Envar Cambridge Section 5 Response

RESPONSE TO SCHEDULE 5 DATED 21 JANUARY 2026
(EPR/GP3930DF/V006)
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Document Control

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Introduction

The Environment Agency has sent a Schedule 5 Request for further information to Envar Composting limited (the operator) to clarify some matters relating to an environmental permit application to vary the existing bespoke permit EPR/GP3930DF, submitted in September 2024 and Duly Made in April of 2025. The Envar Composting Facility, The Heath, Woodhurst, Huntingdon, Cambridgeshire PE28 3BS, hereafter referred to as 'the Site'.

The application to vary the permit has been submitted for an extension to the existing site which is currently operational as an open windrow composting facility, IVC composting facility, a biomass operation, and a waste transfer/treatment operation.

Envar Composting limited (the Operator) referred to as 'Envar' also seeks to amend some minor errors in the current permit.

The main reason for this permit application is to ensure business continuity considering recent government policy changes regarding collection of food waste and to support the wider waste industry where treatment need has been identified in a way which benefits the regional infrastructure, the operator and the wider environment. This is principally to enable the drying of sewage sludge and non-conforming biosolids to produce material of sufficient dry matter levels that it may be burnt as a fuel to recover energy from the waste. The drying process is referred to throughout this document as 'Biodrying'.

Section 1 - Biodrying activity – process and abatement techniques

1. **In reference to Section 4.6 of document ref: "*Operational Plan – Including Biodrying*". Provide written procedures for sludge waste pending biodrying treatment. The response should include but not be limited to the following:**

    i) **Provide specific procedures in place to ensure waste arriving from approved suppliers is contained, and that uncontrolled emissions are prevented from the vehicles delivering the material.**

Envar has produced a standalone Standard Operating Procedure:
Envar SOP for the Biodrying of Sewage Sludge. This SOP is an instruction manual for how the site will manage this process from acceptance of the waste to output of the processed material from the Site. The Operational Plan (Cambridge IVC Operations OT) has also been updated to include specific requirements around this procedure and has been formatted into an Operational Techniques and Management Plan (OTMP) to be consistent with current documentation across all Envar's sites.

Please refer to the updated documents submitted as supporting documents to this response:

- Envar MS 2.31 - Waste Acceptance, Inspection, Quarantine and Rejection Procedure.
- Envar SOP for the Biodrying of Sewage Sludge_V2.0_DRAFT
- Cambridge Envar OTMP V1.0

- Envar Cambridge Dust and emission monitoring plan V2.0 (DEMP)
- Envar MS 2.41 Sampling and monitoring plan V2.0

The following measures are included within the documents above.

All vehicles transporting waste are enclosed or covered to minimise emissions during transport. The company will receive and temporarily store this feedstock in the designated separate Bays (Bay 1 and 2) in the enclosed reception building according to the Envar SOP for Biodrying of Sewage Sludge which outlines how the operation will take place.

The waste reception building has fast acting roller shutter doors and is of sufficient size that the load can be discharged with the doors shut, whilst the odour abatement system treats emissions.

Envar MS 2.31 - Waste Acceptance, Inspection, Quarantine and Rejection Procedure states all suppliers of the sewage material are pre-approved and pre-booked and includes a detailed waste acceptance procedure and pre-delivery process There will be no ad hoc deliveries. The weighbridge system has a logging system which will be used to evidence this. The procedure covers all wastes accepted to the Site, but sewage sludge waste is specifically addressed.

There is a detailed waste acceptance procedure and pre-delivery process in place. Most waste will be delivered from major utility companies. There are few sources of sewage sludges from non-utility-based companies so the risk of incorrect wastes being delivered is minimal. However, the standard acceptance criteria which includes a pre-acceptance questionnaire and evaluation shall be used for all new incoming waste streams regardless of source.

The Envar Cambridge DEMP references:

- the upgraded abatement
- Deliveries will arrive covered, enter the building before covers are removed
- gives detail on enclosed and abated areas
- loads are pre-approved through the chain of custody
- added clarity on additional measures to control emissions

Provide operating techniques that explain how the facility prevents emissions escaping from the building when the waste enters reception areas and is offloaded then stored pending treatment.

