Permit Application Supporting Statement
Fenn's Bank IVC

VEOLIA ES (Shropshire) Limited

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Version 1

Document control

Version	Revision date	Reason for revision
V1	05/2025	Permit Application

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1. Overview

This document presents a permit application for a proposed In-Vessel Composting (IVC) facility at Fenn's Bank. The application is submitted by Veolia ES Shropshire Limited (Company number 06256563) and outlines the development and operation of a facility processing a maximum of 50,000 tons per year of primarily municipal green and food waste, with the flexibility to accept smaller quantities of merchant waste. The IVC facility will process input material to BSI PAS100 and the Quality Protocol for compost producing a valuable resource for soil conditioning and improvement.

The document details various aspects of the project, including the site setting, process description, environmental controls, management plans, and monitoring requirements. The site at Fenn's Bank has a history of industrial use, previously housing an aluminum slag reprocessing plant. The proposed IVC facility will repurpose an existing building and incorporate state-of-the-art composting technology to ensure efficient and environmentally responsible waste management.

Key environmental considerations, such as air emissions, leachate management, and surface water control, are addressed, with detailed plans for mitigation and monitoring. The facility will operate under negative pressure to contain odors, and air treatment systems will be installed to minimize emissions. This application seeks a new permit under the Environmental Permitting Regulations for waste recovery and biological treatment, marking a transition from the site's previous industrial activities.

This document provides an overview of the proposed IVC facility, demonstrating Veolia's commitment to sustainable waste management and environmental protection. It supports the application for a new permit, enabling the development of a modern and efficient composting operation at Fenn's Bank.

2. Non-Technical Summary

Shropshire IVC 'the IVC facility' will be operated by Veolia ES Shropshire Limited 'Veolia' and will accept 50,000 tonnes per year of primarily municipal green and food waste. The facility is located in Fenn's Bank which is just under 3km south west of Whitchurch and just under 13km south east of Bangor-on-Dee. The input green and food waste will be recycled by the IVC facility to produce a BSI PAS100 compliant compost material which will be used for agricultural or horticultural soil conditioning or improvement. Treatment capacity can also be available for merchant waste inputs from a wider range of sources including business, commercial or trade premises with these being secondary to the municipal waste inputs. All municipal and merchant waste inputs will be classified as non-hazardous.

The site layout will comprise an existing repurposed main building of approximately 95m by 52m and around 11m high which will be divided into two roughly equally sized compartments comprising input storage and shredding in one area and the IVC tunnels in the other, providing clear separation between 'clean' and 'dirty' processes. A sealed concrete stabilisation / maturation pad will be sited externally to the south west of the site including a tech room housing fans. An air abatement system with acid scrubber / humidifier and biofilter will be situated to the north of the site along with storage tanks for process generated leachate / condensate. Refining and screening plant will be sited to the north along with storage of finished product.

Waste inputs will arrive by road vehicle and from initial storage in an enclosed waste reception building will be shredded to a uniform size to prepare the material for the composting process in accordance with the Animal By Product Regulations 'ABPR'. From there it will be loaded into one of seven concrete tunnels situated within the main building where sanitisation will take place under controlled aerobic conditions of two stages / 'barriers'. During this process key parameters such as temperature, oxygen and moisture content are monitored and automatically controlled to ensure all required regulatory thresholds are achieved. Once the material is sanitised it is transferred from the tunnels to an external pad where stabilisation stage takes place. The stabilisation / maturation pad has a forced air system supplying the oxygen required for the remainder of the composting process. Following stabilisation the material will be processed through a refining plant comprising a star screen, overband magnet, wind sifters and a trommel. The refining process will remove oversized woody material, plastics, metals and separate the compost into both agricultural and horticultural grades.

The principal environmental releases from the IVC facility will be waste gases produced within the vessels / tunnels which are extracted from the process and then treated via an abatement plant (which includes an acid scrubber and biofilter). The building, including the waste reception area, and the the vessels / tunnels treatment area is maintained under slight negative pressure, with the extracted air also being sent to the abatement plant. Leachate and condensate from composting, and contaminated surface water streams are collected and either sanitised as required and recirculated within the process, or held in storage pending off-site for disposal at appropriately licensed facilities. Clean uncontaminated surface water from non waste storage and processing areas is discharged off site into the surface water drainage network. There is no water treatment plant on site (other than sanitisation) and no emissions connection to an off site sewer network. There are no emissions to ground water or land.

The site setting is agricultural and has been in industrial use since 1998 as a salt slag reprocessing facility principally producing aluminium oxide and operating under a modern style environmental permit since 2005 (VP3030BX). An adjacent site (Mereside industrial park) was formally an aluminium works since the 1940s. The closest residential receptor is 115m to the south east near Mereside Industrial Park. There are other isolated or small clusters of residential dwellings within 1km of the site. The Facility is located in proximity to the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses which are designated a RAMSAR site, Special Area of Conservation 'SAC' and a Site of Special Scientific Interest 'SSSI'. There are also several other Sites of Importance for Nature Conservation 'SINCs' within close proximity. The site is adjacent to, and downgradient of, a landfill formed of waste aluminium slag, which has been remediated by the Environment Agency, although leachate from the landfill is known to have formed a plume down gradient of the site. Veolia will be applying for a new permit rather than a

variation of the current authorisation as there is no crossover between the activities. The existing permit is being surrendered by the current operator.

The IVC facility will be operated in accordance with a fire prevention and management plan ‘FPMP’ which includes adequate water supply via a hydrant network to extinguish a fire in the worst case scenario. A fire detection system is in place with an alert / notification system. There is no automatic suppression system due to the low risk of fire in the humid reception and shredding area, the low residence time and the limited amount of material in storage. Most of the repository on site is in an actively managed phase; either sanitisation, stabilisation or maturation, or has ceased to be a waste (BSI PAS100 end product).

Air dispersion modelling has been carried out which demonstrates the impact to off site receptors is not significant with appropriate controls in place. Odour and ammonia emissions are controlled by an acid scrubber and a biofilter with a wood chip media. The IVC facility will be operated in accordance with an odour management plan ‘OMP’ which ensures appropriate measures continue to be in place to control odour.

The application is accompanied by a bioaerosol risk assessment which concludes that where emissions are controlled in accordance with appropriate measures the off site risk will be very low. Bioaerosol emissions will be monitored every 6 months in accordance with the requirements of appropriate measures guidance.

Noise emissions from the facility have been assessed and modelled including comparing background measurements with predicted emissions from the array of fans operating the biofilter, composting tunnels and forced aeration of the stabilisation pad, yellow plant movements and the operation of the shredder and refining plant. The facility will be operated in accordance with a noise management plan which ensures appropriate measures continue to be in place to control noise.

Other associated management plans include a dust and emissions management plan ‘DEMP’ and a pest management plan.

The IVC process is tightly controlled and regulated by both the environmental regulator (Natural Resources Wales) and the Animal and Plant Health Agency (APHA) who are principally concerned with the spread of transmissible diseases with their areas of focus being sanitisation and cleanliness.

Veolia operates under an integrated management system that defines the business procedures, formulated to assist in meeting business objectives across the entire scope of Veolia’s activities. The system is externally certified to ISO:14001 and therefore is subject to both internal and external audits to ensure compliance and to promote continual improvement. Veolia sites are certified as operating to Competence Management System - Energy & Utility Skills. The certification includes both in-vessel and open windrow composting sites.

3. Site Setting

3.1. Location

The Fenn's Bank IVC is located at just under 3km south west of Whitchurch and just under 13km from Bangor-on-Dee. The site sits within a principally agricultural setting less than 500m from the border between Wales and England. The closest residential receptor is 115m to the south east near Mereside Industrial Park. There are several other isolated or small clusters of residential dwellings within 1km of the site. The site has been in industrial use since 1998 as a salt slag reprocessing facility principally producing aluminium oxide operating under a modern permit since 2005 (VP3030BX). The adjacent site (Mereside industrial park) was formally an aluminium works since the 1940s.

3.2. Human Receptors

To the east are a mixture of farms and residential properties including converted farm dwellings. To the south is the Meresite Industrial Park which is a small collection of light industrial and non retail commercial premises. To the north is agricultural land with the nearest dwellings approximately 340m away. West of the site is predominantly agricultural with a few farm dwellings the closest of which is approximately 700m away. The table below lists relevant receptors which are also shown on the following plan.

