

Trecatti Landfill Site

Multipurpose Waste Treatment and Remediation Pad
Best Available Techniques and Operating Techniques (BATOT)

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1.0 INTRODUCTION

Biffa Waste Services Limited (Biffa) has retained SLR Consulting Limited (SLR) to prepare an application to vary Environmental Permit reference EPR/RP3733PC for their Trecatti Landfill site, Merthyr, Wales under The Environmental Permitting (England and Wales) Regulations 2010 (as amended). This application seeks to vary the existing permit to add a Multipurpose Waste Treatment and Remediation Pad to the permitted landfill Installation.

This report describes the operating techniques that will be implemented at the pad and describes the best available techniques (BAT) that will be employed at the bioremediation facility (a Schedule 1 listed activity). This report describes the measures that will be implemented as a result of the proposed variation to operate the Multipurpose Waste Treatment and Remediation Pad only; the operation of the remainder of the Trecatti Landfill Site will continue as permitted.

A summary of the proposals and Environmental Permit conditions which require variation can be found in the Non-Technical Summary document (reference 407.0034.00461/NTS dated July 2015) which also supports this variation application.

1.1 Report Structure

This report has been drafted to satisfy the requirements of Environment Agency Guidance, 'How to comply with your environmental permit,' version 6 dated June 2013 and is divided into the following sections;

- Section 1 Introduction;
- Section 2 Management;
- Section 3 Operations;
- Section 4 Emissions and Monitoring; and
- Section 5 Closure.

Information has been prepared with due regard to demonstrating Best Available Techniques (BAT) described in Environment Agency Sector Guidance Note IPPC S5.06, 'Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste', Environment Agency, Issue 4, December 2004. Guidance S5.06 determines BAT for specified Listed Activities only. However, the proposed listed green waste composting operations fall within the remit of Standard Rules Permit SR2012 No8 and are therefore considered to not require further assessment here. Details regarding the multipurpose use of the pad are covered in Section 1.2 below.

Assessment of the potential impact of potential emissions to air, land and water is discussed in the H1 Environmental Risk Assessment (Annex A, reference 407.00034.00461/H1).

1.2 Summary of Proposed Development

This Permit variation application seeks to add a Multipurpose Waste Treatment and Remediation Pad (MWTRP) to the permitted activities undertaken at the site. The location of the pad in relation to the permitted landfill is shown on Drawing 001, dated July 2015 Environmental Permit Boundary.

The MWTRP layout is detailed in Drawing 002 and will allow the following two distinct waste activities to take place:

1. Waste Treatment Facility (WTF) - treatment and bioremediation of hazardous and non hazardous soils and sludges; and
2. Green Waste Composting Facility.

The WTF would have a capacity to treat up to 30,000 tonnes (t) of contaminated (classified by Natural Resources Wales (NRW) as “*hazardous*” waste) soils a year, whilst the composting facility would treat typically 30,000t and up to 75,000 of source segregated green wastes per year in accordance with a standard rules set.

The proposed MWTRP would comprise a single impermeable surfaced pad. The pad will have overall maximum dimensions of around 125m by 82m and orientated in a south east to north west fashion. The northern most part of the pad would be used for the composting of green waste and would be 45m by 70m in footprint (3,250m²). Adjoining this would be an area used for the bioremediation of contaminated soils and sludges; this area would be 80m in length and between 56m and 82m in width (having a footprint of around 6,000m²). The two areas would be separated by low level bund.

The larger part of the pad would be used for the treatment of contaminated soils imported to the landfill site. Biffa already operate four similar WTF facilities located at its Skelton Grange (Leeds), Meece (Staffordshire), Redhill Landfill Site (Surrey), Westmill (Hertfordshire) and Cottonmount (Northern Ireland) landfill sites. The WTF at Biffa's Risley Landfill site was the first of the bioremediation facilities to be operated by Biffa but has now closed along with the landfill site.

Part of the WTF process comprises the biological treatment of contaminated soils or sludges to produce suitable materials for use in restoration/reclamation works (either on site or for projects in the South Wales region) and also as a daily cover on the landfill site. This would be undertaken using technology provided by Biffa's technology partner, Celtic EnGlobe. The soil materials to be treated by the WTF process would be too contaminated to allow for their reuse without being cleaned and would otherwise require to be directly landfilled at suitable, specialist landfill sites elsewhere in Wales, or indeed England. Whilst it is possible that some of the treated soil could be utilised within the boundary of the landfill site for restoration works the majority would be exported to the local market. The WTF would therefore contribute towards producing material to ensure that the landfill site and other reclamation projects are restored to the highest standards.

The material to be treated by biological means comprises soils or sludges contaminated with organic compounds (such as hydrocarbons), which are considered as waste and which, in some cases dependent on the level of contamination, may be considered as “*Hazardous Waste*” as defined by the Hazardous Waste (England and Wales) Regulations 2005. The WTF would only accept wastes which have been assessed to ensure that they are amenable to treatment in terms of both their chemical and physical compositions. Most incoming wastes would be classified as hazardous wastes; however, a small proportion of incoming wastes would be similar but at levels slightly below the hazardous waste thresholds hence would be classed as non-hazardous waste. Biological treatment simply accelerates a natural phenomenon, accomplishing in a few months what would require nature decades to achieve. The process utilises Celtic EnGlobe's proprietary technologies and operates through means of moisture control and addition of suitable materials to the soil in biopiles. Forced air extraction and or mechanical turning are used to encourage micro-organism growth and breakdown of hydrocarbons into by products such as carbon dioxide and water vapour. The end product is an uncontaminated material that is suitable for use in restoration of the landfill.

In addition to accepting contaminated soils and sludges, the MWTRP may also accept source segregated green wastes. This waste would typically be from municipal sources collected by local authorities, either through kerbside collections or from Household Waste Recycling Centres. This waste stream would not be classed as hazardous. This aspect of the proposed development is speculative as it is dependent on the applicant securing suitable contracts for the management of green waste collected by the local authorities.

The development proposal would not prejudice the approved restoration scheme for the landfill site and the MWTRP would be removed to allow restoration of the application site in line with the approved restoration scheme. In this respect, the proposals are temporary in nature, being linked to the life of the landfill operations.

At the southern part of the application site would be the site infrastructure, comprising office/welfare accommodation, car parking, two process water storage tanks (within a bunded enclosure), biofilter, air/water separators with attendant process equipment (blowers, pumps etc, housed within a metal container) and a substation. An area to the west of the pad would be used for processing (shredding/screening) the green waste and compost. Along the western edge of the pad would be an access road (approximately 8.5m in width) which would link with an existing access road within the landfill. Finally, within the application site would be two surface water drainage lagoons: one would be located within the southern part and the other within the north eastern part.

WTF – Bioremediation Process

The biopile treatment process will use biological remediation over a period of time to reduce contaminating components within the soils or sludges to concentrations where the material can be reused. Only wastes which have been assessed to ensure that they are capable of treatment in terms of both their chemical and physical compositions will be accepted at the facility. Most incoming wastes will be classified as hazardous wastes, however, a proportion of incoming wastes will be similar wastes but at levels slightly below the hazardous waste thresholds. The proposed bioremediation process will utilise Celtic EnGlobe's biopile technologies used on other Biffa sites and widely for brownfield remediation and will operate through means of use of biopiles for moisture control and addition of suitable materials to the soil. Forced air extraction and or mechanical turning are used to encourage micro-organism growth and breakdown of hydrocarbons into by products such as carbon dioxide and water vapour. Soils will typically be treated over an 8-16 week period, with the material being turned infrequently, typically once every 8 weeks. The bioremediation plant will operate continuously. The facility will be limited to accepting wastes that can be treated to a point where they can be used as restoration soil on the landfill cap or, if required, as daily intermediate cover.

The biopile process includes the control of all gaseous and aqueous emissions. The control of emissions is described in this document. Biopile is a North American term to describe the treatment of soil in a stockpile. A schematic of the forced air extraction bioremediation process is shown below in Figure 1.1 and an example of mechanical turning is shown in Figure 1.2

Figure 1-1
Bioremediation Process – Forced Air Extraction

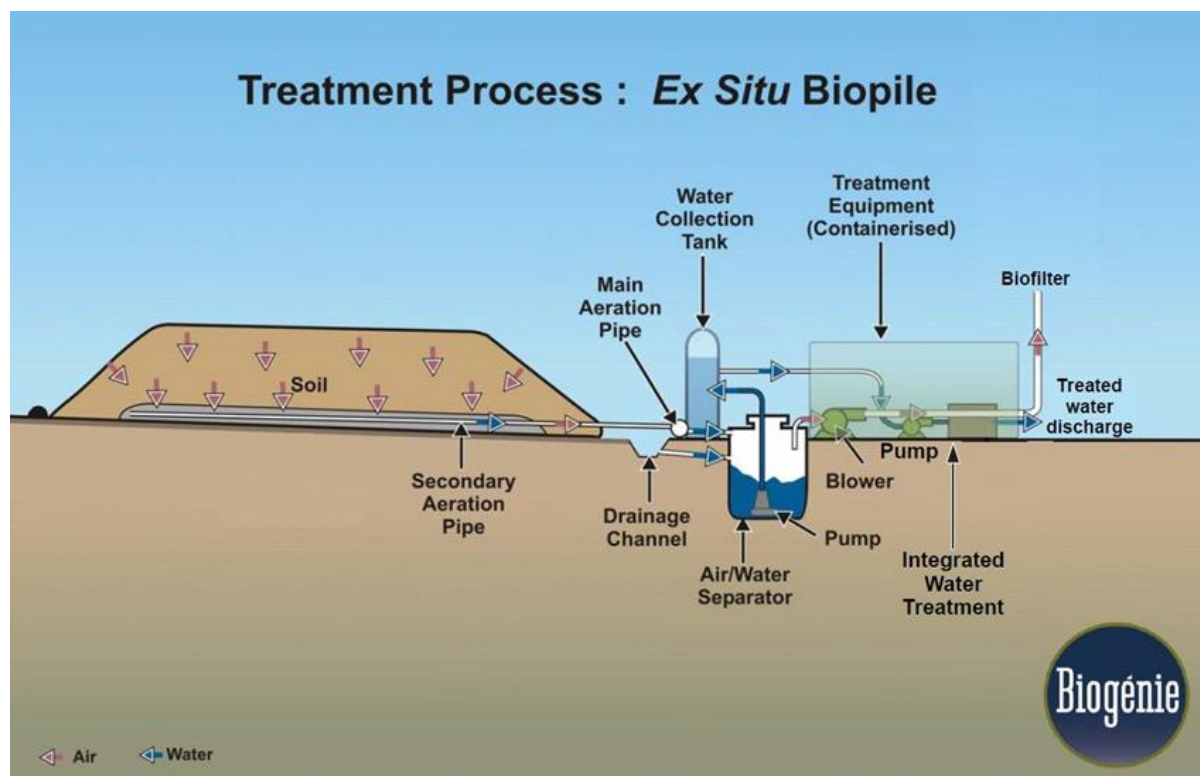


Figure 1-2
Bioremediation Process – Mechanical Turning



The key stages in the process are listed below:-

- waste reception;
- allocation of waste to the applicable treatment pad;
- bioremediation (hazardous and non-hazardous soils);
- emission abatement: employ BAT as required to prevent, minimise and treat releases to air and water;
- emission management: separate collection and management of clean surface water and process water and management of fugitive emissions; and
- transfer to the landfill: movement of soils from the WTF to the landfill site for use in restoration and daily cover as appropriate.

2.0 GENERAL MANAGEMENT

2.1 Environmental Management System

The WTF will be operated by Biffa with Celtic EnGlobe's employees employed to undertake specialist waste treatment operations. Biffa has a documented environmental policy and environmental management system (EMS) to assist in the achievement of environmental goals. The EMS is compatible with the requirements of ISO14001 and is documented and administered through Biffa's ISO 9002 Quality Management Systems.

Trecatti Landfill Site is accredited to ISO14001 (certificate number E601/32) and will be updated to include the operations at the WTF prior to operation.

In addition to the EMS, the WTF will be operated in accordance with the WTF Operations Manual (OM), which will be kept at the site at all times.

The management systems at the WTF will ensure that:

- the risks that the activities pose to the environment are identified;
- the measures that are required to minimise the risks are identified;
- the activities are managed in accordance with the management system;
- performance against the management system is audited at regular intervals; and
- the Environmental Permit is complied with.

The EMS and WTF Operational Manual will be reviewed at least once every 4 years or in response to significant changes to the activities, accidents or in the event of non-compliance. The EMS and WTF Operational Manual will be supplemented by this document which outlines the proposed operating techniques at the WTF.

2.1.1 Management Structure and Environmental Responsibilities

The posts with environmental responsibilities (hierarchy) will be as follows:-

- Biffa Environmental Management Group & Environmental Team;
- Site Manager; and
- all Staff.

Biffa have appointed a company director and committee with the responsibility for Environmental Policy and strategy at all the company's works sites.

The Environmental Advisory Committee and support staff are responsible for the development of the company's EMS and providing direction to the Environmental Management Group and Environmental team. The committee prepares and manages environmental policy, identifies significant aspects and develops and implements environmental programmes to minimise potential significant aspects.

The Site Manager, in consultation with the Environmental Management Group and the Environmental Team, is responsible for environmental management, compliance with regulation and day to day implementation of company policy at that installation. Duties include liaison and reporting to the Environmental Advisory Committee as appropriate. On a daily basis the Site Manager will be responsible for ensuring that:-

- operations personnel are trained and familiar with procedures and requirements;
- operations comply with regulation and permit conditions including monitoring;
- activities conform with company policy and other agreements to which the installation subscribes;
- procedures, logs, and records are followed and maintained as required; and
- aspects for potential improvement are identified and reported to the Environmental Advisory Committee.

Senior Operatives and Site Operatives will be responsible for the following;

- being aware of potential environmental consequences of activities and operations;
- being familiar with site procedures and work instructions;
- working in compliance with procedures;
- reporting unsafe conditions and potential or actual releases arising from unsafe or insecure operating conditions; and
- clean up and reporting of spillages and / or releases.

2.2 Operations

The WTF will be designed, operated and maintained in such a way so as to minimise the potential environmental risks and impact on the environment of the normal running of the facility.

Biffa will review environmental performance in line with procedures detailed in the EMS and the WTF Operational Manual as appropriate, and as set out by the conditions of the Environmental Permit to ensure that any necessary actions are taken to ensure the effective control of operations, use of approved suppliers and contract services, maintenance of operational equipment and calibration of monitoring equipment.

2.2.1 EMS & Operations Procedures

Specific systems, operations and Biffa procedures will be developed for the WTF and will be detailed in the WTF Operational Manual as outlined above. In addition, key relevant procedures from Biffa's EMS will be employed. Relevant procedures are detailed below in Table 2.1.

Table 2-1
Relevant Environmental & Operations Manual Procedures

Ref No	Procedure
Group Standards	
GS01	Integrated management system
GS02	Communication and training
GS03	Customer and development
GS04	Business continuity and emergency planning
GS05	SHE assessments
GS06	Suppliers and contractors
GS07	Working away from Biffa sites
GS08	Working on Biffa sites
GS09	PPE and work wear
GS10	Products, chemicals and hazardous substances
GS11	Manual handling and ergonomics
GS12	Occupational health

Ref No	Procedure
GS13	Motor vehicles
GS14	Plant and equipment
GS15	Driving and road safety
GS16	Incident reporting and investigation
General – Environment	
EQP101	Internal and External Communication of Environmental Objectives, Targets and Policies
EQP102	Preparation and Review of the Environmental Effects Register and the Register of Legislation
EQP103	Assessment of Environmental Performance of Suppliers
EQP104	Emergency / Incident Preparedness
Landfill	
DGNL/01	Landfill Design and Project Management Guidance
DGNL/02	Environmental Management Guidance
DGNL/04	Pre-acceptance and Waste Reception Guidance
DGNL/06	Guidance for Induction
DGNL/07	Landfill Traffic Guidance
DGNL/08	Personal Safety Guidance
DGNL/09	Management of Procurement of Plant and Equipment
DGNL/10	Management of Hazardous Substances Guidance
QP06	Landfill CAPEX Project Management
QP08, ‘	Management Review
QP38	Environmental Monitoring Techniques
QP60	Project Management
QP61	Administration and Record Keeping
QP62	Environmental Control Procedure
QP63	Waste Enquiry, Acceptance and Control
QP64	Waste Reception
QP65	Operations and Tipping Face
QP66	Resource & Treatment Complaints
QP73	Emergency Incident Preparedness
QP76	Odour Monitoring Management
QP80	Landfill Induction and Contractor Control
QP83	Wheeled Plant – Brake Test Procedure
QP86	Site Security For permitted & Non Permitted Sites
SSI/913/07	Waste Acceptance Procedure Soil Repair Centre (STF)
WTF Operations Manual	
WTF OM	Biofilter and Washer Operations
WTF OM	Operation of Water Recirculation
WTF OM	Plant Process Containment Systems
WTF OM	Potentially Polluting Leaks and Spillages from Treatment Plant and Process
WTF OM	Waste Acceptance, Control, Treatment and Dispatch Process, Plant and Equipment and Procedures
WTF OM	Waste Sampling and Testing
WTF OM	Waste Types with Special Requirements
WTF OM	Asbestos bearing wastes
WTF OM	Oil bearing wastes
WTF OM	Monitoring and Reporting for Gases and Vapours
WTF OM	Control of Dust Fibres and Particulates
WTF OM	Storage and Management of Materials

Owing to the specific relevance of the site specific instruction reference SSI/913/07, ‘Waste Acceptance Procedure WTF, it is included here as Appendix BATOT1.

2.2.2 Managing Documentation and Records

An appropriate filing system will be in place to ensure that all records relating to environmental monitoring, maintenance, reviews and audits are maintained and updated.

All records will be held within the site office and are being made available electronically via Biffa's intranet.

2.3 Maintenance

Biffa acknowledges that poor maintenance can be the cause of environmental incidents. As the potential of failure of plant (e.g. air – water separators) or infrastructure (e.g. hard-standing, bunds etc.) at the site could lead to fugitive emissions to the environment, Biffa will carry out a programme of Planned Preventative Maintenance (PPM). All items of plant and equipment will be regularly inspected and maintained in accordance with the manufacturer's specifications and Biffa's programme of plant maintenance.

Preventive maintenance will be controlled in line with Biffa Procedure DGNL/09 'Management of procurement of plant and equipment' which requires environmental incidents and near misses to be reported and an appropriate action plan developed and implemented. These are reviewed at the quarterly environmental meeting.

In addition, all vehicles used on site as part of the operations will be kept in good working order, will be refuelled in accordance with site operational procedures to prevent any fuel spillage, and will be driven only by suitably qualified members of staff.

2.4 Incidences and Non Conformances

Procedures will set out how any abnormal operation including malfunction, breakdown or failure of plant, equipment or techniques will be dealt with to ensure that normal operation of the WTF is regained promptly.

As a minimum the procedures will set out how Biffa will;

- detect abnormal operation and investigate the causes;
- assess the information and decide on the appropriate course of action;
- retain normal operation in the short term;
- prevent against the reoccurrence of the problem in the long term; and
- set out an official complaints procedure for the general public.

As detailed further in Biffa's EMS, these procedures will ensure that non-conformances are reported, investigated and rectified.

Biffa's EMS provides a means for the management system and the environmental performance of the facility to be evaluated. This will be accomplished through regular internal audits and accredited external auditors and will include, where appropriate, the identification of areas where improvements are required. The regular review of the EMS and its procedures will form an essential role in ensuring that the systems and procedure remain appropriate to the site activities and legal requirements (including compliance with the Environmental Permit) throughout the life time of the WTF.

Key indicators of environmental performance are identified by the EMS. These are reviewed at least annually and more frequently where appropriate to ensure that all changes in

operation are included within the EMS. This will be covered by Biffa procedure QP08, 'Management Review'. Review of incidents, issues, complaints, measurement, objectives and targets, policy and areas for improvement.

A log book will be kept containing a record of olfactory and visual assessments made at the facility; should any non-compliances be found these will be followed up and formally reported and signed off.

To assist in the reporting of incidences, Biffa will display and maintain a notice at or near the site entrance with the following information clearly visible;

- site name;
- permit number;
- name, address and telephone number of the operator
- emergency contact telephone number for the operator;
- a statement that the site is permitted by Natural Resources Wales; and
- Natural Resources Wales national number and incident hotline number.

