



Sustainable Solutions, Assured

WRM

wrm-ltd.co.uk

01943 468138



BAT Assessment

v1.0

Environmental and sustainability solutions provided to
Newbourne Farm Composting Limited



This report was prepared by **Walker Resource Management Ltd (WRM)** within the terms of its engagement and in direct response to a scope of services. This report is strictly limited to the purpose and the facts and matters stated in it and does not apply directly or indirectly and must not be used for any other application, purpose, use or matter. In preparing the report, WRM may have relied upon information provided to it at the time by other parties. WRM accepts no responsibility as to the accuracy or completeness of information provided by those parties at the time of preparing the report. The report does not take into account any changes in information that may have occurred since the publication of the report. If the information relied upon is subsequently determined to be false, inaccurate, or incomplete then it is possible that the observations and conclusions expressed in the report may have changed. WRM does not warrant the contents of this report and shall not assume any responsibility or liability for loss whatsoever to any third party caused by, related to, or arising out of any use or reliance on the report howsoever. No part of this report, its attachments or appendices may be reproduced by any process without the written consent of WRM. All enquiries should be directed to WRM.

Document Title	BAT Assessment	
Client	Newbourne Farm Composting Limited	
Revision	v1.0	
Date	05/06/2025	
Document Reference	BAT Assessment	
Project Reference	1452/J05	
Author: Bryanna Heaton		Reviewer: Martin Ropka
		

Copyright ©

All material on these pages, including without limitation text, logos, icons and photographs, is copyright material of Walker Resource Management Ltd (WRM). Use of this material may only be made with the express, prior, written permission of WRM. This document was produced solely for use by the named client to whom the document refers. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of WRM. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.

REVISION LOG

Revision	Details	Date
0.1	Initial draft	07/03/2025
0.2	Update following info request	17/03/2025
0.3	Internal review	31/03/2025
0.4	Update following client review	16/04/2025
1.0	First issue	05/06/2025

CONTENTS

1.0	INTRODUCTION	1
1.1	Legislative Background	1
1.2	Definition of Best Available Technique	2
2.0	BAT ASSESSMENT	3
2.1	General BAT Conclusions	3
2.2	General BAT Conclusions for the Biological Treatment of Waste	43
2.3	BAT Conclusions for the Aerobic Treatment of Waste	48
3.0	CONCLUSION	52

1.0 INTRODUCTION

Walker Resource Management Ltd (WRM) have been commissioned by Newbourne Farm Composting Limited (hereon referred to as 'Newbourne Farm') with undertaking a Best Available Techniques (BAT) Assessment of the existing Composting Facility at their site in Rockbourne, Fordingbridge, Hampshire, SP6 3NT. This BAT Assessment forms part of the application to vary Newbourne Farm's existing bespoke installation environmental permit (Reference EPR/ QP3090VL) to allow for the treatment of inert waste soils and to increase the annual throughput of green waste material for composting from 25,000 tonnes per annum to 40,000 tonnes per annum within the existing site boundary. This BAT Assessment addresses how the site meets BAT standards contained within the Best Available Techniques (BAT) Reference Document for Waste Treatment 2018 (BREF). The BREF 2018 document, as well as the Commission Implementing Decision (EU) 2018/1147, have been consulted in order to ensure this BAT Assessment meets the requirements of legislation.

1.1 Legislative Background

As required under Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), the Environment Agency periodically review existing Environmental Permits contents. This requirement of the Environment Agency as well as other wider requirements of the IED are transposed into UK law through the Environmental Permitting (England and Wales) Regulations 2016. As part of this review the Environment Agency will amend the contents of permits and add any applicable conditions as required by the latest Best Available Technique Reference document generated at EU level. This process ensures the permitting process is in line with the latest set of BAT standards.

The latest Best Available Techniques (BAT) Reference Document for Waste Treatment 2018 (BREF) previously underwent a review across the European Union before being published in 2018. As stated within the Section 61 Notice received from the Environment Agency all Biowaste Treatment Installations are currently up for review against the new BAT standards and all existing installations must meet the standards stated within the BAT document by 17 August 2022.

In order to undertake this BAT Assessment, the following documents have been consulted to ensure the site meets the required standards of compliance.

- *Commission Implementing Decision (EU) 2018/1147.*
- *Best Available Techniques (BAT) Reference Document for Waste Treatment 2018 (BREF).*

1.2 Definition of Best Available Technique

The IED (Directive 2010/75/EU) define BAT as:

“the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and where that is not practicable, generally reduce emission and the impact on the environment as a whole”.

Article 3 of the IED further defines the component parts of BAT as:

- “Best” – means the most effective techniques for achieving a high level of protection of the environment as a whole.
- “Available” – means techniques developed on a scale which allows them to be used in the relevant industrial sector, under economically and technically viable conditions, taking into account the costs and advantages.
- “Techniques” – includes both the technology and the way the installation is designed, built, maintained, operated and decommissioned.

BAT may be demonstrated by either:

- Compliance with the sector-level, indicative BAT performance described in the Sector Guidance Notes (SGNs) produced by the Environment Agency and in the European Commission ‘Reference Documents on BAT’ (BREFs); or
- By conducting an installation-specific options appraisal of candidate techniques.

2.0 BAT ASSESSMENT

The first phase of the process is to assess site activities and the associated permit management system against general BAT conclusions. Following this, sections 3.1.2 and 3.1.3 contain the assessment against BAT conclusions for the biological treatment of waste as well as the BAT conclusions for the aerobic treatment of waste. The following tables have been produced from the Annex contained within the Commission Implementing Decision (EU) 2018/1147. Areas which don't apply to the operations at the facility due to site specific reasons have been excluded from the table. Please note, as stated within the Commission Implementing Decision (EU) 2018/1147, the scope (e.g. level of detail) and nature of how the site addresses the BAT conclusions will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have (determined also by the type and amount of wastes processed).

2.1 General BAT Conclusions

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
01	<p>In order to maintain a high level of environmental performance, BAT is to implement and adhere to an Environmental Management System (EMS) incorporating all of the following features (where applicable):</p> <ol style="list-style-type: none"> I. commitment of the management, including senior management; II. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; III. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; IV. implementation of procedures paying particular attention to: <ol style="list-style-type: none"> a) structure and responsibility, b) recruitment, training, awareness and competence, c) communication, 	<p>Newbourne Farm are accredited to the PAS 100:2018 scheme. As part of this certification a suite of documents have been developed and implemented on site to enable the production of PAS 100 compost. The site's permit holder and COTC, Rodney Hill, is actively involved in daily site operations, leading in house training and taking responsibility of the PAS 100 system. The PAS system is reviewed and externally audited annually and involves Senior Management.</p> <p>Operatives who are involved in the production of PAS 100 compost and soil blending operations are trained on effective process control covering areas such as load acceptance, tipping, sorting, shredding, turning, blending and screening. Training records are maintained for each Site Operative and shall be updated on an annual basis, or as and when required.</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<ul style="list-style-type: none"> d) employee involvement, e) documentation, f) effective process control, g) maintenance programmes, h) emergency preparedness and response, i) safeguarding compliance with environmental legislation; <p>V. checking performance and taking corrective action, paying particular attention to:</p> <ul style="list-style-type: none"> a. monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM), b. corrective and preventive action, c. maintenance of records, d. independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained; <p>VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;</p> <p>VII. following the development of cleaner technologies;</p> <p>VIII. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;</p> <p>IX. application of sectoral benchmarking on a regular basis;</p>	<p>Operations taking place on site are detailed within the PAS 100 Site Operational Procedures (SOPs). In order to claim conformance to the PAS 100 standard, Newbourne Farm must demonstrate that the SOPs have effectively been implemented within daily operational procedures. This is evidenced through Batch Monitoring and Record forms.</p> <p>To further demonstrate that effective process control is maintained, Newbourne sample every 5000m³ of finished compost to verify that product is of minimum PAS 100 quality. In the event that a compost sample should fail sampling, a batch failure investigation is undertaken, and corrective action implemented. A log is maintained and inspected annually as part of the PAS 100 certification scheme.</p> <p>Newbourne Farm also possess permit management system documents such as an Environmental Management System manual, Environmental Policy, Odour Management Plan, Dust Management Plan, Accident Management Plan (non-exhaustive), and a Fugitive Emissions Management Plan which incorporate the relevant detail in the column to the left.</p> <p>During the context of an annual internal audit and management review the following aspects shall be evaluated, where applicable:</p> <ul style="list-style-type: none"> ○ Review of the EMS and its continuing suitability, adequacy and effectiveness.