Table of receptors

Receptor type	No.	Land use e.g. house, school, hospital, commercial	Direction from site (North, South, East, West)	Approximate distance to site boundary excluding access road (m)
Human	R1	Park Farm Cottages, Fenn's Bank Road	East	190
	R2	Fenn's Bank Road 2	East	220
	R3	Fenn's Bank Road 3	South East	240
	R4	Residence near Mereside Industrial Park	South East	308
	R5	The Conery, Conery Lane	South West	680
	R6	Woodlands Farm, Conery Lane	West	470
	R7	Conery Lane Farm, Conery Lane	North West	770
	R8	Pinfold Cottage, Long Lane	North West	840
	R9	The View, Fenn's Bank Road	North West	390
	R10	Waterworks Lane 1	East	480
	R11	Fenn's Bank Road 4	South East	310
	R12	Mereside Industrial Park	South	180
	R13	Bowkers Lane	North	960
	R14	Ellesmere Road	North	1060
	R15	Waterworks Lane 2	East	930
	R16	Fenn's Cottage	South	860

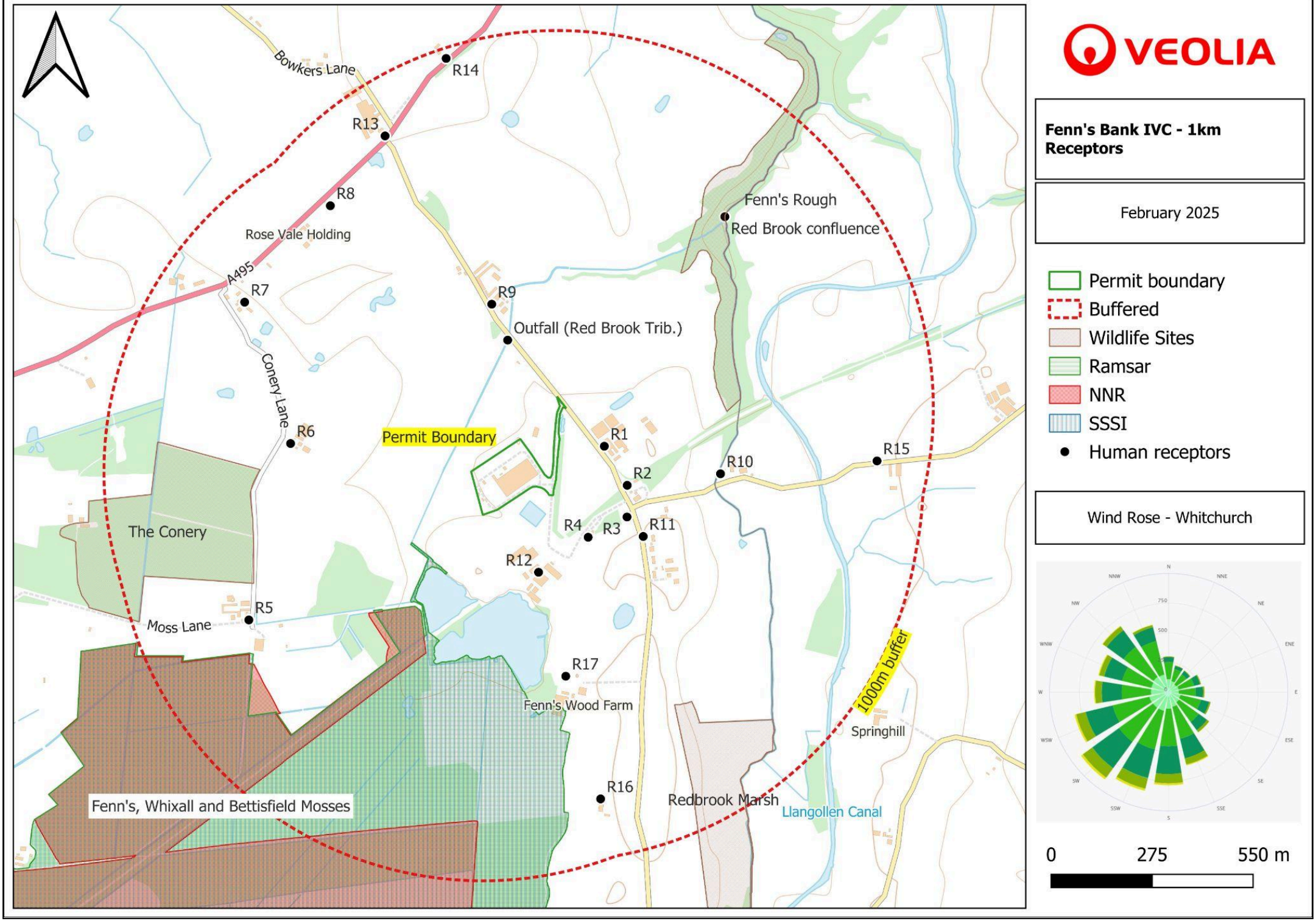
	R17	Fenn’s Wood Farm	South	580
Infrastructure		A495 (Long Lane)	North West	850

3.3. Ecological Receptors

There are several ecological receptors surrounding the site including the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses which are designated a RAMSAR site, Special Area of Conservation ‘SAC’ and a Site of Special Scientific Interest ‘SSSI’. There are also several other Sites of Importance for Nature Conservation ‘SINCs’ surrounding the proposed IVC facility.

Table of receptors

Receptor type	Land use e.g. house, school, hospital, commercial	Direction from site (North, South, East, West)	Approximate distance to site boundary excluding access road (m)
Ecological	Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses	South West	200
	The Conery	West	585
	Redbrook Marsh	South West	700
	Fenn's Rough Ancient Woodland	North East	510
	Red Brook (Watercourse)	East	465


Bowkers Lane
R14
R13
R8
Rose Vale Holding
A495
R7
R9
Outfall (Red Brook Trib.)
Fenn's Rough
Red Brook confluence
Conery Lane
R6
Permit Boundary
R1
R2
R10
R15
The Conery
R4
R3
R11
R12
R5
Moss Lane
R17
Fenn's Wood Farm
1000m buffer
Springhill
R16
Redbrook Marsh
Llangollen Canal
Fenn's, Whixall and Bettisfield Mosses
VEOLIA
Fenn's Bank IVC - 1km Receptors
February 2025
Permit boundary
Buffered
Wildlife Sites
Ramsar
NNR
SSSI
Human receptors
Wind Rose - Whitchurch
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
750
500
0
275
550 m

4. Permitted activities

The primary operation, IVC, is a listed activity within Schedule 1 of the Environmental Permitting Regulations as Section 5.4 Part A(1)(b)(i) activity allowing for the "recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving biological treatment". There will be several directly associated activities including storage of waste inputs pending the composting process, uncertified compost outputs prior to achieving non-waste status and intermediate storage of contraries and the oversized fraction. Physical treatment of waste prior to composting including shredding and post treatment including screening. Storage and collection of process water including leachate and condensate. Discharge of uncontaminated surface water from non waste storage and processing areas to the Red Brook. Collection and storage of contaminated surface water from the stabilisation / maturation area. Treatment of contaminated air via an acid scrubber and biofilter prior to release to the atmosphere. There will also be storage of raw materials including fuel for onsite vehicles.

The table below summarises the permitted activities which are proposed at the IVC facility and lists the Waste Framework Directive Annex I and II 'R and D codes'

Activity	Description	WFD Annex I and II operations
In Vessel Composting	S5.4 A(1) (b) (i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment. Receipt of green and food waste and other suitable waste inputs with the purpose of composting under aerobic conditions in closed concrete tunnels fitted with air abatement. Stabilisation of compost is carried out externally on an impermeable surface with sealed drainage.	R3: Recycling/reclamation of organic substances which are not used as solvents
Storage of waste pending recovery	Receipt of green and food waste and other suitable waste inputs stored in an enclosed building with air extraction and abatement. Storage of compost windrows, residuals including oversized and waste awaiting refinement on an impermeable surface.	R13: Storage of waste pending the R1 to R12 operation (excluding temporary storage, pending collection, on the site where it is produced)
Physical treatment for the purposes of recycling	Pre-treatment of waste prior to composting in an enclosed building fitted with appropriate air abatement and on an impermeable surface with a sealed drainage system including shredding and screening. Post-treatment of processed compost on an impermeable surface with a sealed drainage system including screening to remove oversized material and contraries.	R3: Recycling/reclamation of organic substances which are not used as solvents
Storage of finished compost and non-composted fraction	Storage of processed uncertified compost on an impermeable surface with a sealed drainage system.	R13: Storage of waste pending the R1 to R12 operation (excluding temporary storage, pending collection, on the site where it is produced)

Process water collection and storage	Collection and storage of compost leachate and condensate produced at the facility and contaminated surface water run-off to dispatch off-site or re-use within the facility.	Collection and storage of compost liquor/leachate in 3 storage tanks.
Surface water collection and storage	Collection of uncontaminated roof and site surface water from non-operational areas only to re-use within the facility or discharge off-site.	Collection and storage of uncontaminated roof and site surface water in an attenuation pond and/or storage tank.
Air treatment	Collection of air from site processes for treatment and release of treated air to the atmosphere.	Collection and treatment of air from the buildings or plant using abatement system (scrubber and biofilter) prior to release to atmosphere.
Raw material storage	Receipt of raw materials for use within the facility.	Storage of raw materials including fuel oil and Adblue.