2.4.1 Communication and Reporting of Incidents

Environmental issues will be raised each day during routine process meetings between the Site Manager and site staff. Actions taken in response to environmental issues and complaints are controlled by Biffa procedure:-

- Procedure EQP101: Internal and External Communication of Environmental Objectives, Targets and Policies; and
- DGNL/08: Personal Safety Guidance.

Procedure QP66 Resource and Treatment Complaints; All public and regulatory complaints are noted, recorded and remediated or resolved as soon as possible. This procedure will be updated to include the WTF.

2.4.2 Corrective Action to Analyse Faults and Prevent Recurrence

The Site Manager will deal with complaints and incidents of non-conformance including:-

- system failure discovered at internal audit;
- incidents, accidents, and emergencies; and
- other operational system failure.

In compliance with Procedure QP66 complaints will be reported to and investigated by the Site Manager and remedial measures implemented as required. Changes to prevent future complaints will be proposed and implemented where appropriate.

Written records of non-conformances, complaints and other incidents will be maintained in a log book recording the date, time and nature of the event, together with the results of investigations and remedial action taken.

2.4.3 Auditing

A programme of site audits is the responsibility of the environmental support staff and controlled by general Biffa procedure:-

- Inspections and compliance assessment

An annual programme of audits will be prepared with scheduled dates, pre-audit notification, checklists and questionnaires. Non-conformances will be reported and forwarded to the quarterly review meeting.

2.5 Sufficient Persons who are Suitably Competent

The WTF will be managed by a sufficient number of staff competent to operate the site. Staff will have clearly defined roles and responsibilities. A written record detailing the key skills of each member of key staffs and the training courses (type and date) will be kept up to date.

Training will be controlled within the installation EMS and covered by Biffa procedures:-

- Procedure DGNL/06 Guidance for induction.
- QP80 Landfill induction and contractor control

Periodic review of all staff will take place - typically on an annual basis. This will include a review of training needs. As required, training will be provided to staff either through internal training programmes or by qualified external organisations.

Biffa will induct all contractors to the site to ensure that they are fully aware of the site rules, operational procedures and health and safety procedures at the site.

The management structure for the WTF is shown in Appendix BATOT2 of this document.

2.6 Site Security

In order to prevent unauthorised access to the site, site security measures will be in place. The site will benefit from the existing security measures in place at Trecatti landfill. The landfill site access will be gated and locked outside of operational hours.

2.7 Permit Surrender

At the time that the permit is surrendered the Operator must demonstrate that the site will be returned to a satisfactory state. The operation of the WTF will be carefully managed to meet the conditions of the Environmental Permit.

2.8 Records that demonstrate the Management System

Biffa will ensure that all documents are issued, revised and maintained in a consistent fashion and adequately record all details necessary to satisfy the conditions of the Environmental Permit variation once issued. The procedure for managing documentation and records is set out in Biffa's EMS, and as detailed more thoroughly in the sections above.

2.8.1 Reviewing and Reporting Environmental Performance

Senior site management will annually review environmental performance and ensure action is taken to ensure policy commitments are met and that policy remains relevant.

Environmental issues are incorporated into all relevant aspects of the installation's business activities. An annual management review of the effectiveness of the management system against objectives and targets and planned improvements will be carried out.

A summary of company environmental performance is available to the public, as part of the Biffa Environment Report, via Biffa's web site.

As part of the operating permit environmental data are reported annually to the Environment Agency.

2.9 Displaying the Permit

Biffa will ensure that all staff and contractors working at the WTF have ready and easy access to a copy of the Environmental Permit and WTF Operational Manual governing operations at the site.

2.10 Accident Management Plan

The requirement for an Accident Management Plan will be incorporated into the EMS as described above. Accidents and incidents will be controlled by Biffa operational procedure:-

- Procedure EQP104 Emergency/Incident Preparedness

Staff will have the responsibility to report all conditions that could result in a potential environmental accident. Key staff will meet several times per year to review potential environmental incidents and the possible requirements for mitigation or control. Environmental support staff will be in frequent contact with the Site Manager to discuss potential concerns and visit the site.

Staff involved with the handling and transfer of potentially harmful materials will be trained in the safe handling of such materials.

Natural Resources Wales will be advised of incidents likely to result in a breach of permit conditions or to have a significant impact on the environment including accidental releases due to spillage or abnormal operating conditions.

2.10.1 Potential for Incidents and Accidents

Within the site EMS programme, Biffa will review potential accidents, incidents and their consequences as required by the Accident Management Plan. The approach will use the three components suggested in Sector Guidance Note IPPC S5.06 documentation for the:-

- identification of the hazards posed by the installation/activity;
- assessment of the risks (hazard x probability) of accidents and their possible consequences; and
- implementation of measures to reduce the risks of accidents, and contingency plans for accidents that occur

2.10.2 Assessing Risk and Identifying Techniques to Reduce the Risks

The H1 environmental risk assessment (Annex A, reference 407.00034.00461 /H1) indicates that environmental risk not likely to be significant from the proposed facility.

Biffa recognises the importance of the prevention of accidents that may have environmental consequences, and that it is important to limit those consequences. Biffa has developed a system to identify, assess and minimise the environmental risks and hazards of accidents and their consequences as part of their EMS.

An Accident Management Plan will be implemented and maintained at the site to ensure the site and site staff are fully prepared for such incidents. The Accident Management Plan will be reviewed at least every four years or as soon as practicable after an incident with changes made accordingly to minimise the risk of occurrence.

Activities affecting the health and safety (H&S) of operatives, contractors and visitors will be separately managed in compliance with H&S regulation and Biffa's company H&S Policy.

2.10.3 Hazard Identification

The following potential hazards have been identified with regard to the proposed variation application (development of the WTF). This section details the most appropriate risk control techniques which may be implemented to minimise the potential risks posed to the environment.

The following potential hazards have been identified:-

- receipt, storage, handling and transfer of potentially harmful substances including fuel oils and contaminated soils at the WTF;
 - increased risk of harm from releases;
- process equipment failure;
 - failure of fans, pumps biofilter with resulting non-compliance with Environmental Permit conditions;
 - potential odour, dust and noise;
- loss of containment;
 - blocked or overfilled drains or receipts tanks with subsequent release to ground;
 - transport of soil contaminants through climatic conditions – winds, flood, etc;
 - loss of integrity of storage tanks.
- site security and vandalism;
 - damage to equipment;
- inappropriate waste handling;
 - mixing of incompatible substances;
 - non-compliance with Duty of Care and relevant waste regulations.

Identified pathways include:-

- airborne transfer of particulate, odour and noise to local residents;
- over land flow of contaminated solids and liquids following an uncontrolled loss; and
- lateral and vertical migration in soils also arising from the above.

Table 2-2 details the main environmental risks and the associated risk reduction responses.

**Table 2-2
Main Environmental Risks and Risk Reduction Responses**

Potential Main Risks	Risk Reduction Response
Receipt, Storage and Handling of potentially harmful materials	Pre-acceptance and acceptance procedures will help to prevent receipt of non-permitted waste. Inventories of

Potential Main Risks	Risk Reduction Response
	other materials will be maintained in compliance with pollution prevention procedures. Materials storage areas will be identified and protection measures in place where appropriate.
Process & equipment failure	Equipment failure would slow down biodegradation and release rate. Maintenance programmes and rapid technical response will be in place for maintenance and repair.
Loss of containment	Potentially polluting substances will be stored in suitably sized and designed storage vessels e.g. diesel will be stored in appropriately bunded or double skinned tanks. Procedures for loading and control will be in place. Review of storage vessels and bunds will take place regularly within site's EMS programme. Drains will be regularly inspected and cleared of blockage if required; by e.g. jetting or mechanical means. Flood risk completed as part of the planning application. Biopiles may be covered to prevent wind loss if operational needs require.
Site security and vandalism	Site access will be controlled. Out of hours security will be provided if required.
Waste handling	The WTF will be governed by procedures to include inspection of waste prior to disposal, staff training, etc as detailed in Appendix BATOT1.

2.10.4 Risks Specifically Identified in the H1 Assessment

Mitigation measures for the bioremediation activity

In addition to the above, the H1 environmental risk assessment identifies the following potential hazards. Each potential hazard is discussed in turn below and mitigation measures to prevent the hazard from occurring are outlined.

- odour from contaminated waste soils or sludges;
- engine noise and vibration from vehicles arriving at and leaving the site;
- noise from fixed plant e.g. Biofilter;
- mud on road and dust generated from vehicle movements;
- release of pollutants (PM10, NOx, etc) from traffic;
- release of dust and bio-aerosols from placement and turning of soil biopiles;
- release of VOCs from contaminated soils;
- potentially contaminated run off from the WTF;
- containment failure (i.e. bunds, drainage interceptors) and tanks;
- accidental fire and subsequent release of polluting materials to air, land or water;
- vandalism causing loss of containment, fire or unauthorised access; and
- flooding and subsequent release of polluting materials to air, land or water

If an accident causes damage to the environment, or risks doing so, the staff will:

- where appropriate carry out immediate remedial measures as outlined in the H1 environmental risk assessment and summarised briefly below;
- carry out any other action necessary to minimise the environmental consequences;
- find out why the accident happened and prevent reoccurrence; and
- inform Natural Resources Wales.

Odour Emissions: Mitigation Measures

- extraction ventilation at the biofilter will treat degradation products and prevent emissions of odour;
- the biofilter is a proven method of removing VOCs with a low odour threshold. It is considered that the suction extraction and odour abatement (biofilter) meet the requirements of BAT;
- mechanically turned biopiles will have biocovers to prevent emissions of odour;
- waste will be characterised prior to acceptance to confirm accepted materials can be treated. Strict waste acceptance procedures will be in place, no waste will be accepted unless it has been pre-booked with details of the source, physical and chemical compositions and hazard characteristics;
- waste acceptance procedures will be conducted by competent trained personnel. During the pre-acceptance procedure potentially odorous soils will be identified. These will not be accepted without there being arrangements in place for the soils to be received and managed in a manner which would minimise the potential for odour emissions;
- subject to testing process water will be stored in a tank and may be tankered off site to a suitably licensed facility; and
- control of odour will be governed under the WTF Operations Manual and Biffa Procedure DGNL/02 Environmental Management – Odour Management.

Noise Emissions: Mitigation Measures

- site operations and vehicle movements will be restricted to hours specified within the planning permission for the site;
- the site access road will be maintained and kept in a good state of repair and a speed limit will be imposed;
- plant will be operated in a proper manner with respect to minimising noise emissions, for example, minimisation of drop heights, no unnecessary revving of engines, etc;
- site plant will be maintained according to the Manufacturer's instructions and fitted with silencing equipment where appropriate;
- plant will be subject to regular maintenance and repaired as soon as possible after identifying a fault; and
- machines that are intermittently used will be shut down in the intervening periods between working or throttled back to a minimum.

Air Pollutant and Dust Emissions: Mitigation Measures

- vehicles will be subject to a programme of Planned Preventative Maintenance and maintained in accordance with the manufacturers recommendations;
- waste soils or sludges will be brought to site in enclosed or sheeted vehicles to prevent the escape of dust during transit;
- to minimise the emissions of dust arising from installation roads, speed limits will be imposed for all vehicles;
- the main access road will be swept with a mechanical road sweeper as and when conditions dictate;
- during dry conditions, a water bowser will be used to spray the installation, prior to and during vehicle movements;
- during particularly dry or unfavourable conditions mud and dust collecting on hard surfaces including access roads and stockyards will be removed by scraping and sweeping;

- no plant or machinery involved in the WTF process shall leave the landfill Installation without having used the site wheel wash;
- potential sources of particulates will be maintained in moist condition or covered to minimise potential for wind whipping or dust release;
- dust is unlikely to appear during the turning of the soils as dust in an indication that the moisture content of the soil is too low. Should any dust be identified, water will be added to the biopile to prevent its proliferation. If necessary water will be added to the biopile by either automatic or manually deployed irrigation pipes; and
- biopiles will be covered and or be provided with extraction ventilation when operational or meteorological conditions require. Soils will typically be well weathered.

Contaminated Run Off: Mitigation Measures

- treatment will take place on one engineered pad;
- clean water will be collected via perimeter drains and directed to the clean surface water lagoon (lagoon 1). Following storage, the water will be directed from the surface water lagoon to join the existing permitted Trecatti Landfill Site surface water management scheme;
- process water generated by the soil treatment process at the biopile(s) will be removed via the internal air and water extraction pipes and routed to the process water tanks prior to discharge to a suitably licensed facility. Subject to quality testing, the water may be released to the existing leachate treatment system or surface water system. The collection network for the biopile(s) is illustrated on Drawings 002 and 003;
- a bund will surround the biopile(s) pad and within it will be included the WTF infrastructure e.g. roadways, fuel storage, process water tank, site office and parking area, biofilter and equipment unit. Water run-off from within this bund will all be managed as potentially contaminated water and routed to the process water tank. The water will be stored at the process water tank prior to discharge to a suitably licensed facility. Subject to quality testing, the water may be released to the existing Trecatti Landfill leachate management system or surface water management system;
- if required, the biopile(s) are covered with a biocover, rainfall running off the biocover will be managed as clean surface run-off and directed to the surface water ditch to the east of the biopile(s); the biocover will be secured within the surface water ditch. Clean surface water from the ditch will be routed to the surface water lagoon via a pipe. Water will be discharged from the surface water management lagoon to the existing Landfill surface water management system;
- a cut-off valve will be provided at the surface water management lagoon and should any contamination become evident, the water will be prevented from entering the existing surface water management system and controlled waters. All storage tanks will be banded to a 110% of the tank volume or 125% of the total tank volume within the bund, whichever is greater and located on hardstanding pavement; and
- spill kits will be kept on site.

Containment Issues – Spills and Leaks: Mitigation Measures

In the event of the spillage of polluting materials, immediate action will be taken to contain the spillage. The spillage will be reported to the Site Manager, who will assess the situation and decide upon the most appropriate course of action. If the spillage cannot be contained, specialist help will be obtained.

The action taken will depend upon the size of the spillage, the location of the spillage in relation to sensitive receptors and the nature of the spilled material.

Action taken may include some or all of the following:

- if possible the leak will be stopped;
- if it safe to do so, the cause of the spill or leak will be isolated, and/or removed;
- if the spillage is small, spill granules may be used immediately to prevent the spill spreading. The area will be cleared and all contaminated material sent to an appropriately permitted site for disposal;
- if the spill is larger, inert materials such as sand may be used to make a containment bund and specialist help may be sought to assist in clean up;
- if any spillage enters a flowing watercourse, Natural Resources Wales will be contacted immediately, and appropriate action will be taken to contain the spill by using for example oil absorbent booms; and
- if a vehicle is found to be leaking, it should be moved to a position where the spillage can be contained such as a hard surfaced area, if it is safe to do so.

Accidental Fire: Mitigation Measures

- there will be no burning of waste on site;
- fire extinguishers will be kept on site; and
- in the unlikely event of fire, the Biffa fire action plan will be followed.

The following courses of action are to be taken if a fire is discovered on site:

- the person discovering the fire will raise the alarm and evacuate/isolate the area;
- the Site Manager will be contacted immediately;
- if the fire can be controlled without endangering personnel, appropriate fire extinguishers or other fire-fighting equipment will be used;
- if the fire cannot be safely tackled using fire extinguishers held on site, the emergency services will be notified;
- no further vehicles, other than those of emergency services and personnel or other agencies dealing with the incident, will be allowed to enter the site; and
- the Site Manager will check for all visitors, contractors and staff to ensure everyone is accounted for.

Vandalism: Mitigation Measures

- the Trecatti facility's site gates will remain closed and locked when the site is unmanned;
- the site perimeter will be secure; and
- no machinery will be left unsecured.

Flooding: Mitigation Measures

- the elevation of the WTF is such that it is unlikely to be affected by flooding from surrounding areas
- containment measures will be in place along with appropriate drainage measures;
- if the site is in imminent danger of flooding or a flood alert has been issued, all electrical supplies in the affected area will be isolated;
- if possible, all potentially polluting material will removed from the at risk area;
- all plant will be removed from the area at risk;
- personnel will not attempt to enter a flooded area until a risk assessment has been undertaken or the flood has subsided; and

- personnel will follow instructions issued by supervisors, managers or other competent persons.

Biffa's EMS incorporates a system for recording all incidents, complaints and near misses at the facility and any results following investigation. The system is designed to prevent the re occurrence of any incident through implementation of improved systems.

2.10.5 Control of Major Accident Hazards (COMAH) Regulations

It is not anticipated that the operations will require the storage of any material specified in the Control of Major Accident Hazards (COMAH) Regulations in significant quantities. It is not considered that the COMAH Regulations are applicable to the proposed operations.

3.0 OPERATIONS

3.1 Permitted Activities

The activities which will take place at the WTF to cover the hazardous recycling activities, as defined in Annex II B of The Waste Framework Directive are as follows:

- R3** Recycling / reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes);
- R5** Recycling / reclamation of other inorganic materials; and
- R13** Storage of waste pending any of the operations numbered R 1 to R 12.

3.2 Waste Acceptance and Operations

The operation of the WTF will comprise the following key elements;

1. Waste reception;
2. Biological treatment of soil or sludges at the biopiles using forced air extraction and or mechanical turning;
3. Process water tanks (serve biopiles);
4. Air extraction system (serve biopiles);
5. Air water separators (serve biopiles);
6. Humidifying chamber (serve biopiles);
7. Biofilter (serve biopiles); and
8. Ancillary infrastructure

The following sections describe the key elements.

3.2.1 Waste Reception for Bio-treatment

The WTF will recycle contaminated soil, including soils designated as hazardous waste and a small proportion of non-hazardous waste which is required as an additive to the soil bioremediation process.

The facility will be limited to accepting wastes that can be treated to a point where they can be used as restoration soil on the landfill cap or if required as daily intermediate cover. Contaminants for biological treatment are organic and would predominantly comprise of the following, but are not limited to:

- range of petroleum hydrocarbons (petrol, heating fuel, diesel, used oils, crude oil etc.);
- polycyclic Aromatic Hydrocarbons (PAHs);
- creosote;
- phenols; and
- chlorinated Solvents and other Volatile Organic Compounds (VOCs)

Waste will be characterised prior to acceptance to confirm accepted materials can be treated. Pre-acceptance checks will be conducted for all wastes to be treated at the site. Biffa will pass all soil contaminant information from sales enquiries to the site staff at the biopile process where it will be assessed for treatability for the contaminants of concern. A list of terms and conditions will be returned to Biffa's site office, placing restrictions on the waste that can be accepted, these would generally cover the following:

- maximum soil contaminant concentrations for reuse of material in the restoration area or disposal within the landfill;
- limitations on physical and chemical characteristics (size of debris, pH, moisture content etc.); and
- statement that wastes containing tars, free oils and muddy materials (wastes with too high a moisture content) will be rejected; and
- any wastes outside of the analysis results provided may be rejected.

Biffa will then set up an internal authorisation number, which permits Biffa to accept an order from a client for the disposal of soil at the WTF.

As loads are accepted for deposit through an initial visual inspection, follow-up analysis may be conducted to allow a minimum sampling frequency/volume to satisfy internal guidance, such as in the WTF Operational Manual.

No waste will be accepted unless it has been pre-booked with the following information:

- date of proposed arrival on site;
- producers details; SIC (Standard Industry Codes) are a requirement of WAP (Environmental Permitting Regulations, 2010);
- source;
- physical and chemical composition (an appropriate analysis);
- hazard characteristics;
- handling requirements; and
- chain of custody notes will accompany loads (for hazardous/non-hazardous waste).

Acceptance of materials will be governed by Biffa procedures and the WTF Operational Manual (refer to Table 2-1 above).

Waste acceptance procedures will be conducted by competent trained personnel. Acceptance of waste will be decided on the basis of laboratory analyses that evidence the nature of waste and confirm that it is within treatable ranges.

All vehicles delivering soil will be weighed when entering the site and the soils transferred to the biopiles at the WTF for treatment.

