

SECTION 10

Odour Management Plan





OLIVE
Compliance

Odour Management Plan

NTH SOULTIONS LLP

NORTH TEES AND HARTLEPOOL

NHS FOUNDATION TRUST

Osmotherley House

Hardwick Road

Stockton-on-Tees

Cleveland

TS19 8PE



North Tees and Hartlepool
NHS Foundation Trust

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ODOUR MANAGEMENT PLAN**Basis of report**

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Issue and revision record

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Vo.1 Initial draft	September 2024	Olive Compliance Ltd	Produced as part of a new Bespoke Permit application



ODOUR MANAGEMENT PLAN**CONTENTS****CONTENTS**

1.0	INTRODUCTION	7
1.1	Scope	7
1.1.1	Site Location.....	8
2.0	SITE LAYOUT AND ACTIVITIES.....	10
2.1	Site Layout and Activities.....	10
2.2	Site Management	11
2.3	Site Operational Hours	12
3.0	ODOUR RISK ASSESSMENT AND SENSITIVE RECEPTORS	12
3.1	Methodology	12
3.2	Receptor Sensitivity.....	12
4.0	REVIEW OF POTENTIAL SOURCES OF ODOUR.....	15
4.1	Waste types and storage timescales	15
4.2	Potentially Odorous Wastes	15
5.0	OTHER CONSIDERATIONS	17
5.1	Meteorological	17
5.2	External local odour sources	18
6.0	ODOUR MANAGEMENT AND CONTROL MEASURES	19
6.1	Limiting the Odour Source	19
6.2	Site infrastructure	20
6.3	Housekeeping.....	20
6.4	Odour abatement.....	21
6.5	Waste acceptance, handling and storage.....	21
6.5.1	Pre-acceptance criteria	21
6.5.2	Incoming waste procedures.....	22
6.5.3	Waste rejection	23



ODOUR MANAGEMENT PLAN

6.5.4	Waste processing and treatment	23
6.5.5	Waste storage.....	24
6.5.6	Transport of wastes.....	24
6.5.7	Emergency and contingency measures.....	25
7.0	MONITORING	30
7.1	Operational monitoring.....	30
7.2	Olfactory Monitoring.....	30
7.3	Weather conditions.....	30
7.3.1	Investigation and monitoring records	31
7.4	Trigger level actions	31
7.4.1	Odour Incident Response.....	32
7.4.2	Complaint investigation procedure	32
7.5	Review	33
8.0	COMPLAINTS AND EXTERNAL LIAISON	33
8.1	Our community outreach activities	34
8.1.1	Newsletter/leaflet	34
8.1.2	Website Information	34
8.1.3	Meeting with residents	34
8.2	Site contact.....	34
9.0	CLOSURE	35



ODOUR MANAGEMENT PLAN

REFERENCED DRAWINGS

SITE LAYOUT & INFRASTRUCTURE PLAN 003

SITE LAYOUT PLAN 003a

SENSITIVE RECEPTOR PLAN 004

APPENDICES

APPENDIX 1	ODOUR REPORT FORM
APPENDIX 2	ODOUR COMPLAINT REPORT FORM
APPENDIX 3	ODOUR DIARY



ODOUR MANAGEMENT PLAN

1.0 Introduction

This Odour Management Plan (OMP) has been prepared in respect to the application for a Bespoke Environmental Permit Application for NTH Solutions LLP – North Tees and Hartlepool NHS Foundation Trust. The site is located at Osmotherley House, Hardwick Road, Stockton-on-Tees, Cleveland, TS19 8PE.

This document has been produced to support the site Environmental Management System including the site Fire Prevention Plan and Emissions Monitoring Plan. The Environment Agency's guidance for odour management is provided by Technical Guidance Note H4 Odour Management - How to Comply with your Environmental Permit published 4th April 2011.

1.1 Scope

The Environment Agency guidance for odour management is provided by Technical Guidance Note H4, Odour Management: Environment Agency Guidance for H4 Odour Management.

This Odour Management Plan (OMP) has been prepared in accordance with the principles set out in this technical guidance document.

This OMP is designed to outline management system arrangements to:

- Identify potential sources of odour, receptors and pathways
- Assess the risks of odour pollution having a negative effect on local amenity
- Detail appropriate methods of odour control that are being employed, including monitoring and contingencies to control odour risk
- Prevent unacceptable odour pollution effecting amenity both on, but particularly offsite
- Reduce and minimise the severity of any odour releasing incidents by anticipating them and planning accordingly.

Appendices are included in line with recommended formats for odour reporting, complaints and an odour diary are included and are taken from the H4 document.

The odour management plan is a working document with the specific aim of ensuring that all appropriate measures are taken to prevent or, where it is not reasonably practicable, to reduce odorous emissions to air from the site that may be considered offensive at locations outside of the site's boundary. These measures include to ensure that:

- Odour assessment is considered as part of routine inspections
- Odour is primarily controlled by:
 - Location of operation - treatment will occur within the designated building only
 - Storage of treated wastes and floc will be contained within locked carts/compactor and/or within building
 - Location of equipment – is an enclosed equipment, located within the designated building
 - Low quantity of wastes undergoing treatment per day
 - Compliance with maximum storage periods of waste pre-treatment and post treatment
 - Good operational/housekeeping practices



ODOUR MANAGEMENT PLAN

- The correct use and maintenance of the equipment and Sterilwave machines
- Staff training

This Odour Management Plan (OMP) has been prepared in accordance with the principles set out in this technical guidance document.

Appendices are included in line with recommended formats for odour reporting, complaints and an odour diary are included which are taken from the H4 document.

1.1.1 Site Location

The site is located at Osmotherley House, Hardwick Road, Stockton-on-Tees, Cleveland, TS19 8PE.

The site is accessed from Piper Knowle Road via Hardwick Road which is surrounded by Hospital buildings as well as staff and public car parks. Access to the site is via Piper Knowle Road, through the hospital grounds to the service yard.

Surrounding roads include:

- Piper Knowle Road
- Ketton Road
- Cowpen Crescent
- Hardwick Road
- Jenner Drive
- Middlefield Road

The site is surrounded by Hospital buildings which is principally bounded as detailed in Table 1 below and Image 1 below.