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	X. waste stream management (see BAT 2); XI. an inventory of waste water and waste gas streams (see BAT 3); XII. residues management plan (see description in Section 6.5); XIII. accident management plan (see description in Section 6.5); XIV. odour management plan (see BAT 12); XV. noise and vibration management plan (see BAT 17).	<ul style="list-style-type: none"> ○ Following the development of cleaner technologies and application of benchmarking.
02	<p>In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below.</p> <p>a) Set up and implement waste characterisation and pre-acceptance procedures - These procedures aim to ensure the technical (and legal) suitability of waste treatment operations for a particular waste prior to the arrival of the waste at the plant. They include procedures to collect information about the waste input and may include waste sampling and characterisation to achieve sufficient knowledge of the waste composition. Waste pre-acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</p> <p>b) Set up and implement waste acceptance procedures - Acceptance procedures aim to confirm the characteristics of the waste, as identified in the pre-acceptance stage. These procedures define the elements to be verified upon the arrival of the waste at the plant as well as the waste</p>	<p>Hazards that may affect the safety and quality of compost have been reviewed within the Hazard Analysis and Critical Control Plan (HACCP). The HACCP assessment is reviewed as part of the annual management review. This is to ensure it stays up to date with customers' needs, processing technologies, input materials, and any new hazards that emerge.</p> <p>Due to the low risk that the allowable inputs pose, waste sampling and characterisation is not undertaken at present.</p> <p>The acceptance and processing of incorrect waste material is one of the hazards which forms part of the HACCP. Newbourne Farm have implemented robust waste acceptance procedures to ensure that hazards are controlled to an acceptable level. As detailed within the HACCP, in order to reduce the likelihood of incorrect wastes being accepted on to site, Newbourne have implemented informal input material supply agreements.</p> <p>Furthermore, incoming waste is subject to visual inspection upon arrival at site. Input material containing material contrary other than EWC codes presented</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>acceptance and rejection criteria. They may include waste sampling, inspection and analysis. Waste acceptance procedures are risk- based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</p> <p>c) Set up and implement a waste tracking system and inventory - A waste tracking system and inventory aim to track the location and quantity of waste in the plant. It holds all the information generated during waste pre-acceptance procedures (e.g. date of arrival at the plant and unique reference number of the waste, information on the previous waste holder(s), pre-acceptance and acceptance analysis results, intended treatment route, nature and quantity of the waste held on site including all identified hazards), acceptance, storage, treatment and/or transfer off site. The waste tracking system is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</p> <p>d) Set up and implement an output quality management system - This technique involves setting up and implementing an output quality management system, so as to ensure that the output of the waste treatment is in line with the expectations, using for example existing EN standards. This management system also allows the performance of the waste treatment to be monitored and optimised, and for this purpose may</p>	<p>within Schedule 2 of the permit reference EPR/QP3090VL and waste codes: EWC 17 05 04 and EWC 17 05 06 is removed by hand or machine and temporarily stored in the skip for rejected material. The skip will be emptied prior to reaching capacity at a suitably permitted facility, capable of dealing with the waste types.</p> <p>Loads received at the site which contain large amounts of contrary material will either be rejected at the site office prior to unloading or vehicles depositing large amounts of contrary material will be re-loaded and issued with a record stating why, when and from which contract the waste was provided. Rejected load records shall be stored within the site office and will be available for inspection at the request of the Environment Agency.</p> <p>As well as EWC codes not featured on the environmental permit allowable input sheet the following materials are also removed from input waste, where possible, and quarantined within a skip awaiting dispatch to a suitably licenced facility:</p> <ul style="list-style-type: none"> • Plastic. • Glass. • Metal. • Concrete and Consolidated Mineral Fragments. • Sharps. • Other Non-Biodegradable Items. • Wood Treated with Preservatives. • Plants Containing Toxins (Rhododendron, Yew, Ragwort and Hemlock).

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>include a material flow analysis of relevant components throughout the waste treatment. The use of a material flow analysis is risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</p> <p>e) Ensure waste segregation - Waste is kept separated depending on its properties in order to enable easier and environmentally safer storage and treatment. Waste segregation relies on the physical separation of waste and on procedures that identify when and where wastes are stored.</p> <p>f) Ensure waste compatibility prior to mixing or blending of waste - Compatibility is ensured by a set of verification measures and tests in order to detect any unwanted and/or potentially dangerous chemical reactions between wastes (e.g. polymerisation, gas evolution, exothermal reaction, decomposition, crystallisation, precipitation) when mixing, blending or carrying out other treatment operations. The compatibility tests are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).</p> <p>g) Sort incoming solid waste - Sorting of incoming solid waste aims to prevent unwanted material from entering subsequent waste treatment process(es). It may include:</p>	<p>For the inert waste soils:</p> <p>The waste producer must provide enough information regarding the waste to satisfy the Site Manager that the waste has been properly assessed and classified in accordance with Waste Classification: Technical Guidance WM3. Household and similar non-household waste may be pre-accepted by the terms and conditions of the contract in place. For commercial and industrial waste, the following information must be obtained prior to acceptance:</p> <ul style="list-style-type: none"> • Details of the waste producer including their name, address and contact details; • A description of the waste, and its physical form • The Waste Classification List of Waste (LoW) code; • The waste producer's business and the process that created the waste; • Information on the nature and variability of the waste production process; • Information about the history of the waste producing Site, for example, soil contaminated by historical industrial uses; • the composition from analytical testing on representative samples (mirror entry only); • a description of the waste's odour and whether it is likely to be odorous; and • an estimate of the quantity likely to be received in each load and per year.

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<ul style="list-style-type: none"> – manual separation by means of visual examinations; – ferrous metals, non-ferrous metals or all-metals separation; – optical separation, e.g. by near-infrared spectroscopy or X-ray systems; – density separation, e.g. by air classification, sink-float tanks, vibration tables; – size separation by screening/sieving. 	<p>Sufficient evidence must be provided to confirm the waste have been assigned the relevant Waste Classification mirror entry LoW code. Waste will only be accepted where chemical analytical testing on representative samples indicates the waste to be non-hazardous. If a mirror entry LoW code has not been properly assessed, it must be assumed that the waste is the hazardous mirror entry as a precautionary measure. If the chemical analytical testing on representative samples indicates the waste to be hazardous, it cannot be accepted. Where the waste is an absolute non-hazardous LoW code, such as green waste, analytical testing on representative samples is not required.</p> <p>The chemical composition of the waste from analytical testing on representative samples should be used to assess the waste classification and assign the relevant mirror entry LoW code. Analytical testing must be carried out by laboratories that are accredited to UKAS or MCERTs for the relevant analytical test, and samples scheduled for analytical testing should be representative of the waste in accordance with Technical Guidance WM3. Pre-acceptance records will be held by the Site for at least 3 years following the reception of the soil waste.</p> <p>Where the waste producer is unable to undertake chemical analytical testing on representative samples, Newbourne Farm may attend the waste producing Site to obtain representative samples for analytical testing. The analytical testing suite will be determined by the history of the Site and the specific processes generating the waste, and the sampling frequency will be in accordance with</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<p>Waste Classification: Technical Guidance WM3. Waste will only be accepted at Site following receipt of the analytical testing results and where these results indicated the waste to be non-hazardous.</p> <p>The following waste codes are accepted onto site for inert soil processing:</p> <ul style="list-style-type: none"> • 17 05 04 soil and stones other than those mentioned in 17 05 03 (non-hazardous from construction sites) • 17 05 06 Dewatered dredging spoil and plant tissue waste from inland waters. <p>For the rejection of inert waste soils:</p> <p>Non-targeted waste materials for recovery through the waste soil treatment facility shall include:</p> <ul style="list-style-type: none"> • Oil; • Fuel; • Hardcore; • Concrete; • Green Waste; • Sub soil; • Clay; and • Excess quantities of stones.