Please see the updated SOP for the biodrying of sewage sludge and Envar Cambridge OTMP V1.0. The feed air for the tunnel system is drawn from the reception building both for the fresh air tunnel input to maintain aerobic tunnel conditions and via a bypass system which ensures air is consistently drawn from the reception area, controls include:

- A suitable number of air changes. Calculations have been included.
- A fast roller shutter door will be in place for the entrance/exit.

The building is kept at negative pressure such that air tends to be retained within the building when the doors are open. The system currently works on this basis and effectively controls emissions as evidenced over the facility lifetime. The addition of fast acting doors is an improvement on the current working practices and further reduces the potential for emissions as the time the door is open is reduced when vehicles enter and exit the building.

The incoming waste will be mixed with shredded straw, green waste and blended within a hopper to prepare the correct mix ratio for Biodrying.

Incoming waste is blended and loaded as soon as space becomes available. . Stockpiles are maintained in the smallest surface area to volume ratio which gives less surface area and therefore potential for odours to be emitted.

Stockpiles are fully enclosed within buildings equipped with odour abatement. Stockpiles will be in situ for up to 7 days prior to treatment (loading within the drying tunnel).
Once material has been blended it is conveyed via an enclosed conveyor to the tunnel area G7-11 within the building.

Note: Explain how emissions are prevented from release, using appropriate site infrastructure such as fast-acting doors / airlocks etc and how the site ensures doors are closed between vehicle movements.

eEnvar SOPs to give the exact procedures for hygiene, cleaning down and the SOP for the Biodrying of sewage sludge for the management of traffic including doors and sheeting.

ii) **Section 5.3.2 In-vessel Tunnels of the above document explains that waste reception, shredding and mixing take place within a designated building. Is this area and emissions channelled to the abatement system, prior to discharge to air[1]?**

Yes, all emissions are channelled to the abatement system prior to discharge to air. The air for the tunnels is drawn from the intake or reception halls. There is also a separate bypass valve to maintain the withdrawal of air from the reception hall.

iii) **Is the pre-treatment shredder connected to the abatement system? Provide details detailing the abatement techniques in place on the shredding plant[2].**

All waste accepted has already been screened (de-ragged) and is now raw dewatered sewage sludge or non-conforming biosolids. Pre-treatment then occurs to produce the correct mixture of materials for Biodrying.

The shredder in this instance is being used to reduce the particle size of materials such as straw and green waste mixed with the sludge and facilitates mixing and blending of materials.

The shredder/mixer is located within the Waste Reception building in a separate area which benefits from emissions being channelled through the same abatement system and all the controls as listed previously including the removal and treatment of odorous air in the same way as the tunnel system and the use of fast acting doors, stockpile control, process timing and structural aeration from the aerobic dominant process.

To make this process clearer we have included an update within the SOP for the Biodrying of sewage sludge and Envar Cambridge OTMP V1.0.

Note[1]The waste (sludge biosolids) are odorous in nature, provide details on how the waste arrives for delivery e.g. in tankers / tipper lorry etc. Provide details on the measures in place to ensure arriving waste is covered and contained to prevent an uncontrolled release of odour to air.

As stated above all sewage sludge and biosolids will arrive in covered and contained vehicles. No waste will arrive in tankers.

Note[2] - The Odour management plan v.8 Table 3(a) Ref. C Feedstock preparation details 'Fully enclosed with extraction ventilation'. Provide clarification on whether the ventilation is channelled to the abatement plant.

See the Biological waste treatment: appropriate measures for permitted facilities - 11. Emissions control - Guidance - GOV.UK section and BAT 14(d) of the Waste Treatment BAT conclusions Waste Treatment | EU-BRITE.

Yes – all emissions are channelled to the abatement plant from the processing tunnels and from the building itself. We have provided process flow schematics of the current air handling system (Figure 1) and Proposed air handling system (Figure 2). Further detail is provided within the supporting document Envar Cambridge Abatement Improvement Plan v1.0.