Table 1 – Site Location and Immediate Surroundings

Boundary	Description
North	Residential/Commercial
West	Residential/Commercial
South	Residential/Commercial
East	Residential/Commercial



ODOUR MANAGEMENT PLAN

Image 1 – Site Location and Immediate Surroundings



Image 2 – Birdseye view of the Site location



ODOUR MANAGEMENT PLAN

- 18 02 03 – wastes whose collection and disposal is not subject to special requirements in order to prevent infection

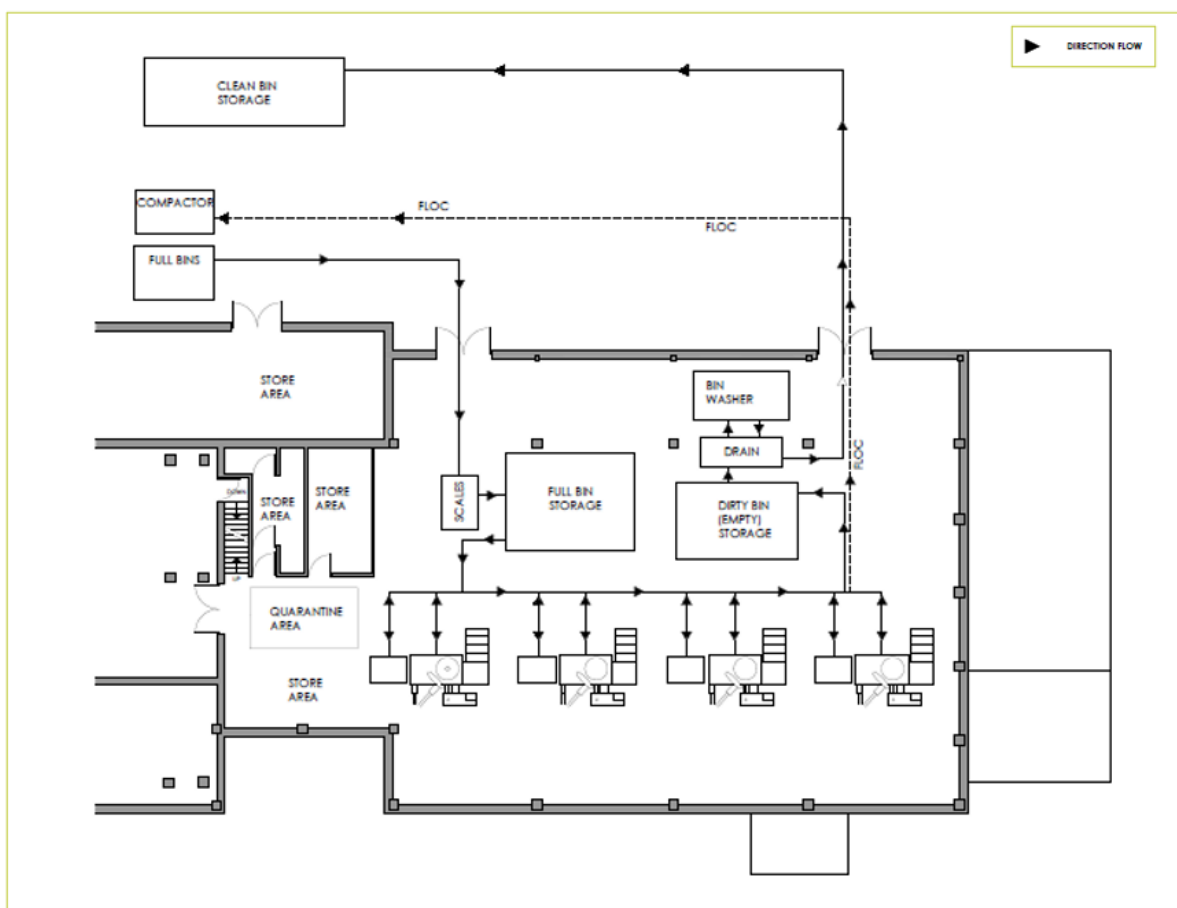
Waste acceptance procedures and forms detailed within the EMS are detailed below.

- Waste Acceptance Procedure
- Waste Rejection procedure
- Waste Rejection Records

All wastes accepted on site are subject to waste acceptance checks by a member of staff.

Image 4 – Site Layout below shows the location of each Sterilwave machine, bin wash facility, waste storage, clean/dirty bin storage, compactor and quarantine area.

Image 4 – Site Layout



2.2 Site Management

The site will be supervised overall by the Site Manager supported by the qualified Technically Competent Manager (TCM). They are responsible for the general management of the site including



ODOUR MANAGEMENT PLAN

the acceptance and handling of any potentially odorous wastes. Support is provided by the addition of trained nominated site personnel.

The Standard Operating Procedures for the site include considerations of emissions to the environment in all site activities, and site employees are made aware of their responsibilities under the Environmental Permit and the consequences for compliance of any incidents or abnormal releases.

Odour management training is provided for all operational employees via formal training sessions which are provided by internal trainers and external training companies as and when required.

Nominated employees will be trained on the odour scoring system and the monitoring point locations, to ensure that odour monitoring is scored on a consistent basis and trigger levels are understood.

The site management are committed to ensure that all relevant employees will be trained on the requirements of the OMP and follow-up refresher toolbox talks will be held periodically, no later than annually. The individual training plans for employees on site must record all training on the aspects of the OMP.

Site Management will ensure that the normal operating conditions are adhered to ensuring that any potential odour is managed so as not to cause a problem

2.3 Site Operational Hours

The site operates according to the hours stated below:

Monday to Friday:	07:00 – 17:00
Saturday-Sunday:	Closed
Bank/Public Holiday:	Closed

3.0 Odour Risk Assessment and Sensitive Receptors

3.1 Methodology

This OMP has been completed to identify where the likely risks are in relation to surrounding land uses. This assessment has been used to inform Section 5.0 of this OMP with regard to specific odour monitoring procedures.

3.2 Receptor Sensitivity

The below table (Table 2) shows the receptors that could potentially be affected by an odour impact within 1km of the site boundary.

Sensitive receptors considered include:

- Local schools, hospitals, nursing and care homes, residential areas, workplaces
- Local protected sites and species



ODOUR MANAGEMENT PLAN

- Local factories and other businesses
- Footpaths, public green space
- Homes, or groups of homes (such as villages or housing developments)
- Playing fields and playgrounds

The site is located within a commercial and industrial area bounded by surrounding residential and local businesses.

The nearest residential receptors are m south of north of the site. Drawing 004 identifies the site location and sensitive receptors.

