Energy from Waste, Combined Heat and Power Facility

North Yard, Devonport

Environmental Permit Application (Application EPR/WP3833FT/A001)

Odour Management Plan

June 2011

Prepared for

MVV Environment Devonport Ltd

Revision Schedule

Odour Management Plan
June 2011

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	Feb 2011	Initial Draft	**Caroline Culley** Consultant	**Angela Graham** Principal	**Mike Nutting** Associate
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The methodology adopted and the sources of information used by URS Scott Wilson in providing its services are outlined in this Report. The work described in this Report was undertaken between May 2009 and April 2011 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements might need to be made after any significant delay in issuing this Report.

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1 Report Context

Scott Wilson Ltd has been commissioned by MVV Environment Devonport Ltd (MVV hereafter) to prepare an application for an environmental permit for an Energy from Waste, Combined Heat and Power Facility located at Devonport Dockyard, Plymouth (Devonport EfW/CHP hereafter).

Within the Site, as defined in planning terms, and the Installation, as defined in permitting terms, the proposed facility will comprise:

- Tipping Hall;
- Waste Bunker Hall with Waste Handling Cranes;
- Bale Store/Baling System;
- Turbine Hall with Steam Turbine Generator;
- Boiler House with Grate, Boiler and Ancillary Systems;
- Flue Gas Cleaning System and Chimney;
- Air Cooled Condensers;
- Water Treatment Plant;
- Bottom Ash Handling System.
- Administration Block; and
- Workshop and Stores

This report has been prepared to support an application for an environmental permit and details the odour management plan proposed for the site. The report should be read in conjunction with the other supporting application reports and risk assessments.

2 Background and Scope

2.1 Background

MVV proposes to construct and operate an Energy from Waste, Combined Heat and Power, facility at the site within the Northern Section of Her Majesty's Naval Base, Devonport Dockyard. The EfW/CHP facility will have the capacity to process up to 265,000 tonnes per annum of waste, although it is expected that actual tonnages will be in the order of 245,000tpa.

2.2 Scope

2.2.1 Operational Odour Management Plan

This Odour Management Plan (OMP) has been developed in accordance with the Environment Agency's Horizontal Guidance Note H4 – Odour Management Guidance (April 2011).

H4 Guidance indicates that all OMPs should, contain the following elements:

- an assessment of the risks of odour problems, from normal and abnormal situations, including worst case scenarios, for example of weather, temperature, or breakdowns, as well as accident scenarios;
- the appropriate controls (both physical and management) needed to manage those risks;
- suitable monitoring;
- actions, contingencies and responsibilities when problems arise;
- regular review of the effectiveness of your odour control measures; and
- emission limits where appropriate.

The OMP also requires inclusion of clear statements to demonstrate that the operator understands and accepts its responsibilities. In particular, it should show that the operator, MVV:

- either directly or through its contractors or subcontractors, will ensure that any odour control equipment is designed, operated and maintained such that it operates effectively to control odour at all times;
- is familiar with the characteristics of the processes and equipment on site and have identified the areas of risk of emissions from odour;
- will reduce or cease operations if necessary to avoid serious odour pollution;
- will engage with neighbours to minimise their concerns and complaints; and
- will respond to complaints.

The remainder of this OMP follows the structure below:

- Section 3 – Overview of process and location;
- Section 4 – Assessment of odour risk;
- Section 5 – Proposed management arrangements;
- Section 6 – Normal operational odour control;
- Section 7 – Routine maintenance and inspection requirements;

- Section 8 – Odour control during abnormal events / maintenance
- Section 9 – Monitoring, recording and reporting; and
- Section 10 – Document control / management records.

3 Overview of Process and Location

3.1 Proposed Facility

MVV is developing a new EfW-CHP facility at Devonport Dockyard, Plymouth. The new facility will be constructed to accept a maximum of 265,000 tonnes of waste per annum.

The site will be designed with in-built safety systems to ensure that risks associated with odour associated with handling of waste is minimised and controlled and drawings showing the proposed location and layout of the new treatment facility are provided in Application Volume 1, Section 12.

The site will be operated by MVV Environmental Devonport Ltd.

3.2 Acceptance of Waste

The EfW/CHP facility will be operational 24 hours a day, 7 days a week burning the waste and generating steam and electricity. . The hours when lorries can deliver waste to the site and take away the ash and other residues and therefore when there will be greater amounts of activity outside the building will be restricted to the following times:

- Monday – Friday 08.00 – 19.00
- Saturday 08.00 – 18.00
- Sunday 08.00 – 16.00
- Bank Holidays (except Christmas Day and Boxing Day) 08.00 – 18.00
- Christmas Day Closed
- Boxing Day 08.00 – 16.00

MVV recognises that there may be some occasions when the SWDWP may request that the facility accepts Contract Waste deliveries outside the normal opening hours, for example in the case of an emergency or to accommodate the delivery of Contract Waste where Authorised Vehicles have been unavoidably delayed; or in other similar circumstances. It is therefore proposed that the facility be able to accept waste outside the operating hours stated above with agreement with the Local Planning Authority.

The plant will be capable of receiving up to 265,000 tonnes of waste per annum. Waste will arrive at the site in various different vehicles and will mainly consist of:

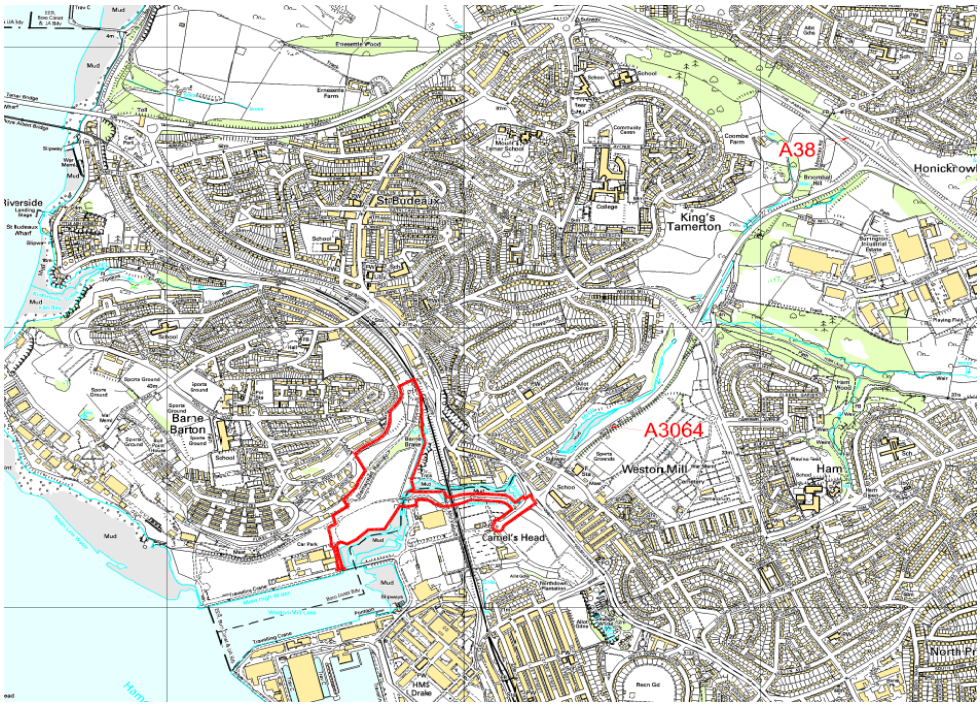
- ‘Black bag’ waste collected from households;
- Household bulky waste;
- Residual waste from HWRCs;
- Street cleaning wastes;
- Waste collected from dumping and fly-tipping incidents; and
- Waste from litter bins.
- Commercial and Industrial wastes

3.3 Site Location

The site is located in the northern section of Her Majesty's Naval Base (HMNB), Devonport dockyard, Plymouth, and extends to approximately 7 hectares in area. The land is the ownership of the Ministry of Defence (MoD) and will be leased by the MoD to MVV.

The general location of the site is shown in Figure 1 below with the site boundary shown in red:

Figure 1: Site Location



The site is situated in an area that comprises a mix of residential, commercial and industrial properties. Receptors adjacent to the site boundaries include:

- To the north and north-west of the site lies the residential area of Barne Barton, which already has a generally industrial outlook;
- There are further residential properties to the east, north-east and south-east of the site, at Weston Mill, St. Budeaux, King's Tamerton, Camel's Head, North Prospect and Keyham, as well as further a field in Saltash to the north-west, Wilcove to the west and Torpoint to the south-west;
- The Weston Mill Viaduct is close to the eastern boundary of the site, and this forms a bridge carrying the railway line over the nearby entrance to HMNB Devonport and provides some screening from residential areas to the east; and
- To the west of the site is a car park, and to the south lies Weston Mill Lake, beyond which the majority of the dockyard facilities are located; to the south-east is the existing Devonport Distribution Facility (DDF) which stands approximately 8m high and is bordered to the north and south by large areas of tarmac used as loading bays and service yards.

4 Assessment of Odour Risk

4.1 Introduction

This section outlines the approach taken to evaluate the odour risks associated with the operation of the EfW/CHP facility. The impact evaluation process has made reference to the appropriate guidance within:

- Environment Agency H1 Guidance *Environmental Risk Assessment for Permits"* (April 2010);
- Environment Agency "A Practical Guide to Environmental Risk Assessment for Waste Management Facilities"; and
- Environment Agency Horizontal Technical Guidance Note H4 – Odour Management, April 2011.

4.2 Odour Risk Assessment Methodology

The evaluation methodology used involves three stages:

a) Source characterisation, to identify the potential odour hazards and risks associated with the operation of the EfW/CHP facility;

b) Receptor evaluation, to review the receptors that could be impacted by the odour hazards and risks from the operation of the EfW/CHP facility; this covers residential, commercial and industrial human receptors; and

c) Risk assessment, which evaluates the odour hazards and risks in terms of the probability of occurrence and the severity of the impact on the identified receptors; the odour risk assessment also summarises the odour management plan approach that will be used to mitigate the identified risks.

4.3 Source Characterisation

4.3.1 Odour Hazard Identification

The odour hazard identification process draws on a combination of URS Scott Wilson's knowledge of odour impact assessment and MVV's practical experience of operating Energy from Waste and CHP facilities.

4.3.2 Odour Emissions and Type

In relation to odour releases at the facility, the following have been identified as potential release sources:

- Unloading of waste from vehicles; and
- Storage of waste.

Referring to '*Environment Agency Odour Guidance – Internal Guidance For Regulation Of Odour At Waste Management Facilities, July 2002, Version 3*', the relative offensive nature of an odour is based on it's nature and it's hedonic tone which can be assessed using:

- An Odour Wheel (Figure D1), which links commonly used descriptors of odours around waste management facilities with the most likely chemical cause and/or origin(s); and

- Hedonic scores (Table D1 and D2), which provide a score to indicate the relative pleasantness or unpleasantness of the odour as determined by the person(s) making the assessment; odours which are more offensive will have a negative hedonic score, whilst the less offensive will have a positive score.

The EfW-CHP facility, according to Figure D1, has the following odour types associated with it:

- Dustbin odour – household wastes in transit and/or storage remaining aerobic; and
- Rotting vegetation – household waste in transit and/or storage turning anaerobic.

Further assessment of the odour types of the references against the hedonic scores in table D2 would give an hedonic score of in the order of -2.76, making the potential odour offensiveness generated from the wastes relatively high.

This corresponds with the earlier H4 guidance (Oct 2004) which ranks activities involving putrescible waste as high.

The application of best practice management measures, described in later sections of this OMP, would, however, be capable of eliminating and minimising emissions to an acceptable level.

4.3.3 Inventory of Odour Sources

An inventory of potential odour sources from the EfW/CHP facility is provided in Table 4.1 on the following page.