5. Process Description

5.1. Site design

The site layout will comprise an existing building which was used by the salt slag reprocessing facility. The building can be repurposed for the proposed activity which is environmentally favourable to demolition. The existing building is approximately 95m by 52m and around 11m high and it will be divided into two roughly equally sized compartments comprising:

- Input storage and shredding
- IVC tunnels

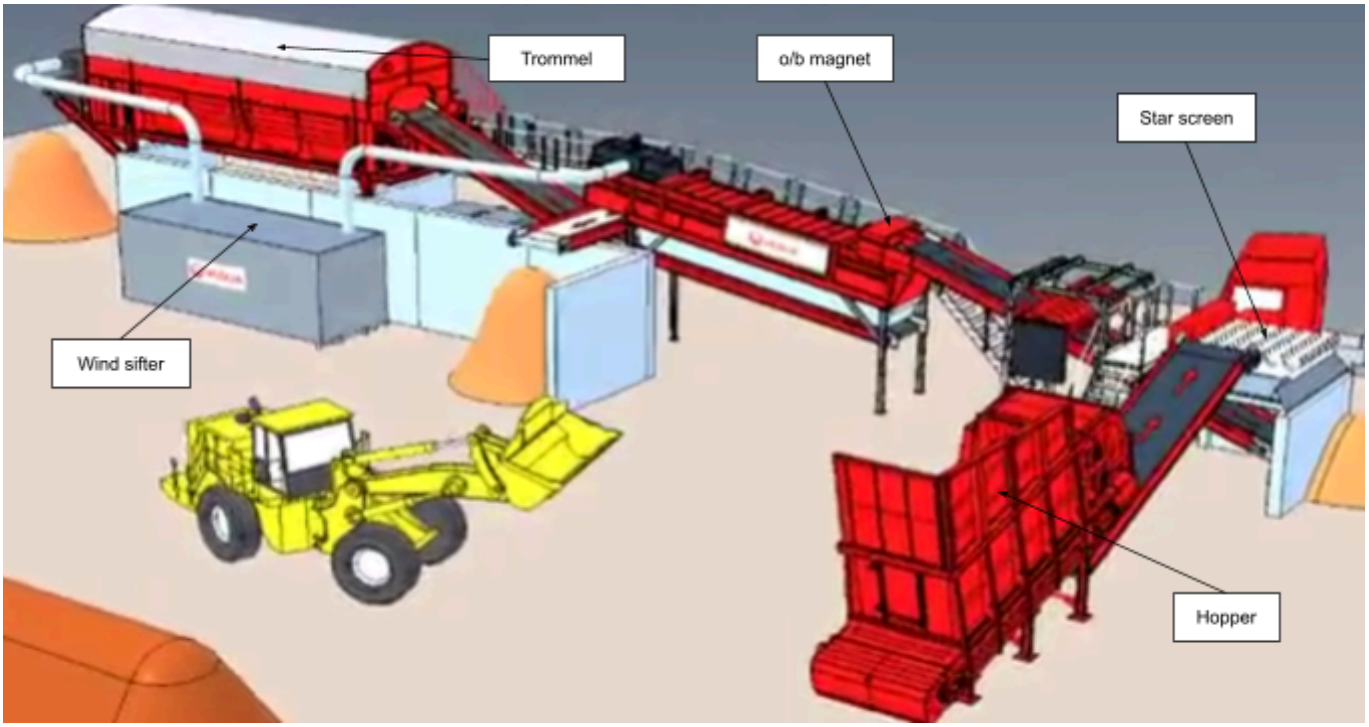
These compartments will be separated by a solid partition providing clear separation between ‘clean’ and ‘dirty’ processes preventing contamination of sanitised material from input material. Wastes stored in the input compartment will typically have a high moisture content and the resulting condensate is corrosive to exposed metal work. A spray applied closed cell polyurethane foam with an impervious polyurea top coat will be installed to prevent corrosion. The foam will be applied to all primary and secondary steelwork, as well as the inside face of the external wall cladding and the roof soffit. The polyurethane will typically be around 100mm thick, with the polyurea top coat providing an air tight impervious coating. The input and pre-treatment compartment will house a bank of bays of concrete / Legioblock construction for incoming waste and pretreated shredded waste. There will be an electrically powered shredder which will reduce the waste size to a consistent <40mm fraction prior to composting. The building will be fitted with two roller shutter doors to allow bulk vehicles in and out to deposit waste. There will also be a cleaning facility to allow the sanitisation of vehicles moving either outside for refuelling or between the input material and the IVC process. Leachate generated from cleaning and from the storage of waste will be directed to a fixed tank. There will be a doorway in the solid partition to allow movement of shredded waste to be moved by handling equipment through to the IVC process. There will also be a hatch close to the refining plant to allow tipping of oversized material back into the input compartment without having to traverse around the facility.

The IVC compartment will comprise 7no. 32m long concrete tunnels which will house the waste undergoing treatment and the monitoring and control equipment. IVC tunnels will be open at both end to allow filling and emptying which preserving the status of the material, i.e. the process flow minimises the potential for cross contamination. There is a filling corridor at both ends of the concrete tunnels.

A stabilisation / maturation pad will be sited externally to the south west of the site adjacent to the emptying corridor of the tunnels. Once sanitised the waste will be moved externally into one of 16 bays all with forced aeration. Air is supplied by a bank of fans situated inside a tech room adjacent to the pad. The air is routed to the sanitised waste via a network of piped and spigots within a slotted concrete floor.

Once sanitised the material will be processed through a refining plant which comprises a star screen, overband magnet, windsifters and a trommel. The star screen will remove gross oversized material which will be stored temporarily and then recirculated back into the process at the shredding stage allowing for selection of woody (higher carbon) structural material where required to supplement inputs which may be higher in nitrogen content. An overband magnet will remove any residual metals within the material and laughter materials, mainly plastics will be removed by wind sifters. The plastics will chuted to netted RORO for storage pending removal from site to a suitably licensed energy recovery facility. An indicative layout for the refining plant is provided below. Two concrete bays will be sited next to the refining plant for product storage.

An air abatement system with acid scrubber / humidifier and biofilter will be situated to the north of the site along with storage tanks for process generated leachate / condensate. The biofilter will be of modular construction with a technical corridor housing associated air handling fans and a monitoring / irrigation system. There will be an associate control room and fire pumphouse. Tanks for the collection of leachate will be bunded in accordance with CIRIA 736.



5.2. Design capacity

The proposed facility will be designed to process up to 50,000 tonnes per annum of green and food waste inputs via an in vessel composting process to produce a non waste soil improver.

5.3. Process parameters

The three major factors that play an important role in the composting process are oxygen, humidity level and temperature.

5.3.1. Oxygen

The most important factor in the composting process is the level of oxygen available to the micro-organisms. Without oxygen, composting cannot take place. In the beginning of the composting process, decomposition of the organic matter is rapid and this is proportional to the oxygen consumption. As the composting progresses, the rate of decomposition and the oxygen consumption reduce. The oxygen used by the micro-organisms must be replenished. This is carried out using pressurised aeration within the vessels. The air supply requirement depends strongly on the material. A high humidity level can reduce the level of flow through the material, which negatively affects the air flow. The flow can be increased by ensuring the input material has sufficient porosity which is managed by a menuing process whereby the inputs are mixed either food / green ratios or by introducing woody oversized material which is rejected bt the refining plant which can be shredded to provide structural amendments to the inputs.

5.3.2. Humidity level

Micro-organisms require a humid environment to absorb nutrients and oxygen. Therefore, maintaining adequate moisture levels is critical to the process. The humidity level depends on the composition of the material and the extent at which aeration takes place. As a result of aeration, the water vapour formed at high temperatures in the material is discharged. If the humidity level drops below 30%, the composting process suffers substantially. A humidity level of 45 – 50% is ideal for the composting process. If the flow of the material to be composted is adequate, the humidity level can increase to approximately 75%. Humidity levels are maintained by a tunnel irrigation system.

5.3.3. Temperature

The temperature of the material to be composted also plays an important role in the composting process and it depends directly on the heat production generated by the activity of the micro-organisms. The activity of the micro-organisms in turn depends on the temperature, humidity level, oxygen level and presence of nutrients. Extremely high or extremely low temperatures negatively affect the composting process. At lower temperatures, the decomposition is slow, the material remains very humid and pathogenic organisms do not die. If the temperature is too high, only some of the thermopile micro-organisms are active which has a negative effect on the decomposition process. Most micro-organisms cannot survive temperatures higher than 70°C. A constant temperature between 45 – 55°C is required for optimum development of the composting process.

5.4. Process phases

The process is generally driven through several sub-phases. Depending on the feedstock and product requirements, these sub-phases can differ slightly.

5.4.1. Levelling off

Large temperature differences in the mixture can occur after the filling process. A small ΔT is required to achieve the optimum homogenous conditions which can be achieved by blowing air through the material. Aeration of the material does not only result in a constant temperature, but it also properly activates the composting process. The levelling off time varies from approximately 2 to 4 hours. The required quantity of ventilation air depends on the compost temperature and the activity of the compost. The average typical compost temperature is set to approximately 30°C. Once the differences in compost temperatures have been reduced, the heating up process can commence.

5.4.2. Heating up

In this phase the starting point is a temperature increase of 1°C / hour. The metabolic activity of the micro-organisms within the compost is generally so high that heat increase occurs without any intervention. To reach this, the supply of fresh air is restricted. Therefore, the oxygen level is important in this phase. The quantity of oxygen required in the air depends on the location at which it is measured. When measured underneath the composting pile at least 12% oxygen is required whereas at least 10% should be measured above the pile. Too much circulation leads to unwanted drying which slows down the process activity. The required quantity of ventilation air depends on the differences in compost temperature and the activity (rate of heat increase) of the compost.

5.4.3. Pre-composting

The temperature is maintained at approximately 50°C during the pre-composting phase. The easily decomposable compounds are decomposed during this process. In addition, a lot of water evaporates. Both activities lead to a substantial reduction in the compost volume.

5.4.4. Hygienization

In order to comply with the Animal By-Products Regulations (ABPR), the air supply must be set to a minimum of e.g. 60°C for a 48-hour period. All harmful organisms (germs and weed seeds) are killed in this phase.