Table 2 – Sensitive Receptors

Receptor	Distance (m)	Contact Telephone Number
Residential Properties	50m	N/A
Abbey Hill Academy and Technology College	70m	01642 677113
Harrow Gate Primary Academy	97m	01642 673984
MP Decorators	152m	07919 651403
Butterwick Hospice Care	325m	01642 607742
Salters Lane Community Centre	353m	01642 617985
Bowling Green	380m	01642 554025
Hardwick Dene Woodland, Pond and Nature Reserve	401m	01287 636382
Care Home Management – Nursing Home	442m	01642 611437
St Gregory's Roman Catholic School	442m	01642 672262
Sports Centre (The Reform Lab) & Playing Field	443m	07359 493806
Heron Foods	508m	0345 6037300
Starbucks (Milehouse Pub)	513m	01642 670697
Hardwick Community Centre	529m	01642 800133
The Fry Guys - Takeaway	533m	01642 672536
Mister Twister Balloon Parties	550m	07974 101554
Fairfield Plasterers	572m	07973 509108
Roseworth Lodge Care Home	590m	01642 606497



ODOUR MANAGEMENT PLAN

The Hope Centre – Elim Pentecostal Church	609m	07879 466062
Pharmacy World	720m	01642 677999
The Vale Good Companion Puppy & Dog Training School	741m	01642 891984
Elm Tree Woodland & Walkway - Nature Reserve (The Hub – Travel)	780m	01642 617672
Hardwick Green Primary School	818m	01642 677968
Newham Grange Park	837m	01642 526871
Roseworth Wild Meadow	846m	01642 733906
Hardwick Baptist Church	847m	01642 612785
Whitehouse Primary School	903m	01642 678212
Elm Tree Community Centre	950m	01642 611333
Bishopsgarth Park & Play Area (Stockton-on-Tees Borough Council)	980m	01642 391959
Redbrook Play Area (Stockton-on-Tees Borough Council)	987m	01642 391959
Durham Road Cemetery (Stockton-on-Tees Borough Council)	996m	01642 527341



ODOUR MANAGEMENT PLAN

4.0 Review of potential sources of odour

The following have been considered by the site as potential causes and sources of odour arising on site.

- Loading, unloading, and handling of wastes
- Waste acceptance
- Vehicle/Plant operations
- Waste processing turnaround
- Excessive volumes of waste
- Waste processing practice
- Poor housekeeping
- Inadequate site management or auditing
- Meteorological conditions

4.1 Waste types and storage timescales

Drawing 003 highlights the locations and site layout for all wastes stored on site.

Storage locations correspond with the Site Layout Plan for consistency between the other key management documents such as the Fire Prevention Plan and the EMS.

The waste types accepted on site are bagged and stored in fully enclosed, lockable, rigid, leak-proof and weather proof 750l bins/containers. The waste types are deemed as having low odours.

4.2 Potentially Odorous Wastes

The following have been considered as potential causes and sources of odour arising on site:

- Loading, unloading, and handling of wastes
- Waste acceptance
- Vehicle/Plant operations
- Waste processing turnaround
- Excessive volumes of waste
- Waste processing practice
- Poor housekeeping
- Inadequate site management or auditing
- Meteorological
- Release Points

In the event that odours are detected, investigations will be undertaken to determine the cause and appropriate remedial action taken.

The Operational Manager will be responsible for implementing risk management measures.



ODOUR MANAGEMENT PLAN

An assessment of all incoming waste types and odour risk has been conducted with the below management controls in place to reduce and mitigate against the risk of odour arising (Table 3).

Table 3 – Waste assessment and controls

Waste EWC & description	Site controls
INCOMING  18 01 03* (AH) wastes whose collection and disposal is subject to special requirements in order to prevent infection LOW RISK	Bagged clinical waste stored within lockable bins/carts within the allocated external storage area. Transferred into the building awaiting treatment. Tipped into the enclosed Sterilwave Machine for shredding and microwave disinfection treatment.
INCOMING  18 01 04 (AN) wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers) LOW RISK	Bagged clinical waste stored within lockable bins/carts within the allocated external storage area. Transferred into the building awaiting treatment. Tipped into the enclosed Sterilwave Machine for shredding and microwave disinfection treatment.
INCOMING  18 02 02* (AH) wastes whose collection and disposal is subject to special requirements in order to prevent infection LOW RISK	Bagged clinical waste stored within lockable bins/carts within the allocated external storage area. Transferred into the building awaiting treatment. Tipped into the enclosed Sterilwave Machine for shredding and microwave disinfection treatment.
INCOMING  18 02 03 (AN) wastes whose collection and disposal is not subject to special requirements in order to prevent infection LOW RISK	Bagged clinical waste stored within lockable bins/carts within the allocated external storage area. Transferred into the building awaiting treatment. Tipped into the enclosed Sterilwave Machine for shredding and microwave disinfection treatment.
OUTGOING  19 12 10 (AN) combustible waste (refuse derived fuel) LOW RISK	Transferred into a plastic bag lined container from the Sterilwave machine to the compactor. The RDF floc is stored within the compactor, located in the external yard, prior to removal off site.



ODOUR MANAGEMENT PLAN

5.0 Other considerations

5.1 Meteorological

Fugitive odour releases are minimised by effective odour management procedures to lower the risk of significant nuisance at receptor locations in the vicinity of the site. However, certain circumstances (as discussed elsewhere in this plan) can cause an increase in the intensity, offensiveness, frequency and duration of any odorous release. The risk of such releases causing a nuisance to local receptors can be increased where local atmospheric conditions fail to dilute and disperse the emissions.

Extreme meteorological conditions that can promote the generation of odour and inhibit its effective dispersion (i.e. high temperatures and stable conditions) may result in an increased risk of impact at receptor locations.

Prevailing Wind Direction

Wind data demonstrates that the prevailing winds are largely from the west, predominately WSW; thus, odours would be expected to be transported over residential and commercial areas in the majority of cases.

Potentially localised odours may cause a temporary nuisance, however, strict waste acceptance and storage controls are in place at the site, as well as daily monitoring carried out in accordance with this Odour Management Plan (OMP).

The WillyWeather Wind Data Archive is based on measurements taken over a 5year average.

The waste accepted onsite is treated within sealed units, that are housed within a building, known as the Boiler House. The discharge from the process passes through ductwork with a condenser for each machine and HEPA filter before a short run of horizontal ductwork to fan and discharge into the atmosphere.

