Project details	Environmental Permit Variation Application – EPR PP3707BB Sharpsmart Limited – Rainham Clinical Treatment Centre
Applicant details	Sharpsmart Limited Unit 1 Meadowfield Avenue Spennymoor Co Durham DL16 6JF
Report details	**EP Variation Application – Appendix I: Odour Management Plan** **Document reference: SHSMT_2020.02/07 v3**
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1 Introduction

1.1 General

Sharpsmart Ltd (the 'applicant') has requested that Reva Environmental Ltd (the 'agent') prepares an Environmental Permit (EP) variation application, for its Rainham Clinical Treatment Centre at Unit 21 Barlow Way, Rainham, Essex, RM13 8BT.

The site currently houses two autoclave units that thermally treat (by steam sterilisation) the incoming soft clinical waste. The applicant has taken the site on recently and the EP has been transferred to them in March 2020. The EP allows the pre-shredding then autoclaving of waste and the associated temporary storage of waste pending that process. The EP includes two directly associated activities (DAAs) which are the operation of a steam boiler and the washing of bins. The latter relates to the large skip bins that are used to bring in the bulk clinical waste. Finally, the EP allows the storage and repackaging of non-hazardous and hazardous waste as a Waste Operation.

The applicant's key business is to supply re-usable sharps containers to the healthcare sector and to provide a collection service to its customers whereby the used containers are taken to an applicant transfer facility, emptied and cleaned and sent back to the customer. The contents are transferred to an appropriately permitted facility for treatment or processed on site where autoclaving is permitted.

The facility is currently authorised by EP ref. EPR/PP3707BB which was most recently varied (V004) in June 2015 and subsequently transferred from G.W.Butler to Sharpsmart in March 2020.

An application was made in May 2020 (ref. SHSMT 2020.02_v1) to include several new activities; following discussions with the EA during duly making, the application has been revised to reflect the need for additional information. This OMP wholly supersedes the May 2020 OMP (ref. SHSMT 2020.02/07_v1).

The objective of this application is to obtain a varied EP which enables the applicant to:

- Install and operate a wash plant at the facility as a standalone, but supporting, activity to the existing operations. This will enable the operator to service its contract customers by way of a sharps bin exchange service, emptying and washing the bins before returning them to the customer.
- Treat decanted sharps waste through the existing autoclave plants. This waste stream would either be subject to pre-treatment shredding or loaded directly into the autoclave, and then be subject to subsequent compaction. The proposed acceptance of sharps waste for treatment in the autoclave will not affect the existing Listed Activity (A1) and the addition of the sharps waste code 18 01 03* (with or without 18 01 09) will be achieved through the amendment of Table S2.2 of the permit.

  Treat single use metal instruments and laboratory wastes through the existing autoclave plants, facilitating the recovery of the metal. This waste stream would not be subject to pre-treatment shredding or compaction. This will allow the direct recovery of these wastes that would otherwise not be recovered.

  Operate a larger LPG fuelled steam-raising boiler. The existing EP specifies the boiler as being 0.7 MW thermal input. The applicant has recently sought installed a new boiler to provide steam for the autoclaves. Whilst the input capacity of the boiler (2.5 MW) is below the threshold for a listed activity the applicant does recognise that as the input capacity will exceed 1 MWth the Medium Combustion Plant Directive (MCPD) is applicable and that emission limits will be imposed on this exhaust via permit conditions.
- Shred offensive waste through the existing shredder. This waste stream would not be subject to autoclaving but would be subject to compaction (this is already permitted). The shredded

offensive waste can be compacted with the autoclaved waste (non-hazardous) so it can be transferred off site as RDF. Prior to the shredding of any non-hazardous waste, the shredder would be thoroughly cleaned in order to prevent any cross contamination of this waste from preceding hazardous waste load.

- Store (externally) compacted floc (treated waste) pending transfer off site for recovery. There is an outlet for the floc resulting from the treatment process. This would be stored in enclosed / sealed skip containers located in the external yard area, in a dedicated area. The EP variation seeks to allow the storage of up to 100 tonnes of this floc pending transfer off site for use as an RDF.

This Odour Management Plan (OMP) forms part of the Environmental Management System and, in the same way as other procedures are, it will be reviewed on a regular basis in accordance with the EP and also updated as required following any substantiated complaints, changes to process, or to reflect changes in legislation or best practice. It seeks to outline the procedures that are in place to ensure that odour is managed at the Site and that odour nuisance does not arise as a result of the operations.

This OMP has been written in accordance with EA Horizontal Guidance H4 Odour Management – How to Comply with your Environmental Permit, dated March 2011. H4 states that emissions from the activities shall be free from odour at levels likely to cause pollution outside the Site.

1.2 Site Setting

The facility is located in the Fairview Industrial Estate which is approximately 15 ha and located to the southwest of the A13 highway, and immediately north (on the banks) of the River Thames. It comprises a number of industrial, commercial and warehouse units. It is bounded by Creek Lane to the east and Frog Lane which extends half way along the western boundary, dividing the industrial estate from the associated parking area.