Table 4.1: Odour Source Emissions Inventory

Source Description		Likely odorous compounds	Containment/Release Point	Odour Description	Intensity at or Near Release Point	Pattern of Release	Potential For Problems
Source	Type Of Emission						
Receipt of wastes	Fugitive	Odours associated with putresible waste streams collected from households.	Vehicles normally sheeted or enclosed.	Variable, depending on the composition and condition, but may contain a strong component of rotting food.	Odour is expected to be noticeable only in close proximity to vehicle (<1m).	Intermittent release, near to ground level.	None anticipated
Waste Discharge	Fugitive	Odours associated with putresible waste streams collected from households	Vehicles will be discharged inside a closed building.	Variable, depending on the composition and condition, but may contain a strong component of rotting food.	Difficult to characterise because the source is within the main building. Initially quite intense but the perception rapidly diminishes upon exposure.	Expected to peak during waste receipt and other waste movement activities.	Failure/maintenance of odour control measures could lead to poor containment of odour.
Waste and Residue Storage	Fugitive	Odours associated with putresible waste streams collected from households	Waste storage, sorting and processing takes place inside closed building. During shutdowns some waste may be baled and stored in the bale store area for up to 4 weeks.	Variable, depending on the composition and condition, but may contain a strong component of rotting food. Odour strength may increase with waste storage duration.	Difficult to characterise because the source is within the main building. Initially quite intense but the perception rapidly diminishes on exposure.	Expected to peak during waste receipt and other waste movement activities. Potential peak periods may occur when waste is stored for an extended period.	Failure/maintenance of odour control measures could lead to poor containment of odour. Equipment failures or shutdown may result in extended holding times for feedstock materials.
	Fugitive	Bottom ash and air pollution control (APC) residues	Residue storage takes place inside closed building in designated ash storage bays or residue silos.	No odour expected	No odour expected	None expected	None anticipated
Export of process residues	Fugitive	Bottom ash and air pollution control (APC) residues	Vehicles will be enclosed or covered	No odour expected	No odour expected	None expected	None anticipated

4.4 Sensitive Odour Receptors

The site is a brownfield site located on the northeast of Her Majesty's Naval Base, Devonport, Plymouth. The centre of the site is located at grid reference 244691, 57306 as shown on in figure 1 (page 5 above). The area proposed for the EfW/CHP facility building, condensers, workshop, stores building, car park and associated infrastructure covers an area of approximately 2.47 hectares.

Sensitive odour receptors that could be impacted by the operations of the EfW/CHP facility include residential, commercial and industrial human receptors. Sensitive receptors for the facility were identified as part of the Air Quality Dispersion Modelling Assessment (see Application Volume 1, Part 4 Environmental Impact Assessment, Appendix B) and the closest receptors were assessed for odour impact.

The receptors are listed in Table 4.2 below.

Table 4.2: Odour Receptors

Receptor	Description	Type	Distance	Direction
R1	Talbot Gardens	Residential	110m	West
R5	Poole Park Road	Residential	200m	North West
R7	Wolseley Road at Camels Head Junction	Residential	450m	East
R22	Westonmill Primary School at Junction	School	500m	East
R24	Wolseley Road nr Camels Head Junction	Residential	480m	East
R25	Wolseley Road nr Camels Head Junction	Residential	450m	East
R32	Cardinal Avenue	Residential	340m	North East
R35	Hamoaze Avenue	Residential	220m	East
R36	Harbour Avenue	Residential	260m	East
R47	Savage Road	Residential	140m	West

4.5 Odour Risk Assessment

4.5.1 Introduction

The odour risk assessment was completed in two parts:

- Initial qualitative assessment following H4 guidance was completed on fugitive releases during normal plant operations; and
- A dispersion modelling assessment of point source releases during periods when the combustion process is stopped and a carbon filter is used to control odour emissions generated from waste reception and storage activities.

4.5.2 Qualitative Risk Assessment

The initial assessment was a qualitative assessment that considered each of the odour sources identified in section 4.3.3 above in terms of:

- Frequency of occurrence;
- Intensity of odour released;
- Pathways and receptors involved;

- Environmental consequence(s) of the event;
- Overall risk and its significance to the environment; and
- Control and mitigation measures needed to prevent or reduce the risk.

This qualitative odour risk assessment has also considered potential odour sources that may be encountered during maintenance and abnormal conditions or situations. The qualitative odour risk assessment can be found in Appendix A of this OMP.

4.5.3 Scoring Mechanism For Qualitative Odour Risk Assessment

The risk assessment methodology has been developed using a scoring mechanism, whereby scores are assigned to:

- The probability of the hazard occurring without the use of protective measures;
- The consequences of the hazard to the environment or human health; and
- The effectiveness of the control/mitigation used to prevent the hazard occurring.

The scoring system used for the assessment is shown in Table 4.3 below:

Table 4.3: Risk Assessment Scoring System

Frequency of Occurrence		
Frequency	***Comment***	***Score***
Never	Incident occurs once every 100 to 10,000 years	1
Very Unlikely	Incident occurs once every 10 to 100 years	2
Unlikely	Incident occurs once every 1 to 10 years	3
Somewhat Unlikely	Incident occurs at least once per year	4
Fairly Probable	Incident occurs at least once per month	5
Probable	Incident occurs at least once per week	6
Consequence of Hazard to Environment or to Human Health		
Consequence	***Comment***	***Score***
Minor	• Onsite nuisance only no outside complaint • No breach of permit	1
Noticeable	• Nuisance noticeable off-site • Potential for 1 – 2 complaints • Reportable breach of permit	2
Significant	• Severe sustained nuisance • Major breach of environmental permit • Numerous public complaints	3
Severe	• Partial plant shutdown required • Replacement of part of plant • Regulator (EA/HSE) involved	4
Major	• Full plant shut-down required • Regulatory prosecution likely	5
Effectiveness of Mitigation		
Mitigation Factor	***Comment***	***Score***
Non-existent	• No mitigation in place	1
Ineffective	• Some minor controls in place but mitigation not achieved	2
Partly effective	• Basic controls in place and hazard partly mitigated but significant residual risk remains	3
Effective	• Basic controls in place and hazard mitigated to an acceptable level although moderate level of residual risk may exist	4
Very effective	• Processes fully controlled (basic/advanced) and hazard mitigated to recognised standard. Some minor residual risk may remain	5
Entirely effective	• Processes fully controlled to level in excess of recognised standards. Hazard mitigation entirely effective and no residual risk remains	6

4.5.4 Dispersion Modelling of Point Source Releases

Dispersion modelling has been carried out of emissions of odour from the shutdown exhaust oulet. During normal operations, ventilation air from the tipping hall and waste bunker is used as combustion air for the process, during which any odorous compounds are destroyed before being emitted to atmosphere from the main chimney. For this reason, odours are not emitted from the shutdown system for most of the time.

When the combustion line is taken out of service for planned maintenance, however, there is the requirement to continue ventilating the facility building. At such times, building air would be passed through a dust and activated carbon filter to remove odorous compounds, prior to being emitted to atmosphere via the shutdown exhaust outlet on the roof of the facility building.

Modelling of residual odour emissions has been undertaken, assuming that a constant emission would occur from the shutdown exhaust system chimney. In practice, this would not occur as the shutdown exhaust outlet would not be in use when the combustion line is operational, and as such represents an over-estimation of impacts. The assessment focuses on predicted odour concentrations in the vicinity of the closest residential properties to the site boundary. This has been achieved through the use of a modelled receptor grid.