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<p>The process from waste acceptance to dispatch offsite is documented within the Environmental Management System Manual which forms part of the Permit Management System.</p> <p>In line with the requirements of the environmental permit, Newbourne Farm keep a record of the location and quantity of waste on site as well as the waste recovery code, destination and quantities of waste dispatched offsite. This information is supplied in the quarterly/annual waste returns. Weighbridge tickets are also archived and inspected during the audit review process of the PAS 100 system.</p>
03	<p>In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of wastewater and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:</p> <p>(i) information about the characteristics of the waste to be treated and the waste treatment processes, including:</p> <ul style="list-style-type: none"> a) simplified process flow sheets that show the origin of the emissions; b) descriptions of process-integrated techniques and wastewater/waste gas treatment at source including their performances; <p>(ii) information about the characteristics of the waste water streams, such as:</p>	<p>There are no emissions to water, so the operator does not feel an inventory of wastewater needs to be established. Emissions to air take the form of open-air emissions from Open Windrow Composting (OWC) in a continuous turned block and soil blending so an inventory of waste gas streams is also not seen to be required.</p> <p>As part of the PAS 100 management system, there is a process flow within the Safety and Quality Control System (SQCS). This is seen to provide the descriptions of the process-integrated techniques.</p> <p>As this is the case the operator is of the view that a number of elements in this BAT conclusion are not relevant.</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>a) average values and variability of flow, pH, temperature, and conductivity;</p> <p>b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances/micropollutants);</p> <p>c) data on biodegradability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);</p> <p>(iii) information about the characteristics of the waste gas streams, such as:</p> <p>a) average values and variability of flow and temperature;</p> <p>b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs);</p> <p>c) flammability, lower and higher explosive limits, reactivity;</p> <p>d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).</p>	
04	<p>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below.</p> <p>a) Optimised storage location (Generally applicable to new plants) - This includes techniques such as:</p> <ul style="list-style-type: none"> - the storage is located as far as technically and economically possible from sensitive receptors, watercourses, etc.; - the storage is located in such a way so as to eliminate or minimise the unnecessary handling of wastes within the plant (e.g. the 	<p>With regards to Technique A, it is of the view of the Operator that it is not applicable, as the site is well established and has been operating for a number of years.</p> <p>Storage durations for waste materials are clearly defined within the PAS 100 SOPS and the Environmental Permit Management System as follows:</p> <ul style="list-style-type: none"> o The waste carrier takes input materials to the 'input materials storage area'. Here, the waste carrier will tip the waste so as not to merge / contaminate it with any input materials already being stored.

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>same wastes are handled twice or more or the transport distances on site are unnecessarily long).</p> <p>b) Adequate storage capacity (Generally applicable) - Measures are taken to avoid accumulation of waste, such as:</p> <ul style="list-style-type: none"> - the maximum waste storage capacity is clearly established and not exceeded taking into account the characteristics of the wastes (e.g. regarding the risk of fire) and the treatment capacity; - the quantity of waste stored is regularly monitored against the maximum allowed storage capacity; - the maximum residence time of waste is clearly established. <p>c) Safe storage operation (Generally applicable) - This includes measures such as:</p> <ul style="list-style-type: none"> - equipment used for loading, unloading and storing waste is clearly documented and labelled; - wastes known to be sensitive to heat, light, air, water, etc. are protected from such ambient conditions; - containers and drums are fit for purpose and stored securely. <p>d) Separate area for storage and handling of packaged hazardous waste (Generally applicable) - When relevant, a dedicated area is used for storage and handling of packaged hazardous waste.</p>	<ul style="list-style-type: none"> ○ The maximum storage duration for input materials prior to shredding shall not exceed 4 days. ○ Waste accepted and stored for composting shall not be stockpiled in a quantity that exceeds 500 tonnes before shredding. ○ The maximum capacity of waste soil situated in the reception area is 3-4,000 tonnes. ○ Shredding shall be carried out each day depending on the waste received. ○ The site operates a 9 week actively managed composting process, waste quantities and locations are monitored throughout each composting phase. ○ Following maturation of the additional grade, the stabilised as well as matured compost will be screened in accordance with the PAS 100 Quality protocol to the appropriate grades. The screened compost will be transported from the Facility and will be stored in a location immediately east of the Permit application boundary as a product. ○ The maximum duration of time that waste soil is stored the screening area is 3 months. ○ The processed soil is then blended with the 0-10mm grade compost to form BS 3882 certified topsoil. <p>The site does not accept or process hazardous waste; therefore, Technique D is not applicable.</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		The permit management system is updated to include relevant storage capacity details.
05	<p>In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.</p> <p>Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements:</p> <ul style="list-style-type: none"> - handling and transfer of waste are carried out by competent staff; - handling and transfer of waste are duly documented, validated prior to execution and verified after execution; - measures are taken to prevent, detect and mitigate spills; - operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). <p>Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.</p>	<p>The overall site procedures including those associated with the handling and transfer of waste is managed by a technically competent person, Rodney Hill, the COTC. Site operatives receive training covering all areas of the PAS 100 system, which covers handling and transfer.</p> <p>Permitted wastes do not contain sludges or liquids. Composting operations shall be carried out on an impermeable pad. All drainage from the concrete pad and soil blending area shall be directed via a sealed drainage system to a contained underground storage tank. Some water in the tank will be recirculated onto the compost piles as required. On occasions where the maximum limit level of the underground storage tank is reached, such as during extreme rain events, water is discharged off site via the swale. All liquids (such as fuels) shall be provided with secondary containment and managed in accordance with the site's management procedures.</p> <p>No substances that would be classified as 'dangerous' under the Control of Major Accident Hazards (COMAH) Regulations will be used at the Site for the operation of the composting and blending operations.</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<p>Fuel is stored in a dedicated double bunded tank capable of storing 110% of the tank's volume. The diesel tank is placed on an impermeable pad. The quantity and void space of the tank will be measured and maintained accordingly, and the integrity of the tank will be routinely checked and maintained. Any defects will be reported immediately, and remedial works undertaken as soon as reasonably practicable following identification.</p> <p>Maintenance and regular inspections of the composting pad are carried out. If a spillage occurs, oil spill equipment is located nearby.</p>

Monitoring		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
06	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).	The BAT criteria have been assessed and it is the view of the operator that the key process parameters do not need to be monitored. The wastewater storage area is connected to a contained drainage system which captures the rainwater falling on the treatment and storage areas and is re-used on site or discharged off site via the swale. It is highlighted that no wastewater streams are directly discharged offsite, so the emission of water is not applicable.