5.4.5. Cooling down

In this phase, the compost temperature is set to a given temperature. The starting point is a temperature drop of 0.5°C/hour. The cooling down process is initiated by increasing the quantity of air blown through the compost and/or by sprinkling water onto the material.

5.4.6. Composting

Composting takes place at a temperature of approximately 52°C: the optimum temperature for the required thermopile micro-organisms. The air temperature depends on the compost's activity. The volume of the compost is further reduced during this phase.

5.4.7. ABPR

Input material is required to be shredded to a uniform size and loaded into what is known as the first ‘barrier’ i.e. the tunnel. The input material and the first barrier stage are considered to be a ‘dirty’ or red area under ABPR. The regulations ensure that strict procedures are in place to prevent cross-contamination of ‘clean’ or green areas (where product is processed and stored) from red areas. After the first barrier the material is transferred to the second ‘barrier’, where the composting process continues. Processing in 2 stages ensures that all parts of the compost mass reaches the required temperature setpoints and duration to ensure the material is fully sanitised. The two stage process is a requirement for inputs containing raw meat content.

5.5. Monitoring and control systems

A control program is responsible for the optimum values for the temperature, the humidity level and the oxygen level of the material to be composted. Several measurements are carried out to achieve this. Sensors are used to measure the values and transmit data to the computer, working as follows:

1. The temperatures, air quantity and oxygen level are measured independently within each tunnel.
2. The control system compares the real value with the set value, programme or threshold.
3. The computer determines which position the fan and air valves should be set to reach or maintain the set or calculated value.
4. The computer sets the air valves and the fan to the given or calculated position.
5. The system modulates through the above steps continuously ensuring all set points are completed.

5.5.1. Composting tunnel construction

An aerobic tunnel consists of a sealed concrete structure provided with a special door equipped with a rubber sealing. The concrete floor houses a series of parallel PVC pipes which are lengthwise incorporated in the floor. These pipes are provided with tapered plastic nozzles called spigots and are used to distribute the air evenly over the tunnel. In this way, the composting process can be controlled properly, and aerobic conditions can be maintained in the complete batch of material being processed.

Each tunnel has its own centrifugal fan that blows a mixture of fresh air and recirculated process air via the spigot pipes to the composting material. Both the fan and the individual spigot pipes are connected to a header at the back of the tunnel.

Used process air can flow, via an air outlet at the top of the tunnel, either back to the fan for recirculation or to the central exhaust duct. The recirculation air supply valve is mechanically linked to the fresh air supply valve and its operation is exactly opposite to the fresh air-supplying valve. If less recirculation air is supplied, more fresh air is automatically blown through the material. The mixture of fresh air and process air is set using the computer controlled, electrically actuated, valves.

Each composting tunnel has its own aeration system consisting of above-mentioned fan and valves as well as the required instrumentation. Each system is connected to two central air ductworks: the central fresh air supply ductwork and the central process air discharge ductwork for the warm and humid air released during the composting process going to the odour abatement system.

In the composting tunnels, negative pressure is maintained throughout the process to prevent polluted and odorous air being released inside the buildings. The discharge air connection to the tunnels is equipped with a motorized air valve to ensure this negative pressure and to ensure the tunnels are fully separated from each other. Each tunnel is also equipped with a negative pressure protection valve set at -300 Pa by a mechanical system.

5.6. Air treatment system

5.6.1. Ventilation of the buildings

Air is continuously drawn from the facility buildings to maintain negative pressure. The air from these areas is discharged using axial flow fans or wall fans. The air flow rate can be adjusted by setting the fan's capacity as the fan is equipped with a frequency transformer. A temperature control for the biofilter air supply is built into the control

software with minimum and maximum set points. When the minimum temperature is reached, the fan's capacity drops. When the maximum temperature is reached, the fan's capacity increases.

Some of the air evacuated from the building envelope is used as fresh air for the tunnels. A constant air supply pressure is required in the tunnel's fresh air supply duct to adequately control the composting process. A by-pass connection to the biofilter fans is built-in because the required quantity of air varies. Therefore, based on the pressure measurement feedback, the by-pass valve is activated.

5.6.2. Tunnel exhaust air

Following the breakdown of organic material, the aerobic tunnels will exhaust a certain amount of waste gas containing products of the decomposition process including ammonia. The biofilter temperature needs to be maintained within the optimum range (20-40°C), including when it is warmer during the summer and it is therefore necessary to introduce fresh air that can be extracted from the process building envelope.

5.6.3. Biofilter fans

All air flows through the input ductwork of the biofilter fans. The pressure loss in the biofilter, in the scrubber / air humidifier, together with the set negative pressure of the suction side, determine the total pressure drop of the fan. The fans capacity is controlled by a frequency transformer based on the defined negative pressure level at the suction side of the biofilter fans. The under pressure is measured in the tunnels process air discharge ductwork. Setting a specific negative pressure is important for obtaining a steady control of the process and the required discharge during the filling / emptying of the tunnel. Biofilter fans blow the air through the air scrubber. An overpressure valve is built into the ductwork to the biofilter fans to protect the air ductworks. The overpressure valve is set to a pressure of 2.000 Pa.

5.6.4. Air scrubbers

Acid scrubbers are installed on to treat the exhaust air prior to biofiltration. These units use sulphuric acid (H_2SO_4) as a reagent. The reagent is dosed by a dosing pump driven by pH signal.

The water discharge is automatically controlled by conductivity measurement whereas the water make-up in the scrubber is controlled by level sensors. The scrubber is also equipped with an acid storage and an ammonium sulphate tank. These units are also used to humidify the air flowing to the biofilters to ensure the high air humidity level which is essential for the correct operation of the biofilter. The water is absorbed by the air because of the close contact and of the temperature difference between the process water and the air. After the air scrubbing and humidifying process, the air flows to the biofilters. Droplet dischargers are mounted on the output side to prevent too much water being transported to the biofilters. The cleaning interval is managed based on the pressure loss (if this rises to more than 500 Pa, the unit must be cleaned). Electronic pressure recording instruments are mounted before and after the scrubber and send their measurement signals to the SCADA system.

5.6.5. Biofilter

The discharge air is guided through the biofilter to reduce odour levels before it is discharged to the atmosphere via a 20m high stack. The biofilter consists of a concrete basin divided into two different fields. The biofilter floor consists of perforated concrete slabs supported by walls which allow the air to flow evenly under the complete field. The polluted air is blown into an air plenum, flows under the biofilter floor and from here through the biofilter material which consists of a mixture of wood chips. The biofilter material is selected to optimise purification capacities, life, limited pressure losses and a good moisture holding capacity.

Each field can be controlled using a manual air supply valve. The pollution in the air is initially adsorbed by biofilter material and then used by the micro-organisms as food. The waste products of the micro-organisms include carbon dioxide, water and heat.

The micro-organisms are only active in a humid environment. Therefore, the biofilter material must be able to retain

water. The target value for the humidity level of the biofilter material is between 50 and 70%. This is obtained by flowing the air through the scrubber / air humidifier before passing it through the biofilter. The humidity level of the air is then more than 95%. A biofilter irrigation system is in place so that additional water can be introduced if required.

The optimum temperature of the biofilter material is between 20 – 40°C. Below 15°C, the biological conversion process is limited even though the ecosystem itself does not die off at these temperatures. The presence of solid substances in the air flow (dust) also has a negative effect on the operation of the biofilter material. These particles block-up the biofilter, preventing the air from flowing through. For this reason the air flowing from the process buildings is scrubbed to reduce the dust content. The biofilter material has a life of around 4 years, however the media does shrink and must therefore be topped up periodically. Multiple fields means that maintenance can be carried out without taking the abatement system off line.

By combining the suction of cold air from outside or from the different buildings with the exhaust of hot air from the composting section, the biofilter receives a suitable amount of heat from the aerobic process therefore maintaining the biofilter within the appropriate temperature range.

Biofilter operation is outlined below:

1. Air Collection: Foul air containing pollutants (like ammonia) is collected from a source (tunnels / processing and input halls).
2. Air Distribution: The collected air is then directed via connected ductwork to the biofilter. It's important that the air is distributed evenly across the biofilter media to ensure efficient treatment. This is achieved using a gas distributor.
3. Biofilter Media: The core of a biofilter is its media, which is woodchip based. The media provides a large surface area for microorganisms to grow and for pollutants to be absorbed or adsorbed.
4. Microorganisms: The biofilter media is populated with microorganisms, such as bacteria and fungi. These microorganisms are key to the biofiltration process.
5. Pollutant Removal: As the foul air passes through the media, the pollutants are transferred from the air to the media. This can happen through absorption (where the pollutants dissolve in a liquid or biofilm on the media) or adsorption (where the pollutants stick to the surface of the media or the biofilm).
6. Biological Degradation: The microorganisms in the media then break down the pollutants into simpler, less harmful substances; this is the biological oxidation process. The by-products of this process are typically water, carbon dioxide, mineral salts, and new biomass.
7. Clean Air Release: The treated air, now with significantly reduced pollutant levels, is released from the biofilter via a 20m stack.
8. Moisture Control: Maintaining the right moisture level within the biofilter is crucial. The media needs to be moist enough to support the microorganisms and to facilitate absorption, but not so wet that it becomes waterlogged. Irrigation systems are in place to control the moisture content.
9. Monitoring and Maintenance: Biofilters are regularly monitored and maintained to ensure they are working effectively. This includes checking airflow, temperature, moisture levels, and the pressure drop across the media.