The use of insufficient ventilation rates can potentially lead to odour emissions occurring from the facility building via open sliding doors. In practice, this often occurs when the ventilation rate is well below 1 building air change per hour. The proposed facility has been designed such that the ventilation rate is 1.3 building air changes per hour and it is therefore very unlikely that odorous emissions would occur from open doors under all but the most adverse meteorological conditions, such as during periods of very high winds, and even then only very minor emissions of odour would occur. For this reason, the modelling assessment has not considered fugitive odour emissions from the facility doors.

A copy of the dispersion modelling assessment has been provided as Appendix B to the Environmental Impact Assessment (Application Volume 1, Part 4) and the model results has shown that ground level odour concentrations are predicted to be very small, well within the selected 1.5 OU_E m^{-3} benchmark level set within the Draft Horizontal Guidance note H4 for ‘highly offensive’ odours. Such odour concentrations are unlikely to be detectable. The location of the maximum predicted odour concentrations is the same for all the meteorological data years used in the assessment, which is a point within the application site boundary, close to the eastern edge of the EfW CHP facility main building. Odour concentrations at locations outside the site boundary would be even lower.

5 Proposed Management Arrangements

5.1 Management Structure

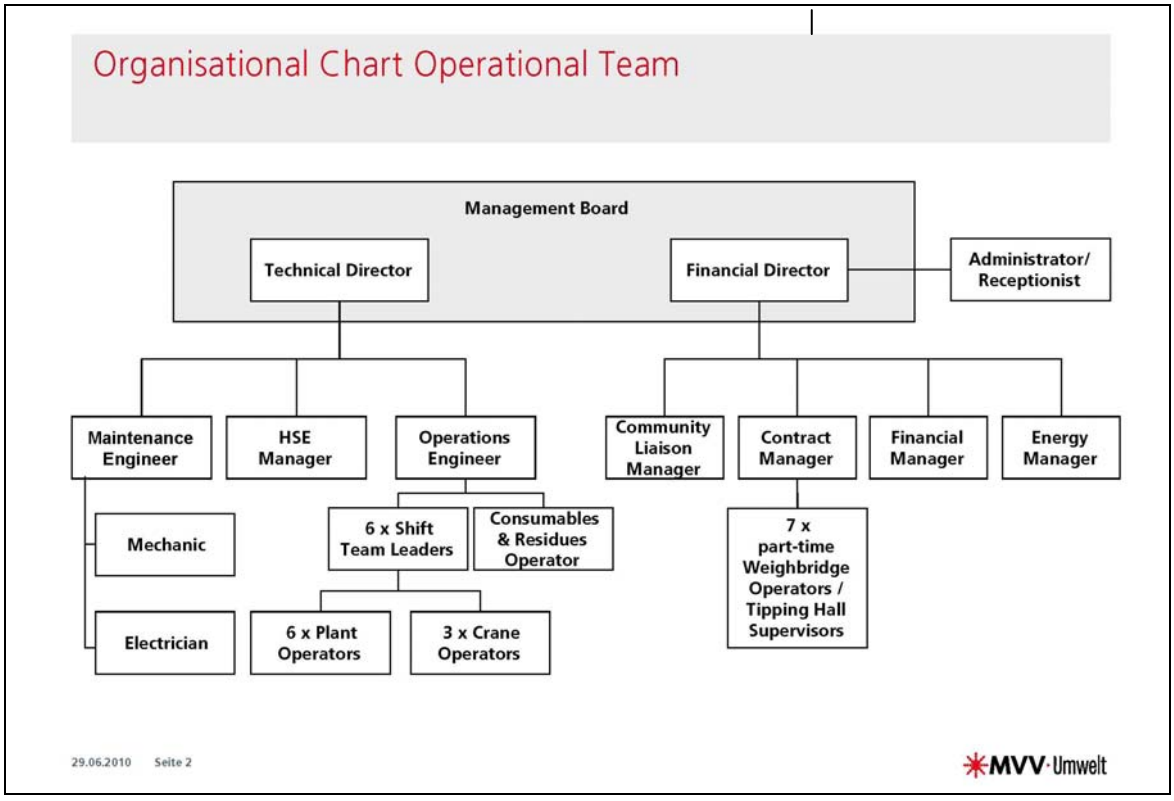
5.1.1 Site Management Arrangements

In respect of the management and operation of the EfW/CHP, MVV Environmental Devonport Ltd. will operate the site. Environmental responsibility for individual operations will be assigned throughout the site management structure and will be defined through the management system.

The Operations Engineer, supported by the Health, Safety and Environmental Manager, will be the designated management representative with overall control of the management system at the facility, including the ability to ensure programmes are realised and translated into activities on the plant.

Indicative line responsibilities of staff within the EfW/CHP facility are presented diagrammatically in Figure 5.1 below:

Figure 5.1: Site Management Structure



Some brief descriptions of the responsibilities of those staff that will be involved in operating the EfW/CHP are outlined below:

Table 5.1: Responsibility of Role Function

Position	Responsibility
Operations Engineer	A supervisor will control day to day operations on site including being responsible for Health and Safety on site. This person will ensure that: • The site is available to receive waste; • The arrangements for removal of waste from site is acceptable; • The site is operating within the parameters of the Environmental Permit and appropriate planning regulations including odour management requirements; and • Any odour complaints are fully investigated and appropriate corrective action is taken as necessary.
Tipping hall supervisor	The tipping hall supervisor will be responsible for the daily inspection of the tipping hall and maintaining the safety and cleanliness of the tipping floor. Liaison with the Weighbridge Operator with regard to incoming and outgoing vehicles will form part of the postholder's duty.
Weighbridge Operator	An experienced Weighbridge Operator will ensure that vehicles entering the site are legitimate, registered and authorised by the WCA's before being allowed to discharge on site. In addition, the correct operation of the weighbridge, the computerised transaction recording, duty of care checks and liaising with the tipping hall supervisor as necessary by radio will form part of the postholder's duties.

5.1.2 Technical Competence

A technically competent person or nominated deputy will be available at all times and will be responsible for the control of incoming and outgoing vehicles, checking Duty of Care documentation, keeping and maintaining all records. The technically competent person or nominated deputy will have overall responsibility for ensuring high standards of housekeeping and odour control are maintained throughout the site as a whole.