3.2.2 Biopile Treatment Area (The Pad)

The main item of infrastructure at the WTF is the treatment pad which will comprise of an impermeable surfaced pad, graded to a fall. The surfacing and drainage details are illustrated on Drawing 003, dated July 2015. It should be noted at the time of submitting this permit application that the design and specification should be regarded as being a preliminary concept and have not been finalised. The details provided within the permit application may be subject to change the details of which would be discussed and agreed with Natural Resources Wales as part of the determination process.

The biopiles will have a drainage network which will capture water from the biopiles into a purpose built collection system composed of a network of drains leading to air/water separators (as detailed in Section 3.2.7). Process water, accumulated from the operations, will be sent to process water tanks, as detailed in Section 3.2.5.

Once accepted at the facility, the contaminated wastes will be transferred to the treatment area by HGV and/or excavator, and arranged into biopiles. The biopiles will be managed using a system of lots which trace waste from its point of origin to its location on the treatment area. The lots system allows a certain area of the treatment pad to be dedicated to a particular consignment for the duration of the process.

3.2.3 The Biopiles

The word biopile is a North American term, which describes the process of the biological treatment of a stockpile of soil. It refers to an active aeration system rather than a windrowing method for soil or sludge treatment. The biopiles comprise linear mounds of imported soils typically around 3-4m high, although the height may vary depending on the soil type and work operation being undertaken. The biopile will be arranged in a mound across the width of the treatment area.

Inorganic nutrients such as ammonium nitrate and organic inputs such as compost and green waste for example, may be used, if required, in low quantities. Specific requirements are detailed in the WTF Operational Manual. Any organic inputs would be taken directly to the treatment pad and incorporated into the biopiles and so would not be stored on site. Inorganic inputs may be stored on site and these materials would be segregated and stored separately on pallets within the onsite storage area.

Soils are typically treated over an 8-16 week period, depending on the contaminants present. During this time the material is turned infrequently, typically once every eight weeks using a mechanical excavator to ensure that the correct aeration of the material is achieved. Turning of the lots will facilitate the following:

- adding organic amendments (if necessary);
- adding inorganic nutrients (if necessary);
- adding water (if necessary);
- de-compaction of the soil; and
- soil sampling.

During the turning process separate batches are not mixed and no material is removed from the treatment area. When completed the material will be removed from the biopile and will be used as daily cover or restoration material for landfill restoration works as and when required.

Optimum conditions for biodegradation are created by controlling parameters including: oxygen level, nutrient concentrations, moisture content, pH level, temperature, etc. This is achieved in biopiles that are ventilated and controlled to provide optimum conditions for treatment. The biopiles are located on a prepared and contained surface with perforated aeration pipes at the bottom and may be covered by a membrane, if operational needs require.

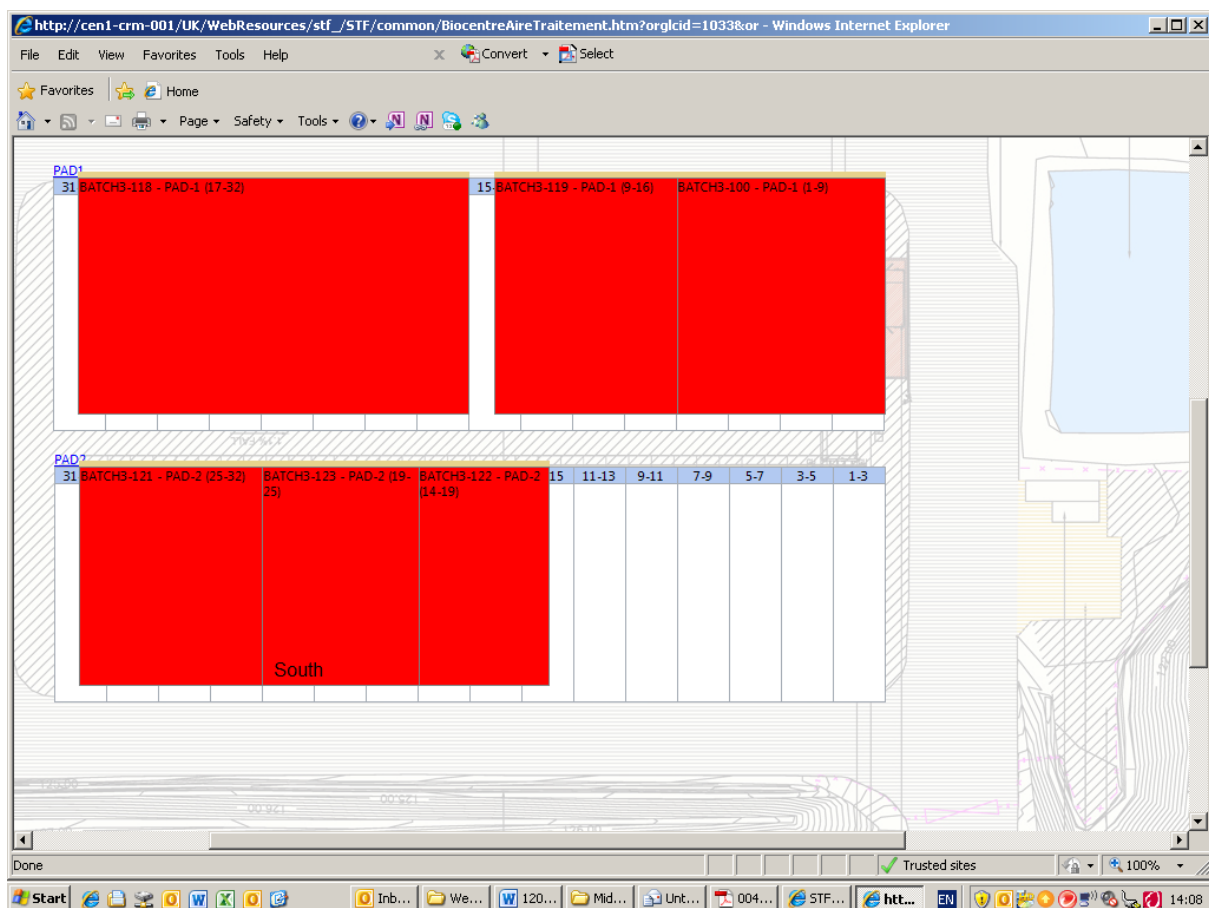
The biopile process consists of a number of unit operations that in addition to the above, allow for the control of all gaseous and aqueous emissions (as detailed in the following sections below).

Biopiles will be managed using a system of batches which trace waste from its point of origin to its location on the treatment area. The progress of treatment and despatch is shown in Figure 3-1.

**Figure 3-1
Biopile Batch System**

Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6
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**Figure 3-2
Screenshot from Redhill Materials Management System (Batch Location)**



The bio – remediation process can be typified as follows:

- Arrival of soil on a particular batch:
 - a consignment note indicates:
 - soil origin (soil type and pollutants derived from the Site Investigation data);
 - addition of organic amendments (if necessary);
 - addition of nutrients (if necessary); and

- addition of water (if necessary)
- Once a batch is constructed:
 - sampling of the lot;
 - analysis of soil samples will typically confirm:
 - concentration of target pollutants; and
 - pH
- Periodically, batches are turned over for the following purposes:
 - adding organic amendments (if necessary);
 - adding nutrients (if necessary);
 - adding water (if necessary);
 - de-compaction of the soil; and
 - soil sampling

Wastes with similar contamination characteristics may be blended prior to treatment.

Waste acceptance testing prior to and on arrival at the site will determine the suitability of wastes for blending to produce a batch of waste. This process will be overseen by the site manager to ensure operational procedures are followed.

Blending the wastes enables an efficient use of space and an effective, viable treatment method for hazardous wastes and non-hazardous wastes. As an example, up to two thousand tonnes of waste may comprise one batch, but this could be derived from four different waste sources sharing similar characteristics with regard to their suitability for treatment.

Recoverable wastes and wastes only suitable for disposal will be kept separate from each other throughout the entire process, including receipt, storage, handling and treatment.

Similarly, hazardous and non-hazardous wastes will be kept separate throughout each stage of the operation.

Subject to the soil quality post treatment, soils will be either utilised for restoration material or cover material. Waste dispatch will typically take place when Biffa's requirements for restoration soils and intermediate daily cover are achieved.

3.2.4 Bio-physical remediation of contaminated soils using mechanical turning.

Bio-physical remediation of hydrocarbons can also be achieved by mechanical means using a propriety turning device such as tractor driven Menart Turner as shown in Figure 3-3 below. The technique is highly flexible and can accommodate variations in the physical nature of the impacted soils, contaminant concentrations, ambient weather conditions and volumes.

Figure 3-3
Bioremediation Process – Mechanical Turning (Menart)



Biopile Construction and Operation

A 70 mm screen will be located within the WTF, following screening, a 21 tonne tracked excavator or a similar machine will be located on the WTF to construct the biopiles following unloading of the dump trucks.

The biopile shape influences the mode and efficiency of treatment. A 3m wide gap in between the biopiles and around the perimeter of the WTF will allow access for excavators and tractors.

Once the biopiles are constructed, active treatment involves the use of equipment to aerate the substrate. The mechanical processing relocates material central to the biopile out to the edge of the heap ensuring optimal aeration of the substrate. Material is added to the biopiles to condition and promote microbial activity in line with Section 3.4.1 as required.

The machinery proposed for this remediation process will be a tractor pulled turner which is capable of an approximate through feed capacity of 1,000 m³/hr.

Any moisture draining from the biopile system will be recovered through the drainage system of the WTF; however, typically, due to the turning action water loss from mechanically turned piles is minimal.

Covering System

The covers are specifically designed for bioremediation operations. The fleece material is composed of chemically and biologically stable polypropylene fibres manufactured to shed rainwater whilst gas-permeable and UV resistant. These properties allow the biopile to

remain at an optimum moisture level and conserve heat generated by hydrocarbon degradation.

The biopiles will be mechanically covered after construction in order to minimise rainwater infiltration, moisture deficiency and release of odours. They will be uncovered during mixing and sampling operations.

Maintenance Schedule

During the treatment period the biopiles will be turned and aerated consecutively using the biopile turner. Following the uncovering of the biopile to treat, the tractor will run the turner through the material along each of the windrows. Once the task is completed, the covers present on the next biopile due to be turned will be removed and used to cover the freshly turned biopile. The process will then be continued until all biopiles are turned before a new turning cycle starts.

3.2.5 Process Water Tanks

Process water (i.e. effluent) from the biopiles will pass into a drain at the lowest point of the treatment pad. The treatment pad will have low level bunding and laid to appropriate falls, thereby keeping the process water from the biopiles separate from clean surface water run-off from the hard surfaced areas around the treatment pad, as indicated in Drawing 003. Process water from the biopiles will be collected and managed in an engineered drainage system thereby ensuring that emissions to groundwater are minimised.

The integrated water treatment equipment at the WTF includes a control panel, blower and fan and allows for water recirculation and / or treatment (with bag filter and carbon filter). Following testing, process water will be tested at the WTF and either;

- re-circulated in the biopiles;
- used to water the biofilter;
- tankered off site to suitably permitted facility; or
- discharged to surface water

The majority of water arising from the WTF operation will be storm water run-off from the engineered surfaced areas, and will be managed as surface water run-off.

It is proposed that there would be one above ground process water storage tank. The tank would be cylindrical in shape, approximately 6m in length, 3m in diameter and 2.7m high. The tanks will be located on a bunded storage area (with 110% tank capacity in containment) to accommodate any potential leaks. The tank will collect process water from the biopile areas and subject to testing will maybe be tankered off site to a suitably licensed facility or released to the existing Trecatti leachate treatment system or surface water system. The location of the tanks is illustrated on Drawing 002.

3.2.6 Air Extraction System

The air extraction system comprises of a network of perforated pipes which will be installed beneath the soil biopiles and will be linked by a main collection system to a high performance vacuum blower system. The air extraction system will allow for flow rates to be controlled at various locations within the biopile to optimise process control. The blower will be designed in such a way that the oxygen required for contaminant degradation is never

insufficient. The blower is an electric motor and fan system which is housed within an acoustically insulated shipping container.

Extraction ventilation to an abatement plant and biofilter treat biodegradation products and reduces emission of particulate and odour.

3.2.7 Air Water Separators

The air/water separators allows for the collection of process water from the biopile. The separators will ensure that air extracted from the biopile does not contain water, which could damage air extraction equipment. Collected water will be pumped from the separators by an automated pump that will be operated by a level detection system. The water will be pumped to the process water tank(s) for primary settlement prior to discharge as described above.

The water collection system (air/water separators and process water tanks) will include water level detectors, which will automatically shut down the pumping system before critical levels are reached. The detectors will also be linked to a warning light system, which notify the operator.

3.2.8 Humidifying Chamber

This is a simple spray system installed within the exhaust system to ensure humid air is pumped towards the biofilter and will ensure moisture content within the air treatment filter is maintained within an optimal range.

3.2.9 Biofilter

Air will pass through a biofilter. The extracted air will pass through the biofilter which will provide an active filter capable of removing potentially odorous or harmful substances from the air leaving the biopiles.

This biofilter will comprise of a wood medium filter which that would be contained within an area approximately 6m by 20m in plan and 2.5m high. The biofilter medium will be covered with exhaust holes to allow gaseous emissions to be released. The biofilter will be measured on a monthly basis for volatile organic compounds, total petroleum hydrocarbons and polycyclic aromatic hydrocarbons.

The atmospheric releases from the biofilter will consist mainly of low levels of volatile organic compounds (VOCs) but will also include carbon dioxide, and water vapour. Figure 3-4 illustrates the biofilter and process water tank at the Risley Landfill site which is a permitted installation and was successfully operated by Biffa Waste Services Limited.

Biffa operated a remediation facility as proposed by this variation application successfully at their Risley Landfill Site, near Manchester (Permit Reference BV7877IR). In addition, the Environment Agency has issued Biffa with a PPC Permit variation for the operation of a facility at the Meece landfill in Staffordshire (Permit reference BV4967IW), Skelton Grange in Leeds (Permit reference BJ9339IF-V013), at the Redhill Landfill Site in Surrey (Permit Reference AP3838UC), Westmill Landfill Site in Hertfordshire (Permit Reference DP3431PC-V006) and Northern Ireland Environment Agency have similarly issued a Permit for the operation of a facility at Cottonmount Landfill in Northern Ireland (Permit Reference P0090/05A/V2).

**Figure 3-4
Biofilter and Process Water Tank**



3.2.10 Ancillary Infrastructure

A site office will be located on the WTF compound. In addition to housing the site office, this portacabin type building will also provide staff welfare facilities.

3.3 Limits of Activities

3.3.1 Permitted Categories and Types of Waste

The list of European Waste Catalogue Codes for acceptance at the site is as detailed in Appendix to the Application Forms C3_1.

Trecatti WTF will accept biodegradable garden waste (20 02 01) and other suitable materials, as highlighted in Appendix C3_1 as additives. The purpose of addition of such woody wastes is to break up cohesive soils to enable a matrix which is easier to aerate. Biffa may add some green waste to the process and this will have been previously composted due to the nitrogen demand of fresh green waste. Biffa do not envisage accepting fresh green waste as this has a high nitrogen demand. Biodegradable wastes are also used on Biffa's specialist contractor's 23 other soil treatment facilities with the same methodology, so the use of these materials for the purposes set out above is widely accepted. All soil additives are minimised as far as practicable due to both cost reasons as well as the need to ensure that soil meets the strict physical criteria for the restoration scheme after treatment is complete

Biffa has recently been issued with an Environmental Permit variation (reference EA/EPR/BJ9339IF/V013) for the operation of a Soil Treatment Facility at Skelton Grange Landfill Site and this permits the use of green waste as part of the process for the reasons set out above.

3.3.2 Waste Quantities

The proposed WTF will be capable of treating up to 30,000 tonnes per annum of the waste types detailed in Section 3.3.1.

3.3.3 Hours of Operation

The WTF facility will be operational (delivery and transfer of waste) in accordance with the hours specified in the planning permission. However, aspects of the plant (for example the air circulation motor(s)) will operate on a continuous basis, 24 hours a day, 7 days a week throughout the year, operating for a total of 365 days per year when the remainder of the site is not operational. This is no different to the operation of similar equipment on the adjoining landfill at Trecatti that is required for environmental control purposes (landfill gas extraction and generation/flaring, and leachate extraction and storage/disposal off site. Where this is the case, acoustic treatment and silencing of equipment to acceptable noise output levels will be in place.

3.3.4 Means of Measurement

A computerised weighbridge is present at the entrance and exit of the Landfill facility and this will be used to record the deliveries to the WTF. The computerised weighing control system will record the following:

- vehicle weights;
- issued transfer ticket numbers;
- tare weights;
- gross weights;
- net weights;
- waste type;
- waste carrier identification;
- vehicle registration; and
- vehicle type

CCTV cameras will be positioned to view vehicles at the weighbridge. Audio communication will be provided between the weighbridge and the central control room.

The equipment located at each weighbridge (weighing terminal) will include:

- weatherproof casing;
- electrical heater;
- digital display;
- ticket printer;
- two way intercom system;
- induction loops, entrance and exit barriers; and
- traffic light.

Equipment located in the control room includes as a minimum:

- one digital weight indicator;
- one complete computer (Pentium widows based); and
- one printer for summaries / reports

Wastes will be characterised, as required under the Duty of Care requirements, prior to acceptance of the delivery. On inspection, deliveries which do not have the required information, will either have to produce the correct information, or will be refused entry to the WTF. Non-conforming wastes will be removed off-site if appropriate for disposal at a suitably licensed facility. Records of the waste characteristics and destination of the waste will be kept in accordance with Duty of Care requirements.

Operational procedures at the site will include specific procedures for waste reception, checking and handling of non-conforming loads/items as detailed in Biffa's EMS and the WTF Operational Manual. These procedures will be developed to ensure that the requirements of the Duty of Care requirements and The Environmental Permit (England & Wales) Regulations 2010 and subsequent amendments are met.

3.3.5 Waste Acceptance Procedures

All drivers bringing waste material to the WTF will report to the weighbridge where the paperwork for the load will be inspected. Further waste acceptance procedures are detailed in Section 3.2.1 of this report and Appendix BATOT1.

3.3.6 Waste Quarantine Procedures

It is not expected that non-conforming waste will be deposited at the WTF following the waste acceptance procedures. A record will be kept of all rejected wastes.

There will be no direct disposal of waste to land within the footprint of the WTF operation.

3.4 Waste Handling

3.4.1 Materials Input

This section describes the materials that will be used at the WTF. The selection and substitution of materials used are also discussed and the techniques used to minimise their use described. Measures include the keeping of an inventory of materials, minimisation, regular review of new developments in raw materials and the implementation of suitable substitutions where possible.

The most significant material input at the WTF is the waste accepted for treatment.

In addition to the soils and wastes accepted at the crushing and screening area, the material input at the bioremediation area is confined to:

- organic amendments (if necessary, and as detailed in the Operations Manual);
- inorganic nutrients (if necessary, and as detailed in the Operations Manual);
- any replacement parts for the WTF plant and infrastructure; and
- water to add to the biopiles as necessary (mains water will be minimised by re-using water from the on-site process tank(s), where appropriate).

3.4.2 Raw Materials Selection at the WTF

A list of all substances used, stored, or produced as waste by-products from the treatment process at the WTF will be contained in the WTF Operations Manual however, a summary is provided below and in Table 3-2.

Soil or Sludges for Treatment

The WTF will treat soils or sludges contaminated with organic compounds, which may be considered as hazardous waste under the Hazardous Waste (England and Wales) Regulations 2005 and Waste (England and Wales) Regulations 2010 and subsequent amendments. The proposed waste types are listed in Appendix to the Application Forms C3_1.

Other Materials

Inorganic nutrients such as ammonium nitrate may be used in low quantities in a small number of cases. A detailed description of the nutrients used is included within the WTF Operations Manual. These materials may be segregated for storage in bags or small containers.

Bulk Storage Tanks

A bund will surround the biopile(s) pad and within it is included the WTF infrastructure e.g. roadways, fuel storage, process water tank, site office and parking area, biofilter and equipment unit. Water run-off from within this bund will all be managed as potentially contaminated water and routed to the process water tank. The water will be stored at the process water tank prior to discharge to a suitably licensed facility. Subject to quality testing, the water may be released to the surface water management lagoon as detailed on Drawing 003 or may be discharged to Trecatti's Leachate Treatment Plant.