5.7. Water systems

Two different types of wastewaters are produced within the composting facility: leachate and condensate. These wastewaters are recirculated with freshwater top up introduced when required.

5.7.1. Leachate circuit

Leachate is collected from the delivery area, from within the tunnels and from the stabilisation area, is collected and conveyed leachate collecting pits. These pits remain full of water acting as a water-lock on the air pressure inside the system. When more fluid flows into the pits, water overflows and is pumped to the storage tank. Circuits are

provided with in-line filters. The quantity of water for each tunnel is measured with a central water flow measuring system. Main pits are equipped with level sensors and level switches.

5.7.2. Condensate circuit

Condensates, although collected in much higher quantities than leachate, contain a relatively small organic load. Condensates collected in the tunnel units and in the central air treatment systems is conveyed to the dedicated treatment system (not in WTT's scope). Condensates are discharged through PVC pipes.

5.7.3. Fresh water system

Fresh industrial water is used as make-up in the pits when needed, to clean the rotating sieves and to humidify the biofilter material. Fresh water is to be provided by the customer to the designated takeover points at the specified pressure and flow.

5.8. Control systems

The biological process is controlled by a PLC, visualised on software on a central SCADA. Operators can check the status of the installation, evaluate and adjust process parameters (setpoints) if required. The SCADA monitors all the inputs and is connected to a PLC that operates the control parameters (setpoints). The setpoints can be adjusted via visualisation software. Compared to linear control systems, such as PID regulators (generally adopted for the PLC control software), this logic suits non-linear processes. The system is built to quickly adapt to changing conditions, which is of utmost importance since the process can be influenced by many factors (waste characteristics, weather conditions, un-uniform filling, etc.). The system can be accessed remotely by the technology provider allowing an immediate repair or modification to the control and supervision software if needed. The table below shows a summary of the monitoring and control carried out within the tunnels, windrows and air abatement system.

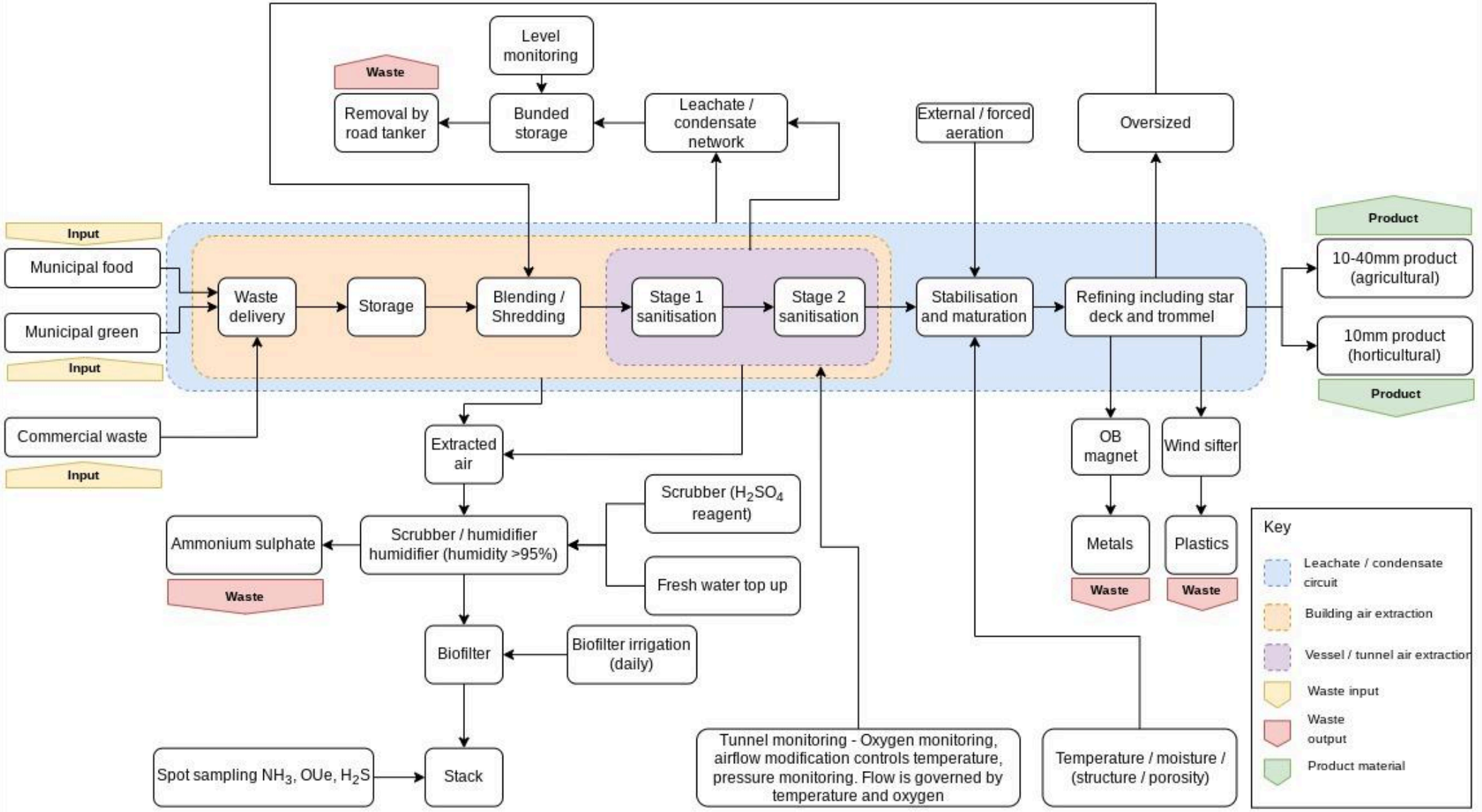
Site process stage	Monitoring
Individual tunnel (monitoring)	Air temperature (inlet)
	Air temperature (outlet)
	Air volume (based on RPM, temperature and pressure difference, calculated via fan curves)
	Pressure in the header
	Oxygen level
Individual tunnel (control)	Fan capacity (flow rate)
	Inlet air temperature - in fresh / recirculation
	Valves for the tunnel water supply
Individual windrow (monitoring)	Temperature via probe arrays
	Fan capacity (flow rate)
	Manual moisture check (squeeze test)
	Manual structure / porosity test (visual tactile checks)
Air circuit (monitoring)	Temperature before and after scrubber

Site process stage	Monitoring
	Pressure before and after scrubber
	Water level scrubber
	Water pH scrubber and biofilter
	Water EC scrubber
	Pressure exhaust duct
Air circuit (control)	Fans Capacity
	Biofilter inlet Air temperature
	Fresh water supply valve scrubber / humidifier
	Drainage valve scrubber / humidifier
	Acid dosing pump

Fenn's Bank IVC Facility - Process Flow diagram

VEOLIA

March 2025



6. EWC codes

The table below lists the proposed EWC codes for the IVC facility. The requested codes have been selected to allow the facility to accept municipal green and food waste with allowance for a broader range of merchant inputs. The codes have been selected to align with other similar facilities and currently available standard rules sets. The EWC codes listed allow the IVC facility to accept a wide range of organic wastes suitable for composting, broadly including:

- Municipal green and food waste
- Agricultural waste
- Food processing waste
- Wood waste
- Certain packaging materials
- Other biodegradable wastes

The following types of waste will be excluded from acceptance at the site:

- Hazardous wastes.
- Liquid waste.
- Waste which is infested with pests.
- Wastes containing Japanese Knotweed or other invasive plant species listed in the Invasive Species (Amendment etc.) (EU Exit) Regulations 2019.
- Wastes containing wood-preserving agents or other biocides and treated wood and post-consumer wood.
- Dusty waste i.e.waste consisting solely or mainly of dusts (except sawdust), powders or loose fibres.
- Biodegradable wastes that is significantly contaminated with noncompostable or digestible contaminants e.g. plastic and litter.
- Manures, slurries and spoiled bedding and straw from farms where animals have notifiable diseases as stipulated in the Animal By-Products (Enforcement) (England) Regulations 2013.