5.2 Training and Competence

5.2.1 Training Provision

All staff will receive instruction and training, both verbal and documented, in all relevant aspects of operational procedures, permit requirements in relation to operations and the environment, health and safety and general requirements of the site management plan. A copy of the permit and approved site management plan will be kept available on site for reference when required by all site staff carrying out work under the requirements of the permit.

Wherever possible, training will be delivered in the workplace by internal training staff or by managers although formal training courses will be employed were required.

In relation to odour management this will be incorporated into the general site operational training and will cover odour awareness in relation to normal, abnormal and maintenance situations and include management of odour complaints.

5.2.2 New Employees

Each position at the site will be covered by a general job description detailing key skills, responsibilities and reporting structure. It will be standard procedure for new process operators to be given comprehensive "on the job" training before they take full responsibility for their post. Supervision will be provided for as long as is necessary to ensure that the required skills have been imparted. In addition specific full training on key tasks will be given to both new and experienced operators as necessary.

5.2.3 Contractor Management

Site rules will be provided to all contractors using or visiting the EfW/CHP facility, these will describe basic safety and operational precautions to be observed while at the site. Instances of drivers or contractors not following site rules or behaving inappropriately will result in warnings. If necessary requests to leave site and/or barring from future visits to the site will be implemented.

5.3 Management System

5.3.1 Management System

MVV operate an integrated management system that has accreditation that meets the requirements of:-

- BS EN ISO 9001:2000 – Quality Management Systems;
- BS EN ISO 14001:2004 – Environmental Management Systems; and
- BS OHSAS 18001:2007 – Occupational Health and Safety Management Systems.

It is the intention of MVV that facilities such as the Devonport EfW/CHP facility will obtain individual certification through the application of the system and preparation of site specific operating plans. Formal audits will be carried out throughout the life of the contract to ensure continued accreditation to these ISO standards.

6 Normal Operational Odour Control

6.1 Introduction

This section describes the control measures and working practices which will be employed at EfW/CHP facility to mitigate odour release under normal operations.

6.2 Operating Procedures to Minimise Odour Release

6.2.1 Waste Acceptance Procedures

All vehicles carrying waste into the EfW-CHP will have to pass over the weighbridge before being allowed into the tipping hall. The vehicle, quantity, type and producer of the waste will be recorded in accordance with the Environmental Permit (EP). Only waste which conforms to the EP will be accepted.

6.2.2 Waste Composition

The potential for odour emissions from the site as a whole will be governed by the nature of the wastes being delivered and accepted at the facility. In the event that malodorous waste is identified by the site operators during load discharge/offloading, then the waste will be prioritised for processing in the combustion process as soon as possible.

6.2.3 Unloading Of Wastes

Incoming waste will be directed into the Tipping Hall by the Weighbridge Operative to the correct area for load discharge into the waste bunker. All unloading of waste will be carried out within the facility building.

The tipping hall has been designed with a double door system whereby:

- The tipping hall has outer access doors which open to allow vehicle access into the building for tipping. These doors are kept closed where practicable when access is not required; and
- Each tipping bay has a door which will be kept closed when access for tipping is not required.

Additionally the tipping hall has negative air flow which when coupled with the double door arrangements minimise the potential for odour releases.

As part of good housekeeping procedures, the facility will be kept as clean as practically possible to prevent vehicles from travelling over previously tipped waste. This should minimise the need for wheel-washing. Should wheel washing be required, jet washing or equivalent will be employed before the vehicle leaves the facility.

6.2.4 Storage of Waste

The length of time waste is to be stored has significant impact on the potential for odour emission, therefore the residence time of the waste once delivered to the facility will be closely controlled to minimise decomposition during storage at the facility.

During normal operational periods, waste may be stored for up to 3 – 5 days which facilitates availability of waste for short periods of non-delivery (eg bank holidays) and to ensure the necessary feedstock of waste to allow for sufficient mixing of the waste to achieve a

homogeneous waste fuel. During these periods ventilation air from the waste bunker, tipping hall and bale store areas is extracted for use as combustion air and any odorous compounds are thermally destroyed.

For periods of planned shutdowns, the facility has been designed to enable continued waste acceptance using a baling system. The waste will be compacted and wrapped in polyethylene sheeting inside the bunker building, and the bales will then be stored in the dedicated bale-store compartment of the waste bunker. During shutdown periods ventilation air from tipping hall, waste bunker and bale store is extract through a dust and carbon filter.

6.2.5 Handling and Processing of Waste

Waste will be temporarily stored before being loaded into the incinerator for combustion.

The following odour control measures will be exercised during the handling of waste within the facility:

- Unnecessary re-handling will be avoided so as to reduce movement and disturbance of waste which could result in further emission of odour;
- All building air from the tipping hall, waste bunker and bale store area will be vented through the furnace during normal operations and via a dust and carbon filter during shutdowns; and
- All handing and loading of waste will occur within the building..

6.2.6 Cleaning

Operational areas, external roads and drainage channels will be regularly cleaned so as to prevent the build up of odour from old degrading material. The frequency and procedure for the cleaning activity will be developed and implemented in accordance with the maintenance plan for the facility.

6.3 Containment of Residual Waste Odour Emission

The whole process of unloading, handling, storage and combustion of waste for onward transport will take place within the enclosed building. Ventilation air from the within the building is either used as combustion air during normal operation or extracted via a dust and carbon filter during shutdown periods thus minimising the emission of odorous air to atmosphere.

Further control of odour emission from the building is achieved through use of a double door system whereby:

- Access to the building is through a designated access door which is closed when not in use; and
- Tipping bays are each equipped with a secondary set of doors that are kept closed when access to the tipping bay is not required.

7 Routine Maintenance and Inspection Requirements

7.1 General

This section of the OMP outlines how MVV will help maintain the effectiveness of odour controls through planned maintenance and inspection procedures.

MVV will ensure good performance of all plant, the integrity of the building and working procedures which are each critical to maintaining efficient odour control. A planned inspection and preventative maintenance regime will be applied, which will include a written maintenance plan and a record of maintenance.

The OMP is a working document with the specific aim of ensuring that:

- Odour is considered as part of routine inspection;
- The risk of unplanned odour releasing incidents that could result in annoyance is minimised;
- Odour is primarily controlled at source by good operational practices, the correct use and maintenance of plant and operator training etc;
- All appropriate measure are taken to present or, where it not reasonably practicable, to minimise odorous emissions to air from the installation that may be considered offensive at locations outside of the installation boundary.