Monitoring		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
07	<p>BAT is to monitor emissions to water with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p> <p>See section 1.2 of <i>Commission Implementing Decision (EU) 2018/1147</i> for full BAT conclusion 7 table containing frequency and standards and the waste treatment processes they are to be monitored against.</p>	<p>As per the above, the BAT criteria have been assessed and it is of the view that these parameters do not need to be monitored. All drainage from the composting pad and soil blending area shall be directed via a sealed drainage system to a contained underground storage tank and is re-used on site or discharged off site via the swale. All liquids (such as fuels) shall be provided with secondary containment and managed in accordance with the site's management procedures.</p>
08	<p>BAT is to monitor channelled emissions to air with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p> <p>See section 1.2 of <i>Commission Implementing Decision (EU) 2018/1147</i> for full BAT conclusion 8 table containing frequency and standards and the waste treatment processes they are to be monitored against.</p>	<p>The Operator does not consider this section of the BAT relevant, given the nature of the site. Newbourne Farm operates an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so there are no channelled emissions to air.</p> <p>Please note, in the event that bioaerosol monitoring detects elevated levels of bioaerosols at the site, the operator will consider whether corrective action is required.</p>

Monitoring							
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents			
09	BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.			These BAT techniques are not considered relevant as Newbourne Farm do not process or have on site any solvents.			
	<table><tr><td colspan="2">Technique</td><td>Description</td></tr></table>				Technique		Description
	Technique		Description				
	a	Measurement	Sniffing methods, optical gas imaging, solar occultation flux or differential absorption. See descriptions in Section 6.2 of <i>Commission Implementing Decision (EU) 2018/1147</i> .				
	b	Emissions factors	Calculation of emissions based on emissions factors, periodically validated (e.g. once every two years) by measurements.				
c	Mass balance	Calculation of diffuse emissions using a mass balance considering the solvent input, channelled emissions to air, emissions to water, the solvent in the process output, and process (e.g. distillation) residues.					

Monitoring		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
10	<p>BAT is to periodically monitor odour emissions.</p> <p>Odour emissions can be monitored using:</p> <ul style="list-style-type: none"> - EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); - when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. <p>The monitoring frequency is determined in the odour management plan (see BAT 12).</p>	<p>Odour emissions have been carefully managed in order to reduce the impact on the local population.</p> <p>Newbourne Farm currently have an Odour Management Plan (OMP), a Fugitive Emissions Management Plan (FEMP) and associated Risk Assessment developed as part of their permit variation application. Please note, due to the nature and scale of Newbourne Farm's composting and soil blending operation it is the view of the operator that odour is not a significant risk for the site. All vehicles delivering waste to the site will be covered and enclosed as such all odours will be minimised and controlled.</p> <p>In order to fully comply with BAT a standalone OMP has been developed which encompasses the following requirements:</p> <ul style="list-style-type: none"> - a procedure for conducting odour monitoring in the form of sniff testing and an odour monitoring check sheet and all complaints investigated and recorded accordingly.
11	<p>BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and wastewater, with a frequency of at least once per year.</p> <p>Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.</p>	<p>The following information is currently recorded by the operator for each calendar year within an Environmental Aspects Monitoring spreadsheet (EMS – Environmental Aspect Monitoring):</p> <ul style="list-style-type: none"> • Annual total water usage; • Annual total energy usage.

Monitoring		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<p>Annual water usage will only be applicable to mains water. Energy usage will only be in the form of mains electricity (MWh) and fuel oil (tonnes).</p> <p>The following information is currently recorded by the operator as part of their PAS 100 management system for each calendar year:</p> <ul style="list-style-type: none"> • Annual total of material inputs; • Annual total of compost outputs; and; • Annual total of soil outputs. <p>Evidence of material input is recorded on site via a central computer as well as individual waste transfer notes for each load. A record system is maintained connecting sources of wastes with delivery dates and weights. This is achieved via the use of the weighbridge system and the duty of care information collected for every load that arrives. Composting batches are created one at a time. Batch formation 'start' and 'finish' dates are recorded in the 'Excel spread sheet'. All waste loads that arrive at the weighbridge between these two dates therefore have gone into that batch and thus can be traced back to source. All compost batches and soil which is removed offsite is recorded by the operator along with their destination. This allows the operator to track how much waste has been received and left site in any given time period.</p>

Monitoring		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		The operator also separately keeps track of their raw material usage in the form of diesel. Please note, raw material usage is only required for fuel oil so will be a duplication of what is required as part of energy usage.

Emissions to Air		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
12	<p>In order to prevent or, where that is not practicable, reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> - a protocol containing actions and timelines; - a protocol for conducting odour monitoring as set out in BAT 10; - a protocol for response to identified odour incidents, e.g. complaints; - an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. 	<p>Newbourne Farm currently have an Odour Management Plan (OMP) and associated Risk Assessment developed as part of their original permit application. Please note, due to the nature and scale of Newbourne Farm's composting operation it is the view of the operator that odour is not a significant risk for the site.</p> <p>The operator has set up and implemented an OMP which is regularly reviewed and encompasses the following requirements:</p> <ul style="list-style-type: none"> - a procedure for conducting odour monitoring and an odour monitoring check sheet. - a procedure for response to identified odour incidents, e.g. complaints (<i>please note, as part of PAS100 the site already has a complaints procedure</i> which can currently be utilised to record any complaints received at site in the interim period); - an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures (the operator has some preventative measures highlighted in the existing OMP, but these shall receive more detail in the revision of the OMP).

Emissions to Air				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
13	In order to prevent or, where that is not practicable, reduce odour emissions, BAT is to use one or a combination of the techniques given below.			<p>Due to the scale and nature of the operations conducted at site, technique B and C are not seen to be applicable.</p> <p>A) With regards to technique A, the maximum storage duration for input materials prior to shredding shall not exceed 4 days. Separately, the OMP also references that odorous green wastes and inert waste soils will be rejected from site. All conforming waste received onto site will be processed within 48 hours. Leachate, which is stored in an underground tank, is recirculated to add moisture to piles as required. Each product batch of compost shall contain compost from no greater than 8 windrows and may be stored for a maximum of 12 months before dispatch to the customer. Compost is to be re-assessed for compliance with the requirements of the 'compost quality' clause when stored for a period of six months or longer. Blended soil is stored for a maximum of six months before dispatch off site.</p> <p>Any product batch that exceeds its time limit for storage shall be tested for compliance with the safety-related parameters and upper limits in BSI PAS 100 as well as any other characteristics declared in labelling, before a decision is made on it being dispatched as conforming. Alternatively, it may be dispatched for use with advice that it may no longer conform to quality criteria or dispatched for disposal.</p> <p>Additionally, storage will facilitate seasonal variations in input materials where applicable.</p>
	Technique	Description	Applicability	
	a. Minimising residence times	Minimising the residence time of (potentially) odorous waste in storage or in handling systems (e.g. pipes, tanks, containers), in particular under anaerobic conditions. When relevant, adequate provisions are made for the acceptance of seasonal peak volumes of waste.	Only applicable to open systems.	
	b. Using chemical treatment	Using chemicals to destroy or to reduce the formation of odorous compounds (e.g. to oxidise or to precipitate hydrogen sulphide).	Not applicable if it may hamper the desired output quality.	
	c. Optimising aerobic treatment	<p>In the case of aerobic treatment of water-based liquid waste, it may include:</p> <ul style="list-style-type: none"> – use of pure oxygen; – removal of scum in tanks; – frequent maintenance of the aeration system. 	Generally applicable.	

Emissions to Air					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents	
			In the case of aerobic treatment of waste other than water-based liquid waste, see BAT 36.		Please note, the operator of the site has a WAMITAB 4 qualification and is experienced in operating an open air continuous turned block composting site. A number of elements of the techniques stated are best practise and are undertaken by the operator on a practical level.