02 Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing

Waste code	Description
02 01	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	Sludges from washing and cleaning − vegetables, fruit and other crops
02 01 02	Animal tissue waste
02 01 03	Plant-tissue waste
02 01 06	Animal faeces, urine and manure (including spoiled fully biodegradable animal bedding)
02 01 07	Wastes from forestry
02 01 99	Wastes not otherwise specified – spent mushroom compost from commercial mushroom growing only
02 02	**Wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	Sludges from washing and cleaning, peeling, centrifuging and separation including wash waters and sludges from secondary food processing or the cook chill sector
02 02 02	Animal tissue waste
02 02 03	Materials unsuitable for consumption or processing

02 02 04	Sludges from on-site effluent treatment
02 03	**Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 01	Sludges from washing, cleaning peeling, centrifuging and separation (including sludge from production of edible fats and oils, seasoning residues, molasses residues, residues from production of potato, corn or rice starch only)
02 03 04	Materials unsuitable for consumption or processing (including waste from production of edible fats and oils, seasoning residues, molasses residues, residues from production of potato, corn or rice starch only)
02 03 05	Sludges from on-site effluent treatment (including sludge from production of edible fats and oils, seasoning residues, molasses residues, residues from production of potato, corn or rice starch only)
02 04	**Wastes from sugar processing**
02 04 01	Soil from cleaning and washing beet
02 04 03	Sludges from on-site effluent treatment
02 05	**Wastes from the dairy products industry**
02 05 01	Materials unsuitable for consumption or processing
02 05 02	Sludges from on-site effluent treatment
07 05 14	solid wastes other than those mentioned in 07 05 13
02 06	**Wastes from the baking and confectionery industry**
02 06 01	Materials unsuitable for consumption or processing
02 06 03	Sludges from on-site effluent treatment
02 07	Wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 01	Wastes from washing, cleaning and mechanical reduction of raw materials – biodegradable wastes from the processing of the raw materials used in the production of such beverages only (wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa))
02 07 02	Wastes from spirits distillation – spent grains, hops and whisky filter sheets and cloths, yeast and yeast like residues, sludge from production process, or malt husks, malt sprouts, yeasts and yeast-like residues only
02 07 04	Material unsuitable for consumption or processing - biodegradable wastes from the processing of the raw materials used in the production of such beverages only (wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa))
02 07 05	Sludges from on-site effluent treatment – sludges from the production of alcoholic and non–alcoholic beverages (except coffee, tea and cocoa)

03 Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard

Waste code	Description
03 01	**Wastes from wood processing and the production of panels and furniture- virgin timber only**
03 01 01	Waste bark and cork – virgin timber only

03 01 05	Sawdust, shavings, cuttings, wood and particle board other than those in 03 01 04 only – virgin timber only
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood – virgin timber only
03 03 10	fibre rejects – virgin timber only

04 Wastes from the leather, fur and textile industries

Waste code	Description
04 01	**Wastes from the leather and fur industries**
04 01 01	Fleshings and lime split wastes
04 02	**Waste from the textile industry**
04 02 10	Organic matter from natural products such as grease and wax

15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified

Waste code	Description
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 01	Paper and cardboard packaging (excluding veneers, plastic coatings or laminates) certified to EN 13432 or equivalent certified compostable standard
15 01 02	Plastic packaging – certified to EN 13432 or equivalent certified compostable standard
15 01 03	Wooden packaging – virgin timber only
15 01 05	Composite packaging certified to EN 13432 or equivalent certified compostable standard
15 01 09	Textile packaging – made entirely from biodegradable fibres only
15 02	**Absorbents, filter materials, wiping cloths and protective clothing**
15 02 03	Absorbents, filter materials and cloths from the production of alcoholic and non-alcoholic beverages other than those mentioned in 15 02 02 – hops and whisky filter sheets and cloths made from compostable material only

16 Wastes not otherwise specified in the list

Waste code	Description
16 03	**Off-specification batches and unused products**
16 03 06	Organic wastes other than those mentioned in 16 03 05 – untreated wool fleece only (excludes hides and skins)
16 10	**Aqueous liquid waste destined for off-site treatment**
16 10 02	Untreated wash waters from cleaning fruit and vegetables on farm only
16 10 02	Liquor or leachate from a composting process that accepts waste input types listed in these standard rules or composting standard rules only and in compliance with Animal by Products Regulation

17 Construction and demolition wastes (including excavated soils from contaminated sites)

Waste code	Description
17 02	**Wood, glass and plastic**
17 02 01	wood – allowed if biodegradable material only, with no chemical additives or preservative, and no persistent organics present. Untreated wood only. Not allowed if treated, for example contains veneers, other coatings or preserving substances.
17 05	**Soils (excluding excavated soils from contaminated sites), stones and dredging spoil**
17 05 06	Dredging spoil other than those mentioned in 17 07 05 (from inland waters only)

19 Wastes from waste management facilities, off-site waste water treatment plants and preparation of water intended for human consumption/industrial use

Waste code	Description
19 02	**Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation**
19 02 03	Premixed wastes composed from waste listed within this table only
19 02 06	Sludges from physico-chemical treatment other than those mentioned in 19 02 05 (sewage sludge which has been previously pasteurised and stabilised only)
19 05	**Wastes from the aerobic treatment of solid wastes**
19 05 01	Non-composted fraction of municipal and similar wastes – from composting process that accepts wastes listed in this table, made up of previously sanitised batches only
19 05 02	Non-composted fraction of animal and vegetable waste from composting process that accepts wastes listed in this table, made up of previously sanitised bathes only
19 05 03	Off-specification compost (from a composting process that accepts wastes listed in this table only and made up of previously sanitised and stabilised batches only
19 06	**Waste from the anaerobic treatment of waste**
19 06 03	Liquor from anaerobic treatment of municipal waste (from a process that accepts wastes listed in this table or anaerobic digestion standard rules only) and made up of previously pasteurised and stabilised batches only
19 06 04	Digestate from anaerobic treatment of municipal waste from a process that accepts wastes listed in this table or anaerobic digestion standard rule permits and made up of previously pasteurised and stabilised batches only
19 06 05	Liquor from anaerobic treatment of animal and vegetable waste from a process that accepts wastes listed in in this table or anaerobic digestion standard rule permits and made up of previously pasteurised and stabilised batches only
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste from a process that accepts wastes listed in this table or anaerobic digestion standard rule permits and made up of previously pasteurised and stabilised batches only
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste (previously digested sewage sludge only)
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**

19 12 01	Paper and cardboard (excluding veneers or plastic coatings) certified to EN 13432 or equivalent certified compostable packaging only
19 12 07	Wood other than mentioned in 19 12 06
19 12 12	Waste types listed within this table that have been subjected to mechanical treatment only from a process that treats wastes which are listed in this table or composting standard rules and made up of previously sanitised/pasteurised and stabilised batches only)

20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions

Waste code	Description
20 01	**Separately collected fractions (except 15 01)**
20 01 01	Paper and cardboard (excluding veneers, plastic coatings or laminates) certified to EN 13432 or equivalent certified compostable packaging only
20 01 08	Compostable kitchen and canteen waste – containing compostable plastics certified to EN 13432 or equivalent certified compostable only (Category 3 ABPR waste only)
20 01 25	Edible oils and fats
20 01 38	Wood other than that mentioned in 20 01 37 – allowed if biodegradable material only, with no chemical additives or preservative, and no persistent organics present. Non-treated wood waste. Not allowed if any non-biodegradable coating or preserving substance present.
20 01 39	Plastics – compostable plastics only, certified to EN 13432 or equivalent certified compostable standard only. Note – limit for incidental non-compostable plastic is 5% w/w to be removed prior to processing
20 02	**Garden and park wastes (including cemetery waste)**
20 02 01	Biodegradable waste (plant matter only)
20 03	**Other municipal wastes**
20 03 01	Mixed municipal waste − only separately collected biodegradable wastes of types listed within this table
20 03 02	Waste from markets, allowed only if source segregated biodegradable fractions

7. Emissions and Monitoring

7.1. Emissions to air

7.1.1. Ammonia and hydrogen sulphide

An Air Quality Assessment has been undertaken by Fichtner Consulting Engineers to support the application. The primary conclusions of the assessment are presented below.

In relation to the impact of ammonia emissions on human health:

- No exceedance of an EAL is predicted.
- All impacts can be screened out as 'insignificant'.

In relation to the impact of ammonia emissions on ecological sensitive sites:

- The impact on annual mean airborne ammonia concentrations can be screened out as

  'insignificant', except at the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC. Taking into account the site context including historical ammonia emissions (from activities for which the site is still permitted), the predicted impact is small and is considered unlikely to have a significant effect.

- Taking into account the likely emissions profile and average impact over five years of modelled weather data, the nitrogen and acid deposition impact at all receptors can be screened out as 'insignificant'.

Based on the above, it is concluded that the operation of the Facility will not have a significant effect on local air quality, the general population or the local community. As such there should be no air quality constraint in granting an EP to operate the Facility.

A proposed emission limit for ammonia has been set at 3.5mg/m^3 which is protective of both human and ecological receptors. Monitoring of ammonia (EN ISO 21877) and Hydrogen sulphide (CEN TS 13649 for sampling NIOSH 6013 for analysis) emissions will be carried out every 6 months.

7.1.2. Odour

Odour modelling has been undertaken by Fichtner Consulting Engineers to support the application. The primary conclusions of the assessment are presented below.

In relation to odour emissions:

- Odour dispersion modelling has shown that the maximum odour impact due to emissions from the biofilters will be well below the assessment criterion of 1.5 OUE/m^3.
- An Odour Management Plan will be implemented, which will effectively manage other sources of odour associated with the operation of the Facility to ensure there are no significant odour impacts.

Odour modelling has confirmed that the odour emission concentration would need to be less than 2,940 OUE/m^3 for the impact to be less than 1.5 OUE/m^3 criterion at the receptor with the highest impact. Data from existing IVC facilities operated by Veolia shows this is readily and consistently achievable. Veolia proposes to carry out monitoring of odour emissions every 6 months in accordance with BS EN 13725 (dynamic olfactometry).

7.1.3. Bioaerosols

In line with the assessment methodology detailed in the 2009 EA guidance, this Bioaerosol Risk Assessment

evaluates the likelihood of potential emissions of bioaerosols from the Facility, in conjunction with the consequences to nearby receptors, to determine the overall risk to human health within the vicinity of the Facility. This is achieved through identification of potential bioaerosol hazards, the plausibility of hazards being realised at receptors, the probability of the risks to human health and the significance of those risks. The magnitude of risk identified across the five receptors identified within the screening distance is deemed to be 'low' or very low. At this level of risk, no significant impacts are predicted and only periodic review of bioaerosol risks and control measures are required.