A cut-off valve will be provided at the surface water lagoon and should any contamination become evident, the water will be prevented from entering the existing surface water management system and controlled waters.

Drums

Any chemicals will be stored in drums, sacks or other suitable containers upon sealed surfaces and within contained areas or structures. Only relatively small amounts are required and these materials are mostly inert or of low toxicity.

Drums that may be received for occasional maintenance or repair of plant and equipment will be stored and used in accordance with site procedure. Drums will be returned to the supplier or disposed of in accordance with relevant regulations and site waste management procedures.

Table 3-1
Principal Raw Materials and Storage at the Bioremediation Pad (Listed Activity)

Raw Material	Use	Storage/ Containment	Maximum amount stored on site at any one time	Annual Throughput	Chemical Composition	Hazard Code	Fate of Material (% of product to air, water, land)	Alternatives
Soil / Sludge for Treatment	Remediation of contaminated soils / sludges to materials suitable for use as restoration soils at Trecatti Landfill Site	Storage on biopiles at the WTF pad of engineered surfacing and served by an engineered drainage system	15,000m3 on each biopile pad at any one time	The facility will be capable of treating up to 30,000 tonnes per annum (this does not include materials for processing)	Soils / sludges may be special waste or hazardous waste as detailed in Section 3.3.1	Low – High	To land for use as restoration material or daily cover as appropriate at the adjacent landfill	None. The purpose of the facility is to remediate contaminated soils
Nutrients (organic and inorganic as appropriate)	To maintain growth conditions within the soils.	These materials may be segregated for storage in bags or small containers within a site storage shed/workshop	<5 tonnes	As detailed in the WTF Operations Manual: the actual quantities are considered commercially sensitive	As detailed in the WTF Operations Manual: the actual quantities are considered commercially sensitive	As detailed in WTF Operations Manual	As detailed in WTF Operations Manual	None identified. The process will be reviewed once operational to ensure that the nutrients used are optimal for the process
Diesel	Fuel for excavators and mobile plant	Storage of diesel in accordance with the Oil Storage Regulations (double skinned and bunded to 110%of capacity on hardstanding.	Approx 2,500L	As required by site plant	Diesel	As detailed in WTF Operations Manual	Combustion in site plant	Alternatives will be considered when site plant is upgraded; currently site plant runs on diesel.

Wherever possible, raw materials will be selected that minimise environmental impact. Consideration will be given to such factors as degradability, bio-accumulation potential and toxicity. Reviews will be frequently undertaken to ensure that all raw materials are appropriate for use, that consumption is optimised and that opportunities for reduction and improvements are implemented.

Materials storage and management will be governed by the WTF Operations Manual. An inventory of materials held and used will be maintained by the Site Manager and or the purchasing office. Biffa periodically reviews the use and sourcing of raw materials and where cost effective environmental benefits can be obtained through the use of alternatives this is implemented. Quality assurance systems in place maintain materials quality requirements and stock levels will be minimised as far as practicable, consistent with operational needs.

3.4.3 Waste Minimisation

Given the nature of the processes, the opportunity for waste minimisation is limited. However, minimisation of waste will be considered as and when appropriate.

Materials will be recycled and re-used, wherever possible. The process does not need a significant input of water except for maintaining moisture levels. Generated process water will be recycled where possible.

Use of raw materials and opportunities for substitution or minimisation will be considered as part of Biffa's EMS.

Measures will be in place for the prevention and reduction of waste and will include:-

- process control to minimise the creation of rejects or unacceptable materials; and
- plant and equipment will be maintained on a routine basis to prevent breakdowns and loss of product.

3.4.4 Waste Streams and General Arrangements

The WTF will generate relatively small amounts of waste that require disposal. The largest potential waste streams will be recycled to the process or used on site; however a small quantity of waste will be produced as detailed below in Table 3-3.

Table 3-2
Annual Waste Streams and Amounts

Waste Stream	Annual Volumes	Storage for Disposal	Main Action or Disposal Route
Paper, plastic & general packaging	Approx 50 m ³	Skips and bins in plant or from office bins	Off site (from the WTF) to a suitable permitted facility which may include the adjacent Trecatti landfill site.
Metal: engineering workshop scrap	Unknown	Open skip	Off site (from the WTF) to a suitable permitted facility which may include the adjacent Trecatti landfill site.

Other industrial and commercial waste which may arise as a result of the operations will be segregated and consigned to appropriate skip or container for onward disposal in compliance with the Duty of Care requirements as follows:-

- general industrial waste will be contained within skips located throughout the facility. This will be disposed of off-site on a regular basis;
- office waste will be contained in bins or closed skips and removed for disposal; and
- empty drums will be stored within the facility or storage shed for return to supplier.

The site will not produce a hazardous waste on a routine basis except for small quantities of waste oil, batteries and occasional batches of solvents. These will be segregated, labelled and stored in a secure vessel(s) prior to disposal by licensed contractor. The Site Manager will be responsible for implementing waste management requirements and ensuring that skips are labelled and, maintained in an appropriate location and condition. Staff will be responsible for ensuring waste is correctly consigned and for notifying the Site Manager when skips or containers may contain inappropriate items.

Waste will be managed by the WTF Operations Manual and Biffa Procedures, as described in Section 2.2.1.

3.4.5 Disposal Options and Controls

Materials that are not recycled or re-used on site will be disposed off-site as controlled waste. All controlled waste will be disposed of in accordance with the duty of care requirements to licensed disposal facilities.

Copies of transfer notes will be held for a minimum of two years and any hazardous waste consignment notes (if required) are held for a minimum of three years. Arrangements for disposal of waste will be reviewed annually by the environmental support staff. This provides checks on contractors and review of requirements for licensing and registration.

3.4.6 Records

Records will be maintained to satisfy the requirements of the Duty of Care requirements and Biffa's WTF Operations Manual and Biffa Procedures.

3.5 Waste Recovery or Disposal

3.5.1 Recovery and Disposal Options

Containers will be segregated, labelled, covered and maintained in a satisfactory condition. Storage areas will be protected from vandalism by site security arrangements. Storage areas will be designated and marked as appropriate.

Consideration will be given to the most appropriate disposal route for waste arising, with disposal being as close to the facility as possible. Where practicable, recycling and reuse of materials and plant will be undertaken.

The recovery and disposal details for the waste streams are likely to be as specified below:

- solid rejects and soils will be stored in situ in a skip prior to transport off site (from the WTF) to a suitable permitted facility;
- paper, plastic & general packaging from office waste will be stored in situ in skips or office bins and will be either recycled as appropriate or transport off site (from the WTF) to a suitable permitted facility; and

- waste associated with machine parts and other wastes generated as a result of malfunction or routine maintenance will be transported off site and disposed of at an appropriately authorised facility.

It is considered that the chosen routes for recovery or disposal represent the best environmental option given the circumstances prevailing at the site namely the minimal waste volumes and therefore minimal environmental impacts associated with off-site disposal.

3.5.2 Water Use

Mains water will be minimised by re-using water from the on-site process tanks, where appropriate. Biffa will review water use on a regular basis.

3.5.3 Best Practicable Environmental Option (BPEO)

Waste management will be reviewed every year as part of the site's Environmental Management System. This will be undertaken to confirm that the best environmental options are being used for the dealing with waste from the installation.

It is considered that present arrangements represent BAT and represent the BPEO.

3.5.4 Packaging Waste Regulations

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997 implement EU Directives on Packaging Waste. The Regulations place a legal requirement on UK businesses to recover and recycle packaging so the UK can achieve the European packaging recycling targets. Biffa has registered with the Environment Agency as an obligated company under the Regulations (Biffa handles more than 50 tonnes of packaging a year).

Biffa operate 'Biffpack' the leading waste management industry based Compliance Scheme. Biffpack is registered to ISO 9001:2000. Biffpack operates on the basis that it will meet the aggregated obligations of its members by obtaining Packaging Recovery Notes (PRNs) generated through the recovery and recycling of packaging waste. The cost of acquiring PRNs is charged back to members quarterly according to each member's obligation.

The WTF will not be a significant producer of packaging and would not normally be required to manage packaging. In practice packaging that may be received will be forwarded to the main installation landfill site for disposal.

Typical annual estimates of packaging waste that may be generated by the WTF as follows;

- paper (tonnes) <5;
- metal (tonnes) <5;
- wood (tonnes) <5; and
- plastic (tonnes) <5.

3.6 Plant and Equipment

All items of plant and equipment will be regularly inspected and maintained in accordance with the manufactures specifications and Biffa's programme of plant maintenance (as detailed further in Section 2.3 of this report).

4.0 EMISSIONS AND MONITORING

This section of the report details the emissions that will result from the WTF. The emissions from Trecatti Landfill will continue to be monitored and regulated in accordance with the conditions of the Environmental Permit for the site. The techniques for pollution control described below conform to the indicative BAT requirements contained within the IPPC S5.06, 'Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste', Issue 4, December 2004 for the IPPC Directive activity only (the treatment of hazardous soils at the bioremediation centre).

Potential emissions to air, water and land from each stage of the WTF (including any during start up, shut down and any breakdown/abnormal operation) are summarised in Table 4-1 below.

Table 4-1
Summary of Potential Releases - WTF (Modified from S5.06)

	Materials Receipt	Biopile Creation	Biopile Bio- remediation	Biofilter Emissions	Materials Sorting	Materials Export	Other Oil & Chemical Storage
Particulate	A	A	A	A	A	A	
Odour		A		A			
Solid Rejects					L		
Effluent			W				W
Noise	Low	Low	Low		Low	Low	
Key	A - Releases to Air. W – Releases to Water. L - Releases to Land						

Standards and Obligations

Emissions from the WTF generally comply with associated sector guidance and relevant emission standards such as those described by S5.06.

Benchmarks or limits (including units used) will be expressed as defined by Guidance S5.06 or as appropriate.

4.1 Point Source Emissions to Air

4.1.1 Sources of Emissions

There will be no point source emissions to air. The main source emission to air will be from the biofilter which will be designed to remove potentially odorous or harmful substances.

The potentially significant polluting substances produced by the biofilter are as follows, and as a consequence an Air Quality Assessment has been undertaken and is included in Appendix BATOT3:-

- particulate;
- organic breakdown products (untreated or partially treated); and
- odour.

4.1.2 Control of Emission to Air

BAT – Guidance S5.06

BAT for bioremediation projects is not specifically described by BAT Guidance S5.06; though are described as one of the available air abatement options (S5.06 Table 2.5). With respect to biofilters (termed biobeds or infiltration in the Guidance), S5.06 states:-

“Biofilter is a generic term applied to any biological oxidation process taking place in a packed system. This includes the conventional trickling filters, bioscrubbers (microbial population supported in scrubber liquor) or biobeds (packed system using soil, peat and bark). Biobeds have been installed on waste treatment sites for the abatement of odorous emissions.

Operational conditions include:

- *incoming air must have a relative humidity of >90% (this may require the use of a humidifier);*
- *particulate must be removed;*
- *major operating parameters such as gas temperature and backpressure should be checked daily;*
- *moisture content in the filters should be monitored regularly;*
- *a low-temperature alarm should be fitted to warn of freezing, which may damage the filter and affect the growth of the microbial population;*
- *the packing medium must be supported to allow a fast, even air flow without pressure drop;*
- *the medium should be removed when it starts to disintegrate, affecting air flow (bark is less resistant than, for example, heather);*
- *choice of medium and supporting system affects the power requirement to maintain air flow with power to overcome bed resistance. This is the largest operational cost; and*
- *biofiltration and bioscrubbing have lower operating costs than many other air pollution control technologies for treating low concentrations of biodegradable organic pollutants. Bioscrubbers have the higher maintenance cost of the two”.*

The use of the biofilter is considered the Best Available Technique (BAT) to prevent, minimise and treat releases to air from the WTF. The biofilter is considered a suitable abatement technique and release heights are considered sufficient to ensure adequate dispersion of the air under normal conditions. Environmental benefits include low energy requirements and the avoidance of cross-media transfer of pollutants.

Biofilter Construction & Operations

Abatement will comprise an air abstraction and conditioning unit, followed by a biofilter. Air will be continuously removed from the biopile and typically treated first through a conditioning unit (humidifier). The humidifier will regulate conditions to ensure the soil is kept at appropriate conditions (warm and moist). The air will then pass to the biofilter to remove particulate and odour and then released directly to the atmosphere.

The biofilter would be contained within an area approximately up to 6m by 20m in plan and 2.5m high. Airflow will be diverted to all parts of the biofilter bed(s) as required. The biofilter bed will be constructed with perforated piping to distribute air flow, followed by surface layers of organic material such as peat or similar. The large area will ensure a low rate of air flow

through the biofilter media with a large surface area to intercept and/or treat particulates and odours.

Biofilter Emissions and Control

Temperature and condition of the biofilter will be observed on a daily basis together with odour.

On a monthly basis, monitoring of the biofilter will take place for:-

- total Petroleum Hydrocarbons (TPH);
- benzene, Toluene, Ethyl Benzene and Xylenes (BTEX); and
- polycyclic Aromatic Hydrocarbons (PAHs).

Monitoring will be undertaken by a specialist laboratory for accredited analysis.

Greenhouse Gases Emissions

Estimated annual contributions to greenhouse gases as carbon dioxide are shown in Table 4-2.

Emissions are estimated from the use of imported energy including diesel, electricity, LPG etc., which are detailed further in Section 4.15 of this document. Standard factors for carbon dioxide emissions are provided in the Environment Agency horizontal guidance H2 (Version 3, February 2002).

Table 4-2 also includes an estimate of carbon dioxide arising from soil / sludge treatment. This value is approximate only and actual mass emissions could be more than double this – depending on soil concentrations of hydrocarbon and the amount treated in any year.

Table 4-2
Greenhouse Gas Contributions (Bioremediation Pad Only)

Energy option	CO ₂ Emission (tonnes/year)
As delivered Electricity use	2.64
Fuel	78
LPG	15
Coal	-

* estimated as 30,000 tonnes soil treated with 1% contamination as hydrocarbon and converted to carbon dioxide.

Mobile Plant Emissions and Control

Releases as nitrogen oxide will be minor and associated with mobile plant and occasional space heaters only. Emissions from mobile equipment will be controlled by proprietary exhaust systems.

Biopile Emissions and Control

Dust is unlikely to appear during the turning of soils. Dust indicates that the moisture content of the soil is too low. Should dust be identified, water will be added to the biopile to maintain humidity at an appropriate level to enhance bio-degradation. Water would be added by either automatic or manually deployed irrigation pipes.

4.1.3 Monitoring of Emissions to Air

The monitoring regime will enable Biffa to assess the performance of the abatement systems and facilitate early identification of any potential environmental impacts.

The Site Manager will be responsible for ensuring emission abatement is adequate and identifying the need for further control. Emissions monitoring is covered by Biffa Operational Procedure DGNL/02 Environmental Management.

In addition the WTF Operations Manual details the following;

- monitoring & Reporting for Gases and Vapours
- control of Dust, Fibres and Particulates; and
- monitoring & Reporting for Gases and Vapours.

Biffa will immediately notify Natural Resources Wales of the detection of the release of any substance which exceeds any relevant limit or criteria specified in relation to the substance in the permit or any other substance that might cause harm and of any malfunction or breakdown that has the potential to cause serious pollution of the environment.

4.1.4 Sampling Techniques/Calibration

Sampling and analytical methods will comply with the Environment Agency's / Natural Resources Wales Monitoring Certification Scheme (MCERTS), where appropriate. In general methods will be undertaken in accordance with British Standards or other recognised technique accepted for measurement or as agreed with the regulator. Concentrations will generally be expressed at standard reference conditions of; Temperature 273 K (0°C); pressure 101.3 kPa (1 atmosphere); no correction for water vapour or oxygen.

All monitoring at the facility will be in accordance with the conditions of the Environmental Permit and best practice and Biffa's monitoring procedures (as detailed in the EMS).

4.2 Point Source Emissions to Groundwater

4.2.1 Sources of Emissions

There will be no direct discharges containing List I or List II substances to groundwater from the WTF.

4.2.2 Control of Point Source Emissions to Groundwater

As detailed in Section 4.2.1 above, there will be no point source emissions to groundwater from the WTF. Note that drainage details with regards to the Green Waste Composting Operations are included within the Non-Technical Summary.

The proposed MWTRP comprise a single impermeable surfaced pad. The pad will have overall maximum dimensions of around 125m by 82m and orientated in a south east to north west fashion. The northern most part of the pad would be used for the composting of green waste and would be 45m by 70m in footprint (3,250m²). Adjoining this would be an area used for the bioremediation of contaminated soils or sludges; this area would be 80m in length and between 56m and 82m in width (having a footprint of around 6,000m²). The two areas would be separated by low level bund.

The main item of infrastructure on the WTF will comprise the treatment pad which would comprise from top to bottom of impermeable surfacing, 150mm Type 1 sub-base, geogrid with 200mm layer of capping stone. The integrity of the treatment area will be confirmed before soil is placed on it. Due to the site specific engineered containment system proposed at the WTF it is unlikely that there will be releases to groundwater.

The impermeable surface of the MWTRP would be graded to a 1-2% fall. Water from the biopiles/windrows would be collected and managed in a separate sealed drainage system thereby ensuring that emissions to groundwater are prevented.

There will be no underground storage tanks for the bulk storage of fuels or bulk chemicals. The only underground structures that will be installed at the facility will be:-

- air/water separator sumps; and
- foundations.

The geology, hydrogeology and groundwater vulnerability at the site is described within the H1 Risk Assessment (reference 407.00034.00461/H1).

4.3 Point Source Emissions to Surface Water

4.3.1 Sources of Emissions

The point source emission to surface water from the WTF is the release of clean surface water.

The surface water will be collected at the holding lagoon (Lagoon 1) and pumped to join the existing permitted surface water management system at the Trecatti landfill prior to discharge under the conditions of the Environmental Permit.

4.3.2 Control of Point Source Emissions to Surface Water

Surface water volumes will be variable and dependant on rainfall. Surface water at the WTF will be collected separately to process water and will be routed to surface water Lagoon 1 within the footprint of the MWTRP.

Process water generated by the treatment process at the biopile(s) will be removed via the internal air and water extraction pipes and routed to the process water tank prior to discharge to a suitably permitted facility. Subject to quality testing, the water may be released to the existing Trecatti Landfill leachate management system or surface water management system. The collection network for the biopile(s) is illustrated on Drawing 003.

A bund will surround the biopile(s) pad and within it will be included the WTF infrastructure e.g. roadways, fuel storage, process water tank, site office and parking area, biofilter and equipment unit. Water run-off from within this bund will all be managed as potentially contaminated water and routed to the process water tank. The water will be stored at the process water tank prior to discharge to a suitably licensed facility. Subject to quality testing, the water may be released to the existing Trecatti Landfill leachate treatment system or surface water management system.

If required, biopile(s) maybe covered with biocovers, rainfall running off the biocovers will be managed as clean surface run-off and directed to the surface water ditch to the east of the biopile(s); the biocovers will be secured within the surface water ditch. Clean surface

water from the ditch is routed to the surface water lagoon via a pipe. Water is discharged from the surface water management lagoon to the existing Landfill surface water management system. Empty pads may also have clean surface water diverted into surface water drains using sandbags.

A cut-off valve will be provided at the surface water management lagoon and should any contamination become evident, the water will be prevented from entering the existing surface water management system and controlled waters.

The proposed drainage layout is shown on Drawing 003.

4.3.3 Monitoring of Point Source Surface Water

Surface water quality will continue to be monitored in accordance with the Environmental Permit for the Trecatti landfill site. The surface water retention pond at the WTF will have a cut off valve so that should the surface water at the WTF become contaminated, the contaminated surface water would not enter the landfill surface water management system.

Monitoring procedures are covered by Biffa's Operation Procedure DGNL/02, Environmental Management.

The proposed monitoring regime will enable Biffa to assess the performance of the abatement systems and facilitate early identification of any potential environmental impacts.

4.4 Point Source Emissions to Sewer

4.4.1 Sources of Emissions

There will be no direct emissions to sewer at the WTF.

4.5 Point Source Emissions to Land

4.5.1 Sources of Emissions

There will be no direct deposit of waste to land at the WTF.