Emissions to Air				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
14	In order to prevent or, where that is not practicable, reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.			As a responsible operator, Newbourne Farm employ preventative and reactive measures as indicated within their existing Fugitive Emissions Management Plan. These measures include the following:
	Technique	Description	Applicability	<ul style="list-style-type: none"> - The site manager is responsible for checking wind strength and direction and stopping operations if needed. - As part of its daily inspection regime, the Site will be visually inspected for the presence of fugitive emissions (dusts) and if required water will be applied to the site's access road and external areas if on-site conditions become dusty.
	a. Minimising the number of potential diffuse emission sources	This includes techniques such as: <ul style="list-style-type: none"> - appropriate design of piping layout (e.g. minimising pipe run length, reducing the number of flanges and valves, using welded fittings and pipes); - favouring the use of gravity transfer rather than using pumps; - limiting the drop height of material; - limiting traffic speed; - using wind barriers. 	Generally applicable.	A) With regards to Technique A, the Fugitive Emissions Management Plan includes the relevant aspects, such as: <ul style="list-style-type: none"> - limiting the drop height of material; - limiting traffic speed.
	b. Selection and use of high-integrity equipment	This includes techniques such as: <ul style="list-style-type: none"> - valves with double packing seals or equally efficient equipment; - high-integrity gaskets (such as spiral wound, ring joints) for critical applications; - pumps/compressors/agitators fitted with mechanical seals instead of packing; - magnetically driven pumps/compressor-s/agitators; - appropriate service hose access ports, piercing pliers, drill heads, e.g. when 	Applicability may be restricted in the case of existing plants due to operability requirements.	B) With reference to technique B, Newbourne Farm operate an open air continuous turned block composting and soil blending facility with minimal fixed infrastructure. Plant/machinery is maintained as follows: <ul style="list-style-type: none"> • Telehandlers X4 are all serviced by the suppliers in accordance with manufacturers recommendations. • All other machines (a digger for turning, wind sifter, shredder, trommels x2 but each is from different manufacturers and a mini

Emissions to Air					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents	
			degassing WEEE containing VFCs and/or VHCs.		digger) are serviced by Newbourne Farm's fitter, every 500 hours. Newbourne Farm keep a service book for each piece of machinery in accordance with manufacturers recommendations.
	c.	Corrosion prevention	This includes techniques such as: <ul style="list-style-type: none"> - appropriate selection of construction materials; - lining or coating of equipment and painting of pipes with corrosion inhibitors. 	Generally applicable.	The operator is therefore of the view they satisfy technique B.
	d.	Containment, collection and treatment of diffuse emissions	This includes techniques such as: <ul style="list-style-type: none"> - storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment (e.g. conveyor belts); - maintaining the enclosed equipment or buildings under an adequate pressure; - collecting and directing the emissions to an appropriate abatement system (see Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i>) via an air extraction system and/or air suction systems close to the emission sources. 	The use of enclosed equipment or buildings may be restricted by safety considerations such as the risk of explosion or oxygen depletion. The use of enclosed equipment or buildings may also be constrained by the volume of waste.	C) With reference to technique C, Newbourne Farm composting facility is situated partly on a concrete pad and partly on a layer of asphalt (see site plan in latest EA permit V6 for locations). The exact construction details of these impermeable surfaces are not available but the operator, as part of this review process, has commissioned a Construction Quality Assurance Engineer to attend site to review containment and bunding infrastructure at the site. The engineer's report shall be sent separately to this BAT Assessment. D) With reference to technique D, the site is an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so this technique is not considered relevant given the nature of the site. Please note, as mentioned in the odour management plan, odorous green wastes and inert waste soils will be rejected from site. In addition, bioaerosol emissions are monitored from site in line with the environmental permit.
	e.	Dampening	Dampening potential sources of diffuse dust emissions (e.g. waste storage, traffic areas,	Generally applicable.	E) With reference to technique E, the Fugitive Emissions Plan states, 'if required water will be applied to the site's access road and external areas if on-site conditions become dusty'. The Bioaerosol Risk Assessment submitted as part

Emissions to Air				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
			and open handling processes) with water or fog.	
	f.	Maintenance	This includes techniques such as: <ul style="list-style-type: none"> - ensuring access to potentially leaky equipment; - regularly controlling protective equipment such as lamellar curtains, fast-action doors. 	Generally applicable.
	g.	Cleaning of waste treatment and storage areas	This includes techniques such as regularly cleaning the whole waste treatment area (halls, traffic areas, storage areas, etc.), conveyor belts, equipment and containers.	Generally applicable.
	h.	Leak detection and repair (LDAR) programme	See Section 6.2 of <i>Commission Implementing Decision (EU) 2018/1147</i> . When emissions of organic compounds are expected, a LDAR programme is set up and implemented using a risk-based approach, considering in particular the design of the plant and the amount and nature of the organic compounds concerned.	Generally applicable.
<p>of the original permit management system states 'on occasions of dry and dusty conditions with significant winds blowing composting material towards sensitive receptors, the site shall be dampened down to reduce emissions.' These references specifically mention dampening of waste as a corrective action which is also incorporated into the Fugitive Emission Management Plan.</p> <p>F) With reference to technique F, the site is an open-air composting and soil blending facility so this technique is not seen to be applicable.</p> <p>G) With reference to technique G, cleaning of the site is undertaken at a practical level by the operator as required. This cleaning activity is recorded and cleaning requirements are included within the Fugitive Emissions Management Plan and a check sheet has been produced to record any cleaning undertaken.</p> <p>H) With reference to technique H, the site is an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so this technique is not considered relevant given the nature of the site. Please note, bioaerosol monitoring detects elevated levels of bioaerosols at the site, the operator will consider whether corrective action is required.</p>				

Emissions to Air		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
15	<p>BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.</p> <p>See section 1.3 of <i>Commission Implementing Decision (EU) 2018/1147</i> for full BAT conclusion 15 table containing technique and description and the waste treatment processes they applicable to.</p>	The operator does not utilise a flare, so this BAT Conclusion is not considered applicable.
16	<p>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.</p> <p>See section 1.3 of <i>Commission Implementing Decision (EU) 2018/1147</i> for full BAT conclusion 16 table containing technique and description and the waste treatment processes they applicable to.</p>	The operator does not utilise a flare, so this BAT Conclusion is not considered applicable.

Noise and Vibration		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
17	<p>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ol style="list-style-type: none"> I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; III. a protocol for response to identified noise and vibration events, e.g. complaints; IV. a noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures. 	<p>Newbourne Farm currently have a Fugitive Emissions Management Plan and associated Risk Assessment developed as part of their permit variation application. Please note, due to the nature and scale of Newbourne Farm's composting operation and soil blending activities, it is the view of the operator that noise is not a significant risk for the site.</p> <p>The operator has set up and implemented this Fugitive Emissions Management Plan, which is regularly reviewed. The Fugitive Emissions Management Plan encompasses the following requirements:</p> <ul style="list-style-type: none"> - a procedure for conducting noise monitoring should the operator ever deem it necessary in order to address any noise complaint received. - a procedure for response to identified noise incidents, e.g. complaints (<i>please note, as part of PAS100 the site already has a complaints procedure</i> which can currently be utilised to record any complaints received at site in the interim period); - a noise and vibration prevention and reduction programme designed to identify the source(s); and to implement prevention and/or reduction measures.