Bio-aerosol emissions will be carried out once every 6 months in accordance with the following action levels:

- Total bacteria 1000 $CFUm^{-3}$
- Aspergillus Fumigatus 500 $CFUm^{-3}$

Monitoring will be carried out in accordance with Technical Guidance Note M9 – Environmental monitoring of bioaerosols at regulated facilities.

7.2. Emissions to water

7.2.1. Surface water

Emissions to surface water from the proposed IVC facility consist only of uncontaminated roof water and from areas of the site where there are no waste storage or processing activities. There are physical barriers between drainage from clean and potentially contaminated drainage networks. These are either kerbing or topographical e.g. dishing or watershed.

7.2.2. Sewer

There are no emissions to the sewer from the proposed activity.

7.3. Emissions to land

There are no emissions to land from the proposed activity.

7.4. Process monitoring

7.4.1. Meteorological conditions
The facility will have a weather station which will be capable of continuously logging Wind speed, Air temperature and Wind direction.

7.4.2. Leachate volumes
Monitored using SCADA system

7.4.3. Biofilter

- Daily weekly and monthly checks including:
- Back-pressure Visually check the operating of the pumps and spray nozzles
- Check pumps for cavitation
- Water levels
- Tunnel temperature sensors showing vs expected value on SCADA
- Oxygen transmitter ok vs corresponding with the value on SCADA
- Wireless probes vs corresponding with the value on SCADA
- Temperature (30 - 40°C)
- Back-pressure (<500Pa)

- Water pressure either side of humidifier / scrubber
- Water filter and high/low sensors
- Rotation sieve
- Tunnel spray system
- Maturation spray system
- Compressor pressure
- Pressure transmitters (check hose connection and for any sign of blockage)
- Biofilter water sprinklers
- Ammonia concentration in leachate tank (<100mg/l)
- Ammonia concentration before humidifier/scrubber
- Ammonia concentration after humidifier/scrubber (<20ppm)
- Ammonia concentration inside bio-filters or at stack (<5ppm)
- Sample bio-filter media in several locations for moisture content (60-75%)
- Sample bio-filter media in several locations for pH (6.5 - 7)
- Sample humidifier water for pH (6.5 - 7)
- Check temperature in several locations (should be consistent)
- Uniform media
- Uniform airflow
- pH of biofilter
- H_2S before biofilter
- H_2S at stack
- Structural integrity (cracks, leaks)

8. Drainage systems

8.1. Uncontaminated surface water network

Surface water is collected from the roof of the buildings, site roadways and impermeable surfaces across the site via a series of drains. The surface water then drains via an attenuation tank, a class 1 bypass separator and a flow control valve to a single emission point at the north east corner of the site. From there it runs along a pipe adjacent to the road and then discharges via a single outfall into the Red Brook at SJ50603949. The Red Brook flows roughly northerly until it reaches confluence with the Grindley Brook at SJ50854181. There is clear delineation between clean and contaminated surface water collection areas.

The Red Brook flows into the Wych Brook which is a tributary of the River Dee; this then flows through Bala Lake (Llyn Tegid) which is listed as a RAMSAR site, a SSSI and an SAC.

8.2. Contaminated surface water network

Surface water from the external refining area and product storage is diverted into the process water network.

8.3. Foul network

Foul water from the site toilets and kitchens in the offices and weighbridge is directed to an on site package treatment plant. The plant is located below ground in the north east corner of the site.

8.4. Process water network

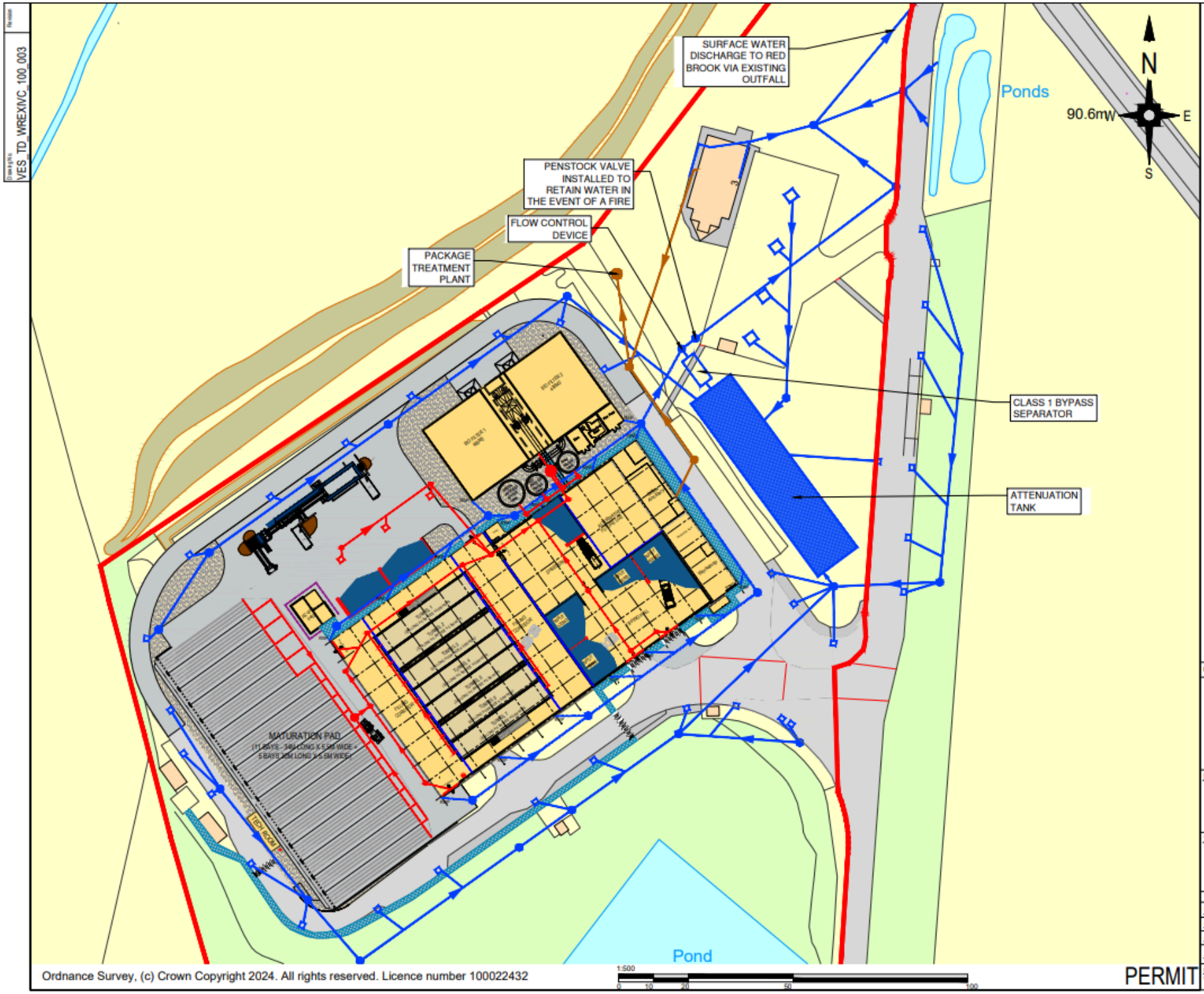
Process generated water (leachate and condensate from the tunnels), liquids generated during the stabilisation / maturation process and leachate from the storage and shredding area are diverted to fixed bunded storage tanks for recirculation or disposal off site.

Gully drains are provided across doorways including personnel and vehicular access to capture migration of any liquids from inside the building.

There is no process water discharge to an off site foul sewer network. Any excess liquids are collected by road tanker and transferred to a suitably authorised disposal facility.

8.5. Discharges from site

The only emission point to surface water either directly or via a sewage treatment works is clean uncontaminated water from the main building roof and yard area / roads which are not associated with the handling or storage of waste.



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KEY

SURFACE WATER DRAIN

FOUL WATER DRAIN

PROCESS WATER DRAINAGE (SEALED SYSTEM)

Rev	Description of revision	Drawn	Chkd	App	Date

VEOLIA
Technical Direction,
8th Floor, 210 Pentonville Road, London. N1 9JY
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Project
MERSEYSIDE INDUSTRIAL ESTATE
FENNS BANK
WHITCHURCH

Title
SHROPSHIRE IVC
PROPOSED SITE DRAINAGE LAYOUT

	Initials	Date	Scale	Sheet size
Drawn	JB	05.02.25	1:500 @A1	A1
Checked				
Approved				

Job No. WREXIVC

Drawing No. VES_TD_WREXIVC_100_003

Revision

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0 10 20 50 100

PERMIT

VES_TD_WREXIVC_100_003

9. Containment

9.1. Primary / secondary containment

There will be several bulk containment tanks on site and for ease of reference these are listed below with additional information relating to size, location and pollution prevention measures.