4.5.2 Control of Point Source Emissions to Land

There will be no direct deposit of waste to land at the WTF. However, the resultant material (non-contaminated soils) will be used at the adjacent landfill facilities as restoration material and daily cover material as appropriate and subject to quality. It is not anticipated that resulting soils will be transported off site.

4.5 Fugitive Emissions to Air

4.5.3 Sources of Emissions

There may be the following sources of fugitive or diffuse emissions to air from the WTF;

- biopile construction: emission of dust and particulate from soils;
- biopile remediation: emission of dust, particulate and VOC from soils during treatment;
- biopile turning: emission of dust and particulate from soils during turning of the piles; and

- hardcore access road, stone surfacing pavement and site access area: emission of dust as vehicles track over the pavement.

Odour is addressed separately in Section 4.9 of this report.

4.5.4 Control of Fugitive Emissions to Air

Dust

Roadways and hardstanding will be periodically cleaned. During potentially dry or unfavourable conditions, mud and dusts collecting on hard surfaces, including access routes will be removed by scraping and sweeping. Surfaces will also be dampened down by water bowser.

The operation of the WTF process will be conducted in such a way as to control mud and debris from leaving the WTF area. Biffa will take suitable precautions to ensure that mud and debris are not deposited on public roads. No plant or machinery involved in the WTF process shall leave the landfill without having used the vehicle washes located at various positions along the site haul road.

The presence of dust is unlikely to appear during the turning of soils. Dust is an indication that the moisture content of the soil is too low. Thus, should dust be identified, water will be added to the biopile to prevent proliferation of dust and to maintain humidity at an appropriate level to enhance biodegradation. If necessary, water will be added to the biopile by either automatic or manually deployed irrigation pipes.

VOC

The potential for VOC release during biopile remediation will be low. Operation of the treatment process and plant will be carried out in such a way as to minimise the release of VOCs from the facility as far practicable.

Soils will be typically well-weathered. However standard procedures do allow for the receipt of soils with light hydrocarbons, which have an elevated VOC content. The biofilter is a proven method of removing VOCs with a low odour threshold prior to venting to atmosphere. Details of emissions to air are included Appendix BATOT3, Air Quality Assessment.

Bonfires

No bonfires or rubbish burning will be permitted on site.

4.5.5 Monitoring of Fugitive Emissions to Air

Monitoring for fugitive emissions to air will include the daily visual inspection of the facility by site operatives, and will be in accordance with Biffa procedures, the WTF Operations Manual and the conditions of the Environmental Permit.

In the event of a significant release of fugitive emissions to air, Biffa will record the occurrence and take remedial action in accordance with the EMS and WTF Operations Manual. The WTF Operations Manual will include the Biffa procedures, 'Control of Dust, Fibres and Particulates and Monitoring & Reporting for Gases and Vapours'.

4.6 Fugitive Emissions to Groundwater

4.6.1 Sources of Emissions

In accordance with the Groundwater Regulations and Environmental Permitting Regulations, there will be no direct discharge of List I or List II substances to groundwater. The site will be designed and operated to minimise the potential risk of fugitive emissions to groundwater.

4.6.2 Control of Fugitive Emissions to Groundwater

Storage of waste soils will only occur on the engineered pad which will be served by an engineered drainage system. Water resulting from the WTF (process water and clean surface water) will be managed as part of a combined system described in Section 4.3 of this report.

All storage tanks on site will be bunded and will be of sufficient size to accommodate 110% of the volume of one of the storage tanks it contains. Bunded areas will be kept contamination free. These bunded areas will be checked regularly by competent persons for integrity.

In line with best practice, appropriate storage facilities will be provided at the facility for substances with special requirements (for example, nutrients and amendments as detailed in the WTF Operations Manual) and operational procedures at the site will ensure that where necessary, the storage of materials is kept separate. Storage areas will have appropriate signs and notices and all containers and packages will be clearly labelled.

4.6.3 Monitoring of Fugitive Emissions to Groundwater

Monitoring for fugitive emissions to groundwater will include the daily visual inspection of the WTF (including bunded areas) by site operatives, and will be in accordance with Biffa procedures, the WTF Operations Manual and the conditions of the Environmental Permit.

In the event of a significant release of fugitive emissions to groundwater, Biffa will record the occurrence and take remedial action in accordance with the EMS and WTF Operations Manual.

4.7 Fugitive Emissions to Surface Water and Sewer

4.7.1 Sources of Emissions

Surface water at the WTF is managed via the surface water management system detailed in Section 4.3 of this report. Any failure of the engineered drainage system or of the containment structures (process water tanks and fuel tank) at the WTF may lead to fugitive or diffuse emissions to surface water.

4.7.2 Control of Fugitive Emissions to Surface Water

A bund will surround the biopile(s) pad and within it will be included the WTF infrastructure e.g. roadways, fuel storage, process water tank, site office and parking area, biofilter and equipment unit. Water run-off from within this bund will all be managed as potentially contaminated water and routed to the process water tank as illustrated on Drawing 003 and managed as described in Section 4.3. The water will be stored at the process water tank prior to discharge to a suitably licensed facility. Subject to quality testing, the water may be

released to the existing Trecatti Landfill leachate treatment system or surface water management system.

The stone surfacing at the site and the components of the engineered drainage systems will be maintained and repaired as required. The site will be regularly inspected and areas in poor condition will be reported at daily operation meetings and/or the quarterly management meetings for inclusion within the environmental protection programme as appropriate.

It is proposed that an appropriate sealed storage facility is created that will attenuate clean surface water runoff from all paved areas. A separate sealed drainage system for composting proposes occurring on the multipurpose pad is also provided, and detailed within the NTS.

The attenuation pond (lagoon 1) will be designed for a total storage volume of 157m³ plus 0.3m freeboard. The attenuation facility will discharge to an existing network of perimeter drains and surface water lagoons at Trecatti Landfill. The retention pond will be designed to provide sufficient storage for rainfall events up to a 3 day 20% Annual Exceedance Probability rainfall event which is the maximum length of time that the site is likely to remain closed and non-pumping would take place.

The surface water attenuation pond will be located to the south east of the pad as illustrated on Drawing 003. The final design will be determined at a detailed design stage, and agreed with Natural Resources Wales prior to construction as required by the conditions of the Environmental Permit.

All storage tanks will be bunded and will be of sufficient size to accommodate 110% of the volume of one of the storage tanks it contains or 125% of the total tank volume within the bund, whichever is the greater. The bunded areas will be checked regularly by competent persons for integrity. A hardstanding surface will underlay all chemical and oil storage areas to prevent fugitive emissions to groundwater should spills/ leaks occur.

In line with best practice, appropriate storage facilities will be provided for substances with special requirements (for example, nutrients and amendments as detailed in the WTF Operations Manual) and operational procedures at the site will ensure that where necessary, the storage of materials is kept separate. Storage areas at both the WTF will have appropriate signs and notices and all containers and packages will be clearly labelled.

4.7.3 Monitoring of Fugitive Emissions to Surface Water and Sewer

Monitoring for fugitive emissions to surface water will include the daily visual inspection of the WTF (including bunded areas) by site operatives, and will be in accordance with Biffa procedures, the WTF Operations Manual and the conditions of the Environmental Permit.

In the event of a significant release of fugitive emissions to surface water, Biffa will record the occurrence and take remedial action in accordance with the EMS and WTF Operations Manual.

4.8 Fugitive Emissions to Land

4.8.1 Sources of Emissions

There may be the following sources of fugitive or diffuse emissions to land;

- Surface water attenuation area: aqueous emissions to land (release route);
- Process water tanks: aqueous emissions to land (release route);
- Fuel storage tanks: aqueous emissions to land (release route);
- Biopiles: emission of dust and particulate from soils (settlement on land)

4.8.2 Control of Fugitive Emissions to Land

The WTF site will be operated to reduce fugitive emissions to land. Waste will arrive at the site in sheeted vehicles and will be stored and treated within the designated areas only.

In addition, and as detailed in previous sections (Sections 4.2 – 4.4) the engineered drainage systems and on site containment systems at the WTF shall be constructed, operated and maintained in order to mitigate against the potential release of substances which may be harmful to the receiving environment.

4.8.3 Monitoring of Fugitive Emissions to Land

Monitoring procedures at the site will be in place to ensure that emissions (dust, particulate, litter from waste packaging etc) from the site do not escape on to neighbouring land.

Monitoring for fugitive emissions to land will include the daily visual inspection of the facility (including bunded areas) by site operatives, and will be in accordance with Biffa procedures, the WTF Operations Manual and the conditions of the Environmental Permit.

In the event of a significant release of fugitive emissions to land, Biffa will record the occurrence and take remedial action in accordance with the EMS and WTF Operations Manual.

4.9 Odour

An odour assessment has been undertaken as part of the planning application for the WTF and as part of the Air Quality Assessment appended to this BATOT in Appendix BATOT3.

Control of odour at the WTF will be governed by the WTF Operations Manual and Biffa Procedure DGNL/02, Environmental Management.

Odour Sources & Treatment

Contaminated soils may contain odorous organic substances including aromatic hydrocarbons such as, diesel range organics, PAHs, and phenols. Operation of the treatment process and plant will be carried out in such a way as to minimise offensive odours travelling outside the boundaries of the site. The waste list has been specifically chosen to minimise potentially high odorous wastes.

Under normal operation forced air extraction biopiles will be provided with extraction ventilation and air abatement (biofilter), as described in Section 3.2.9. Mechanically turned biopiles will be covered.

Fugitive odour from exposed soils during construction or stockpiling is unlikely, however, all operations are designed in order for this potential to be minimised. During the pre-acceptance procedure potentially odorous soils will be identified. These will not be accepted without there being arrangements in place for the soils to be received and managed in a manner which would minimise the potential for odour emissions. At all other times potentially

fugitive odour will be controlled by minimising the area of the biopile exposed at any one time.

BAT for Odour Control

It is considered that suction extraction and odour abatement (biofilter) meet the requirements of BAT, as does the covering of mechanically turned biopiles

Alternatives such as pre-blending adsorbents such as activated charcoal would not only inhibit the treatment process but are prohibitively expensive requiring the construction of additional storage and preparation equipment and buildings. It would also create additional opportunities for the release of odour through additional handling of soils.

Monitoring and Management

As part of the environmental management programme associated with the landfill operations, perimeter odour monitoring will be implemented, in accordance with the conditions of the Environmental Permit for the landfill Installation.

4.10 Noise and Vibration

The H1 Environmental Risk Assessment submitted in support of this variation application (reference 407.00034.00461/H1) considers the amenity type risk in a qualitative manner and considers noise at receptors within 500m of the existing Trecatti Landfill Permit boundary as a worst case scenario. Consideration is also given to the distance from the proposed Multipurpose pad to sensitive receptors. In summary, it is concluded that there will be no significant impact on surrounding human receptors.

4.10.1 Control of Noise

The Site Manager will be responsible for ensuring noise is minimised and site personnel will be trained in the need to minimise noise.

Site Operatives will undertake daily routine observations of noise from activities and plant. Noisy or potentially noisy activities or noisy equipment will be reported to the Site Manager. Depending on the scale of the noise the activity will be stopped or re-scheduled. Equipment may be withdrawn and sent for immediate service or listed for service.

Specific mitigation measures will include:-

- internal haul roads shall, where possible, be routed to allow maximum acoustic screening and separation distances to noise sensitive receptors;
- haul roads shall be kept clean and maintained in a good state of repair and subject to a 20mph speed limit so as to avoid unwanted rattle and “body slap” from vehicles;
- mobile plant will have noise emission levels that comply with the limit levels as defined by the EC Directive 86/662/EEC and subsequent amendments;
- plant shall be operated so as to minimise noise emissions; for example, minimisation of drop heights, no unnecessary revving of engines, etc;
- plant shall be subject to regular maintenance. Vehicles and mechanical plant would be fitted with effective exhaust silencers and maintained in good working order to meet the manufacturers’ noise rating levels. Silencers which become defective would be replaced as soon as possible;

- generation and level of noise emissions from the reversing beepers may necessitate use of reverse warning systems incorporating broadband noise, if appropriate;
- quiet plant shall be selected where appropriate. Such machines may be fitted with lined and sealed acoustic covers which would be kept closed whenever the machines are in use;
- machines that are intermittently used shall be shut down in the intervening periods between working periods or throttled back to a minimum;
- where possible pumps and mechanical plant shall be located behind existing screening mounds and be electrically powered. Acoustic enclosures shall be used where necessary, but particularly if pumps, etc. were to operate 24 hours per day; and
- the air circulation plant will be enclosed in an acoustically treated shipping container, which would minimise noise of the electrical pumps and blowers housed inside.

In addition, noise at the site will be controlled by operating in accordance with all relevant planning permissions (including working hours).

4.10.2 Noise Monitoring

As part of the environmental management programme associated with the landfill operations, noise monitoring will be implemented in accordance with the conditions of the Environmental Permit.

4.11 Pest Control

Due to the strict operational procedures employed at the site and the nature of the waste type, pests are not envisaged as being a nuisance. However, should pests become a nuisance at the site or the surrounding environment (and attributed to operations at the site) a pest control contractor will be brought in immediately to alleviate the problem.

4.12 Litter

Due to the nature of the waste to be accepted at the WTF it is considered unlikely that litter will be generated at the WTF.

4.13 Mud on Road

The WTF area will consist of stone surfacing which will be maintained free of potholes to prevent the pooling of surface water. Soils stored on the biopiles will not overhang the 'pad', and so vehicles (other than mobile plant used in the operations) should not come into contact with significant quantities of soil which may then leave the WTF on vehicles.

Should mud on road be attributable to operations at the site Biffa will take remedial action (road sweeping, washing of vehicles on site) as necessary in accordance with the procedures set out in the EMS and the conditions of the Environmental Permit.

4.14 Monitoring and Reporting of Waste Emissions

Waste management will be the responsibility of the Site Manager and will be undertaken as detailed in Biffa's EMS. On-going monitoring will be addressed as part of a waste minimisation audit and implemented through the EMS.

4.14.1 Monitoring of Process Variables

Monitoring of conditions within the soil biopiles will be undertaken as described in the WTF Operations Manual section, Waste Sampling and Testing.

Monitoring of the biofilter will be undertaken as detailed in Section 4.1.3 & 4.1.4 of this report. Sampling will be carried out by competent personnel trained in the use of sampling tools and methods appropriate for the waste being handled. Any samples will be shipped in suitable containers, to laboratories for analysis.

Laboratory analysis and testing will be carried out by qualified personnel in accordance with methods and protocols appropriate for determining the nature and concentrations of contamination present. A typical sampling regime includes:

- one (1) sample / 500m³ taken approximately every 4-6 weeks:
 - composite sampling from top, middle and bottom of Biopile

The typical parameters analysed will be (including but not exhaustive):

- Pollutants;
- Temperature; and
- pH.

Treatment of the contaminated soils (the remediation process) will be deemed to be complete when contaminant concentrations are below the target criteria to a confidence level of 95%.

4.15 Energy Efficiency

Whilst Biffa has certain obligations in relation to the Climate Change Levy Agreement (CCA) for example, fuel emissions and methane emissions, Biffa is not a participant in a CCA.

4.15.1 Basic Energy Requirements (1) – Energy Use

The WTF will be a minimal user of energy.

An estimate of the typical breakdown of primary energy usage by fuel type is shown below in Table 4-3. The main energy use will be fuel for the mobile plant. Electricity will be used for fans, pumps, lighting and general works activities. The WTF will not be connected to the mains gas supply.

Primary energy uses will be (in order):

- mobile plant to construct and handle biopiles (daytime intermittent) – diesel;
- blower fan(s) (continuous) – electrical;
- pump(s) (intermittent as required) – electrical; and
- lighting and welfare (intermittent as required) – electrical & LPG (heaters).

Table 4-3
Delivered and Primary Energy Consumption

Energy Source	Energy consumption (estimated)		
	As Delivered, MWh	At Primary Source, MWh	% of total
Electricity	0.6	1.56	0

Energy Source	Energy consumption (estimated)		
Gas	0	0	0
LPG	60	60	16
Coal	0	0	0
Fuel oil/gas oil/diesel	300	300	82
Total	360.6	361.56	100

4.15.2 Basic Energy Requirements - Energy Efficiency

Energy will be in line with the EMS and reviewed as part of Biffa's energy procedure at least annually as one of the significant environmental aspects of operation. The purpose of the procedure is to reduce energy usage within the Biffa group.

Energy specification and consumption of each unit operation for the treatment equipment will be described within the WTF Operations Manual.

Periodic energy audits and training for key staff will take place. Areas where new technology provides an opportunity for energy reduction will be identified and incorporated into the EMS environmental management plan.

The installation and equipment will be operated and maintained to minimise the use and loss of energy. Basic energy control measures will be in place:-

- process equipment when not in use will be turned off;
- operating housekeeping and maintenance measures will be in place for:
 - operation of motors and drives;
 - lubrication to avoid friction losses;
 - other maintenance relevant to the WTF; and
 - mobile plant in efficient running condition.
- where new equipment is purchased consideration will be given to energy efficiency; and
- doors and windows will be kept closed when heating or air conditioning is on and thermostats will be kept as low as possible; consistent with comfort levels.

4.15.3 Further Energy Efficiency Requirements

The energy plan will be reviewed annually.

As part of this plan and with reference to the WTF, consideration will be given to further savings by the selection of the preferred source of energy (e.g. 'green' electricity), the fuel type, e.g. LPG or diesel and fuel efficiency measures.

5.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client.

This report is for the exclusive use of Biffa Waste Services Limited; 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 SLR. SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Appendix BATOT1

407.00034.00461/WAP This is a Controlled Document Issue 1

Waste Acceptance Procedure Waste Treatment Facility (WTF).

Document Status

Document No	: TBC	Issue No.	: 1
Author	: J. Stringer / S. Rutledge	Approved By	: G Peacock
Issue Date	: 14/11/2013	Approval Date	: 14/11/2013

THE ONLY VERSION OF THIS DOCUMENT GUARANTEED AS CURRENT IS THAT ON SCREEN WITHIN BIFFANET OR THAT ISSUED BY THE BUSINESS SYSTEMS DEPARTMENT UNDER MANUAL DOCUMENT CONTROL.

Reason for Issue or Re-Issue:

- To satisfy the requirements of the PPC permit.

Purpose & Scope:

Biffa / Celtic EnGlobe waste treatment facilities are limited to accepting wastes which can be treated to a standard that is acceptable for disposal in the landfill void or for use as restoration material. Candidate wastes for treatment must be assessed prior to their acceptance to ensure their suitability.