Atmospheric conditions are unlikely to result in an odour occurring at the residential locations due to atmospheric dispersion and in conjunction with strict waste acceptance controls. However, odours will be monitored in accordance with this OMP.

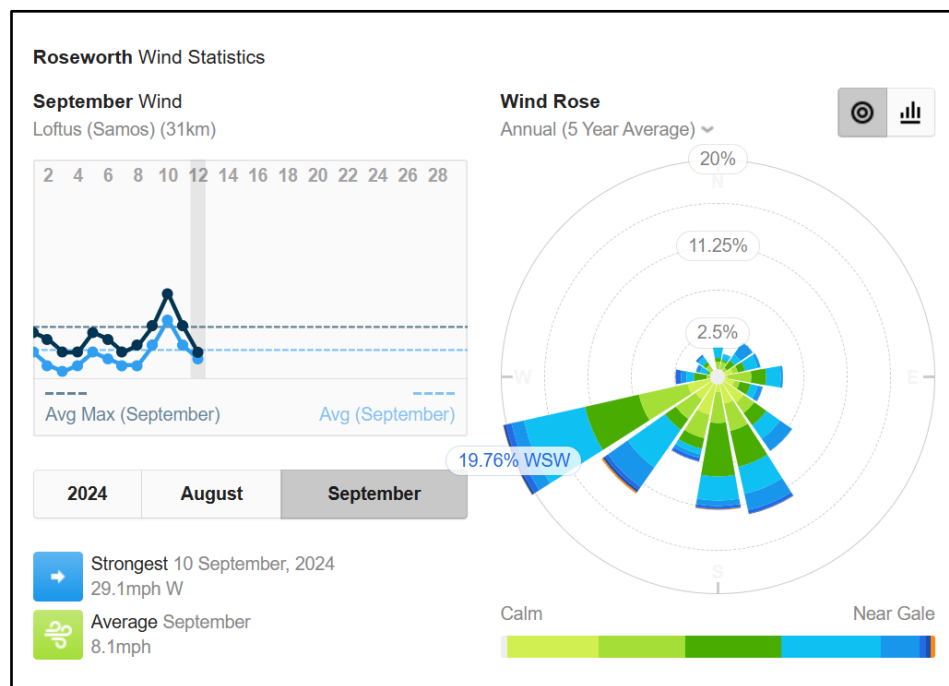
The rose diagram below (Diagram 1) shows the prevailing wind direction taken from windfinder¹.

¹ [Windfinder Apps for iOS and Android - Windfinder](#) accessed September 2024



ODOUR MANAGEMENT PLAN

Diagram 1 - Prevailing Wind Direction



5.2 External local odour sources

There are other potential odour sources externally and within 1km radius of the site boundary, which can produce unpleasant odours, that may be detectable within the vicinity of the site and the surrounding area.

- **Other waste management facilities** neighbouring the site have the potential to produce strong fouling odour which could be detected on or around the site through poor operational practices.
- **Commercial and industrial industries** surrounding the site have the high potential to produce strong odour which could be detected on or around the site through poor operational practices, manufacturing processes or poor housekeeping.

Within 1km of the site there is one regulated waste site. An assessment of the activities has been made, and the site has been identified as a potential odour source.



ODOUR MANAGEMENT PLAN**Table 4 – Permitted Facilities**

NGR	Site Name & Licence Number	Details	Waste Type	Date	Distance (m) from site
442218 521879	JEWSON LIMITED EAWML/66066	Jewson Builders Merchants, Junction Road, Stockton On Tees, Cleveland, TS19 9PB	Household, Commercial and Industrial Transfer Station	Issued: 25/07/2002	739m

There are 7 companies with registered waste exemptions within 1km of the site.

After a review of the registered exemptions there is no posed risk to the activities proposed on site.

Offensive odours arising from external sources will be noted in the site diary. If a significant odour is noted as coming from any external facility, a decision will be made by the Technically Competent Manager or Operations Manager whether to report the odour to the Environment Agency and/or local authority.

6.0 Odour management and control measures

6.1 Limiting the Odour Source

Limiting odour from the clinical waste treatment facility can best be achieved through employing effective site management and good general practice.

NTHS 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. Bagged waste is always contained within a yellow lidded 770 litre waste bin.
- Storage of bagged untreated waste is stored in lidded waste bins and located within the external yard close to the building entrance.
- 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 72 hours, however the contingency plan limits it to 2 weeks after which the waste is transferred off site.
- The stages of the treatment process are enclosed within the Sterilwave machines. All waste is shredded inside each unit and hazardous loads are disinfected using microwaves.



ODOUR MANAGEMENT PLAN

Each machine has air extraction which is fanned through a HEPA filters to the central emission point where it is filtered via second HEPA filter prior to being released. Each machine and extraction can be isolated. A floc classified as Refuse Derived Fuel (RDF) is produced. The RDF is stored within a 15-tonne compactor before being transported off site.

- General cleaning of process plant is carried out on a daily basis.

The site has a number of measures in place to control odour, all of these are considered in relation to the operations that are undertaken at the Hospital on a daily basis. The site management plan procedures ensure that good operational practices are employed. The following sections detail management techniques, procedures, and odour control measures to minimise the potential for odour generation on site.

This section addresses the general site management guidelines and identifies specific procedures to mitigate against odorous emissions.

6.2 Site infrastructure

The Site Layout & Infrastructure Plan (UHNT-Drawing 0003) contains details of the following:

- Buildings and external yard
- Storage facilities for hazardous materials
- Storage of waste materials
- Storage of dirty bins/carts
- Storage of clean bins/carts
- Emergency arrangements (spill kits etc.)
- Entrances and exits that can be used by the emergency services
- All points designated to pollution control (inspection/monitoring points/ emergency valves)
- Trade effluent discharge point

Drainage for foul and combined is marked on the internal drainage plan (NTH Solutions LLP-Drawing 005) in red and surface water is marked in blue, showing the direction of flow, location of discharge points, the interceptor location, the trade effluent discharge point manhole covers/drains and the location of stop/diverter valves. The plan also shows the location of manhole covers/drains, bin washing water discharge/catchment sump.

6.3 Housekeeping

Daily inspections of plant and equipment are made as part of the daily checks, including any vehicles used in the transfer of waste materials, ensuring that they are kept free of any wastes and litter. Vehicle operatives will clean up such material on identification, placing the material in the correctly designated storage bin/cart. NTEES Env 132 Form (WTP) – Plant & Equipment Inspection is used to record these checks.