There is some grassland and planting beyond Creek Lane, between this estate and the neighbouring Ferry Lane Industrial Estate.

The wider site setting is summarised in Table OMP1 below. Drawing SHSMT-RH03 Site Setting, submitted with the May 2020 variation application, presents the site and its surroundings.

Table OMP1: Site Setting

Direction	Local Setting
Northern Boundary	The site is immediately bounded to the north by neighbouring buildings in the Fairview Industrial Estate, following the line of the A13. Beyond the A13 is also industrial use. The closest residential area is approximately 700 m to the north, beyond the railway line which passes from east to west at approximately 575 m from the site.
Eastern Boundary	The site is immediately bounded to the east by neighbouring buildings in the Fairview Industrial Estate, beyond which lies the Ferry Lane Industrial Estate – the two separated by a strip of land, a creek, and Creek Way (a Local Wildlife Site lying at approximately 100 m). Beyond this, at approximately 400 m lies Rainham Marshes SSSI and LNR. To the northeast, at approximately 150 m the A13 runs in a west to easterly direction. There are no residential areas within 1 km of the eastern boundary.
Southern Boundary	The site is immediately bounded to the south by neighbouring buildings in the Fairview Industrial Estate, beyond which lies the River Thames at

	approximately 550 m. The other side of the river lies Fishers Way Industrial Estate. There are no residential areas within 1 km of the southern boundary.
Western Boundary	The site is immediately bounded to the east by neighbouring buildings in the Fairview Industrial Estate, beyond which Frog Lane borders the top half portion of the estate. Beyond Frog Lane is a large open car parking area, and beyond that again is a patch of grassland then the Ford Motor Car facility. There are no residential areas within 1 km of the western boundary.

1.3 Sensitive Receptors

Key sensitive receptors are considered to be those within 1 km of the site; the potential dispersion of odours to these depends on the weather conditions. The odour concentrations at receptors located down-wind are likely to be more than at those located cross or up-wind. Some receptors are more sensitive than others, for example a residential area is likely to be more sensitive than an industrial estate. Though not usually considered as sensitive receptors, the adjacent industrial premises have been included in the OMP.

Table OMP2: Sensitive Receptors within 1 km

Receptor	Distance at closest point	Direction	Receptor Type	Relative Risk of Odour Impact
River Thames	550 m	South	Public area (restricted use) – transient use by members of public. Also used for commercial shipping.	Low
Rainham Marshes	400 m	East	SSSI and LNR – salt marshes providing habitat to breeding and non-breeding birds, invertebrates and plants	Low
Creek Way (part of the Thames and Tidal Tributaries designation)	100 m	East	LWS – salt marshes designated notably for the presence of birds but also fish, invertebrates and marine mammals	Low
Residential Properties	700 m	North	Residential properties – potential all-day presence	Moderate
Workers in other premises in the Industrial Estate	Immediately adjacent	All directions	Commercial/industrial workplace	Low

1.4 Wind Rose

Figure OMP1 presents the wind rose for the area. This has been sourced from the met office (www.metoffice.gov.uk/climate/uk/regional-climates/mi) and is from a station located at Heathrow airport.