Tank name and description	Location	Pollution prevention measures
Green process water tank	Adjacent to the biofilters	High level alarm linked to SCADA
Red process water tank	Adjacent to the biofilters	High level alarm linked to SCADA
Fire water tank	Adjacent to the biofilters	Fill level alerts linked to SCADA
Fuel tank - Diesel range fuel for the ICE powered fixed and mobile plant.	Two locations (north and south)	Integrally bunded tank
Adblue tank - Diesel exhaust fluid for NOx reduction of ICE powered fixed and mobile plant.	Two locations (north and south)	Integrally bunded tank
Scrubber reagent storage (H_2SO_4) - Sulphuric acid reagent used in the scrubber for abatement of NH_3 from the waste gas stream.	Biofilter technical tunnel	IBC with secondary containment
Ammonium sulphate storage - Ammonium sulphate produced from the reaction between sulphuric acid in the scrubber and ammonia from the waste gas stream.	Biofilter technical tunnel	IBC with secondary containment

9.2. Tertiary containment

There is a penstock valve on the surface water network located immediately after the bypass interceptor and flow control valve. In the event of a pollution incident or fire the penstock valve can be closed sealing the surface water drainage system across the site. There will be no penstock valve serving the surface and roof water from the main office block as this area is not directly adjacent to any waste storage or processing activities. There is also an overflow from an area to the north of the site where natural ponding occurs; drainage in this area prevents surface water collection on the access road.

10. BAT / Appropriate measures

10.1. Best Available Techniques / Appropriate Measures

A BAT assessment has been carried for the proposed facility covering BAT conclusion 1-53 within the waste treatment BREF.

10.2. Residue management

The primary purpose of the facility is production of soil improver / compost from green and food waste. There are limited amounts of residue produced by the process limited to plastics / light fraction and metals. Both of these are removed as a contaminant from the input material, these are removed during the screening process after the stabilisation / maturation stage. There will be some associated residue from maintenance work and general waste / recyclables produced by staff.

Residue type	Approximate amount (m^3)	Expected management	Constraints / improvements
Plastics	20	Landfill / Energy from waste	Contamination with ABP prevents recycling. Some films not viable for recycling, low return on volume vs complexity. Review any opportunities with improvement in technology. Education for reduction at source.
Metals	20	Secondary metal sector	No expected opportunities other than reduction at source.
Ammonium sulphate	1	Disposal as hazardous waste	No expected improvement
Maintenance waste	5	Various depending on material. Metals are recycled. Oils / lubricants are sent for disposal as hazardous waste	No expected improvements.
General waste / recyclables	10	Source segregation on site. Non recyclables are sent to EfW and recyclables are sent to various outlets depending on material	The company is well placed to roll out improvements as new opportunities arise in the marketplace.

11. Land Quality and Site Condition

11.1. Currently authorised activity

The subject site was a former aluminium slag reprocessing plant comprising a car park and office in the north, with the former plant in the centre-west of the site. The site operated under an environmental permit reference EPR-VP3030BX. A storm water ditch is located on the northeast boundary, and a surface water lagoon is located in the south of the site. The metal sector activity ceased in 2020 and the site will now be redeveloped into an IVC facility.

The site was undeveloped until 1998 when Wardle built a Total Reclamation Plant (TRP) to recycle aluminium salt slag generated from the aluminium works to the south. The Wardle site is shown on the earliest historical maps as Fenn's Bank Brick and Tile works with clays excavated from three pits. Anecdotal information suggests that excavation of the clay ceased when the volume of water flowing into the pits could not be controlled. The pits were left flooded, creating Bulls Head, Wheatsheaf and North pool. Wardle Metals began operations at the aluminium works in World War II and began depositing waste material in the North Pool from this time. Waste disposal volumes were around 1,000 m^3/year in the 1950s but increased as production volumes increased; by the early 1990s 300,000 m^3/year were deposited, the pool was filled above the water level by 1993, and in 1995 there was a large-scale fish kill in Wheatsheaf pool caused by pollution from the operations. In 1996 changes were made to the level controls on Wheatsheaf and Bull's Head pools, and leachate pumping commenced. Another pollution incident affected Bull's Head Pool in 1998, and a Total Reclamation Plant (TRP) was commissioned. In 1999, leachate abstraction from waste boreholes ceased, and leachate abstraction from a perimeter ditch to the TRP commenced. In 2002 the landfill was reprofiled and capped, with leachate pumping to the TRP. This is reported to have ceased in 2003, although monitoring was ongoing. The TRP was operated from 2000 to 2004 by Remetal Total Reclamation Plant Limited, and then operated by Befesa Salt Slags Limited from 2004 until 2020, when the process closed down. Befesa Salt Slags was sold to Markos Properties (Whitchurch) Ltd in 2023 and renamed Markos Commercial Limited. The site is adjacent to, and downgradient of, a landfill formed of waste aluminium slag, which was remediated by the Environment Agency. Leachate from the landfill is known to have formed a plume below the site, and to discharge into local surface water courses. Recent data collected from the site indicates that emission of leachate from the landfill is ongoing. The landfill has emitted or is emitting gas evident by a c.50 m by 60 m on-site surface water lagoon, whose lining has risen to form an 'island' in the lagoon, due to an underlying gas bubble. Under the site's current environmental permit, no discharge of water is permitted. While the site was operational under the current permit, surface water was collected in the lagoon and used in the process. When site aluminium slag reprocessing operations ceased, surface water was no longer consumed by the process; and in the absence of a formal discharge arrangement, rainfall falling on the site discharged informally via the road system to the nearby Red Brook, and to a field ditch along the south-western site boundary.

A portfolio of site investigation work has been carried out in relation to the former landfill with a summary of previous information and additional work in support of site surrender being conducted between January and July 2024 by HFCL, included soil sampling, installation of gas spikes and boreholes, gas and groundwater monitoring, and surface water sampling. A GQRA was undertaken to assess potential risks to human health and controlled waters receptors.

Site data indicate that the operation of the reprocessing plant has not had an impact on soil and groundwater quality that can be distinguished from impacts arising from landfill leachate, deriving from the adjacent landfill. Groundwater and surface water in and around the site are impacted by landfill leachate, with the highest concentrations found off-site close to the landfill (with the exception of fluoride where the highest concentration is measured on site, but at concentrations that are not considered to present a significant risk to controlled waters quality). The likely impact of drainage from the site on receiving surface waters is not considered to be significant, owing to high background concentrations.

The application for an IVC facility will be a new application and Veolia will not be seeking transfer of the existing

permit. The existing permit for a metal reprocessing activity reference EPR-VP3030BX will be surrendered by the current operator. The proposed permit boundary for the IVC facility includes the building and surrounding roadway and the weighbridge.

Natural Resources Wales has issued advice to the operator of the existing permit relating to permit surrender with the key remaining action stated to be the surface water lagoon which required removal of effluent and sludge, removal of the liner and backfilling with suitable material. The surface water lagoon area will not be included in the permit boundary for the IVC.

The operation of the IVC does not include any process water discharge to controlled waters either directly or via a sewage treatment works. The only water discharging directly from the IVC facility will be surface water from uncontaminated areas of the site including roadways. All external waste processing and storage associated with the compost activity will be on sealed drainage. Waste reception, shredding and sanitisation are carried out internally. Bulk liquid storage including leachate will be in newly constructed bunded tanks. All leachate and condensate pipework will be new. There is no intention to reuse any legacy bulk storage or transfer facilities. The site will not store any hazardous waste and fuels for fixed and mobile plant will be bunded with a preventative maintenance plan in place. The risk of adverse impacts to land quality from the proposed IVC are therefore very low.

12. Supporting information

The table below summarises the supporting information included with this application.

Document / reference	Detail
202505_SHROPSHIREIVC_FPMP_V1	Fire Prevention and Management Plan
202505_SHROPSHIREIVC_DEMP_V1	Dust and Emissions Management Plan
202505_ SHROPSHIREIVC_PMP_V1	Pest Management Plan
202505_SHROPSHIREIVC_NMP_V1	Noise Management Plan
202505_ SHROPSHIREIVC_OMP_V1	Odour Management plan
202505_REF_SHROPSHIREIVC_ERA_V1	Environmental Risk Assessment
202505_SHROPSHIREIVC_BAT ASSESSMENT_V1	BAT Assessment
202505_SHROPSHIREIVC_SCR	Site Condition Report
SHROPSHIREIVC - Process Flow	Process Flow Diagram
UF00174-0030-0001SMN Shropshire IVC Facility Air Quality Assessment_r2	Air quality and odour assessment
ADMS model files.zip	Modelling files for air quality assessment
UF00174-0030-0002SMN Shropshire IVC Facility Bioaerosol Risk Assessment_r1	Bioaerosol risk assessment
Veolia_FennsBank_IVC_NVC_R250506_NIA	Noise Impact Assessment
VES_TD_WREXIVC_100_004 Rev - Shropshire IVC - Proposed Bay Distances-004	Distance model drawing
VES_TD_WREXIVC_100_002 Rev - Shropshire IVC - Proposed FPP Layout-500	Layout Plan for Fire Management Plan
VES_TD_WREXIVC_100_001 Rev B - Shropshire IVC - Proposed Site Layout-500	General Arrangement Drawing
202505_SHROPSHIREIVC_Receptor plan	Receptor Location Plan
240613-charge-tool-new_SHROPSHIRE IVC	NRW charging tool
CMS Cert Apr 24	Competence Management System Certification
Veolia EMS Summary	Veolia Environmental Management System Summary
06256563_DIRECTORS	Details of company Directors
Environmental Sustainability Policy Statement	Veolia Environmental Policy Statement