Noise and Vibration				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
18	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.			<p>A) With regards to technique A, due to the scale and nature of the operations conducted at site, technique A is not seen to be applicable as it is the view of the operator that amending existing site layout is unlikely to dramatically affect noise emissions as the site is relatively small.</p> <p>B) With regards to technique B, the Fugitive Emissions Management Plan states the following preventative measures:</p> <ul style="list-style-type: none"> • Due to the dimensions of the site, traffic movements will be low. • Noisy work will be avoided during evenings and weekends. • Delivery and vehicle routes are located to the east away from the site's closest sensitive receptor. • Plant and vehicles will be switched off when not in use. • All vehicles, plant and machinery operated at the site will be maintained in accordance with the manufacturer's specification and be fitted with effective silencers. <p>The Fugitive Emissions Management Plan also states that equipment operation will be undertaken by experienced staff. In addition, the operator of the site has a WAMITAB 4 qualification and is experienced in operating an open air continuous turned block composting and soil blending site. This measure is therefore also undertaken by the operator on a practical level.</p>
	Technique	Description	Applicability	
	a. Appropriate location of equipment and buildings	Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating building exits or entrances.	For existing plants, the relocation of equipment and building exits or entrances may be restricted by a lack of space or excessive costs.	
	b. Operational measures	<p>This includes techniques such as:</p> <ul style="list-style-type: none"> (i) inspection and maintenance of equipment; (ii) closing of doors and windows of enclosed areas, if possible; (iii) equipment operation by experienced staff; (iv) avoidance of noisy activities at night, if possible; (v) provisions for noise control during maintenance, traffic, handling and treatment activities. 	Generally applicable.	

Noise and Vibration					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
	c.	Low-noise equipment	This may include direct drive motors, compressors, pumps and flares.		<p>C & D) With regards to technique C & D, the operator has ensured that all vehicles used will be maintained in accordance with the manufacturer's specification and be fitted with effective silencers. In addition, the site is an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so a number of elements of this technique are not considered relevant given the nature of the site. Therefore, these two techniques are considered satisfied.</p> <p>E) With regards to technique E, the site is an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so the addition of noise attenuation is not considered relevant given the nature of the site. The operator has also never received a noise complaint which further evidences this viewpoint.</p>
	d.	Noise and vibration control equipment	This includes techniques such as: (i) noise reducers; (ii) acoustic and vibrational insulation of equipment; (iii) enclosure of noisy equipment; (iv) soundproofing of buildings.	Applicability may be restricted by a lack of space (for existing plants).	
	e.	Noise attenuation	Noise propagation can be reduced by inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).	<p>Applicable only to existing plants, as the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may be restricted by a lack of space.</p> <p>For mechanical treatment in shredders of metal wastes, it is applicable within the constraints associated with the risk of deflagration in shredders.</p>	

Emissions to Water				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
19	In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.			A number of these techniques are not considered relevant as Newbourne Farm are a small-scale site and do not treat any of their generated wastewater (leachate). Any generated wastewater (leachate) as well as surface water, is captured via the following system and then dealt with in one of two ways.
		Technique	Description	Applicability
	a.	Water management	Water consumption is optimised by using measures which may include: <ul style="list-style-type: none"> – water-saving plans (e.g. establishment of water efficiency objectives, flow diagrams and water mass balances); – optimising the use of washing water (e.g. dry cleaning instead of hosing down, using trigger control on all washing equipment); – reducing the use of water for vacuum generation (e.g. use of liquid ring pumps with high boiling point liquids). 	Generally applicable.
	b.	Water recirculation	Water streams are recirculated within the plant, if necessary after treatment. The degree of recirculation is limited by the water balance of the plant, the	Generally applicable.
				<p>There is a natural fall across the site from the southwest to the northeast to a drain which is located in the northeast corner of the site. Rain or process water that makes its way across site and into the drain is then fed into a water storage tank with a capacity of 54,500 litres and is re-used on site or discharged off site via the swale. On the northeastern edge of the continuous turned block, a kerb has been installed which acts as a grip for surface water runoff. The surface water is then directed to the drain.</p> <p>A) With regards to technique A, water-saving plans shall be added as an agenda at the management review to be discussed.</p> <p>The operator only uses water for washing of vehicles if their wheels are dirty or to reduce dust emissions. As this is the case, the other two elements of this technique are considered applicable.</p> <p>B) With regards to technique B, some of the water collected in the drainage tank is used in the composting process to amend moisture levels of the compost block complying with BAT.</p>

Emissions to Water					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
			content of impurities (e.g. odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).		C) With regards to technique C, the composting block and soil blending activities are situated on a layer of impermeable concrete.
	c.	Impermeable surface	Depending on the risks posed by the waste in terms of soil and/or water contamination, the surface of the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.	Generally applicable.	<p>The waste reception area is covered in a layer of impermeable tarmac. Therefore, the operator complies with this technique.</p> <p>D) With regards to technique D, the drainage tank is made of 8mm thick steel and is fitted with a maximum limit level before full capacity is reached. The water collected in this tank is used in the composition process or discharged off-site via the swale. Therefore, it is the operators view that they comply with BAT.</p>
	d.	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	<p>Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as:</p> <ul style="list-style-type: none"> – overflow detectors; – overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel); – tanks for liquids that are located in a suitable secondary containment; 	Generally applicable.	<p>E) With regards to technique E, this is not relevant as the site is operated as an open-air site.</p> <p>F) With regards to technique F, rain or process water that makes its way across site and into the drain is then fed into a water storage tank with a capacity of 54,500 litres and is re-used on site or discharged off site via the swale. It is the operator's view that the segregation of these streams is not required as they have always operated in this manner and the leachate is not processed.</p> <p>G) With regards to technique G, the waste treatment area is connected to drainage infrastructure.</p>

Emissions to Water					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
			the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; – isolation of tanks, vessels and secondary containment (e.g. closing of valves).		Rainwater falling on the treatment and storage areas is collected in the drainage infrastructure along with washing water and is recirculated or discharged to the swale. If a spillage occurred and made its way into the drainage tank it is likely that the tank would need to be emptied and cleaned before water could be recirculated for use in the process. This spills procedure is included within the Fugitive Emissions Management Plan.
	e.	Roofing of waste storage and treatment areas	Depending on the risks posed by the waste in terms of soil and/or water contamination, waste is stored and treated in covered areas to prevent contact with rainwater and thus minimise the volume of contaminated run-off water.	Applicability may be constrained when high volumes of waste are stored or treated (e.g. mechanical treatment in shredders of metal waste).	H) With regards to technique H, Newbourne Farm operate an open air continuous turned block composting and soil blending site with minimal fixed infrastructure so full design and maintenance provisions to allow detection and repair of leaks is not seen to be required. The operator can commit to performing a weekly site walkover to assess the condition of impermeable surfacing. If any cracks are detected these shall be remedied. This practise is documented within the Fugitive Emissions Management Plan.
	f.	Segregation of water streams	Each water stream (e.g. surface run-off water, process water) is collected and treated separately, based on the pollutant content and on the combination of treatment techniques. In particular, uncontaminated waste water streams are segregated from	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the	I) With regards to technique I, on occasions where the maximum limit level of the underground storage tank is reached, the water is discharged to the swale on site.

Emissions to Water					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
			waste water streams that require treatment.	water collection system.	
	g.	Adequate drainage infrastructure	The waste treatment area is connected to drainage infrastructure. Rainwater falling on the treatment and storage areas is collected in the drainage infrastructure along with washing water, occasional spillages, etc. and, depending on the pollutant content, recirculated or sent for further treatment.	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the water drainage system.	
	h.	Design and maintenance provisions to allow detection and repair of leaks	Regular monitoring for potential leakages is risk-based, and, when necessary, equipment is repaired. The use of underground components is minimised. When underground components are used, and depending on the risks posed by the waste contained in those components in terms of soil and/or water contamination, secondary	The use of above-ground components is generally applicable to new plants. It may be limited however by the risk of freezing. The installation of secondary containment may be limited in the	

Emissions to Water					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
			containment of underground components is put in place.	case of existing plants.	
	i.	Appropriate buffer storage capacity	Appropriate buffer storage capacity is provided for waste water generated during other than normal operating conditions using a risk-based approach (e.g. taking into account the nature of the pollutants, the effects of downstream waste water treatment, and the receiving environment). The discharge of waste water from this buffer storage is only possible after appropriate measures are taken (e.g. monitor, treat, reuse).	Generally applicable to new plants. For existing plants, applicability may be limited by space availability and by the layout of the water collection system.	