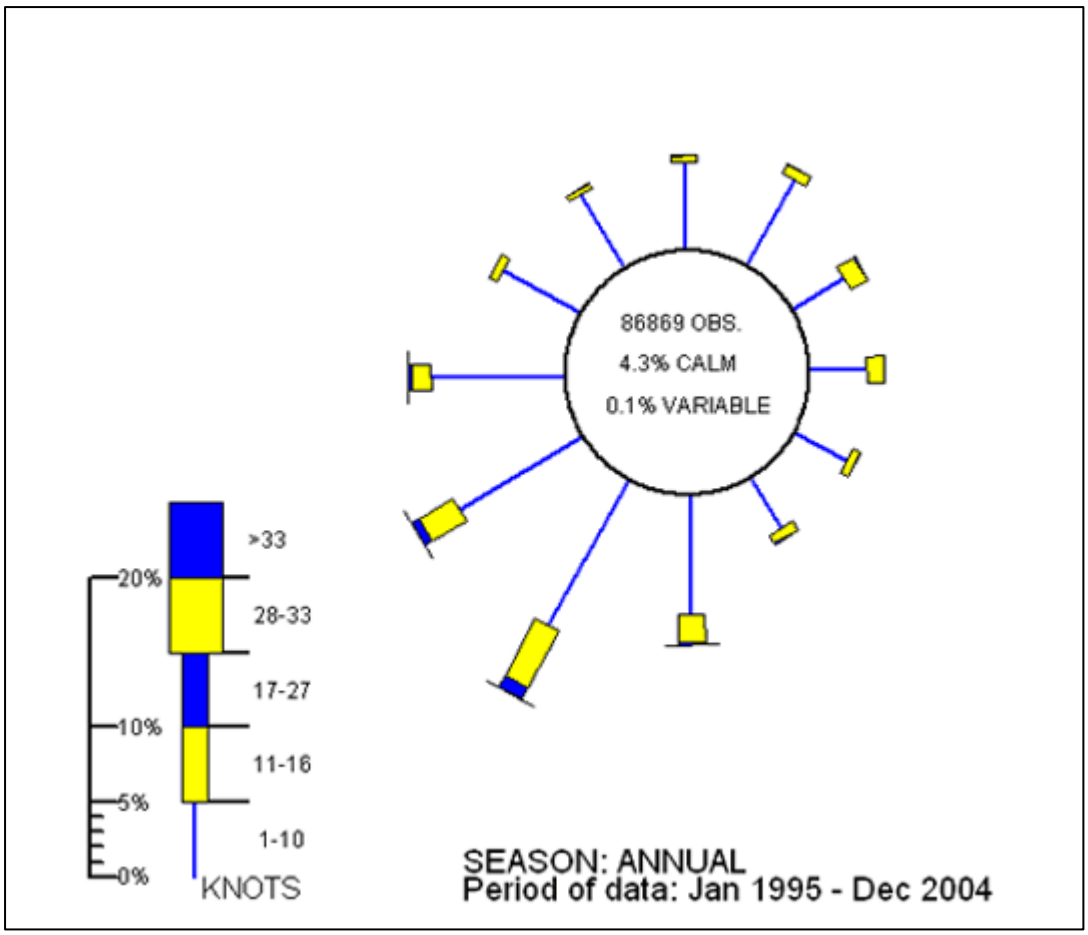

Figure OMP1: Wind Rose

This data is for Southern England which is one of the more sheltered parts of the UK. The strongest winds are associated with the passage of deep areas of low pressure close to or across the UK; the frequency and strength of these is greater between December and February.

Southern England is the part of the UK closest to continental Europe and as such can be subject to continental weather influences that bring cold spells in winter and hot, humid weather in summer. It is also furthest from the paths of most Atlantic depressions, with their associated cloud, wind and rain, so the climate is relatively quiescent.

The wind rose above is considered by the met office to be typical of open, level locations across the region, with a prevailing south-westerly wind direction throughout the year.

1.5 Complaint History

The site was out of operation for 20 months while the applicant carried out building repairs and installed new equipment but has now been operational since 1 August 2020. It is accepting and treating 18 01 03 (orange bag) waste. The Washsmart wash plant has been installed, as has the new steam-raising boiler but neither are operational as this EP variation is required to obtain permission to do so.

Details of the process in the event of receipt of an odour complaint are provided in section 5.4 of this OMP.

2 Odour Sources and Pathways

2.1 Raw Materials

Raw material use at the site is currently limited to 'pine disinfectant' and 'Apple Fresh' from CIS, which is used in the 770 litre bin washer, and to clean the shredder plant. With the installation of the Washsmart S6000 wash plant, this will add the use of 'Solid Hero' and 'Pep Active' from Ecolab.

Raw materials are delivered to the site when stock checks identify the need for more, and are in small proprietary containers. They are stored within the building in a dedicated area. When needed, the containers are carried to the plant area where it is required.

Due to the nature of the raw materials and the storage and handling arrangements, the risk of odour release is considered to be very low.

2.2 Waste Receipt, Handling, and Storage

Clinical waste will arrive at the facility in two forms:

Bagged waste – This waste is always contained within a yellow lidded 770 litre waste bin. It is delivered to the site in an appropriate waste delivery vehicle and unloaded using the tail lift on the vehicle. The vehicle reverses right up to the doors into the reception area of the building. Bins are wheeled into the dedicated bin store area for waste pending treatment. The access doors are open only during the delivery process.

Offensive waste is currently permitted for acceptance at the site and loading directly into a compactor skip located in the yard area. The variation application seeks to continue this practice but to allow the offensive waste to be shredded should it be necessary for contingency. The waste would be accepted in the same way as it is now. Once shredded it would be loaded into the compactor skip unit within the building along with autoclave floc; this would be included in the proposed 100 tonne (10 skip) external storage limit.

Sharps waste – This arrives contained in the applicant's own re-useable sharps containers. These are thick plastic, lidded and securely closed. They are also delivered to the site in an appropriate waste delivery vehicle and unloaded using the tail lift on the vehicles. The vehicle reverses right up to the doors into the reception area of the building. The bins are placed into enclosed trolley units designed specifically for the safe movement and handling of this type of waste and the trolleys are placed in a dedicated area pending emptying.

The maximum storage period for any load of waste is 2 weeks.

The nature of the waste (predominantly plastics and metals) and the storage and handling arrangements mean that the risk of odour release is low.

2.3 Bin Washing

The automated system moves the bins to the emptying point, where the contents are safely emptied into a dedicated facility 770 litre skip bin (a UN-approved wheeled cart) which has been lined with an 80 micron bag. Once the carts containing the contents from the emptied bins are full the heavy duty liner is sealed and the cart lid locked. The nature of the waste (predominantly plastics and metals) and the storage and handling arrangements mean that the risk of odour release is low.