Prior to acceptance at a non-hazardous landfill site the treatment outputs must be assessed and pre-characterised so that its acceptance will not:

- Result in unacceptable emissions to groundwater, surface water or the surrounding environment;
- Jeopardise environment protection systems (such as liners, leachate and gas collection and treatment systems) at the landfill;
- Put at risk waste stabilisation processes (such as degradation or wash out) within the landfill; or
- Endanger human health

References and Forms:

- PPC Permit
- PPC Regulations 2000
- Landfill Regulations (England and Wales) 2002

Definitions & Abbreviations

- ECA – Environmental Control Advisor
- WTFWTF – Waste Treatment Facility

Waste Acceptance Procedure WTF

Who What When

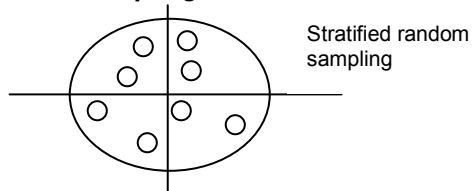
1.0	Waste enquiry receipt, data collection and classification.	
ECA/Site Management	Upon receipt of a new permit or permit variation, all existing wastes should be evaluated in line with the procedures below.	Upon issue of new permit
Sales Team	The initial stage of the WTF waste acceptance procedure commences via an enquiry from a potential customer. Information is received via a number of methods, the most common being e-mail, fax, telephone and post. These enquiries are generated in response to visits from the Sales Team, previous trading history, referrals from present customers and referrals from the Environment Agency.	Ongoing
Sales/ECA	The Environmental Control Advisor (ECA) is informed of the nature of the waste and shall carry out a full technical assessment. As a first step toward this aim, the following details shall be gathered: • Source and origin of the waste; • Discussion to be held between the Biffa Sales team and Celtic EnGlobe to establish suitability on the proposed material prior to undertaking the full technical assessment. • Information on the process producing the waste • Appearance of the waste e.g. smell, colour and physical form; • Code in accordance with the European Waste Catalogue or List of Wastes Regulations; • Data on the composition of the waste and the levels of contamination; • Any additional information that may require special precautions to be taken at the WTF.	Ongoing
ECA	Waste types acceptable at the WTF are limited to those detailed in Appendix C3_1 of the environmental permit variation application, December 2013. If the candidate waste is not classified in one of the categories above, it shall be rejected. Any asbestos containing wastes will be rejected. Wastes containing free tars or free oils and muddy materials will be rejected. Wastes only accepted if able to stand their own weight, not spread and have no free water will be rejected.	Ongoing
ECA	As part of the classification process described above, the waste will be assessed to determine whether it is hazardous or non-hazardous in accordance with Environment Agency guidance "WM3" and the associated "How to determine if waste oils and wastes which contain oils are hazardous".	Ongoing
ECA	The ECA will gather all of the above information and pass to the site staff at the Celtic EnGlobe process.	Ongoing

2.0	Assessment of Treatment Suitability	
Celtic EnGlobe	The waste shall be assessed to ensure that it comprises treatable substances. Such substances predominantly comprise of the following, but are not limited to: • A range of petroleum hydrocarbons (petrol, heating fuel, diesel, used oils, crude oil etc) • Polycyclic Aromatic Hydrocarbons (PAHs) • Pentochlorophenols (PCP) • Creosote • Phenols • Volatile Organic Compounds (VOCs) and Solvents If the waste contains no treatable materials, or materials which are likely to render the waste unacceptable at the landfill post-treatment, the waste will be rejected.	Ongoing
Celtic EnGlobe	Celtic EnGlobe will forward confirmation to the ECA that the waste is suitable for treatment together with a statement of any limitations on physical and chemical characteristics (particle size, pH, moisture content etc) which they wish to impose. Celtic EnGlobe will at this point advise of the acceptable frequency of incoming loads for treatment. They will also advise with regard to any relevant, additional parameters to be tested for compliance testing and output testing.	Ongoing

3.0	Waste stream Approval / Rejection	
Sales/ECA	A Customer Enquiry Form is generated on the computer network at this stage.	Ongoing
Sales/ECA/ Site Manager	All details gathered above will be entered into the waste assessment screens associated with the enquiry. Including the frequency of sampling. Once the assessment is completed and the waste approved for acceptance at the WTF, the enquiry is allocated a specific Approval Number and the Customer Enquiry form becomes the Technical Approval. If the waste is rejected the reasons for rejection are keyed onto the Customer Enquiry Form so that a letter of rejection may be generated informing the customer of our decision.	Ongoing
ECA	Following the allocation of an Approval Number to a specific waste all the technical data obtained during and following the appraisal, will be forwarded to the Site Manager and a copy forwarded to the WTF Manager.	Ongoing
Sales / Site Manager	A contract detail line for the waste will created on the Central System and a quotation created and sent to the customer. The contract detail line will require all vehicles to “tare off” following delivery of the waste.	Ongoing

4.0	Waste acceptance and booking in.	
WTF Manager	No waste will be accepted unless it has been pre-booked for disposal with the WTF manager at least 24 hours in advance. Upon booking in, the following information will be required: • Date of proposed deliveries to site • Confirmation of source and approval number (provided on the quotation paperwork) The Sales Team will confer with the Site Manager in relation to the number of the expected loads to the site weighbridge prior to the site opening each day.	Ongoing
Weighbridge Operator	The weighbridge operator will weigh all incoming loads and assign them to the appropriate contract detail line. If the waste is hazardous the system will demand the entry of the consignment note details. These details should be entered at this point but the paperwork should remain with the driver for completion & signing by Celtic EnGlobe staff. The driver should be directed to the WTF making them aware of the need to tare off after deposit of the waste.	Ongoing
Celtic EnGlobe	Celtic EnGlobe staff will inspect any associated hazardous waste consignment notes and sign them prior to deposit of any load. The paperwork will be returned to the delivery driver with an explanation that it must be handed in at the weighbridge. They will direct the deposit of the waste into the suitable treatment lot. During unloading, a visual inspection will be carried out. If the waste appears to be different to that specified in the approval, the material will be rejected.	Ongoing
Weighbridge Operator	When the driver returns to tare off the weighbridge operator will collect the signed hazardous waste consignment note (where relevant) and file it securely. The weighbridge ticket will be completed and appropriately signed.	Ongoing

5.0	WTF Reception - Compliance sampling and testing	5.0																
	All incoming wastes for treatment at the biopile process will be subjected to thorough pre characterisation as described above.	Ongoing																
Celtic EnGlobe	In addition to this, further testing will be performed to ensure that the materials accepted are consistent with the analysis and description supplied at the pre-characterisation stage. This is known as Reception and Compliance testing.	Ongoing																
Celtic EnGlobe	WTF Reception and Compliance Sampling methodology: Scale; A sample is to be collected from all consignments of soil delivered to the WTF. As the soil volume and number of lorry movements associated with each clients contract can vary the sampling of incoming soils is adjusted to ensure that representative data is obtained. The table below shows how the number of recovered samples relates to the volume of soil delivered under each contract. Table 1 – Reception – Sampling Frequency <table><tr><th>Volume of soil (m³)</th><th>No. of samples recovered for analysis</th></tr><tr><td>< 30</td><td>1</td></tr><tr><td>30-60</td><td>2</td></tr><tr><td>60-100</td><td>3</td></tr><tr><td>100-200</td><td>4</td></tr><tr><td>200 – 1,000</td><td>4 + 1 for every 100m³ after 200m³</td></tr><tr><td>1,000 - 2,000</td><td>12 + 1 for every 250m³ after 1000m³</td></tr><tr><td>2,000 +</td><td>16 + 1 for every 500m³ after 2000m³</td></tr></table> Sampling Population: The sampling exercise is intended to represent the volume of material accepted from each contaminated land site. Its purpose is merely to ensure that the material accepted is that which was described during the pre-characterisation stage and that the material being accepted does not significantly differ either qualitatively or quantitatively in terms of its chemical composition. Specify detailed sampling location: Samples to be collected immediately from the discharged waste upon reception at the WTF as per the Celtic EnGlobe Sampling Matrix. Specify date and time(s) of sampling; Each consignment of soil delivered to the WTF will be sampled once it has been deposited in the WTF & prior to being mixed with any existing material. The number of samples taken is dependent on the scale of the delivery (see Table 1 above).	Volume of soil (m³)	No. of samples recovered for analysis	< 30	1	30-60	2	60-100	3	100-200	4	200 – 1,000	4 + 1 for every 100m³ after 200m³	1,000 - 2,000	12 + 1 for every 250m³ after 1000m³	2,000 +	16 + 1 for every 500m³ after 2000m³	Ongoing
Volume of soil (m³)	No. of samples recovered for analysis																	
< 30	1																	
30-60	2																	
60-100	3																	
100-200	4																	
200 – 1,000	4 + 1 for every 100m³ after 200m³																	
1,000 - 2,000	12 + 1 for every 250m³ after 1000m³																	
2,000 +	16 + 1 for every 500m³ after 2000m³																	

	Specify persons to be present: The sampling of soils during the reception process is conducted by the WTF Manager or Celtic EnGlobe Technician. Identify equipment: Stainless Steel trowel, Sample containers (with air tight lids) and a permanent marker pen. Specify no. of samples to be collected: See Table 1 and associated notes above. Specify number of increments per sample: 8 (eight) Specify increment size/sample size: Approximately 200g removed with a trowel. Description of Sampling event:  The pile of discharged soil is split into quarters (visually) and 2 (two) incremental samples are taken from random locations within each quarter. These incremental samples are placed in plastic containers with air tight lids for subsequent mixing and sub-sampling. Detail Requirements for on site determinations: No onsite testing is undertaken on these samples Identify sample-coding methodology: Each sample should be labeled (written in indelible ink) twice. One label on the lid of the container and once on the outer body of the container both should contain identical information including: Contract and Line Number, Approval Number, Time of sample collection, date, signature of sampler. SUB-SAMPLING No sub sampling is undertaken with soils recovered at the point of reception. Each sample is considered to fairly represent the quality of the material delivered by the client. The number of samples submitted for external analysis (by an accredited laboratory) from each running contract is outlined in Table 1 and the associated notes above. PACKAGING, PRESERVATION, STORAGE AND TRANSPORT REQUIREMENTS Packaging: Samples are packaged into (1 litre) plastic containers, with airtight lids, as supplied by the laboratory. Each container is labelled using the sample coding specified above. These are packed into plastic cool boxes supplied by the laboratory along with a copy of the Chain of Custody documentation, specifying the analysis to be completed. Preservation: The addition of preservatives is not required. Storage: All soils awaiting analysis are stored at <4°C in a fridge up to the point of transport to the laboratory Transport: The samples should be collected and delivered to the laboratory using a propriety courier with proof of collection and delivery confirmed by time, signed and dated receipts.	
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	WTF Input Compliance Testing: The samples collected above should be submitted for the following analytical testing: - Metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se and Zn) - pH - Benzene, Toluene, Ethyl benzene and Xylene - Volatile Petroleum Hydrocarbons (C5-C10, C10-C12) - Extractable Petroleum Hydrocarbons (C10-C12, C12-C16, C16-C21, C21-C36, C36-C40, C10-C40)* - USEPA priority 16 PAHs⁺ * At the time of writing, BSRL are in the process of changing the carbon bands to reflect recent changes in hazardous waste assessment practises (A guide to Hazardous Waste Regulations HWR08 Version 3.1 – June 2007) ⁺ At the time of writing, BSRL are to revise the PAH compounds assessed within in coming soils. This is based on 7 compounds from the USEPA priority 16 plus the introduction introduce one additional PAH (Benzo (j) fluoranthene) to reflect recent changes in hazardous waste assessment practises. (A guide to Hazardous Waste Regulations HWR08 Version 3.1 – June 2007) Any additional parameters suggested by Celtic EnGlobe at stage 2.0.	Ongoing			
	Any material found to be inconsistent with the pre-characterisation description will be removed, at the waste producers cost, to an appropriately licensed disposal point.	Ongoing			
	Following treatment, further analysis of the treatable organic fraction will be performed to ensure the material's subsequent suitability for use as restoration material or as daily cover on site.	Ongoing			
	WTF Output Sampling methodology: <table border="1"><tr><td> Scale: A sample is to be collected from each batch (Biopile) of processed soils following treatment to confirm the level of decontamination. </td></tr><tr><td> Sampling Population: The sampling exercise is intended to represent the volume of material arising from each batch of soil that has been through the process. </td></tr><tr><td> Note - The size of a typical process batch (referred to as a Biopile) can vary from as little as 800 tonnes to over 4000 tonnes. Soils that are formed into treatment batches at the start of the treatment (Biopiles) contain soils </td></tr></table>	Scale: A sample is to be collected from each batch (Biopile) of processed soils following treatment to confirm the level of decontamination.	Sampling Population: The sampling exercise is intended to represent the volume of material arising from each batch of soil that has been through the process.	Note - The size of a typical process batch (referred to as a Biopile) can vary from as little as 800 tonnes to over 4000 tonnes. Soils that are formed into treatment batches at the start of the treatment (Biopiles) contain soils	Ongoing
Scale: A sample is to be collected from each batch (Biopile) of processed soils following treatment to confirm the level of decontamination.					
Sampling Population: The sampling exercise is intended to represent the volume of material arising from each batch of soil that has been through the process.					
Note - The size of a typical process batch (referred to as a Biopile) can vary from as little as 800 tonnes to over 4000 tonnes. Soils that are formed into treatment batches at the start of the treatment (Biopiles) contain soils					

	with similar, or compatible, chemical and physical properties. Once treatment begins sampling is based on stratified random sampling at a frequency of one composite sample for every 500 m³ in process. Specify detailed sampling location: Samples to be collected from Lots on the basis of a stratified random sampling plan. Specify date and time(s) of sampling: Each batch will be sampled once it is considered to have completed the treatment process to the required standard. The end point of each treatment is tracked through the collection and analysis of "in-process" soil samples over a period of typically 8 to 16 weeks. This work is conducted by Celtic EnGlobe in conjunction with an accredited analytical laboratory. Specify persons to be present: The sampling of soils during the reception process is conducted by the WTF Manager or a Celtic EnGlobe technician. Identify equipment: Stainless Steel trowel, Sample containers (with air tight lids) and a permanent marker pen. Specify no. of samples to be collected: 1 (one) composite sample from each 500m³ of soil within the batch (Biopile). Specify number of increments per sample: 8 (eight) Specify increment size/sample size: Approx 200g removed with a hand held auger at depths of between 0.5m and 1.5m below the surface. Description of Sampling event: The upper surface of the biopile is visually divided into 3 (three) meter wide strips. This equates to the area influenced by a single aeration pipe and contains approximately 400 tonnes of soil. This area is then visually divided once more into 4 (four) equal zones and 2 (two) incremental samples are taken from random locations within each quarter. These incremental samples are placed in a clean 25 litre plastic tub for mixing and sub-sampling. Detail Requirements for on site determinations: No onsite testing is undertaken on these samples SUB-SAMPLING Detailed procedure: Recovered soils from a single batch sampling process are placed in a clean 25 litre plastic container and mixed using a stainless steel hand trowel, for a minimum of two minutes, to generate a uniform sample. Each mixing operation is limited to a maximum of 2kg of soil at any one time. A 1 (one) kg sub sample from each mixing operation is transferred as a the sub-sample to a sample container (1 litre plastic container with air tight lid) One sub sample is submitted for chemical analysis for every 500m³ of soil held within the treated batch (Biopile) PACKAGING, PRESERVATION, STORAGE AND TRANSPORT REQUIREMENTS	
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	Identify sample-coding methodology: Each sample should be labelled (written in indelible ink) twice. Once on the lid of the container and once on the outer body of the container. Both should contain identical information including: Batch identification Number, Time of sample collection, date, signature of sampler. Sample numbers have the following structure: WTF -1-X-Y Where X corresponds to batch number and Y corresponds to the nth sample number taken. E.g. – if batch 14 underwent three separate sampling events, the samples would be numbered: WTF -1-14-1 WTF -1-14-2, and WTF -1-14-3 Packaging: Samples are packaged into (1 litre) plastic containers, with air tight lids, as supplied by the laboratory. Each container is labelled using the sample coding specified below. These are packed into plastic cool boxes supplied by the laboratory along with a copy of the Chain of Custody documentation, specifying the analysis to be completed. Preservation: The addition of preservatives is not required. All soils awaiting analysis are stored at <4°C in a fridge up to the point of transport to the laboratory. Storage: Store sample containers in a cool darkened environment (preferably a cold store) until collected. Transport: The samples should be collected and delivered to the laboratory using a propriety courier with proof of collection and delivery confirmed by time, signed and dated receipts.	
	WTF Output Testing: The samples collected above should be submitted for the analytical testing as detailed in WTF Input Compliance Testing.	Ongoing

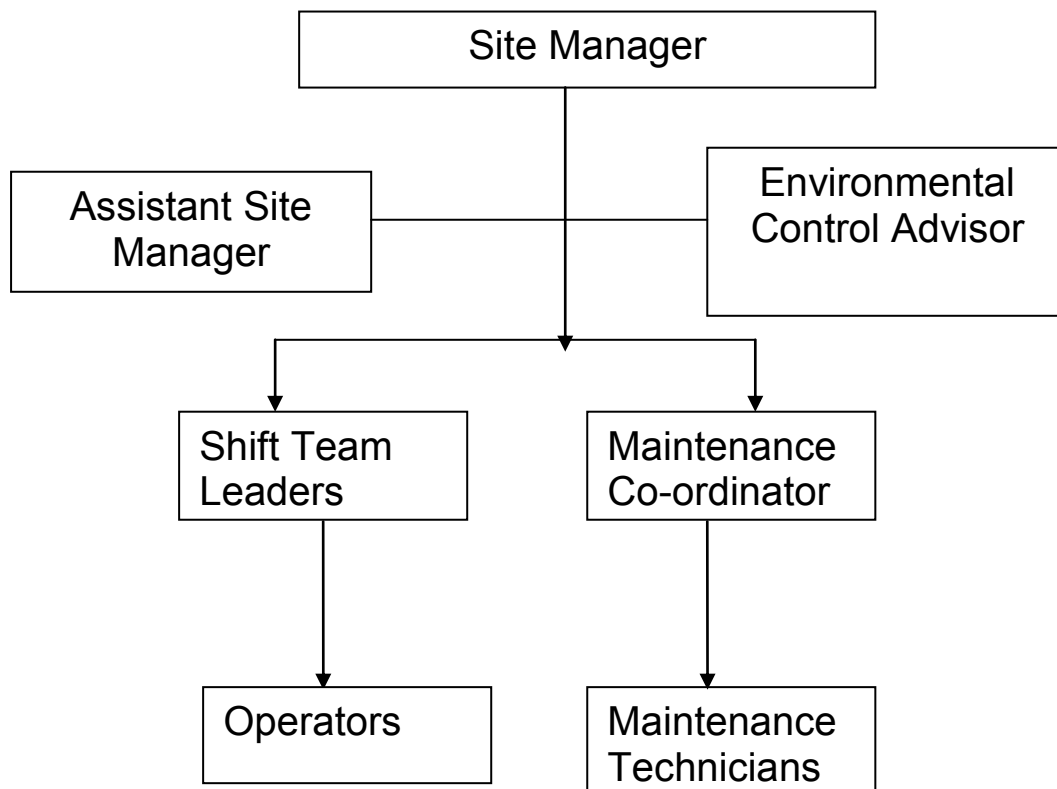
6.0	Acceptance of treated material at the landfill.	
ECA	Results of WTF output testing will be forwarded to the landfill ECA for review. All materials accepted from the WTF into the landfill must be subjected to a full technical assessment and approval in accordance with existing landfill procedures.	Ongoing
ECA	Material leaving the WTF following treatment will be coded under the list of Wastes as either: 19 13 02 An assessment will therefore be required to determine whether the material is hazardous or non-hazardous in accordance with Environment Agency guidance "WM3" using the Approved Supply List (ASL) as the reference source for substance classification. The biodegraded petroleum hydrocarbons present will have their classifications assessed individually rather than being classified on the basis of the complex mixtures (e.g. oil or petrol) from which they originally derived. 19 13 01* Any materials found to be hazardous will not be accepted at the landfill and will remain at the WTF to undergo further bioremediation or off site disposal to a suitably permitted facility.	Ongoing
ECA	Materials which are shown to be non-hazardous and which are shown to display levels of contamination below the Inter-departmental Committee for the Redevelopment of Contaminated Land (ICRCL) trigger thresholds for "Parks Playing fields and Open Spaces" (set out in ICRCL 59/83) may be used for restoration purposes Once CLEA based soil guideline values are available for "Parks Playing fields and Open Spaces" these will be used instead of the ICRCL thresholds. Materials which are shown to be non-hazardous which contain levels of contamination in excess of the trigger thresholds for "Parks Playing fields and Open Spaces" but do not exceed any CLEA thresholds for Industrial / Commercial end use, will be used as daily or intermediate cover on site Materials which are shown to be non-hazardous but which contain levels of contamination in excess of the trigger thresholds for "Parks Playing field and Open Spaces" and which are malodorous or which exceed any CLEA thresholds for Industrial / Commercial end use will be buried. It is anticipated that a site specific risk assessment will be undertaken within 6 months of the operation of the WTF to more clearly define the approval of restoration soil quality.	Ongoing

Appendix BATOT2

APPENDIX BATOT2

**WASTE TREATMENT FACILITY /
GREEN WASTE COMPOSTING FACILITY**

MANAGEMENT STRUCTURE



Appendix BATOT3

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INTRODUCTION

- 5.1 This chapter comprises an air quality assessment considering the potential for the proposed Multipurpose Waste Treatment and Remediation Pad (MWTRP) at the Trecatti landfill site to impact upon air quality in the vicinity of the application site.
- 5.2 This air quality assessment describes the scope, relevant legislation, assessment methodology and the baseline conditions currently existing at the application site and its surroundings. It then considers any potentially significant environmental effects that the proposed facility would have on this baseline environment; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual impacts after these measures have been employed.
- 5.3 As has been set out in Chapter 3 above, the proposed MWTRP would essentially comprise a Soils Treatment Facility (STF) and an Open Windrow Composting (OWC) facility. This will also require a variation to the Environmental Permit for the Trecatti landfill site which is regulated by Natural Resource Wales (NRW). As part of this Permit variation process, assessments of the risk associated with fugitive releases of dust, bioaerosols, Volatile Organic Compounds (VOCs) and odour will be required.
- 5.4 These risk assessments will be reviewed by NRW to ensure that the MWTRP operations will not cause significant pollution to the environment (including offence to human senses) or harm human health prior to issuing a Permit Variation. This chapter is therefore based on the presumption (as per the requirements of the Planning Policy Wales (PPW)) that the pollution control regime operates effectively (as summarised in paragraph 5.46).