ODOUR MANAGEMENT PLAN

Daily site inspections and general housekeeping of the site is also undertaken in order to minimise the potential for the build-up of waste and litter. These checks are recorded in the Site Inspection Form (NTEES Env 134 Form (WTP) – Site Inspection Record).

All waste storage areas within the building and external yard are easily accessible to allow visual inspection and cleaning if required. Dirty bin/cart storage areas, equipment and surfaces are routinely checked and cleaned daily to prevent historic waste building up leading to unwanted odours.

At the end of each working day a full clean-down is conducted on all internal fixed plant and storage areas. This is recorded on the NTEES Env 124 Form (WTP) – Daily Weekly Monthly Checklist and signed off by the Site Manager or TCM.

Additional deep cleaning of the site infrastructure and drainage system is carried out as and when required.

6.4 Odour abatement

If odorous materials are detected on site, then a deodoriser can be delivered [via the plant](#), within the building by staff with appropriate training. prior to removal off site. This product can also be utilised during the cleaning process in storage areas.

HEPA filters are high efficiency filters that typically capture over 99.5% of all particulate pollution. They're made from either plastic (PP+PET) or fiberglass, and can capture things like pollen, viruses, bacteria, mould and PM2.5. Diffusion also means they are highly effective at capturing nanoparticles too

6.5 Waste acceptance, handling and storage

6.5.1 Pre-acceptance criteria

Waste pre-acceptance checks are in place in order to prevent the acceptance of unsuitable wastes which may lead to adverse reactions or uncontrolled emissions. This ensures their suitability for the site. Waste must be properly characterised.

All loads incoming and outgoing are booked in daily to ensure that storage limitations aren't exceeded.

The potential supplier for the following information will be requested:

- The source and types of waste
- Composition & the quantity of the waste
- Any pre-treatment that was carried out before the waste is dispatched
- How long the waste can be held by the client before it is delivered to our facility
- Transfer/transport conditions (types and size of vehicles can be used)
- Special handling requirements for the waste
- Hazards of the waste; and
- EWC code of the waste.



ODOUR MANAGEMENT PLAN

This process will allow the company to determine the suitability of incoming waste prior to agree to accept any waste.

6.5.2 Incoming waste procedures

Site waste acceptance procedures are in place to ensure that only wastes that are specified within the permit are allowed into the site. Wastes that are not permitted at the facility will be refused entry.

Majority of wastes arriving to the treatment facility will be produced on site by the Hospital and booked in prior to being transferred across. All vehicles arriving on site from external waste producers will be booked in prior to arrival. All waste loads will be agreed prior to arrival, where the load will be visually inspected upon collection, if possible, in order to confirm its description and composition against the transfer note and other accompanying documentation.

All wastes will be characterised during the pre-acceptance stage of the waste acceptance process, which will include the customer (waste producer) providing information such as a representative waste pre-acceptance audit report (which may include where a healthcare professional identifies through risk assessment that waste may be infectious) and a WM3 assessment, to ensure that the waste has been correctly classified and permitted for acceptance and treatment.

Wastes will only be accepted at the site if the description in the accompanying documentation is in accordance with the, the pre-acceptance documentation, the permit conditions and that onsite inspection confirms waste is consistent with the description provided.

Waste will not be accepted into site unless sufficient storage capacity exists and the site is adequately manned to receive waste. If plant and equipment are out of action due to any unforeseen circumstances for prolonged period, then the site will not accept any incoming waste materials.

Any non-permitted wastes (including malodorous wastes), which are found following arrival or during subsequent storage and treatment operations, will be removed as soon as practicable or within 48hrs.

The facility operates First In First Out (FIFO) principle for the acceptance, storage, treatment and removal of waste off site. The site's Fire Prevention Plan (FPP) specifies and controls all waste storage timescales, no wastes will be stored in exceedance of 14 days, unless otherwise agreed with the Environment Agency.

The site may accept waste from other hospitals or healthcare centres so it is difficult to provide an average age of waste but upon reception of the waste after visual checks, any loads which contain significant amounts of odorous waste will be rejected as above.

As detailed within the EMS procedure Emergency Preparedness, all input of materials is confirmed that they will not accept any materials that have been stored, awaiting transport to site for a period exceeding 7 days unless otherwise agreed with the Environment Agency.

Toolbox talks on this issue / have been given to staff by the Site Manager and any issues will be raised with either the Facility Supervisor, or the Site Manager.



ODOUR MANAGEMENT PLAN

Bagged waste

Bagged waste is always contained within a yellow lidded 770 litre waste bin/cart. Majority of the waste to be treated is produced by the Hospital on site. Incoming waste from external sites will be 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.

Waste Compaction

The sterilised waste floc exits the Sterilwave unit at the end of the batch process and cart is placed onto a bin lifter which tips the waste into a 15-tonne compacter unit. 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.

6.5.3 Waste rejection

Rejected wastes will be stored in the quarantine area provided for non-conforming wastes. In respect to significant loads, an investigation will be conducted and recorded in the site diary. Problem odorous wastes will be stored for no longer than 48 hours pending removal to a suitably permitted site.

The EA will then be contacted in the event of significant loads to agree a course of action where necessary.

6.5.4 Waste processing and treatment

Microwave treatment via four standalone Sterilwave machines – the sterilisation and shredding process will take place entirely enclosed (the Sterilwave machine is an enclosed unit) and the Sterilwave machines are located within the designated building, known as the Boiler House. Each Sterilwave machine is designed to minimise point source emissions to air, specifically the emission of bioaerosols, compounds with the potential to cause odour, and volatile organic compounds.

Each unit is fitted with HEPA filters to prevent the emissions of bio-aerosols during the process. HEPA filters are high efficiency filters that typically capture over 99.5% of all particulate pollution. They're made from either plastic (PP+PET) or fiberglass, and can capture particulates such as like viruses, bacteria, mould and PM2.5. Diffusion also means they are highly effective at also capturing nanoparticles. Once used, the filters are then replaced and the spent filters are transferred to a permitted treatment/disposal facility.