The emptied sharps container is then processed in the proposed washing facility that serves to wash, disinfect and dry the containers. Each is also sprayed with a silicon spray to line it and prevent contents from sticking to the container.

The additional emission point is as follows:

- A4 – Wash plant tipping area local exhaust ventilation (LEV), filtered for particulates via HEPA filter (no monitoring).

2.4 Waste Shredding

The treatment process begins with the shredding of a batch of clinical waste to break it up to a form that enables efficient heat treatment (autoclaving) to be applied. Waste is loaded into a bin tipper mechanism that loads the batch into the shredder unit. The shredder has an air extract system (hood) which vents air from the shredder to the atmosphere via emission point A3 which has a HEPA air filter and a carbon filter system, providing odour control. Once shredded, the waste falls into a lined cart and the liner bag tied closed before being fed into the autoclave via a bin tipper.

The waste is potentially odorous however, given that it is processed on a batch system and there is LEV with filters on the shredder, this part of the treatment plant is considered to present a low-medium risk of odour release.

Offensive waste is currently permitted for acceptance at the site and loading directly into a compactor skip located in the yard area. The variation application seeks to continue this practice but to allow the offensive waste to be shredded should it be necessary for contingency. The waste would be accepted in the same way as it is now. The shredder would be thoroughly cleaned and disinfected prior to the shredding of any non-hazardous waste in order to prevent any cross contamination from preceding hazardous waste loads. Once shredded, waste would be loaded into the compactor skip unit within the building along with autoclave floc; this would be included in the proposed 100 tonne (10 skip) external storage limit.

2.5 Waste Treatment (Autoclave)

The autoclaves are horizontally orientated rotating cylindrical vessels that are subject to high vacuum and high pressure. The waste is placed into each vessel in its autoclave cart and the door is closed. Each cycle is approximately 0.8 tonnes.

During the waste treatment cycle, venting is performed through a condenser unit to produce a small volume of liquid effluent, approximately 150 litres per cycle. The post-vacuum cycle removes residual steam from the autoclave and flashes residual liquids, drying the waste. This also controls odour.

The waste is potentially odorous however given that it is processed on a batch system within an enclosed pressurised unit, and the venting of the treatment vessel during operation is via a condenser unit, this part of the treatment plant is considered to present a low-medium risk of odour release.

2.6 Waste Compaction

The sterilised waste floc exits the autoclave at the end of the batch process and the autoclave cart is placed onto a bin lifter which tips the waste into a 40 yard compacter skip. The compacted floc is placed into enclosed, sealed skips and stored temporarily at the facility (in the external yard area) pending transfer off-site.

The waste has been fully treated at this stage so is not odorous. This part of the treatment process is therefore considered to have a very low risk of odour release.

Offensive waste is currently permitted for acceptance at the site and loading directly into a dedicated compactor skip located in the yard area. The variation application seeks to continue this practice but to allow the offensive waste to be shredded should it be necessary for contingency. Once shredded, the offensive waste would be loaded into the compactor skip unit within the building along with autoclave floc; this would be included in the proposed 100 tonne (10 skip) external storage limit. It is confirmed that all shredded material can be mixed together in the same skip; the outlet for all floc/shredded material is the same and is incineration.

2.7 Residue Management

In addition to the floc the process generates a condensate from the autoclave, and a potentially contaminated effluent which is generated when the shredder is cleaned. The two liquid effluent streams are managed in one of two ways, depending on the composition, as follows:

- If the effluent generated relates to the autoclaving of waste that could be considered potentially pharmaceutically contaminated then it is not discharged to sewer. Instead it is collected in an sealed tank and pumped into IBCs for transfer to a permitted energy from waste facility for disposal (and heat recovery). The same applies if the effluent contains wash water from cleaning the shredder.
- If the effluent generated relates to the autoclaving of a batch of solely orange classified waste, then it is considered that there is no pharmaceutical contamination and the effluent is no different to that produced by the transfer facility and can be discharged to sewer under the existing consent.

The liquid effluent, that is not discharged to sewer at the site, is stored in IBCs within the process building, until there is sufficient to make up a full load for transfer off-site for recovery. The IBCs are enclosed and within the building so it is considered that this poses a low risk of odour release.

2.8 Odour Source Assessment

The potentially significant odour sources (materials and processes) are set out in Table OMP3. Details of the location of storage, type of containment, and maximum quantities of each source material are also provided in Table OMP3. In relation to storage, each source has been allocated a unique reference (Odour Source (OS) 1 – 12) and these identifiers are included on a copy of the Site Layout Plan, provided in Annex OMP2.