SCOPE OF THE ASSESSMENT

Identification of Potential Impacts

Odour, Bioaerosols, VOC's and Dust

- 5.5 Given the handling of green waste, waste soils and the biologically active composting and bioremediation processes there is a potential risk for the generation of odour, bioaerosols, VOCs and dust. There is also the risk of generation of dust during construction activities.
- 5.6 The actual magnitude and nature of the generation and release of odour, bioaerosols, VOCs and dust from the process is dependent on the nature of the incoming wastes (green and soils) and the ongoing application of effective control measures. These control measures, which would include limitations on the type of wastes to be accepted at the facility; monitoring (of moisture, temperature and oxygen levels) and turning of windrows; negative aeration and biofiltration of biopiles and covering of biopiles; alongside monitoring regimes to demonstrate their effectiveness and management

procedures will be defined in the Odour Management Plan (OMP) and Environmental Management Systems for the MWTRP.

- 5.7 Adherence to the operational procedures defined in these documents will be a condition of the Environmental Permit for the site, compliance with which will be inspected and audited by NRW. Non-compliance with a condition of an Environmental Permit is an offence and can lead to enforcement action being taken by NRW.
- 5.8 It is therefore assumed, in accordance with the PPW that the pollution control regime will operate effectively (as summarised in paragraph 5.46) to ensure that the generation and release of odour, bioaerosols, VOCs and dust are mitigated to an appropriate extent to prevent unacceptable offsite impacts.

Vehicle Exhaust Emissions

- 5.9 Vehicle exhaust emissions resulting from traffic generated by the operation of the proposed MWTRP has the potential to affect local pollution levels, both within and surrounding the application site.
- 5.10 The pollutants of greatest concern in respect of the impact on public health, which are found in the exhaust emissions of road traffic and plant, are NO₂, PM₁₀, CO and benzene. Of these pollutants, NO₂ and PM₁₀ are present in the highest concentrations relative to air quality standards; where Air Quality Standard (AQS) objectives for these are met it is found that the AQS Objectives for the other pollutants are also met.

Required Scope of Assessment

- 5.11 The following potential releases to atmosphere have been considered:
- construction dust;
 - combustion pollutants from traffic exhausts; and
 - potential releases of odour, bioaerosols, VOCs and dust from operations.
- 5.12 The baseline scenario, against which any changes to impacts on local air quality would be assessed, includes the existing waste disposal operations undertaken at the Trecatti landfill site.

RELEVANT LEGISLATION, STANDARDS AND GUIDANCE

The Environment Act

- 5.13 The Environment Act 1995 requires the Welsh Government (alongside DEFRA) to produce a national air quality strategy containing standards, objectives and measures for improving ambient air quality and to keep these policies under review. In addition it sets out the responsibilities of local authorities on air quality management.

Air Quality Strategy

- 5.14 The 'Air Quality Strategy for England, Scotland, Wales and Northern Ireland' (AQS) 2007, contains air quality objectives based on the protection of both human health and vegetation (ecosystems). The Air Quality Strategy sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK.
- 5.15 These objectives have been set taking into account the AQS defined in the Air Quality Standards Regulations (Wales) 2010.
- 5.16 The AQS actually includes more exacting objectives for some pollutants than required by EC legislation. This assessment refers only to the UK air quality standards, as compliance with these standards will ensure that the less demanding European Air Quality limit values also being met.
- 5.17 A summary of the current air quality standards for relevant pollutants as detailed in the AQS 2007 is provided in Table 5-1 below.

Table 5-1
UK AQS Air Quality Standards

Pollutant	Concentration	Measured as
Nitrogen dioxide (NO ₂)	200 µg/m ³	1 hour mean (18 exceedences per year 99.79%ile of hourly averages)
	40 µg/m ³	Annual mean
Particulate matter PM ₁₀ (gravimetric)	40 µg/m ³	Annual mean
	50 µg/m ³	24 hour mean (35 exceedences per year ; 90.41%ile of 24-hr averages)

Local Air Quality Management (LAQM)

- 5.18 Part IV of the Environment Act 1995 requires local authorities to review and assess existing and predict future air quality in their areas as part of a rolling 'review and assessment' process. In areas where exceedence of one or more of the air quality objectives are predicted the local authority must designate an Air Quality Management Area (AQMA). Once designated; the local authority must then draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to take in pursuit of achieving the air quality objectives in the AQMA.
- 5.19 The core guidance documents for use by persons involved in Local Air Quality Management (LAQM), or considering the impacts of a development with the potential to impact on air quality as covered by LAQM, are LAQM TG (09)¹ and LAQM PG (09)².

¹ DEFRA, Local Air Quality Management Technical Guidance LAQM.TG(09), (February 2009).

² DEFRA, Local Air Quality Management Policy Guidance, LAQM.PG(09) (February 2009).

Environmental Permitting Regulations

- 5.20 The STF and OWC operations would be authorised under the EP Regulations by the NRW and would be regulated by its Environmental Permit.
- 5.21 Guidance Notes produced by DEFRA provide a framework for regulation of installations and additional Technical Guidance Notes produced by NRW are used to provide the basis for permit conditions as regards releases to air and mitigation measures.
- 5.22 Of particular relevance to the assessment of air quality impacts is Horizontal Guidance Note H1 - *Environmental risk assessment for permits*³. The purpose of this guidance note is to assist operators to assess risks to the environment and human health when applying for a permit under the EP Regulations. Annex F⁴ of the H1 Guidance Note is specifically concerned with emissions to air and the process of carrying out a bespoke risk assessment. Included in the H1 Guidance Note are Environmental Assessment Levels (EALs) for each pollutant in air against which impact of potentially significant releases may be assessed.

Standards and Guidance Relating to Odour

- 5.23 Currently, in the UK there are no statutory numerical standards or levels against which to assess odour nuisance, however relevant guidance has been published as discussed below.

NRW - H4 Odour Management Guidance

- 5.24 Guidance on odour management and assessment under the EP Regime has been published by the EA and adopted by NRW⁵. This guidance focuses on the minimisation of odour releases at source (where possible) through effective site management (to be demonstrated through ongoing process monitoring) and requires a detailed OMP for all sites where odour is likely to have an offsite impact.
- 5.25 The NRW's H4 guidance also provides a framework for assessing the odour risk presented by a site which follows the normal source–pathway–receptor approach. This approach is used for identifying mitigation requirements and residual environmental impacts, therefore these general principals have been applied in this assessment.

Institute of Air Quality Management (IAQM) Odour Guidance

- 5.26 The Institute of Air Quality Management (IAQM) is the professional body for air quality professionals and aim to be the authoritative voice for air quality by maintaining, enhancing and promoting the highest standards of working practice in the field.

³ Environment Agency, Horizontal Guidance Note H1 - Environmental risk assessment for permits v2.0 (April 2010).

⁴ Environment Agency, Horizontal Guidance Note H1 - Annex (f) Air Emissions. v2.2 (December 2011).

⁵ Environment Agency H4 Odour Management, March 2011.

- 5.27 The IAQM has published a guidance document⁶ specifically for assessing the impacts of odour for the purposes of planning applications as summarised in Appendix 5/3.

Standards and Guidance Relating to Bioaerosols

- 5.28 The Environment Agency (England) have undertaken extensive research regarding the potential health effects of bioaerosols from composting sites and have published a position statement⁷ which NRW have adopted.
- 5.29 This identifies acceptable levels for bioaerosols at sensitive receptor locations and sets limits (in terms of proximity to receptors, tonnages and operations) that can be carried out at composting facilities to ensure these levels are met.
- 5.30 Specifically for new composting facilities where receptors are located within 250m of sensitive receptors, a Site Specific Bioaerosol Risk Assessment (SSBRA) will be required and either quantities of waste (handled at any one time) must be less than 500 tonnes or any uncontrolled releases of high levels of bioaerosols (i.e. turning) must be subject to mitigation (i.e. negative aeration or enclosure).

Standards and Guidance Relating to Dust

- 5.31 For the purposes of environmental assessment, dust is generally categorised into two size classifications; 'suspended dust' with diameters below 10µm (PM₁₀), and 'deposited dust' with diameters between 10µm and 75µm. The impacts associated with PM₁₀ are related to potential health impacts, thus air quality standards exist for this fraction, whilst deposited dust is related to potential nuisance effects.
- 5.32 Research indicates that particles of >30µm which make up the greatest proportion of dust emitted from minerals sites will deposit within 100m, and particles of <30µm but >10µm may travel 250 to 500m⁸. To allow for this effect of distance, buffer zones are often defined by mineral and waste planning authorities around potentially dusty activities to ensure that sufficient protection is provided. The 1995 DoE Guidance⁹ recommended a stand-off distance of 100-200m from significant dust sources (excluding short-term sources), although it is recognised that these distances can be reduced if effective mitigation measures are identified and implemented.
- 5.33 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist – 'nuisance' is a subjective concept and its perception is

⁶ IAQM Guidance on the assessment of odour for planning. Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/odour-guidance-2014

⁷ Position Statement 031: Composting and potential health effects from bioaerosols: our interim guidance for permit applications. Environment Agency. Version 1.0, 1st November 2010.

⁸ Arup, The Environmental Effects of Dust at Surface Mineral Workings. (Report to the DETR 1995).

⁹ Based upon research document - DETR, The Environmental Effects of Dust from Surface Mineral Workings (Dec 1995)

highly dependent upon the existing conditions and the change which has occurred.

- 5.34 Guidance for control of dust from construction has been produced by the Institute for Air Quality Management (IAQM)¹⁰. The IAQM guidance document provides site evaluation guidelines based upon the size of site, proximity to receptors, nature of activities and sensitivity of receptors and then prescribes a range of best practice mitigation measures to be applied at an application site as summarised in Appendix 5/1.

Traffic Exhaust Emissions - Regulation and Guidance

- 5.35 The emission of combustion pollutants from vehicle exhausts is regulated by European Directives with the phasing in of more stringent standards for new vehicles over the past 20 years for a range of pollutants including NO_x, CO, unburnt hydrocarbons and Particulate Matter. The actual emission limits vary depending on vehicle size (i.e. car, LDV, HDV) and fuel type (i.e. diesel or petrol).
- 5.36 The latest standard, 'Euro 6', applies to new type approvals from September 2014 and all new cars from September 2015 and requires significantly lower NO_x limits for diesel vehicles.
- 5.37 Similarly for HGV's, Euro VI is the current standard and also requires significant reductions in NO_x (and PM) emissions from the previous Euro V standard.
- 5.38 NRMM is defined as any mobile machine, item of transportable industrial equipment, or vehicle (with or without bodywork) that is:
- not intended for carrying passengers or goods on the road;
 - installed with a combustion engine - either an internal spark ignition (SI) petrol engine, or a compression ignition diesel engine.
- 5.39 In the UK, the legislation governing emissions produced by engines fitted in NRMM is the Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999, as amended which sets emission standards for carbon monoxide (CO), hydrocarbons, oxides of nitrogen (NO_x) and particulate matter (for diesel engines only).
- 5.40 The UK Design Manual for Roads and Bridges (DMRB) methodology (2007)¹¹ facilitates the prediction of pollutant concentrations near to roads, as a result of vehicle emissions. Predicted concentrations at receptors are made using an empirical relationship using different emission factors for different vehicle types. These emission factors change from year to year as the technology in the vehicle fleet improves.

¹⁰ Institute of Air Quality Management, Guidance on the assessment dust from demolition and construction. February 2014.

¹¹ Design Manual for Roads and Bridges Vol. 11 Environmental Assessment (Consolidated Edition), Section 3, Part 1 Air Quality (May 2007, with revisions 2009)

- 5.41 Owing to improvements in vehicle technology, the DMRB assumes that emissions per vehicle kilometre will fall with time. The vehicle improvements include progressive refinements in engine performance, the introduction of three-way catalytic converters and particle traps for diesel vehicles. As a consequence of these reductions in emission rates, predicted future pollutant levels can be lower than present day levels close to roads where traffic flows do not change significantly
- 5.42 The IAQM and EPUK have together published guidance¹² to ensure that air quality is properly accounted for in the development control process. It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed. Importantly, it sets out a recommended approach to assess the significance of impacts as summarised in Appendix 5/2.
- 5.43 The guidance also states that best-practice design and operational measures should be recommended and applied to all developments that require an Air Quality Assessment, to reduce emissions and human exposure to poor air quality. Additionally, where appropriate, further measures are also suggested to off-set emissions, depending on the nature and scale of the development proposals.

Planning Policy Context

- 5.44 National, regional and local planning policy documents have been reviewed in Chapter 4 above. Policies relevant to Air Quality and this Planning Application are summarised below.

Planning Policy Wales (PPW)

- 5.45 PPW indicates (PPW para 12.7.2) that the impact of proposed waste management facilities on the amenity of local people and the natural and build environment must be adequately assessed. Where adverse impacts on amenity or the environment cannot be mitigated, planning permission should be refused.
- 5.46 PPW also stresses that Planning Authorities should operate on the basis that the relevant pollution control regimes will be properly applied and enforced by other agencies and they should not seek to control through planning measures, matters that are the proper concern of the pollution control authority (PPW para 13.10.2). This is of relevance to the Environmental Permit that will be required for the MWTRP and similar advice is provided in TAN21.
- 5.47 However, PPW continues by noting that where pollution considerations affect the use and development of land, then these may be material planning considerations. This provision extends to air quality objectives and the local authority's Air Quality Management Areas (ref para 13.10.3).

¹² Land-Use Planning & Development Control: Planning for Air Quality. EPUK & IAQM, May 2015.

Technical Advice Note 21 - Waste

- 5.48 TAN21 identifies (para 2.11 of TAN21) that planning authorities should ensure that all types of waste management facilities are located where a high level of protection for the environment and public can be ensured (as per the requirements of Article 13 of the Waste Framework Directive). In particular:
- (a) without risk to water, air, soil, plants or animals;*
 - (b) without causing a nuisance through noise or odours; and*
 - (c) without adversely affecting the countryside or places of special interest.*
- 5.49 TAN21 also identifies (para 2.12 of TAN21) that planning authorities should take account of the ability of Environmental Permits to control the operations and not duplicate controls and promotes parallel tracking of applications for both planning and permitting.
- 5.50 Annex C of TAN21 identifies potential detailed planning considerations for waste management facilities, which includes bioaerosols (para 1.4 of Annex C), dust (Section 3 of Annex C), odour (Section 10 of Annex C), and vehicle exhaust pollutants (para's 1.3 & 14.14 of Annex C).

Local Planning Policy

- 5.51 Caerphilly County Borough Local Development Plan up to 2021 (Adopted November 2010) contains policy CW2 'Amenity' which states:
- Development proposals must have regard for all relevant material planning considerations in order to satisfy the following requirements:*
- A There is no unacceptable impact on the amenity of adjacent properties or land.*
- 5.52 The Merthyr Tydfil Local Development Plan (LDP) 2006-2012 (adopted May 2011) contains policy TB10 relating to Waste Management facilities:
- Development proposals for new and expanded in-building and open-air waste management facilities other than those involving new landfill capacity/sites will be permitted subject to consideration against the following criteria:-*
- [...]*
- 2. the proposal must not have an unacceptable impact on the health and amenity of neighbouring land uses including the effects of dust and other emissions, noise and odours;*

ASSESSMENT METHODOLOGY

General

- 5.53 This assessment is based upon a comparison of the baseline situation against the air quality impacts resulting from the development proposal scenario.

- 5.54 Each of the activities associated with the proposal have been assessed in a staged approach for potential air quality impacts with the assumption that the pollution control regime enforced by NRW is applied effectively. The methodology used in each assessment is presented in the sections below.

Dust and Bioaerosols

- 5.55 There are potential risks of dust generation onsite through the handling of waste, soils and earthworks, associated with both construction and operation. For such operations the common concern regarding dust emissions is their potential 'nuisance' effect.
- 5.56 The potential nuisance effects of dust emissions are related to emissions of large and fine particles, generally larger than 30 microns in diameter. Deposition of these particles onto surfaces, such as windows and cars, can cause soiling that, if sufficiently great; will sometimes be considered to be a 'nuisance'.
- 5.57 To assess the impacts associated with particulate matter releases during the construction phase a qualitative assessment has been undertaken using guidance published by the Institute for Air Quality Management (IAQM) as detailed in Appendix 5/1.
- 5.58 This assessment of impacts also examines the potential dust and bioaerosol generation associated with the operation of the OWC and STF facilities. The assessment takes into account the prevailing meteorological conditions at the site; particularly the frequency of wind speeds capable of carrying airborne dust (greater than 3m/s)¹³ and bioaerosols, the frequency of rainfall considered sufficient to effectively suppress wind-blown dust emissions (greater than 0.25 mm/day¹⁴) in assessing dust nuisance impacts.
- 5.59 This assessment considers:
- the nature, scale and duration of activities undertaken on site in order to determine the potential magnitude of releases;
 - the potential magnitude of released dust and bioaerosols;
 - separation distances between sources and receptors; and
 - local meteorological conditions.

Odour and VOCs

- 5.60 Given the handling and composting of green waste and bioremediation of soils contaminated with hydrocarbons, there is a potential risk for the release of odour and VOCs. For such operations the common concern regarding odour resulting from the VOC emissions is their potential 'nuisance' effect.

¹³ K. W. Nicholson (1988) A review of particle re-suspension. Atmospheric Environment Volume 22, Issue 12, 1988, Pages 2639-2651

¹⁴ US Environmental Protection Agency AP-42 Section 13.2.2

- 5.61 To assess the impacts associated with the potential odour and VOC releases during the operational phase a qualitative assessment has been carried out in accordance with the IAQM guidance. This assessment considers:
- the potential magnitude of release;
 - separation distances between sources and receptors;
 - local meteorological conditions; and
 - sensitivity of receptors.

Traffic Exhaust Emissions Risk Assessment

- 5.62 The criterion for assessment of air quality contained within the latest DMRB¹⁵ guidance (207/07) focuses on roads with relatively high changes in flows or high proportion of HDV traffic. Affected roads are defined as those that meet any of the following criteria:
- road alignment will change by 5 m or more; or
 - daily traffic flows will change by 1,000 AADT¹⁶ or more; or
 - Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or
 - daily average speed will change by 10 km/hr or more; or
 - peak hour speed will change by 20 km/hr or more.
- 5.63 Only properties and “*Designated Sites*” within 200m of roads affected by the project need be considered. If none of the roads in the network meet any of the traffic/alignment criteria or there are no properties or relevant Designated Sites near (within 200m) the affected roads, then the impact of the scheme can be considered to be ‘neutral’ in terms of local air quality and no further air quality assessment is required.
- 5.64 The EPUK/IAQM guidance sets lower thresholds for increases in vehicle movements; specifically in relation to the development an air quality assessment would be required for a change of HDV flows of
- more than 25 AADT within or adjacent to an AQMA; or
 - more than 100 AADT elsewhere.
- 5.65 For roads where either the DMRB or EPUK/IAQM criteria are met the predicted environmental concentration at receptors within 200m will be predicted using the ‘DMRB screening method’ and the latest ‘NO₂ from NO_x calculator’.

Air Quality Significance Criteria

- 5.66 The assessment of significance or air quality impacts within this assessment can be either ‘Adverse’ or ‘Beneficial’ and the magnitude will be judged as ‘Negligible’, ‘Slight’, ‘Moderate’, or ‘Substantial’, as detailed in Appendices 5/1 to 5/3.