The treatment process begins with the shredding of a batch of clinical waste to break it up to a form that enables efficient microwave treatment to be applied. A 770-litre waste bin is loaded onto the Sterilwave machine where it is automatically tipped into the drum. The dirty bin is transferred to the bin wash area. The machine is locked where the shredding, heating and treatment process begins. Rotative blades begin shredding the waste where in this phase, heat typically builds up to a drum temperature of 80°C. The clinical waste is sterilised using dynamic force [heat] within the drum during the shredding phase to reach the required sterilisation parameters, then microwaving is 'auto introduced' to ensure compliant residence time and temperatures of 110°C are achieved. The end



ODOUR MANAGEMENT PLAN

waste product is classified as EWC 19 12 10, a sterile Refuse Derived Fuel (RDF) with a CV of approximately 16MJ/KG.

Shredding of wastes during the microwave treatment process minimises the potential for bio-aerosols emissions. The Sterilwave machines do not produce liquids requiring discharges. Each Sterilwave machine has an air extract system which fans air from the shredder/treatment chamber to the atmosphere via emission point A1 which has a HEPA air filter, providing odour control.

Good housekeeping standards are already implemented in the Hospital to minimise the potential for malodours to occur from the storage of healthcare wastes. The surface of the designated building allows for disinfection and cleansing of all areas and bins/carts preventing build-up of potentially odorous wastes, details of the bin washer are provided in the Appendices.

6.5.5 Waste storage

Storage and Handling of pre-treated wastes will take place in the designated area within the external yard. The bins/carts containing the pre-treated wastes will be transferred into the building, prior the treatment process. The volume of waste to be treated is low and will be treated on a daily basis, Monday-Friday. Hence, it is anticipated that stored pre-treated wastes will not be likely to build-up. The maximum storage periods will not be exceeded. NTH Solutions LLP has designed a contingency plan which includes the potential failure scenarios, preventative measures and details of who is responsible for corrective actions for situations where plant malfunctions or breakdowns occur.

NTH Solutions LLP will treat the University Hospital of North Tees and Hartlepool's wastes so vehicle movements will be limited. However, there may be a requirement to accept clinical waste from external Trusts and healthcare facilities, where vehicles movements and waste acceptance measures will be strictly controlled following the appropriate measures, procedures and plans in place at the site.

Low storage volumes and strict turnaround of wastes stored in accordance with the FPP will be observed.

Should contaminated or odorous wastes be identified these will be immediately quarantined and removed off site within 48hrs to an appropriate disposal destination e.g. incineration plant.

6.5.6 Transport of wastes

Incoming waste is transferred from the Hospital and external customers in bags that are stored within bins/carts. Where possible confirmatory checks are carried out before offloading. The bin/cart contents are visually inspected upon receipt prior to treatment to allow site management and operatives to make an accurate waste assessment and odour assessment. Where waste is delivered in wheeled carts, or other bulk containers, it is likely that the waste at the bottom of the carts is not wholly visible and additional procedures are carried.

NTH Solutions LLP (NTHS) have procedures to ensure that if any type of indicative non-conforming waste is present in any bin/cart arriving at the site is identified and then managed in accordance with the permit. Clinical waste bags, boxes or similar packaging will not be opened for inspection by



ODOUR MANAGEMENT PLAN

operatives, instead the contents are determined by cross-referencing against the pre-acceptance checks. Quantities of each bin/cart and the description of the waste types are checked against the accompanying paperwork. The bins/carts are inspected for their integrity, well fitted lids and to ensure they are clearly labelled. To meet the requirements of the Hazardous Waste Regulations and as part of the waste acceptance procedure, details of each bin/cart arriving on site are recorded in a tracking system, identifying the source producer, and date of arrival.

If the inspection indicates that the wastes fail to meet the acceptance criteria the wastes are rejected or stored in the dedicated quarantine area prior to removal from site. The maximum storage time for such loads will reflect upon the potential for odour generation and insect infestation; in all cases five working days is the maximum storage time for hazardous waste that has failed to meet the acceptance criteria. NTHS has written procedures to deal with wastes held in quarantine, together with the maximum storage time and volumes.

The bins/carts are initially stored in the external designated permitted area within the yard. When required, the bins/carts containing the waste are transferred into the building and temporarily stored within the allocated area until the bin/cart is moved to one of the Sterilwave units where the waste is tipped into the Sterilwave machine for disinfection treatment, as specified by the FPP. The empty bins are moved across to the designated bin washing area, awaiting the cleaning process.

The sterilised waste becomes a floc non-hazardous waste material produced from the treatment process, that is bulked into a bag lined container. The bags of floc are transferred to the compactor positioned in the external yard, where the waste is stored until collection by a third party.

The treatment building doors are kept closed at all times, unless otherwise in use, to prevent odour release out of hours or non-operational periods.

6.5.7 Emergency and contingency measures

In accordance with the EA's guidance on OMPs, contingency plans have been prepared to react to situations 'where monitoring indicates that a potential odour source is not completely under control, meteorological conditions are unfavourable or that adverse impact has occurred'.

These further control measures are detailed in Table 5 below.



ODOUR MANAGEMENT PLAN**Table 5: Scenarios involving odorous issues, emergency and remedial actions**

Problem / Scenario	Issue	Action
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	• Intermittent – only during cleaning activities • Within building – doors will be kept shut
Waste delivery and storage of clinical wastes	Fugitive emissions 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	• Continuous during operation
Wash plant emissions	Emission from the wash plant during washing of emptied bins	• Continuous during operation, with active extraction with HEPA filter
Compactor emissions	Treated clinical waste (floc) stored in a closed vessel; fugitive emission from the door of the compactor during loading.	• Intermittent as compactor is part of a batch process, but continuous during operation of the compactor. • Low tonnages of sterilized floc waste material stored.



ODOUR MANAGEMENT PLAN

Problem / Scenario	Issue	Action
Odorous load arrives late afternoon/early evening after all export has ceased for the day	Potential for overnight complaint.	Carry out heavy odour treatment and disinfect with neat product, cover with clean material to seal and remove next day first load.
Exhaustion of odour treatment stock	Unable to operate odour suppression.	- Ensure stocks are monitored daily. - Quick turnaround – FIFO basis treated. - Low tonnages.
Damage identified in bins/containers	Holes can cause uncontrolled odour release points.	- Ensure daily structural inspections are carried out. - Maintenance is reactive with planned maintenance programmes in place. - Call maintenance team/contractor to repair or replace.
Treatment areas - general	Clinical waste or raw material spillage. Fugitive emissions from spillages on the floor, localised odour in processing area, dilution in ambient air before release via doors.	- Occasional, cleaning activities occur regularly. - Housekeeping, within building – doors kept closed as standard. - Daily inspection.
Failure of waste handling/processing equipment	Plant breakdowns. Staff absence.	- Cease import of waste to activities affected by failure until extent of the breakdown is known. - Divert wastes to the quarantine bay as an overflow measure. - Monitor import volumes to ensure site storage capacity is not exceeded, allow import of waste only if confident of handling capacity, to ensure we can balance import / export ratio. - Cease import when storage capacity is reached. - Operational Manager to inform all incoming hauliers of redirection to alternative site to keep stock waste to a minimum.