Figure 1 Current air handling system

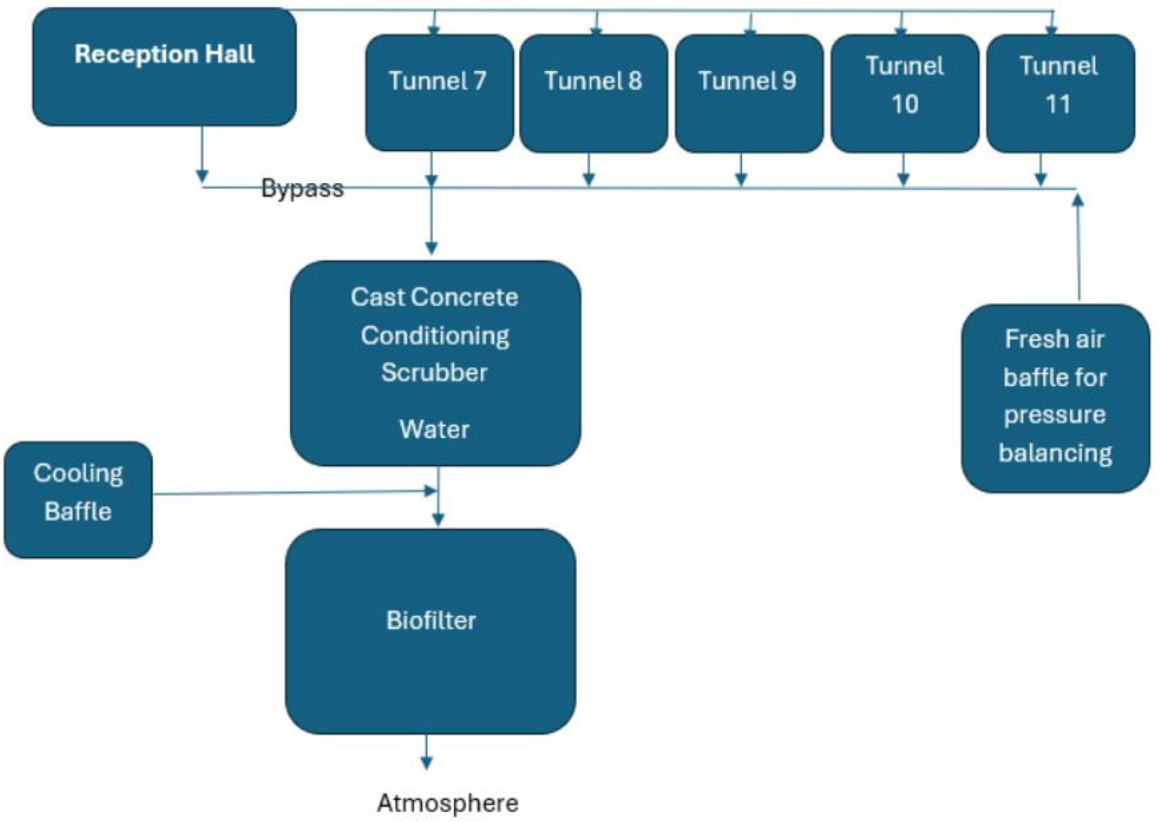
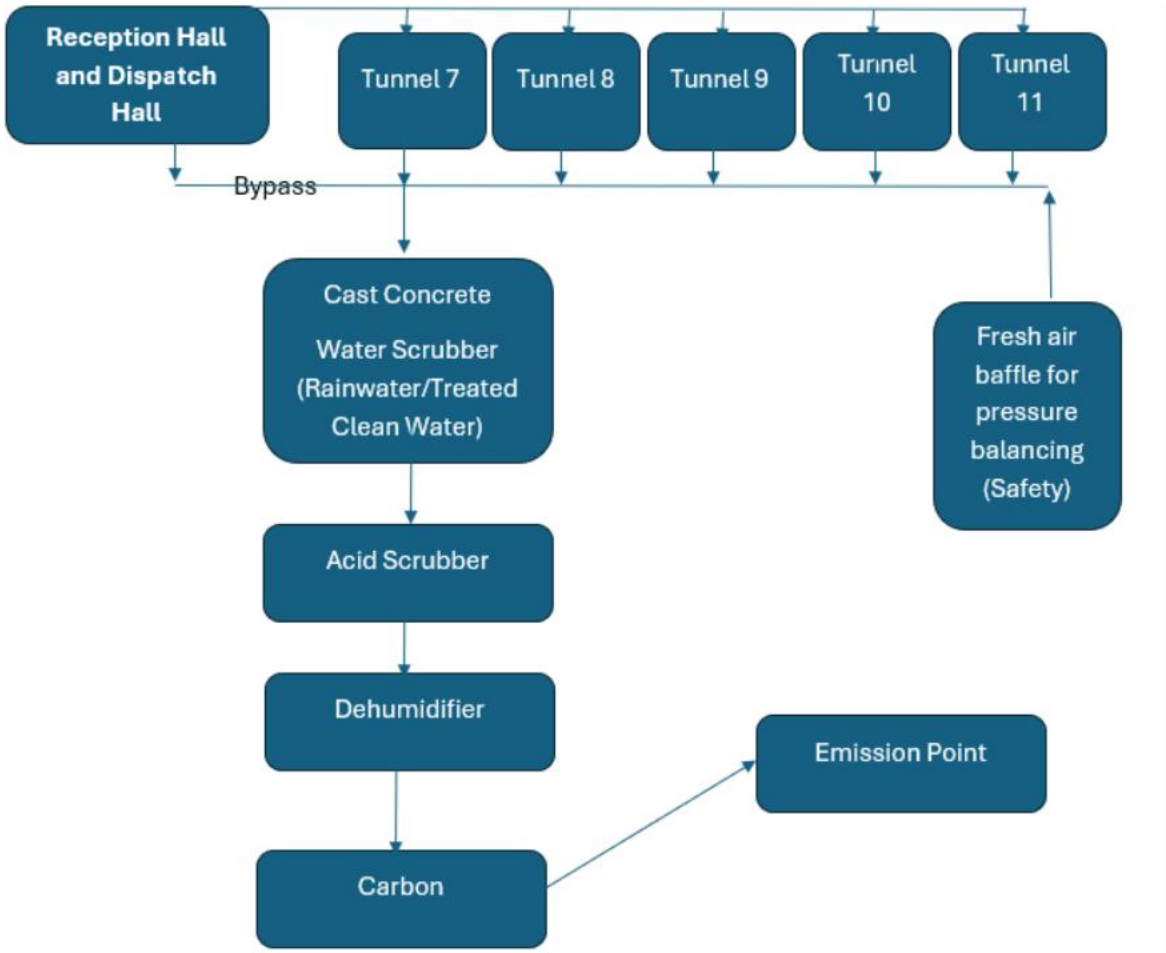