Emissions to Water				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
20	In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below.			
	Technique		Typical pollutants targeted	Applicability
	Preliminary and primary treatment, e.g.			
	a.	Equalisation	All pollutants	Generally applicable.
	b.	Neutralisation	Acids, alkalis	
	c.	Physical separation, e.g. screens, sieves, grit separators, grease separators, oil- water separation or primary settlement tanks	Gross solids, suspended solids, oil/grease	
	Biological treatment, e.g.			
	l.	Activated sludge process	Biodegradable organic compounds	Generally applicable.
	m.	Membrane bioreactor		
	The activities which are not relevant to the operator have been removed from the table.			
	These treatment techniques and BAT associated emission levels are not considered relevant as Newbourne Farm does not treat any of their generated wastewater (leachate). Any generated wastewater (leachate) as well as surface water, is captured via the following system and then dealt with in one of two ways.			
	There is a natural fall across the site from the southwest to the northeast to a drain which is located in the northeast corner of the site. Rain or process water that makes its way across site and into the drain is then fed into a water storage tank with a capacity of 54,500 litres and is re-used on site or discharged off site via the swale. On the northeastern edge of the continuous turned block, a kerb has been installed which acts as a grip for surface water runoff.			

Emissions to Water		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>In addition, see table 6.1 entitled 'BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body' and table 6.2 entitled 'BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body' of <i>Commission Implementing Decision (EU) 2018/1147</i>. These tables contain the relevant BAT-EAL and substances/parameters which discharges to receiving water bodies should be tested for.</p>	

Emissions from accidents and incidents

BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm		Newbourne Farm Permit Documents			
21	In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1).		Newbourne Farm currently have an Accident Management Plan (AMP), and associated Risk Assessment developed as part of their permit variation application.			
	<table><tr><th colspan="2">Technique</th><th>Description</th></tr></table>		Technique		Description	The AMP is regularly reviewed and encompasses the following requirements:
	Technique		Description			
	a.	Protection measures	These include measures such as: <ul style="list-style-type: none">– protection of the plant against malevolent acts;– fire and explosion protection system, containing equipment for prevention, detection, and extinction;– accessibility and operability of relevant control equipment in emergency situations.	<ul style="list-style-type: none">- Emergency contact details for the following:<ul style="list-style-type: none">• Emergency services• Fire Brigade• Local Police• Environment Agency Hotline• Health and Safety Executive• Electricity Supplier• Local Authority• Waste Disposal Contractor• Gas Supplier• Sewerage Undertaker• Fuel Supplier• Out of hours company contact.		
	b.	Management of incidental/accidental emissions	Procedures are established and technical provisions are in place to manage (in terms of possible containment) emissions from accidents and incidents such as emissions from spillages, firefighting water, or safety valves.			
c.	Incident/accident registration and assessment system	This includes techniques such as: <ul style="list-style-type: none">– a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections;– procedures to identify, respond to and learn from such incidents and accidents.	<ul style="list-style-type: none">- Perform an up to date assessment of the risks at site such as (not exhaustive):<ul style="list-style-type: none">• plant or equipment failure• fires arising from storage of waste and fuel• failure of mains services			

Emissions from accidents and incidents

BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<ul style="list-style-type: none"> • site security failures/vandalism/arson <ul style="list-style-type: none"> - Appropriate preventative and response measures detailed and linked to wider site procedures. - A log to record identified incidents, changes to procedures and the findings of inspections; - a procedure to identify, respond to and learn from such incidents and accidents (please note, as part of PAS100 the site already has a digestate quality incident procedure which can also be utilised to record any incidents which occur at site.

Material efficiency

BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
22	<p>In order to use materials efficiently, BAT is to substitute materials with waste.</p> <p>Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders).</p>	<p>As the operator purely undertakes open air continuous turned block composting and soil blending of green waste and inert waste soil materials, the opportunities for substituting materials with waste are quite limited. To adjust the composition of the compost blocks the operator utilises oversize material to increase airflow. Wastewater (leachate) from the waste is also used to dampen the composting block and inert waste soils where required. Both of these are viewed to satisfy this BAT conclusion.</p>

Material efficiency		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	Some applicability limitations derive from the risk of contamination posed by the presence of impurities (e.g. heavy metals, POPs, salts, pathogens) in the waste that substitutes other materials. Another limitation is the compatibility of the waste substituting other materials with the waste input (see BAT 2).	

Energy efficiency									
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm		Newbourne Farm Permit Documents						
23	In order to use energy efficiently, BAT is to use both of the techniques given below.		A) With regards to technique A, the operator possesses an Energy Efficiency Management Plan. The plan is minimal as in the operator’s view the nature and scale of the operations at the site do not require a complex one. As a minimum this includes calculating the specific energy consumption of the activity and setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed). B) With regards to technique B, the site is a basic open air continuous turned block composting facility and soil blending activities, so energy usage is minimal. Despite this, the site possesses an Environmental Aspects Register (EMS – Environmental Aspect Register) which documents annual energy usage.						
	<table><tr><th colspan="2">Technique</th><th>Description</th></tr><tr><td>a.</td><td>Energy efficiency plan</td><td>An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</td></tr></table>		Technique		Description	a.	Energy efficiency plan	An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.	
Technique		Description							
a.	Energy efficiency plan	An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.							

Energy efficiency				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
	b.	Energy balance record	<p>An energy balance record provides a breakdown of the energy consumption and generation (including exportation) by the type of source (i.e. electricity, gas, conventional liquid fuels, conventional solid fuels, and waste). This includes:</p> <ul style="list-style-type: none"> (i) information on energy consumption in terms of delivered energy; (ii) information on energy exported from the installation; (iii) energy flow information (e.g. Sankey diagrams or energy balances) showing how the energy is used throughout the process. <p>The energy balance record is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.</p>	

Reuse of Packaging		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
24	<p>In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).</p> <p>Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).</p>	<p>As the site is an open air continuous turned block composting and soil blending facility which processes green waste and inert waste soils, minimal packaging is received at site. Therefore, this BAT conclusion is not seen to be relevant.</p>

2.2 General BAT Conclusions for the Biological Treatment of Waste

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
33	<p>In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.</p> <p>The technique consists of carrying out the pre-acceptance, acceptance and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.</p>	<p>The operator complies with this aspect of the BAT assessment, as part of Newbourne Farm's compliance with the PAS 100 scheme. Selection of waste input is clearly described within the PAS 100 management system documents. Please see BAT conclusion 2 earlier in the document for details on waste acceptance.</p> <p>Moisture levels are monitored and adjusted as per the PAS 100 requirements. The operator monitors the levels at 12 points along the batch on a daily basis during sanitisation and then weekly during stabilisation.</p> <p>The nutrient balance and toxic compounds of the waste is well managed through Senior Management's COTC qualification and knowledge of managing the composting process to produce material which is of PAS 100 standard. Although it is acknowledged this is also documented within the permit management system documents.</p>

Emissions to Air				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
34	In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H2S and NH3, BAT is to use one or a combination of the techniques given below.			These treatment techniques and BAT associated emission levels are not considered relevant as Newbourne Farm does not use any form of channelling for their emissions to air of dust, organic compounds and odorous compounds. In addition, the site is an open air continuous turned block composting and soil blending facility and stores all waste material in open air, so these techniques are not considered relevant.
	Technique		Description	
	a.	Adsorption	See Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i> .	
	b.	Biofilter	See Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i> . A pretreatment of the waste gas before the biofilter (e.g. with a water or acid scrubber) may be needed in the case of a high NH ₃ content (e.g. 5-40 mg/Nm ³) in order to control the media pH and to limit the formation of N ₂ O in the biofilter. Some other odorous compounds (e.g. mercaptans, H ₂ S) can cause acidification of the biofilter media and necessitate the use of a water or alkaline scrubber for pretreatment of the waste gas before the biofilter.	
	c.	Fabric filter	See Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i> . The fabric filter is used in the case of mechanical biological treatment of waste.	