ODOUR MANAGEMENT PLAN

Problem / Scenario	Issue	Action
		• Service agreement with plant/equipment supplier to support with repair requirements.
Haulage issues	Site storage capacity reached. Incoming loads require redirection.	• Cease import of waste until extent of the haulage problem is known and evaluated. • Operational Manager/TCM to inform the Hospital of issues and provide advice for potential alternative measures to keep in-house stock waste to a minimum. • Operational Manager/TCM to inform all incoming hauliers of redirection to alternative site to keep stock waste to a minimum. • If traffic-based issues re-route vehicles to minimise impact prioritising older/odorous waste. • Carefully monitor incoming waste capacity, to ensure the balance of import/export ratio.
Onward disposal route problems	Destination is unable to accept waste materials (Floc).	• Cease import of waste until extent of the delay for disposal is evaluated. • Operational Manager/TCM to inform the Hospital and advise of alternative options to keep inhouse stock waste to a minimum. • Re-route inhouse waste and vehicles to alternative treatment/incineration site(s) to minimise the impact, prioritising any old/odorous waste. • Ensure that no incoming waste is accepted until such time as offsite disposal is confirmed as available. • Proactive treatment and monitoring of all waste for odour and infestation in anticipation of delay in removal from site.



ODOUR MANAGEMENT PLAN

Problem / Scenario	Issue	Action
Employee issues	Shortage of responsible employees to deal with odour.	• Implement holiday booking procedures to ensure that a trained member of employees responsible for odour issues is always on site during working hours. • Training for nominated employees on odour issues to allow for stand-in, in the event of sickness of a designated odour controller. • Provide a call-out register so that employees are aware of who will be on stand-by in the event of sickness or emergency. • Implement agency support for long term staff absences.



ODOUR MANAGEMENT PLAN

7.0 Monitoring

7.1 Operational monitoring

The operator will monitor the emissions at source (on site) to ensure releases do not result in odour nuisance at sensitive receptors.

Monitoring includes both emissions monitoring, monitoring of odour and inspections of the process, to check that any potential odour emissions are being contained and controlled to meet the accepted standards of good practice in relevant guidance.

Monitoring can include the following:

- Proactive inspections and maintenance of plant and equipment
- Process monitoring
- Daily sniff test
- Meteorological data monitoring
- Complaints monitoring; and
- Odour diaries from local residents.

7.2 Olfactory Monitoring

A site odour assessment is made daily to assess odours at the perimeter boundary and recorded in the Site Inspection Record (NTEES Env 134 Form (WTP)).

Sniff testing will be carried out by trained competent staff.

The assessor should not:

- a) Smoke or consume strongly flavoured food or drink for at least 30 minutes before the assessment.
- b) Consume confectionary or soft drinks immediately before the assessment.
- c) Apply scented toiletries, such as perfumes or aftershave immediately before an assessment.

Should the monitoring conclude that a certain activity/waste is giving rise to odour which may migrate offsite, steps will be made to reduce the impact of this activity, which may include but is not limited to:

- quarantine and removal offsite to a suitably licensed facility
- removal of waste to a more suitable area of the site prior to removal; and
- applying odour neutraliser to mitigate until removed off site

7.3 Weather conditions

Meteorological forecasts and conditions are monitored using most recent information from the met-office website, to enable remedial actions to be taken, such as increased monitoring.



ODOUR MANAGEMENT PLAN

Meteorological data will be recorded in the daily diary as per the table below.

Table 6 - Meteorological data

Monitoring Requirements	Frequency
Observed description of conditions: precipitation, drizzle, rain, sleet, snow, temperature, winds, etc	Recorded daily
Wind direction	Recorded daily

Additional monitoring will be conducted in the event the following weather conditions which could cause a potential on or off-site odour issue.

- High winds >30mph which could exaggerate an odour and wind direction southerly impacting local residents
- Periods of hot weather exceeding 3 major dry days which could lead to water shortages, hosepipe bans and excessive odour
- Flooding

7.3.1 Investigation and monitoring records

Daily records shall be maintained and include the following detail if applicable:

- Results of inspections and odour monitoring carried out by site personnel
- If odour is identified what is the extent of odour – how long has it been apparent? Is it arising from site operations?
- Weather conditions including wind speed and wind direction
- Operational problems including date, time, duration, prevailing weather conditions and problem loads
- Complaints received including address of complainant (if available)
- Details of corrective action taken, and any subsequent changes to operational procedures; and
- An evaluation of the effectiveness of control and abatement techniques used.

7.4 Trigger level actions

All odour complaints will be investigated promptly, and appropriate remedial action will be taken if the complaint is substantiated e.g. remove odorous materials off site as soon as reasonably possible. Complaints will be recorded on the form found in Appendix 2.

Complaints to the EA will also be recorded and investigated. An olfactory assessment survey will be carried out from where the complaint was made and from any locations between the complainant/receptor and the site so that the complaint can be validated or rejected.



ODOUR MANAGEMENT PLAN

If odour is detected during routine olfactory monitoring and is judged to be moderate (Odour Intensity Rank 3) then the TCM (or nominated representative) is notified immediately and the olfactory survey will continue and attempt to determine the scope and extent of the odour, as follows:

- A suitable location downwind of the facility and potentially sensitive receptor at which the odour plume is unlikely to extend will be selected for assessment
- Survey continues toward the site until an unpleasant odour is perceived; and
- Where odour is detected, this point is recorded, and reported to the TCM, who must take steps to reduce or prevent the odour spreading.
- If the source of the odour is anticipated to be from an external source, the survey will also progress away from the site boundary towards the potential source until an unpleasant odour is perceived (this will be carried out if the odour detected is unusual for the site e.g. an agricultural foul odour or smells from adjacent sites burning waste).

This will involve as necessary:

- A review of the site activities at the time of the olfactory survey
- A review of the meteorological conditions at the time of the olfactory survey; and
- A review of the effectiveness of process operations and odour control procedures.