¹⁵ Design Manual for Roads and Bridges

¹⁶ Annual Average Daily Traffic

BASELINE ENVIRONMENT

- 5.67 As described in Chapter 2 the Trecatti landfill site straddles the boundary between Caerphilly County Borough Council (CCBC) and Merthyr Tydfil County Borough Council (MTCBC) with the boundary running North-South through the site.
- 5.68 The Trecatti landfill Site is located approximately 250m south-east of the village of Dowlais close to the town of Merthyr Tydfil in South Wales. The land to the north, east and south of the site is predominantly agricultural with the outskirts of Dowlais village to the north-west. There are some isolated properties to the north and a commercial / industrial area on the outskirts of Dowlais.
- 5.69 The application site is located toward the eastern half of the Trecatti landfill site approximately 0.5km south east of extent of Dolwais.

Baseline Air Quality

Local Air Quality Management

- 5.70 The development has the potential to impact upon air quality of both MTCBC and CCBC and therefore consideration of both Councils LAQM assessments has been undertaken.
- 5.71 CCBC has regularly reviewed and monitored air quality within its boundary and has declared an AQMA within Caerphilly town centre for the annual objective for NO₂, primarily as a result of traffic congestion and at Hafod-yr-nys. These AQMA's are over 15km to the southeast of the application site and unlikely to be affected by the proposed development.
- 5.72 MTCBC has regularly reviewed and monitored air quality within its boundary and has not declared any AQMA's or identified any areas of concern.

Automatic Monitoring Data

- 5.73 There are two automatic monitors located in the vicinity of the application site, both of which monitor particulate matter (PM₁₀ and PM_{2.5}) in response to potential emissions of particulate matter from the nearby Ffos-y-fran surface coal mine.
- 5.74 In MTCBC a Tapered Elemental Oscillating Microbalance (TEOM) has been located at the Twynyrodyn Primary School since 2007 to track any changes in particulate levels during the operation of the nearby Ffos-y-fran surface coal mine.
- 5.75 In CCBC a Beta Attenuation Monitor (BAM) has been in operation since May 2012 due to concerns raised by residents regarding potential particulate emissions from the open cast coal scheme. A summary of the monitoring results is presented in Table 5-2.

Table 5-2
Automatic PM₁₀ & PM_{2.5} Monitoring Data (µg/m³) – Annual average

Site		2009	2010	2011	2012	2013
Twynyrodyn Primary School (MTCBC)	PM ₁₀	14.0 (5)	13.8 (5)	16.0 (8)	Not yet reported	
	PM _{2.5}	5.8	5.7	6.1	Not yet reported	
Fochriw (CCBC)	PM ₁₀		Not monitored			14.0
	PM _{2.5}		Not monitored			10.0

Table Note: (Number) indicates number of exceedences of the 24-hr PM₁₀ AQO of 50µg/m³; 35 exceedences per year are allowed.

Non-automatic monitoring data

- 5.76 The concentrations of nitrogen dioxide are monitored by both CCBC and MTCBC via a network of diffusion tubes. A summary of those in proximity to the application site is presented in Table 5-3.

Table 5-3
NO₂ Diffusion Tube Monitoring Data (µg/m³) – Annual average

Site	2009	2010	2011	2012	2013	2014
Victoria Street, Dolwais (MTCBC - WAQF32)	Not monitored	29.0	26.2	Not yet reported		
Upper Dolwais (MTCBC – WAQF25)	20.7	27.0	24.8	Not yet reported		
Pontlottyn Road, Fochriw (CCBC -61)		Not monitored		10.0	10.0	10.0

Defra Background Maps

- 5.77 Background pollutant concentrations have been obtained from the Defra Background Air Pollution Maps. These 1km grid resolution maps are derived from estimated background annual mean pollutant concentrations which are then projected to future years. A summary of the estimated annual mean background concentrations for the grid square containing the site (308500, 207500) are presented in

5.78 Table 5-4.

Table 5-4
Estimated Annual Mean Background Concentrations for 2015

Pollutant	Average ($\mu\text{g}/\text{m}^3$)
PM ₁₀	12.7
PM _{2.5}	8.6
NO ₂	10.5

Dust

- 5.79 Extensive dust monitoring in the vicinity of the application site is undertaken by the operators (Miller Argent) of the nearby Ffos-y-fran surface coal mine and a summary of the data¹⁷ does not indicate that significant adverse dust impacts are occurring.

Odour

- 5.80 There are no quantitative measurements of existing odour concentration available from the vicinity of the application site which comprises an active landfill.
- 5.81 A significant number of complaints in relation to odour attributed to the landfill site have been reported over recent years but none in recent months (since April 2015) following implementation of an action plan agreed with NRW to increase the efficacy of landfill gas collection.

Sensitive Receptors

- 5.82 The term 'sensitive receptors' includes any persons, locations or systems that may be susceptible to changes as a consequence of the proposed development.
- 5.83 Primarily in relation to odour, VOCs and dust the most sensitive receptors would be residential properties and amenity areas, with commercial or industrial receptors typically being less sensitive due to lower frequency of occupation and expectations.
- 5.84 Sensitive receptors within close proximity to the MWTRP are presented in Table 5-5 below and shown on Drawing TR 5/1.

Table 5-5
Sensitive Receptor Locations

Receptor	ID	X-coordinate	Y-coordinate	Elevation
Cwm Bargoed Bungalow	1	309040	208480	371.2
Blaen Dowlais St (Loc A)	2	307647	207849	355.9
Blaen Dowlais St (Loc B)	3	307624	207828	354.7
Blaen Dowlais St (Loc C)	4	307595	207894	354.8

¹⁷ Chapter 12 – Air Quality of Environment Statement for Nant Llesg Surface Mine, located to the East of Trecatti.

Receptor	ID	X-coordinate	Y-coordinate	Elevation
Blaen Dowlais St (Loc D)	5	307546	207899	353.8
High St (Loc A)	6	307694	208150	365.8
High St (Loc B)	7	307648	208098	359.9
High St (Loc C)	8	307512	208055	358.5
High St (Loc D)	9	307566	208110	362.0
High St (Loc E)	10	307359	207980	349.0
High St (Loc F)	11	307272	207937	336.1
Dennithorne Dr (Loc A)	12	307325	207771	330.5
Dennithorne Dr (Loc B)	13	307302	207842	332.7
Japonica Drive	14	307269	207741	330.3
Blanche Street	15	307256	207979	338.0

5.85 There are no nationally designated ecological sites within 2km of the application site and no international (European) designated sites within 10km of the site.

Meteorology – Dispersion of Emissions

5.86 The most important climatological parameters governing the atmospheric dispersion of pollutants are as follows:

- wind direction determines the broad transport of the emission and the sector of the compass into which the emission is dispersed; and
- wind speed will affect ground level emissions by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment.

5.87 Rainfall is also an important climatological parameter in the generation of dust. Sufficient amounts of rainfall can suppress dust at the source and eliminate the pathway to the receptor. Rainfall greater than 0.25mm per day is considered sufficient to suppress dust emissions¹⁸.

Rainfall

5.88 Relevant rainfall data applicable to the site has been obtained from the Meteorological Office website for Tredegar (1981 – 2010), which is located approximately 6km to the east of the application site. The average number of days with rainfall greater than 1mm is 166.5 days per year (46% of days/year).

Local Wind Speed and Direction Data

5.89 The closest weather station with sufficient and suitable records of wind direction and wind speed is Rhoose Airport Meteorological Station. This meteorological station is located approximately 40km south of the application site.

¹⁸ US Environmental Protection Agency AP-42 Section 13.2.2

- 5.90 A wind rose for the average conditions recorded at Rhoose Airport over a five year period from 2003-2007 is presented below in Figure 5-1.

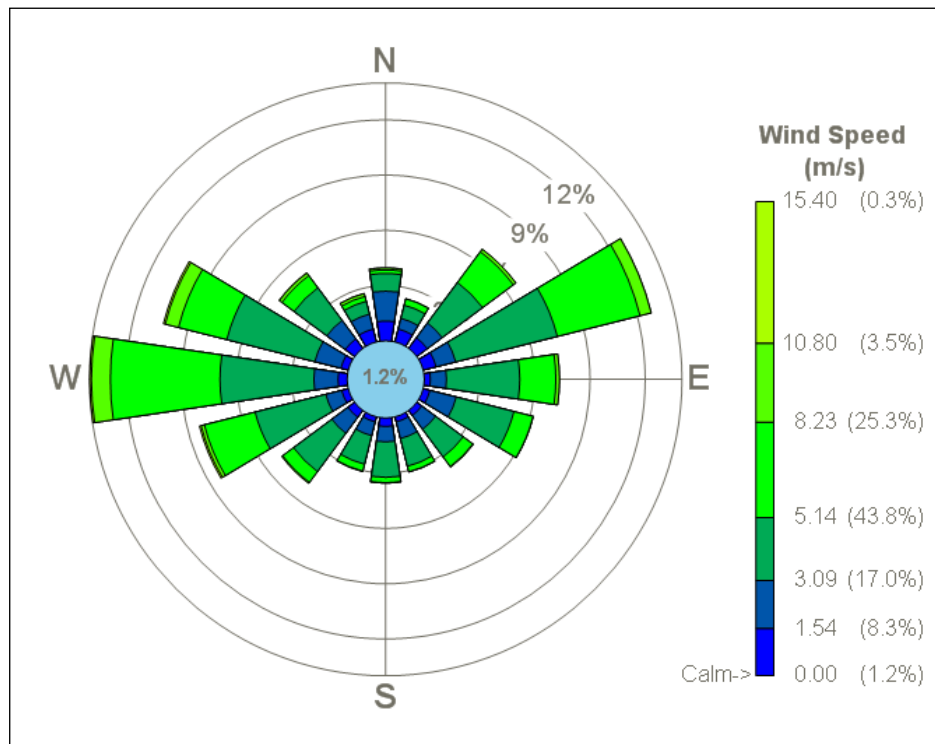


Figure 5-1
Windrose for Rhoose Airport Meteorological Station (2003 – 2007)

- 5.91 The predominant wind directions are from the westerly and easterly quadrants. Moderate to high speed winds ($>3.1\text{m/s}$), capable of dust generation occur for approximately 75% of the time.
- 5.92 High wind speeds tend to lead to odour emissions being more rapidly dispersed and diluted due to turbulence, while low wind speeds inhibit the dilution of odours. Low wind speed conditions of less than 1.5m/s occur for approximately 10% of the time.

Topography

- 5.93 The presence of elevated terrain can significantly affect the dispersion of pollutants and the resulting ground level concentration in a number of ways. Elevated terrain can increase turbulence and, hence dispersion, and can serve to channel airflows.
- 5.94 The topography in the vicinity of the application site is complex, of particular significance is the elevation of the landfill site (390m to 445m AOD) above the local receptors (330m to 370m AOD).

ASSESSMENT OF IMPACT, MITIGATION AND RESIDUAL EFFECTS

Construction Phase

Vehicular Exhaust Pollutants

- 5.95 Exhaust emissions associated with construction vehicle movements, particularly HDV movements and Non Road Mobile Machinery (NRMM) have the potential to result in increased concentrations of combustion related pollutants, such as NO₂ and PM₁₀ in the vicinity of the development site.
- 5.96 The number of HGVs associated with construction operations is not anticipated to result in a significant increase in movements (particularly relative to the IAQM or DMRB criteria). Allied to this, the duration of movements would be short term in nature and are therefore not considered further within the context of this assessment.
- 5.97 Similarly the on-site movements of NRMM are not considered to be significant in terms of numbers or duration and would be in excess of 200m from receptor locations. Therefore, in accordance with the DMRB, emissions from NRMM have not been considered further within the context of this assessment.

Dust

- 5.98 As defined within the IAQM guidance a dust assessment is as required where there is:
- a human receptor with 350m of the site; or
 - a human receptor within 50m of the access roads (up to 500m from the site entrance);
 - an ecological receptor with 50m of the site; or
 - an ecological receptor within 50m of the access roads (up to 500m from the site entrance).
- 5.99 As shown on Drawing TR 5/1, there are no 'human receptors' within 450m of the application site boundary or 50m of the site access road, and no habitat sites within 50m of the site boundary or within 50m of the site access roads (assessed up to 500m from the site entrance, as a worst-case scenario).
- 5.100 Therefore, a more detailed assessment of construction dust can be screened out from this assessment and potential impacts classified as 'negligible'.

Mitigation

- 5.101 Whilst given the location of the site the potential impacts are classified as 'negligible' the following good practice mitigation measures would be adopted:
- vehicles would be sheeted to prevent loss of materials off-site;

- regular inspection of local roads to check for dust deposits and any deposits removed;
- all vehicles would use the wheel wash onsite;
- use water as a dust suppressant as and when required; and
- a trained site manager (or his deputy) would be on site during working hours to be responsible for proper implementation of dust mitigation measures.

Operational Phase

Source of Emissions

Dust & Bioaerosols

- 5.102 It is considered the main potential release points for dust and bioaerosols from the proposed MWTRP would be from the compost windrows (particularly during formation, turning and screening), shredding of green waste, the biopiles, handling of contaminated soils (transfer and biopile formation) and haul roads at the site.
- 5.103 The amount of dust generated and the presence of any bioaerosols from each activity would depend on the nature of the material and crucially upon their moisture content. Dust emissions are greatest when there is a plentiful supply of small dry particles. Therefore potential for fugitive dust and bioaerosol emissions would be the greatest when working with dry materials (containing < 15% water by weight) and particularly under windy conditions (>3m/s wind speed).
- 5.104 Vehicle movements would be on existing haul roads within the site. Particulate emissions from road surfaces are primarily due to re-suspension of loose material present on the road surface (either due to wind-blow or entrainment) and through the erosion of the haul road.

Odour and VOC

- 5.105 The main sources of odour and VOCs would be from the compost windrows (particularly during formation, turning and screening), shredding of green waste and from soils containing volatile organic contaminants.
- 5.106 The main point source atmospheric release point from the STF process is the biofilter. The biofilter provides an active filter that removes potentially odorous and gaseous biodegradation products from the air leaving the biopiles and minimises emissions of VOC and odour. Following treatment of the air stream there would be a residual odour and VOC release from this point.

Mitigation Measures

- 5.107 Extensive mitigation measures for dust, bioaerosol, odour and VOC management and control would be required at both the OWC and STF and defined in the Environmental Permit. The effective application of these mitigation measures would continue to be monitored by NRW as part of their

regulatory role and are therefore not duplicated in detail in this assessment, but they are assumed to be effective for the purposes of the assessment of potential impacts.

5.108 The primary environmental design measures to mitigate the risk of dust, bioaerosols, VOC and odour generation and release during the composting process (including shredding, turning and screening), waste reception, biopile formation and bioremediation process are as follows:

- limitation of waste types (and ages) accepted to exclude dusty or odorous types (will be regulated by the NRW as part of the permit);
- extensive monitoring (as defined in the OMP) of the process parameters within the windrows and biopiles to ensure adequate moisture and oxygen content and that the biological processes occur effectively;
- negative aeration of biopiles to ensure aerobic bioremediation process and minimise the requirement to turn the biopiles;
- abatement of air extracted from the biopiles by biofiltration;
- enclosure of the biopiles under covers as necessary;
- adoption of good housekeeping measures to include regular cleaning of working areas and access roads;
- limit of vehicle speed limit, watering of haul roads, sheeting of vehicles and use of wheel wash; and
- when handling waste materials, in the event of unacceptable dust emission temporarily cease activities and avoid double handling of material.

Assessment of Impacts

Dust and Bioaerosols

5.109 Dust and bioaerosol emissions would be suppressed by the required moisture levels of the windrow and biopiles and by local rainfall which would significantly reduce the magnitude of emissions.

5.110 In terms of potential impacts, the prevailing wind directions for moderate to high winds expected at the application site is from the west and east. Therefore receptors located to the east and west of the application site are considered to be at a higher risk of experiencing impacts.

5.111 As shown on Drawing TR 5/1, there are no 'human receptors' within 450m of the application site boundary in any direction, well in excess of the distances where potential dust (typically impacts are limited to 100-200m) and bioaerosols (typically impacts are below background levels beyond 250m) impacts could occur.

5.112 It is therefore considered that the risk associated with potential dust and bioaerosol emissions from the OWC and STF operations is 'negligible'.

Odour and VOCs

- 5.113 The OWC and STF activities are considered to be potentially a significant odour source given the quantities of waste and applied processes; the OWC and STF therefore represent a 'large' source in the context of the IAQM guidance.
- 5.114 In terms of the pathway between the source and residential receptors (which are classified as highly sensitive); the closest residential receptors are over 450m from application site and low wind speeds towards these receptors only occur for a low percentage of time. Therefore, this is considered to represent an 'ineffective pathway' (i.e. significant dispersion would occur between source and receptor).
- 5.115 The risk of odour exposure can therefore be classified as a 'low risk; in accordance with the IAQM methodology. Given the highly sensitive nature of the receptors; this results in a 'slight adverse effect' of odour at the residential receptors.

Traffic Exhaust Emissions

- 5.116 As detailed in Chapter 7 (Transport Assessment) the proposed development would not result in a significant increase of vehicle movements to the Trecatti landfill site. The number of HDV movements associated with the OWC and STF operations is expected to be 49 AADT and in reality some of these movements would be replacing existing traffic associated with the landfill.
- 5.117 Assuming all these vehicle movements associated with the MWTRP are additional, using the screening criteria within the DMRB and EPUK/IAQM guidance, none of the screening criteria are met. Therefore the scheme can be considered to be 'neutral' in terms of local air quality and no further air quality assessment or vehicle exhaust emissions is required.

CUMULATIVE IMPACTS

- 5.118 There is a risk for cumulative impacts of dust and odour to occur between the OWC and STF operations and the ongoing landfilling and the nearby Ffos-y-fran surface coal mine/reclamation project.
- 5.119 In relation to dust, the potential risk of impact from the operation of the OWC and STF is assessed to be insignificant. Therefore given the control measures in place and the results of ongoing monitoring in the locality, the risk of cumulative impacts is also considered to be 'insignificant'.
- 5.120 In relation to odour, there is a risk for cumulative impacts to occur between the OWC and STF and ongoing activities at the Trecatti landfill site. It is considered that the application of effective odour control measures at the landfill site (as currently in place) alongside those that would be required for the OWC and STF by NRW, can prevent significant adverse cumulative impacts.

CONCLUSIONS

- 5.121 An assessment of the air quality impacts associated with the proposed MWTRP at the existing Trecatti landfill site has been undertaken. The MWTRP would comprise an Open Windrow Composting (OWC) facility and Soil Treatment Facility (STF). The assessment has considered:
- Construction dust;
 - Air Quality Strategy Pollutants from vehicle exhausts; and
 - Odour, VOCs, dust and bioaerosol emissions during the operational phase.
- 5.122 The assessment of construction dust has found that impacts are negligible but mitigation measures are recommended in accordance with best practice.
- 5.123 There is predicted to be 49 AADT additional traffic movements associated with the OWC and STF and therefore the impact associated with vehicle exhaust emissions is considered to be 'insignificant'.
- 5.124 In terms of dust, bioaerosols, VOCs and odour from the OWC and STF during operation, the permit variation would not be approved by NRW unless they are satisfied that operations would not cause significant pollution to the environment (including offence to human senses) or harm human health.
- 5.125 Given the potential identified for the release of dust, bioaerosols and VOCs from the OWC and STF, the significant distance between source and receptors (>450m), prevailing meteorological conditions, and the mitigation measures that would be required by NRW; the residual impact is considered to be 'insignificant'.
- 5.126 Given the potential identified for the release of odour from the OWC and STF, the significant distance between source and receptors (>450m), prevailing meteorological conditions, and the mitigation measures that would be required by NRW; the residual impact is considered to be 'slight adverse'.
- 5.127 There is a risk for cumulative dust impacts to occur between the OWC and STF and ongoing activities at the Trecatti landfill site and the nearby Ffos-y-fran surface coal mine. However given the control measures in place and the results of ongoing monitoring in the locality, these cumulative impacts are considered to be 'insignificant'.
- 5.1 Finally, there is a risk for cumulative odour impacts to occur between the OWC and STF and ongoing activities at the Trecatti landfill site. However, it is considered that the adoption of effective control measures at the landfill site and those that would be required for the OWC and STF by NRW, can prevent significant adverse cumulative impacts.