Table OMP3: Odour Sources

Source	Odorous material	Containment / Release Point	Maximum Quantity & Duration	Storage Arrangements	Pattern of Release	Abatement Techniques
Raw materials	Disinfecting chemicals	Fugitive emission from storage and use of the chemical (e.g. manual cleaning or dosing in wash plant). Localised odour in process area, dilution in ambient air before release via doors	20 bottles of Pep Active, 4 tubes of Solid Hero. Continuous storage to ensure availability	Stored in proprietary containers (in which they are supplied), and stored within the building in a dedicated area (OS1)	Intermittent – only during cleaning activities	Doors to the building in which the materials are stored are kept shut as standard
Waste delivery and storage	Clinical waste	Fugitive emission of clinical waste/ammonia odour from the access doors used for delivery and from the waste storage areas, in the process areas within the building, dilution in ambient air before release via doors	55 tonnes, Waste is processed within 2 weeks	All waste arrives in UN approved (sealed) containment, it is also stored in UN approved containers pending processing or transfer (OS2)	Continuous during operation	Doors to the building in which the materials are stored are kept shut as standard, other than during delivery when access is required
Wash plant operations	Exhaust air from washing of bins	Emissions from the wash plant during washing of emptied bins, LEV at tipping area filtered via HEPA (A4)	150 - 160 containers (approx. 0.4 tonnes) processed per hour	Wash plant is a fixed within the building, location OS3	Continuous during operation	Active extraction with HEPA filter, doors to the building in which the materials are stored are kept shut as standard, other than during delivery when access is required
Wash plant effluent	Odour from effluent – clinical waste/detergents	Emissions from the wash plant effluent during discharge from wash cycle	25 m^3 per 24 hours at a rate of <2 m^3/hour	Discharged via enclosed pipeline to	Intermittent during operation of the plant	Unit fully enclosed, discharge is via

Source	Odorous material	Containment / Release Point	Maximum Quantity & Duration	Storage Arrangements	Pattern of Release	Abatement Techniques
				foul sewer network under consent		enclosed pipeline to foul sewer network
Shredder operation	Exhaust air from shredding of clinical waste (including offensive)	Emission from the shredder during loading, closed process vessel during shredding of incoming waste, filtered extract via A3	1 tonne per batch, process runs for 48 minutes per autoclave batch	Shredder plant is a fixed within the building, location OS4	Intermittent as shredder is part of a batch process, but continuous during operation of the shredder	Active extraction with HEPA and carbon filter
Shredder – general	Clinical waste or raw material/effluent spillage	Emission from abnormal scenario – spillage of waste during loading, or spillage of effluent during cleaning/disinfecting leading to localised odour in process area, dilution in ambient air before release via doors	1 tonne of waste per batch; 40-50 litres water/cleaning product used per wash	Shredder plant is a fixed within the building, location OS4	Intermittent as shredder is part of a batch process, but continuous during operation of the shredder	Active extraction with HEPA and carbon filter; plant within the building, on impermeable flooring, building doors are kept shut as standard
Autoclave operation	Exhaust air, hot process air from treatment of clinical waste/sharps and single-use instruments	Closed process vessel with no exhaust, fugitive emission from the door to the autoclave during loading of carts of shredded waste	0.8 tonnes of waste per batch, batch cycle runs for 60 – 90 minutes (including loading/unloading)	Autoclaves are fixed within the building, location OS5	Intermittent as autoclave is part of a batch process, but continuous during operation of the autoclave	Active extraction with HEPA and carbon filter
Autoclave - general	Clinical waste or effluent spillage	Fugitive emission from spillages on the floor, localised odour in process area, dilution in ambient air before release via doors	0.8 tonnes of waste per batch, 150 litres effluent per batch cycle	Autoclaves are fixed within the building, location OS5	Occasional (abnormal scenario), cleaning activities occur regularly	Housekeeping procedures implemented, plant is within building – doors shut as standard

Source	Odorous material	Containment / Release Point	Maximum Quantity & Duration	Storage Arrangements	Pattern of Release	Abatement Techniques
Movement of treated waste	Treated clinical waste (soft and sharps)	Movement to compactor via conveyor, fugitive emission from the autoclave door to the compactor	0.8 tonnes of waste per batch	Compactor is located within the building, OS6, conveyor will be located between OS5 and OS6	Intermittent as autoclave is part of a batch process	Covered conveyor, plant within the building and building doors are kept shut as standard
Movement and storage of treated single use instruments	Treated medical waste instruments	Movement to storage containers via conveyor, fugitive emission from the autoclave door to the containers	0.8 tonnes of waste per batch, filled containers removed within 24 hours	Treated waste stored within palletised rigid boxes or skips which are ordered in preparation for the batch, OS7	Intermittent as autoclave is part of a batch process; estimated 3 – 4 batches per month	Covered conveyor, plant and treated waste storage are within the building and building doors are kept shut as standard
Compactor operation	Treated clinical waste (soft and sharps) and shredded offensive waste	Closed vessel, fugitive emission from the door of the compactor during loading of treated waste via the conveyor	Up to 11 tonnes within the compactor unit, moved to skip container which is stored outside once full for <2 days	Compactor is located within the building - OS6	Intermittent as compactor is part of a batch process	Fully enclosed compactor unit, within the building, doors shut as standard
Shredded & compacted offensive waste storage	Shredded and compacted offensive waste – clinical waste odour	Enclosed, sealed skip container, no fugitive emission of clinical waste odour during normal operations as unit is not loaded or emptied outside	100 tonnes in 10 compactors skips (capacity shared with floc), stored for < 2 days	Compacted in unit within the building (OS6) into skip container (OS8) then stored outside once full (no loading/filling once outside) – OS9	Storage is continuous during facility operations	Fully enclosed, sealed skip – filling only occurs within the building

