour checks. The presence of odour will be determined by sniff test and recorded in a site odour diary and a score allocated.

The site will be equipped with a Weather Station located on a pole above the Process Building. The weather station will record data (wind direction, wind speed, temperature, rainfall etc.) and transfer this to the site computer. The weather station will provide 'live' data but also store historic data. This data will be used to inform site operations and also be reviewed in the event of an odour complaint. A weather chart can be printed to correspond with the time of complaint and used to confirm wind direction and speed. This will form part of the Odour Complaint Report.

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.

7.2 Odour complaint report

In the event that an odour complaint be received at site via the Environment Agency, by another third party or directly to site then the Odour Complaint Report ('OCR') will be completed as follows;

- Complainant details to be recorded including contact details, date and time the odour was detected and a NIRS number if reported by the EA.
- Description of the complaint to include; description of odour, intensity, duration, location, weather conditions.
- Site to the undertake investigation as follows;
    - Print weather station data to confirm wind speed and direction
    - Details of vehicles on site and movements at time of complaint
    - Check integrity of Process Building i.e. doors open or closed at time of complaint
    - Details of abnormal events i.e. plant breakdown, spillage etc
    - Operations on site i.e. Treatment of biosolids, stockpiling internally, loading externally
    - Any other relevant information

- List any actions undertaken following investigation
- Site Manager or designate to attend location of odour complaint to undertake odour assessment and record details.

- The completed OCR will then be sent to the EA and recorded on site and on the 4R Group EMS.

Example OCR:

The Old Peat Works Odour Complaint Report					
Complaint details				NIRS	
Name		Date and Time Reported			
Contact Tel		Date and Time of Odour			
Contact Email		Location of Odour			
Description of Complaint - Describe odour, characteristics, duration, constant or intermittent, score					
Site Investigation					
Action		**Complete**	**Outcome**		
Print Weather Station Data for time of odour					
Details of vehicles on site and movements					
Check integrity of Process Building					
Details of abnormal / unplanned events					
Details of site operations					
Details of any other relevant data					
Site Manager or designate to attend location of complaint					
Date and time of attendance		Odour detected		Odour score	
Describe odour, characteristics, duration, constant or intermittent				1 = No odour	
				2 = Faint odour - hard to detect	
				3 = Moderate odour - easy to detect	
				4 = Strong odour	
				5 = Very strong odour - causing nausea	
Form completed by		Date		Sent to EA and filed	

7.3 Continued compliance

All of our operating procedures, management systems and health and safety compliance are independently audited. We are ISO 9001, 14001 and 18001 accredited and we are Achilles verified. Additionally, these systems will be continually audited and monitored by members of the 4R Group team to ensure continued compliance and to identify improvements if necessary.

The 4R Group team has numerous qualifications and professional memberships including:

- 2 x PhDs in plant and soil science disciplines, including research into wastes for land restoration for biofuel production and the fate and mobility of heavy metals in soils
- 3 x MSc degrees in Environmental Sciences
- 10 x BSc degrees in plant, soil and environmental sciences
- 8 x FACTS Qualified Advisors (Fertiliser Advisors Certification and Training Scheme)
- 6 x WAMITAB operatives (Waste Industry Certification for Waste Management and Technical Competency)
- 1 x Chartered in Waste Management through the Chartered Institution of Wastes Management (CIWM)
- Membership of numerous professional bodies (CIWM, BSSS, IPSS, UK Spill Association, REA)
- 1 x Chartered Soil Scientist (CSci) chartered through the Institute of Professional Soil Scientists and the Science Council

7.4 Interaction with neighbours

The site information board will be located at the site entrance detailing permits and contact details including out of hour contact details.

The Odour Report 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 report will use the site weather station and operations diary to generate data to allow for thorough investigation. 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.

8.0 Odour management plan review

The odour management plan will be reviewed every 6 months and in the event of any changes to process, process equipment etc. A revision table will be included in the plan.

Revision No.	Amendment Made	By	Date	Authorised By
01	*New access roller door installed to Process Building*	*AB*	*01/09/2018*	*AN*