7.2 Maintenance Plans and Inspection Schedules

A series of maintenance and inspection procedures will be developed during the commissioning phase of the EfW to ensure building/plant integrity and working practices can remain effective in respect of efficient odour control. This maintenance plan will include:

- A significant element of planned preventative maintenance to ensure high standards of performance;
- An indication of reference documents, along with procedural steps including who will undertake the work, the relevant mechanism for recording the information and the action/reporting to be completed if an issue is identified;
- Maintenance scheduling making reference to statutory requirements, manufacturer's recommendations and from plant history; and
- Documenting major maintenance work undertaken.

7.3 Building Containment

Odour containment within the building is achieved through:

- Fast-acting roller door which will be kept closed where practicable;
- Doors on the tipping bays which will be kept closed when access not required;
- Maintenance of negative air pressure and extraction of ventilation air as either combustion air during normal operations or through a dust and carbon filter to a shutdown exhaust during shutdown periods; and
- Waste handling and storage within facility buildings.

Maintenance schedules for the facility will ensure that equipment critical to odour control is subject to planned preventative maintenance to minimise the risk of plant failure and odour release.

Building infrastructure will be checked weekly for evidence of cladding damage, and repairs to significant damage which may contribute to the release of odour will be undertaken as a priority.

7.4 Plant and Equipment

All plant items and equipment will be serviced and maintained according to manufacturer's schedules and recommendations, in order to minimise the risk of breakdown.

Plant and equipment will be inspected and serviced in accordance with detailed planned preventive maintenance schedules, and records maintained. Standby equipment for some critical items will be provided, as required.

7.5 Defect Reporting and Reactive Maintenance

Mobile and fixed plant will be subject to a first use check on a daily basis to facilitate defect detection and reporting.

Defects will be logged and reported to the MVV maintenance team so that repairs can be scheduled. In relation to equipment that is critical to odour control at the site, repairs will be completed within 24 hours where practicable.

8 Odour Control During Abnormal Events / Maintenance

8.1 Introduction

This section of the OMP addresses the management and control of odours during maintenance and abnormal events or conditions (including emergencies, accidents, breakdowns and weather anomalies).

This section outlines a summary of foreseeable situations which may compromise the operator's ability to control and / or minimise odorous emissions and summarises the actions to be taken to minimise the impact.

8.2 Abnormal Situations

In relation to abnormal operations and emergency situations, the following scenarios have been identified which may affect odour control:

- Storage of waste for long periods of time due to plant shutdown;
- Accident resulting in major spillage of waste;
- Delivery of malodorous waste;
- Plant and equipment malfunction / breakdown; and
- Anomalous weather conditions.

The risk assessment approach used for the assessment of odour impact during normal operations has also been employed in the assessment of odour control techniques during abnormal situations. The risk assessment is presented in Appendix A, and includes an appraisal of abnormal conditions, where odour control may be compromised, the potential impact or consequences and how the conditions may be prevented and/ or mitigated and controlled.

8.3 Mechanical Problems / Breakdowns

Mechanical problems or breakdowns may require the replacement or repair of component parts and render plant/ equipment required for odour control ineffective or non-operational.

To minimise, and mitigate the potential impact of such breakdowns, the following will be put in place:

- A preventative maintenance schedule will be developed to reduce the risk of plant breakdown;
- A list of suppliers or contractors for critical equipment and/or standby equipment will be maintained; and
- Availability of maintenance personnel is 24 hour per day.

8.4 Maintenance

Where planned and emergency maintenance of plant or equipment is required, and there is a likelihood of odour being released to atmosphere in quantities sufficient to result in detection of odour by offsite receptors, a detailed risk assessment of the activity will be conducted to assess

potential for odour generation, release and control. The detailed risk assessment methodology and accompanying forms for carrying out unplanned works will be developed by MVV as part of the management system during the commissioning phase.

8.5 Abnormal Events Management Plan

Although the site does not fall within the COMAH regulatory regime, the site accident management plan will, however, still reflect the broad principles of the COMAH guidelines, in that:

- Major accident hazards/abnormal events will be identified, including those where generation of significant odour could occur;
- The measures necessary to prevent such accidents/ events will be identified, including those necessary to limit their consequences for people and the environment;
- Adequate safety and reliability will be incorporated into the design, construction, operation and maintenance of the facility; and
- An on-site abnormal events management plan will be developed.

Environmental accident prevention, including odour controls, will be managed within the overall site health, safety, quality and environmental management programme. Management and procedures relating to such emergency preparedness and response will be documented within an Emergency Procedure.

In respect of odour management, individual elements of the abnormal events management plan are outlined below.

- Defect reporting procedures – maintained in the facility's Operations Manual covering all reasonably foreseeable incidents, the procedure will detail the how to report the defect, communication routes and mechanisms for corrective and mitigating action;
- Investigation and reporting procedure – this will deal with the reporting, investigation and recording of any incidents relating to odour control at the facility, including those associated with external complaints;
- Incident Controller – this will be normally be the Operations Engineer identified in the plan, who will have the responsibility to mobilise and co-ordinate a response team, and will be responsible for all communications with external stakeholders and the regulator as necessary;
- Emergency equipment – including critical spares and standby plant arrangements; and
- Contingency plan– the plan will detail the alternative arrangements that can be made available in the event that the operation has to cease.

9 Monitoring, Recording and Reporting

9.1 Introduction

This section of the OMP outlines the monitoring procedures that will be employed during normal operating conditions. The success of the various operational procedures put in place to minimise and contain odour emissions, and the extent and nature of odour issues should they arise, will be assessed using this monitoring protocol.

9.2 Overview of Monitoring Plan

To ensure that odorous emissions from the facility do not result in nuisance at sensitive receptors, MVV will monitor odour emissions by:

- Daily site inspection using 'sniff tests' to assess odours;
- Daily monitoring of meteorological information and weather forecasts;
- Monitoring of odour complaints; and
- If a sustained period of justified odour complaint should arise, MVV will review existing procedures and other management and control techniques as necessary.

9.3 Monitoring Methodology

9.3.1 Sniff Testing

Sniff testing (sensory field odour assessment) is the most common form of odour monitoring and can provide evidence of an odour problem. Sniff testing will be undertaken in the following ways:

- Level 1: Site Odour Assessment – Sniff testing at source; as part of a daily inspection at the site boundary during normal operational conditions;
- Level 2: Boundary Odour Assessment – Sniff testing at the site boundary during abnormal or adverse weather conditions; and
- Level 3: Receptor Odour Assessment – Sniff testing at identified sensitive receptor locations if necessary, e.g. in the event of a complaint being received.