Source	Odorous material	Containment / Release Point	Maximum Quantity & Duration	Storage Arrangements	Pattern of Release	Abatement Techniques
Un-shredded Offensive Waste Storage	Compacted offensive waste – clinical waste odour	Closed vessel, fugitive emission from the door of the compactor during loading of treated waste	1 x Compactor Skip, stored	Compactor stored in yard (as per current EP), OS10	Storage is continuous during facility operations, release is intermittent and only whilst loading	Fully enclosed yard compactor skip, kept shut apart from when filling
Floc storage	Treated clinical waste	Enclosed, sealed skip container, fugitive emission of clinical waste odour from the compactor door during loading	100 tonnes in 10 compactor skips (capacity shared with shredded offensive) for < 7 days (but typically <2 days	Compacted in unit within the building (OS6), moved to a skip container (OS8) then stored outside once full (no loading/filling once outside) – OS9	Storage is continuous during facility operations	Fully enclosed, sealed skip – filling only occurs within the building
Liquid effluent storage	Effluent from treating of clinical waste	Fugitive emission from storage of liquid effluent in IBCs	20 IBCs for <2 weeks	IBCs are always kept within the building – OS11	Storage is continuous during facility operations	Containment within IBCs within the building – doors shut as standard

2.9 Odour Release Points and Pathways

Release of odours from the site would be via a release to air from any of the sources details above, and transfer through the air via dispersion. Odour releases can be either from a point source (a physical intentional, forced emission point) or fugitive (an unintentional or passive release). These are as follows:

- Point Source A1 – LPG boiler
- Point Source A2 – Rotoclave exhaust vent (abated exhaust), monitored for VOCs and microbial emissions;
- Point Source A3 – Shredder local exhaust ventilation (LEV), monitored for VOCs and microbial emissions
- Point Source A4 – Wash plan local exhaust ventilation (LEV), not monitored
- Fugitive Source 1 – Incoming waste storage area
- Fugitive Source 2 – Delivery doors on the south-eastern side of the building

3 Odour Risk Assessment

The applicant has carried out a qualitative risk assessment for the proposed new treatment plant. This identifies the sources, their pathways to causing nuisance to the defined receptors, the likelihood of odour release, the control measures in place, and actions required based on the findings. This is presented in Table OMP4.

Table OMP4: Risk Assessment

Odour Source	Material	Pathway	Main Receptor	Likelihood	Controls	Residual Likelihood	Action Required?
Raw materials	Disinfecting chemicals	Fugitive via open doors, windows – air transportation then inhalation	Any of the identified receptors in Table OMP2, depending on prevailing wind direction	Low	Small quantities held, proprietary container, stored within building	Very Low	No
Waste delivery and storage	Clinical waste			Medium	Intermittent – only during delivery, all waste in closed containers, doors closed at all times outside of delivery, no waste stored outside, waste processed quickly	Low	No
Wash plant emissions	Exhaust from cleaning of emptied bins	A4 wash plant bin tipping area exhaust – air transportation then inhalation		Medium	Active air extraction around bin emptying area, wash plant enclosed system, HEPA filter maintained and serviced in accordance with PPM, waste processed quickly	Low	No
Shredder emissions	Exhaust air from shredding of clinical waste	A3 shredder LEV stack – air transportation then inhalation		Medium	Active air extraction whilst in operation, HEPA and carbon filter - maintained and serviced in accordance with PPM	Low	No
Autoclave emissions	Exhaust air, hot process air from treatment of clinical waste	A2 autoclave vent stack – air transportation then inhalation		Medium	Active air extraction whilst loading the waste into the unit, HEPA and carbon filter - maintained and serviced in accordance with PPM	Low	No
Compactor emissions	Fugitive emission from compacted waste	Fugitive via open doors, windows – air		Low	Waste has been heat treated, compactor is fully enclosed, located within a building, doors and windows kept closed	Very Low	No

Floc storage	Fugitive emission from compacted, stored waste	transportation then inhalation		Medium	Waste has been heat treated, skip containers are fully enclosed	Low	No
Liquid effluent storage	Effluent from treating of clinical waste			Medium	Effluent unlikely to be odorous, stored in IBCs, within a building, doors and windows closed other than during delivery/transfer of waste	Low	No
Treatment areas – general	Clinical waste or raw material spillage			Low	Regular inspection and cleaning, housekeeping controls, all incoming waste is contained	Very Low	No

4 Management Responsibilities

The site will be operated in accordance with the defined business management system (current version 1.6, dated 30 January 2019). This is led by the management team which ensures that the system is implemented, understood, and complied with at all levels of the organisation. The National Operations Manager, Plant Manager and Plant Supervisor all have responsibility for odour management at the site, as follows:

- National Operations Manager – responsible for overall control of operations for the company and providing the resources required to support the work of the responsible persons in reducing the risk of odour impact from the site;
- Plant Manager – responsible for (or delegates authorised alternative to be responsible for) maintaining compliance with legal and regulatory requirements, liaising with neighbours (local receptors), implementing the OMP, providing odour training to site personnel, and implementing the odour monitoring regime;
- Plant Supervisor – responsible for day to day management and operation of the site, including provision of operating procedures and training as required.