Emissions to Air				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
	d.	Thermal oxidation	See Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i> .	
	e.	Wet scrubbing	See Section 6.1 of <i>Commission Implementing Decision (EU) 2018/1147</i> . Water, acid or alkaline scrubbers are used in combination with a biofilter, thermal oxidation or adsorption on activated carbon.	
	For the BAT-associated emission levels (BAT-AELs) for channelled NH3, odour, dust and TVOC emissions to air from the biological treatment of waste see table 6.7 in Commission Implementing Decision (EU) 2018/1147. The contents of the table are displayed below for ease of reference.			
	Parameter	Unit	BAT-AEL (Average over the sampling period)	Waste treatment process
	NH3(1)(2)	mg/Nm3	0,3-20	All biological treatments of waste
	Odour concentration(1)(2)	ouE/Nm3	200-1 000	
	Dust	mg/Nm3	2-5	Mechanical biological treatment of waste
	TVOC	mg/Nm3	5-40(3)	
	(1) Either the BAT-AEL for NH3 or the BAT-AEL for the odour concentration applies.			

Emissions to Air		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	<p>(2) This BAT-AEL does not apply to the treatment of waste mainly composed of manure.</p> <p>(3) The lower end of the range can be achieved by using thermal oxidation.</p> <hr/> <p>The associated monitoring is given in BAT 8.</p>	

Emissions to Water and Water Usage				
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents
35	In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below.			Technique A is dealt with as part of BAT 19f.
				Technique B is dealt with as part of BAT 19b.
				C) With regards to technique C, the moisture content of the waste is assessed by the operator and amended as required. Any runoff is captured within the drainage tank, so process water is cycled round the composting process or discharged off site via the swale. Moisture checks are performed on the
	Technique		Description	Applicability
a.	Segregation of water streams	Leachate seeping from compost piles and windrows is segregated from surface run-off water (see BAT 19f).	Generally applicable to new plants. Generally applicable to existing plants within the constraints associated with the layout of the water circuits.	

Emissions to Water and Water Usage					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm				Newbourne Farm Permit Documents
	b.	Water recirculation	Recirculating process water streams (e.g. from dewatering of liquid digestate in anaerobic processes) or using as much as possible other water streams (e.g. water condensate, rinsing water, surface run-off water). The degree of recirculation is limited by the water balance of the plant, the content of impurities (e.g. heavy metals, salts, pathogens, odorous compounds) and/or the characteristics of the water streams (e.g. nutrient content).	Generally applicable.	actively management compost process as part of the PAS 100 management system.
	c.	Minimisation of the generation of leachate	Optimising the moisture content of the waste in order to minimise the generation of leachate.	Generally applicable.	

2.3 BAT Conclusions for the Aerobic Treatment of Waste

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
36	<p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>Monitoring and/or control of key waste and process parameters, including:</p> <ul style="list-style-type: none"> - waste input characteristics (e.g. C to N ratio, particle size); - temperature and moisture content at different points in the windrow; - aeration of the windrow (e.g. via the windrow turning frequency, O₂ and/or CO₂ concentration in the windrow, temperature of air streams in the case of forced aeration); - windrow porosity, height and width. <p>Monitoring of the moisture content in the windrow is not applicable to enclosed processes when health and/or safety issues have been identified. In that case, the moisture content can be monitored before loading the waste into the enclosed</p>	<p>The operator follows a PAS 100 certified Standard Operating Procedure (07 SOPS V20) which monitors and/or controls key waste and process parameters. There is also an environmental permit management system in place which controls these parameters:</p> <ol style="list-style-type: none"> 1) Waste input characteristics: The operator follows waste acceptance / rejection procedures which follows set criteria on physical contaminants, invasive species, plants containing toxins and wood with preservatives. The SOP also considers mixing feedstocks to try and achieve a C:N ratio of between 25:1 to 30:1. This includes blending kerbside, oversize and civic amenity wastes. The sites WAMITAB holder has a number of years experience of forming composting batches with the appropriate waste input characteristic. 2) Temperature and moisture content in compost block: Temperature during sanitisation and stabilisation phases are monitored via a hand-held probe which is inserted in the compost block at a minimum of 0.5m below the surface and from 12 points per batch. The temperature is allowed to stabilise before a final reading is recorded. The temperature is monitored daily as part of the sanitisation phase and weekly as part of the stabilisation phase of composting. Corrective actions

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
	composting stage and adjusted when it exits the enclosed composting stage.	<p>to increase the temperature may be carried out where necessary. These include additional turning and increasing the batch size. Moisture content is measured before a batch is formed and then from 12 points per batch daily during the sanitisation phase and weekly during the stabilisation phase. The moisture is measured via a grip test. The guidance on how to assess the grip test is in the SOP. Where the moisture is found to be too low, water may be sprayed onto the batch from the water storage tank. Where the conditions are too moist, relatively dry input materials may be added. The cross-sectional profile of the batch may also be altered to modify moisture addition to / loss from the composting material. Temperature and moisture are critical limits in the composting process. All temperature and moisture results for sanitisation and stabilisation are recorded on an excel spreadsheet.</p> <p>3) Aeration of the compost block: Aeration of the compost block is kept to a minimum where possible. However, the frequency of turning depends on the rate of decomposition, the moisture content, temperature and porosity of the material. The SOPs detail the minimum number of turns for the sanitisation and stabilisation phases. These are critical limits. The compost must be turned at least twice during sanitisation and at least twice during stabilisation. Should any batch fail to meet the critical limits, all of the material within that batch is returned to</p>

Overall Environmental Performance		
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm	Newbourne Farm Permit Documents
		<p>the reception area and reprocessed with fresh material to restart the process.</p> <p>4) Compost block height and width: Each compost batch shall be approximately 5m high, 12m wide and 50m long. This is detailed in the SOP. The typical batch size is 1,000 tonnes. There is currently no written control of the compost block height and width. There is currently no control over compost block porosity.</p>

Odour and Diffuse Emissions to Air			
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm		Newbourne Farm Permit Documents
37	In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below.		The operator currently possesses an Environmental Permit Management System which includes adaptations of the operation to meteorological conditions. The operator does record weather data in a spreadsheet on site and amends operations, including avoiding batch formation, batch turning, shredding, blending or screening when the wind is over a certain windspeed or when the wind is blowing in the direction of the sensitive receptor.
	Technique	Description	
	a. Use of semipermeable membrane covers	Active composting windrows are covered by semipermeable membranes.	
		Applicability	
		Generally applicable.	

Odour and Diffuse Emissions to Air					
BAT Conclusion No	BAT Guidance (Adapted from Annex I of Directive 2010/75/EU) / Information that needs to be provided by Newbourne Farm			Newbourne Farm Permit Documents	
	b.	Adaptation of operations to the meteorological conditions	<p>This includes techniques such as the following:</p> <ul style="list-style-type: none"> - Taking into account weather conditions and forecasts when undertaking major outdoor process activities. For instance, avoiding formation or turning of windrows or piles, screening or shredding in the case of adverse meteorological conditions in terms of emissions dispersion (e.g. the wind speed is too low or too high, or the wind blows in the direction of sensitive receptors). - Orientating windrows, so that the smallest possible area of composting mass is exposed to the prevailing wind, to reduce the dispersion of pollutants from the windrow surface. The windrows and piles are preferably located at the lowest elevation within the overall site layout. 	Generally applicable.	

3.0 CONCLUSION

As can be seen from the above assessment, Newbourne Farm Composting Ltd operates to BAT compliance standards in all areas. Newbourne Farm Composting Ltd will continue to uphold the high levels of discipline when operating the site and will endeavour to review and update their operating systems in line with the requirements.