7.4.1 Odour Incident Response

In the event that odour has been detected 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:

- **Treatment process (e.g. shredding & microwave treatment process, as well as the compaction activities).**
The treatment process will be stopped, to allow assessment of the equipment. Once shutdown has occurred, the plant will be cleaned thoroughly to remove any residual odour source. If the plant and equipment require repair work, this may require the services of a third-party contractor. Additionally, the HEPA filters will be checked and 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.
- **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.
- **External area (e.g. yard, compactor).**
The source of the odour will be identified and removed. The area will be cleaned thoroughly if required.

7.4.2 Complaint investigation procedure

Once an odour complaint has been received, this may be directly to the site from a member of public, or via the EA. and the details collected the matter will be reported to the appointed-on site odour



ODOUR MANAGEMENT PLAN

controller, either the TCM on duty or Site Manager or nominated site personnel. The complaint will be investigated immediately if it's received during normal operating hours, or first thing on the next working day if received outside of normal operating hours.

The odour controller will carry out an investigation in accordance with the trigger level actions in Section 8.4 to identify potential sources. The odour complaint data will then be reviewed to assess the magnitude of exposure, to identify any patterns, which may help to identify the likely cause of the problem. The site would normally consider the following as part of an incident investigation:

- Is the process under control? (i.e. has the site received exceptionally odorous wastes, for example or have wastes been left standing/stored too long before being processed. Have we had any breakdowns?)
- Have odour containment measures failed? (i.e. Has a door been left open, for example? 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 the HEPA/carbon filters become saturated, does the plant/equipment need servicing?)
- Have atmospheric conditions concentrated an odorous plume?

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.

The University Hospital of North Tees & Hartlepool recognises the need to identify and understand the needs of interested parties which includes local residents and neighbouring businesses. Engagement with these parties is encouraged and will be undertaken as required.

7.5 Review

After the complaint has been resolved, there will be a review to identify whether the site procedures and OMP were effective in dealing with the issue.

Where there are any improvements to be made, these will be identified to the Environment Agency and the any relevant procedures and OMP will be updated accordingly.

8.0 Complaints and External Liaison

The company recognises the importance of engaging with the people who may be affected by site activities. If an issue occurred where neighbours were affected by the activities, then the company would like to propose to use the following community outreach activities to engage with local



ODOUR MANAGEMENT PLAN

community in order to understand the issues and provide detailed information about actions taken to mitigate any problems.

8.1 Our community outreach activities

8.1.1 Newsletter/leaflet

Leaflet explaining about site activities, remedial actions and information about complaining procedures. The company may choose to communicate with residents regarding any incidents or issues via this media.

8.1.2 Website Information

Website update explaining about site activities, remedial actions and information about complaint procedures. The company may choose to communicate with residents regarding any incidents or issues via this media.

8.1.3 Meeting with residents

In the event of a major incident or an issue which may lead to complaints regarding odour, the company will carry out a formal letter drop to inform local residents about the OMP and future improvements to the site and invite residents to contact us through the appropriate methods and/or to attend a public meeting regarding the issues on site.

This OMP will be updated to include actions and outcomes from any community engagement meetings.

The Trust will issue the odour diary form to residents who wish to participate in recording odour issues. A copy of the Odour diary is provided in Appendix 3. This information will be used to form the basis of discussion at community group meetings. Copies of the completed forms will be retained in the site records. A list of scores from residents participating in odour diaries will be summarised in future revisions of the OMP.

8.2 Site contact

Members of the public are able to contact the company with any odour complaints about the facility by the following means.

- By telephone 01642 624713 where the contact number will normally be manned from Monday to Friday between the hours of 07:00 and 17:00. Outside of these hours, and on infrequent occasions during the above hours when an immediate reply cannot be made, there will be an answer phone service which is checked by the Operator to respond out of hours.
- or



ODOUR MANAGEMENT PLAN

- By email to steve.bell@nhs.net

These methods of contacting the site are displayed at the site entrance and on the company's website.

9.0 Closure

This report has been prepared by Olive Compliance Limited (OCL) with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the NTH Solutions LLP and North Tees and Hartlepool NHS Foundation Trust no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from OCL.

OCL disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.



ODOUR MANAGEMENT PLAN

APPENDICIES

APPENDIX 1	ODOUR REPORT FORM
APPENDIX 2	ODOUR COMPLAINT REPORT FORM
APPENDIX 3	ODOUR DIARY



ODOUR MANAGEMENT PLAN**APPENDIX 1****ODOUR MONITORING REPORT FORM**

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)					
Wind direction (e.g. from NE)					
Intensity (see below)					
Duration (of test)					
Constant or intermittent in this period					
What does it smell like?					
Location sensitivity (see below)					
Is the source evident?					
Any other comments or observations					

Intensity (Detectability)

- 1 No detectable odour
- 2 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 3 Moderate odour (odour easily detected while walking & breathing normally)
- 4 Strong odour
- 5 Very strong odour (possibly causing nausea depending on the type of odour)
- 6 Extremely strong odour (likely to induce vomiting due to strength)

Location sensitivity (where odour detected)

- Low (e.g. footpath, road)
- Medium (e.g. industrial or commercial workplaces)
- High (e.g. housing, pub/hotel etc)



ODOUR MANAGEMENT PLAN**Appendix 2 – ODOUR COMPLAINT FORM**

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



ODOUR MANAGEMENT PLAN**Appendix 3 – ODOUR DIARY**

Odour Diary	
Name	
Address	
Contact Number	
Date of Odour	
Time of Odour	
Location of Odour (if not at above address, inside or outside)	
Weather Conditions (rain, dry, fog, snow, etc)	
Temperature (very warm ,warm, mild, cold or exact temperature if known	
Wind Strength (none, light, steady, strong, gusting)	
Wind Direction (e.g. from WS)	
What does it smell like? How unpleasant is it? Do you consider this smell offensive?	
Intensity. How strong was it? (See below 1-6)	



ODOUR MANAGEMENT PLAN

How long did it go on for (time)	
Was it consistent or intermittent in this period?	
What do you believe the source/cause to be?	
Any actions taken or any other comments:	

Intensity

Scale	Observations - description
0	No Odour
1	Very Faint Odour
2	Faint Odour
3	Distinct Odour
4	Strong Odour
5	Very Strong Odour
6	Extremely Strong Odour

Receptor sensitivity
Low (e.g. footpath, road)
Medium (e.g. industrial or commercial workplaces)
High (e.g. housing, pub/hotel etc)