Sniff tests will be undertaken in accordance with Appendix 1 of the latest EA H4 (April 2011), and an example report form is attached in Appendix B.

9.3.2 Monitoring Of Meteorological Information and Weather Forecasts

Monitoring of meteorological information and weather forecasts can assist in the management of odour emissions from the site. Some meteorological conditions can exacerbate the risk of odour annoyance at sensitive receptors for example low odour dispersion caused by cold temperatures and low wind speed.

Monitoring of meteorological information and weather forecasts will be used in the following ways:

- To predict when weather conditions are likely to cause poor odour dispersion, this will ensure that planned maintenance can be re-scheduled to avoid such conditions; additional monitoring may also be scheduled if weather conditions necessitate;

- To plan where monitoring of the site boundary should take place during normal operations, in order to correctly assess odour impacts;
- To predict the areas where potential odour impacts may occur during abnormal events; and
- During the investigation of odour complaints to ascertain complainants observations.

9.3.3 Complaints monitoring

MVV recognise that complaints data is probably the most direct and reliable form of monitoring whether odours beyond the site boundary are causing an annoyance. MVV will therefore record complaints, respond to them and communicate with the complainants.

Complaints will be collected, registered and investigated as described in the following section.

9.4 Complaints Procedure and Communication

9.4.1 Complaints Procedure

MVV's complaints procedure shall be incorporated into their management system to ensure that odour complaints are handled correctly and systematically and acted upon.

The complaints procedure will be maintained as part of the IMS system and will outline how MVV will:

- Respond to odour compliant;
- Investigate odour complaints, take appropriate steps and actions and communicate with relevant stakeholders; and
- Communicate to appropriate bodies routinely and in response to any abnormal events or planned maintenance.

9.4.2 Complaint Management and Registration

MVV's procedure for handling odour complaints is based on guidance set out in the Environment Agency's latest version of H4. The principal arrangements are:

- **Publicising contact details for odour complaints**

  The various contact methods for reporting issues will be displayed at the facility, shown on the company web-site and communicated through meetings, bulletins, press releases and any other form of advertisement used during the construction and operation of the facility.

  Telephone contact to the facility will be responded to during normal operating hours with an answer phone service available outside these times.

  Alternatively, complaints can be made in writing using post or email.

- **Complaint Management**

  MVV will log all complaints regarding potential odour annoyance from the EfW/CHP facility on a registration system that will ensure data is collected and recorded in a systematic way. The complaints register will be reviewed monthly for trend analysis.

- **Roles and Responsibilities**

  Initially, complaints received at the site will be taken by the Weighbridge Operator who will record the relevant details (i.e. name, address, contact number and details of complaint) and will notify the Operations Engineer.

  The Operations Engineer will be responsible for ensuring the complaint is investigated, for ensuring the appropriate corrective action is implemented and for providing feedback to the complainant. The Operations Engineer is also responsible for ensuring the complaints register is completed with all relevant details, for reviewing the register for adverse

- **Collating Complaint Data**

  Where possible, the following information will be collected as a minimum in order to handle / investigate odour complaints in a robust manner:

  - Time and date odour annoyance was observed;
  - Location of where odour annoyance was observed, e.g. postal address, and its sensitivity;
  - Complainant's description of odour; this should include a subjective description of all the factors necessary to make an assessment of the impact of the odour, including intensity, character, relative unpleasantness, frequency and duration;
  - Name of complainant, if possible, to assess any repeat nature of complaints;
  - Residential address of complainant; and
  - Any additional information the complainant can provide on activities at the alleged odour source.

In order to assist with complaints monitoring, the following additional information should be collected either by observation or further investigation:

- Meteorological conditions at the time of the complaint, e.g. wind direction, speed, atmospheric stability;
- Operational incidents at the time of the complaint; and
- Any off site activities ongoing at the time of complaint, e.g. agricultural or other potential odour-generating operations.

9.4.3 Investigation of Odour Complaints

Initial screening of the complaint will be undertaken in order to establish if an odour incident has actually taken place, which will consider:

- Knowledge of potential odour sources at the facility;
- Knowledge of operational issues or plant defects that could contribute to odour release;
- Consideration of potential external odour sources;
- Location and distance of complainant from the site; and
- Results of any site monitoring already taking place

If no such odour incident can be confirmed, then further investigation will not be required. However, if an odour incident is confirmed as valid, a more detailed investigation will occur.

Once screening has been completed, MVV will provide feedback to the complainant including details of any action that has/ will be taken.

9.4.4 Communication with Complainants

Where complaints are received by email, letter or answer phone, an acknowledgement and initial response will be made to the complainant by telephone or email within 48 hours, provided their contact details were provided. Where complaints cannot be resolved on initial contact or require further investigation, then a written response will be made within 10 working days of the receipt of the complaint.

9.5 Recording Results, Reporting and Actions

9.5.1 Recording Results and Reporting

Records of all odour monitoring undertaken, as described in this OMP, will be maintained by MVV. Records will be retained as stipulated in the Environmental Permit.

9.5.2 Reporting

MVV will report monitoring results as stipulated by the Environmental Permit. Odour complaint reports will be reported to the EA within one working day of complaint receipt if the odour source was confirmed as identified.

9.5.3 Actions in the Event of Abnormal Emissions

In the event that daily odour monitoring indicates abnormal emissions from the EfW/CHP are occurring, the site management team will implement the following actions:

- Check relevant items of odour control equipment in order to identify likely cause of abnormal emission, i.e. rapid response roller doors;
- If possible, take immediate steps to eliminate the cause of the abnormal situation including contacting the MVV maintenance operative if necessary; and
- Record response(s) to abnormal emission(s), and remedial action taken.

10 Document Control

10.1 Security and Availability of Records

Records pertaining to the facility's operation will be maintained in either electronic or hard copy form.

a) Electronic records will be saved to the internal computer network; and

b) Paper records will be retained in designated filing cabinet in the main office.

Records will be available on request. Operational records will be retained for at least 6 years in line with the current Environment Agency guidelines, whereas all waste transfer documentation will be retained in line with the Duty of Care requirements.