All employees have a stake in odour control at the site and training is therefore provided to all staff.

5 Odour Control and Response

Further detail is provided in this section of the control measures listed in Table OMP4 above.

5.1 Limiting the Odour Source

The applicant will undertake the treatment of clinical waste and as such the site has the potential to generate odour from both the storage of clinical waste pending treatment, and the treatment process itself. Measures are taken to limit the potential for odour, as follows:

- All waste is delivered in sealed containers – the bagged waste is always contained within a yellow lidded 770 litre waste bin whilst sharps waste is received in re-useable sharps containers which are thick plastic, lidded and securely closed. The waste stream itself is primarily metals and plastics and unlikely to be an odour source;
- Storage of untreated waste is within the building – no untreated waste is stored outside;
- Doors to the building are kept closed other than when there is a delivery or collection taking place;
- Procedures ensure that waste is processed quickly. This is usually a matter of up to a few days, however the contingency plan limits it to 2 weeks after which the waste is transferred off site;
- The three parts of the treatment process are enclosed when in operation and the shredder has air extraction which is filtered via HEPA and carbon systems;
- Daily inspections are undertaken and include housekeeping and cleanliness checks. These are a visual inspection and focus on key areas of plant/equipment that could generate odour; and
- General cleaning of process plant is carried out on a regular basis, including disinfection of the shredder plant. As a minimum, process equipment is cleaned at the end of each shift prior to handover, or at the point of cessation of use if is it not running 24/7.

5.2 Maintenance and Monitoring

The operator follows a planned preventative maintenance programme to ensure that the plant works efficiently and the likelihood of failure is minimised. This has a direct reduction in the likelihood of odour release resulting from abnormal operations.

The following are included in the PPM:

- Maintenance of HEPA and carbon filters in the LEV systems, in accordance with the manufacturer's guidelines to ensure normal removal efficiency is retained. Pressure differentials are measured across the filters to identify when exchange is required; and
- Maintenance of the component parts – shredder (and bin tipper), autoclave (and autoclave carts), compactor, bin wash plant - in accordance with manufacturer specification.

The operator has obtained technical advice from plant manufacturers regarding the ongoing maintenance and repair of all key plant at the site and, on this basis, will retain a stock of key spare parts at the facility. An inventory of these spare parts will be maintained, and stock replaced upon use to ensure that a sufficient level of parts is always available at the facility. Scheduled maintenance and service will be carried out by the manufacturer (or manufacturer's contracted provider); the tools and expertise required for this is therefore assured.

The operator will carry out daily olfactory monitoring in accordance with the EA's guidance in H4, using a checklist based on the one provided in H4, a copy of which is attached as Annex OMP1. It will also be carried out following any odour complaints from receptors or identification of odour issues within the building by the operational team. The frequency may need to be increased in the event of extreme weather conditions such as long periods of hot weather.

The monitoring will be undertaken at several fixed points around the site boundary, as well as a point down-wind at the time of the monitoring (a moveable point so not defined). These are shown on Figure OMP2.

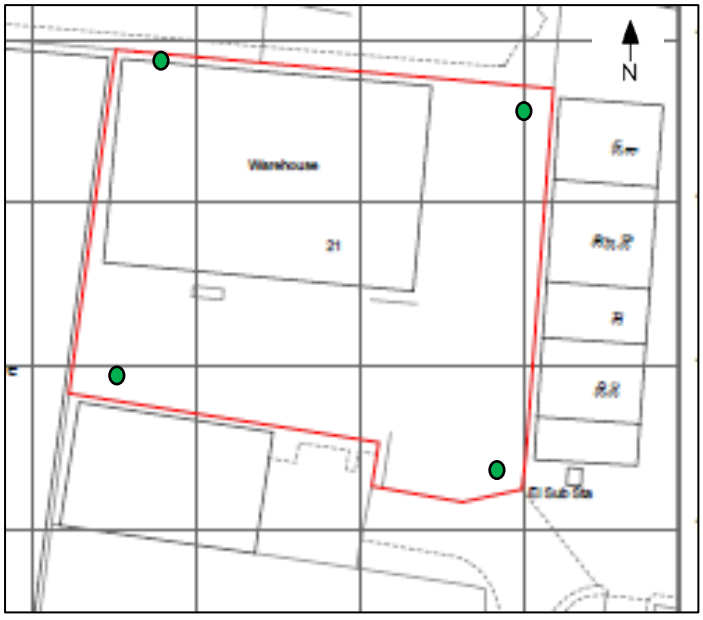

Figure OMP2: Olfactory Monitoring Locations

5.3 Odour Incident Response

In the event that there is an issue with odour, within the building, resulting from the treatment plant or associated activities, the incident will be investigated to identify the cause:

- **If the odour source is found to be the treatment process**. The treatment process will be stopped (one or more of the 3 distinct components – shredding, autoclaving, compaction) to allow assessment of the equipment. Once shutdown the plant will be cleaned thoroughly to remove any residual odour source. If the source is deemed to be abnormal operation of the LEV filter systems these will be checked and filters replaced if required. Olfactory monitoring will be carried out (internal and external to the building) and if odour is no longer being generated, treatment can recommence.
- **If the odour source is found to be a fugitive source (e.g. waste storage, spillage).** The source of the odour will be identified and removed, the area will be cleaned thoroughly to remove any residual odour source.
- **If the odour source is found to be in an external area.** The source of the odour will be identified and removed/repaired – this may require the services of a third party contractor. The area will be cleaned thoroughly if required.

5.4 Odour Complaint Response

If an odour complaint is received, this may be directly to the site from a member of public, or via the EA. The complaint will be investigated immediately if it received during normal operating hours, or first thing on the next working day if received outside of normal operating hours.

Following receipt of a complaint, the operator will determine:

- Is the process under control? (i.e. has the site received exceptionally odorous wastes or have wastes been left standing for too long before processing?)
- Have odour containment measures failed? (i.e. has a door been left open, have odorous materials been stored outside a containment area, have adverse conditions, such as weather, overwhelmed containment structures?)
- Have treatment measures failed? (i.e. has a carbon scrubber become saturated, does the LEV system need servicing?)
- If the odour is associated with the treatment of hazardous materials, is there any possibility of health risk to the local community?

As noted in Section 5.2 above, the operator will carry out additional olfactory monitoring in accordance with the EA's guidance in H4, following any odour complaints from receptors. Records will be kept of any investigations that are carried out following an odour complaint. This will include details of any measures taken to rectify the issue where the complaint is substantiated.

Sharpsmart recognises the need to identify and understand the needs of interested parties; this includes neighbours (e.g. householders) and neighbouring businesses. Engagement with these parties is encouraged and will be undertaken as required.

5.5 Odour Records

Olfactory monitoring is carried out daily as part of the site manager/supervisor daily checks. These are recorded on an App/electronic system. Wider audits are then carried out by the compliance department as a secondary check; this is typically monthly.

Records of olfactory monitoring are maintained at the site and can be made available to the EA if requested.

This OMP is a live document and will be reviewed on a regular basis. Circumstances that would initiate an extraordinary review of the OMP includes a significant change to the treatment process or ancillary

processes, introduction of any new control measures, introduction of a new odour source, a change to the Site layout, or changes to the sensitive receptors.

Annex OMP1

Olfactory Monitoring Checklist

Annex OMP1

Odour report form				Date	
Time of test					
Location of test e.g. street name etc					
Weather conditions (dry, rain, fog, snow etc):					
Temperature (very warm, warm, mild, cold, or degrees if known)					
Wind strength (none, light, steady, strong, gusting) Use Beaufort scale if known					
Wind direction (e.g. from NE)					
Intensity (see below)					
Duration (of test)					
Constant or intermittent in this period or persistence					
What does it smell like?					
Receptor sensitivity (see below)					
Is the source evident?					
Any other comments or observations					

Sketch a plan of where the tests were taken, the potential source(s).

Intensity		**Receptor sensitivity**
0 No odour	4 Strong odour	Low (e.g footpath, road)
1 Very faint odour	5 Very strong odour	Medium (e.g. industrial or commercial workplaces)
2 Faint odour	6 Extremely strong odour	High (e.g. housing, pub/hotel etc)
3 Distinct odour	Ref: German Standard VDI 3882, Part 14	

Annex OMP2

Odour Source Location Plan

1b
1c

3h
3j

3e
3f
3g

3d

3b
3c

Smoking Shelter

OS1

OS2

OS3

OS4

OS5

OS6

OS7

OS8

OS9

OS10

OS11

WASTE STORAGE
PENDING TREATMENT OR TRANSFER
770LTR CARTS AND/OR PALLETS

WASTE STORAGE (SHARPS/WASTE)
PENDING REPACKAGING
SHARPSMART TRANSFOSERS

WASTE STORAGE
PREPARED AUTOCLAVE LOAD

WASTE STORAGE
PENDING TREATMENT
770LTR CARTS

WASHSMART SASSO

Mixing Tank

Water Tank

Accumulator

Hotwell

BOILER

Container

Rotocone 1

Rotocone 2

FILTERS

BIN WASH

COMPACTOR

QUARANTINE AREA

WC

CANTEEN

KITCHEN

WC

WEIGH STATION

POLITENESS ACCESS DOOR

WASTE SHUTTER ACCESS DOOR

LPG TANK FARM

H

El Sub Sta

Centre