10.2 Records Management

10.2.1 Records of Waste Accepted At the Site

A record of the types and quantities of wastes accepted and dispatched from the facility will be maintained. A summary of the types and quantities of wastes deposited at the facility will be provided to the Environment Agency at an agreed frequency and format.

10.2.2 Management System Records

Records demonstrating compliance to a management system will be maintained at the site in hard copy or electronic format.

10.2.3 Records of Significant Events

Records will be held regarding:

- All complaints, incidents, accidents and non-conformances;
- Actions taken for all of the above instances; and
- Changes to operating procedures following adverse findings resulting from the above events.

The following significant events will be recorded when applicable:

a) Commencement and completion of any construction/engineering work undertaken on site;

b) Plant breakdowns and maintenance;

c) Emergencies;

d) Problems with waste received and rejected loads;

e) Sampling exercises;

f) Site inspections;

g) Dispatch of records;

h) Weather conditions;

i) Complaints; and

j) Pest or vermin incidence(s).

The technically competent person, as previously referred to, or another nominated person, will maintain a record of the above information as required. Records will be retained in the facility office at all times, and will be available for inspection at all reasonable times by an authorised officer of the Environment Agency.

10.3 Reporting and Notification

10.3.1 Reporting

The Operations Engineer will submit to the Environment Agency a form specifying the waste accepted and removed from the facility in line with the permit requirements..

10.3.2 Notifications

In the event of any breach of the Environmental Permit, including those related to odour management, the Environment Agency will be notified of details in writing within two weeks, and informed of mitigation measures.

10.4 Document Control

10.4.1 Site Documents

The IMS, associated drawings and records will be maintained by the Operations Engineer in accordance with the requirements of the environmental permit.

All modifications to the IMS will be controlled, tracked and be identified with a revision number.

10.4.2 Environmental Permit

A copy of the current version of the environmental permit will be retained at the facility.

Appendix A Odour Risk Assessment

Operating Status	Odour Source	Most Sensitive Receptors	Likelihood			Control Measures	Mitigation Factor	Residual Risk	Action if odour causes problem	Responsibility
			Probability	Consequence	Risk					
Normal Operations	Unloading, handling, storage and loading of residual wastes		6	3	18	▪ Unloading, handling, storage and loading of wastes will take place inside the main process building. ▪ Good housekeeping standards will ensure that the main building and plant are kept clean to prevent build up of residual waste. Wheel washing shall be employed if necessary. ▪ Waste will be stored for 3 – 5 days during normal operations to maintain sufficient waste to cover short periods of non-delivery and to assist producing a homogenous fuel mix – ventilation air will be extracted as combustion air, ▪ During plant shutdown waste will be directed to the bale store, shredded and baled. A these times baled waste can be stored for up to 18 days and waste in bunker for up to 10 days. Ventilation air will be extracted through a dust and carbon filter to a shutdown exhaust during these periods. ▪ Unnecessary handling of waste will be avoided.	5	3.6	▪ Review housekeeping procedures. ▪ Review handling procedures.	Crane operator to ensure unloading, handling, storage and loading procedures are adhered to.
Abnormal Conditions	Delivery of large volume of residual waste over a short period of time		2	1	2	▪ The facility has been designed with a waste bunker that can hold up to 10 days of average waste deliveries and additional 18 days storage in a bale store area. Therefore deliveries in excess of normal loads can be comfortably catered for.	5	0.4	▪ ventilation air will be extracted as combustion air or via dist and carbon filter on a shutdown exhaust.	Weighbridge operator to record quantity of waste accepted daily.
	Gradual accumulation of spilt residual waste and leachate from delivery vehicles.	R5, R6, R7, R8	4	3	12	▪ Implement a housekeeping procedure and cleaning schedule for site entrance, access road, weighbridge and outside main building.	5	2.4	▪ If spills detected, spilt material / debris will be transferred into main building. Cleaning and hosing of affected areas will be undertaken.	Competent person required to inspect all areas to detect spills and accumulation of wastes.
	Accident involving vehicle resulting in major spillage of residual waste	R5, R6, R7, R8	1	5	5	▪ Implementation of Accident management plan	5	1	▪ If vehicle is still operational remaining waste should be delivered into main building or vehicle removed off site. Spilt wastes will be immediately collected and moved into main building. Accident area cleaned and hosed down.	Competent person to initiate accident response plan.
	Delivery of malodorous waste	R5, R6, R7, R8	3	4	12	▪ Load to be prioritised for combustion.. .	5	2.4	▪ Waste prioritised for combustion.	Competent persons - weighbridge operator and crane operator
	Plant and equipment malfunction / breakdown	R5, R6, R7, R8	2	4	8	▪ Planned preventative maintenance and regular inspections. ▪ Planned preventative maintenance and regular inspections. ▪ 24 hour availability of MVV maintenance operatives. ▪ Stand by parts / equipment may be available	5	1.6	▪ Repairs to be undertaken as quickly as possible. ▪ Ensure waste remains enclosed in the WTS building.	Competent person to ensure plant / equipment is repaired as quickly as possible
	Unusual weather conditions	R5, R6, R7, R8	3	4	12	▪ Meteorological information / forecasts received	5	2.4	▪ Monitor odour emissions using	Competent person to

			Likelihood							
	e.g. extreme atmospheric temperature, extreme wind turbulence					▪ from the Met Office. ▪ Job planning to mitigate the impact of unusual weather conditions.			▪ site procedures. ▪ Review site procedures in relation to weather conditions to establish if modification will mitigate odour emissions.	ensure meteorological information / forecast is reviewed daily. Competent person to exercise monitoring procedures.

Appendix B Example Sniff Testing Record

Odour report form				Date	
Time of test					
Name of Operator Completing 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					
Sketch of Odour Monitoring Locations/Potential Odour Sources				↑	**N**

Intensity (Detectability)	**Location sensitivity where odour detected**
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)	0 not detectable 1 Remote (no housing, commercial/industrial premises or public area within 500m) 2 Low sensitivity (no housing, etc. within 100m of area affected by odour) 3 Moderate sensitivity (housing, etc. within 100m of area affected by odour) 4 High sensitivity (housing, etc. within area affected by odour) 5 Extra sensitive (complaints arising from residents within area affected by odour)

Appendix C Example Complaint Log

Time and date of complaint:	Name and address of complainant:
Telephone number of complainant:	

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

Intensity(Detectibility)	
1	Not detectable
2	Faint odour – barely detectable need to stand still & face into the wind
3	Moderate odour – detectable when walking
4	Strong odour
5	Very strong odour