Figure 2 Proposed air handling system



1.1 Emissions Abatement

2. The abatement plant effectiveness has been previously assessed under improvement condition IC7 as part of the biowaste permit review programme. However, given that there are new waste streams being treated through the biodrying process, has an updated assessment of the channelled emissions from the IVC process abatement system been undertaken?

The existing abatement plant will now be improved to ensure BAT AEL's can be met as described within the supporting document Envar Cambridge Abatement Improvement Plan v1.0

Envar carried out a trial of the process under an RPS/LPS to assess how changes in feedstock might influence the odour profile and to confirm that the system would continue to operate effectively. While the existing abatement system was shown to treat odours efficiently during the trial, Envar has committed to an upgrade to provide greater long-term reliability and certainty such that AELs will be met.

Results from the trial will also be used to inform the design of the upgraded abatement system, please see the abatement improvment plan developed with input from specialist abatement consultants as previously discussed.

The current abatement plant will therefore be advanced to ensure consistent compliance with BAT AELs. Design work for the upgraded system is underway and is being informed by additional Volatile Organic Compound (VOC) waste-gas characterisation and air-dispersion modelling that will assist in determining optimum exhaust stack parameters.

Envar requests a condition is included within the permit which will present the final design of the abatement system together with modelling to demonstrate its efficacy is provided as part of a pre-operational and/or improvement condition. Dispersion modelling will assess emissions from the upgraded system using upper BAT AELs, and these assumptions will be validated through routine monitoring required by the permit.

BATc 3 requires an inventory and characterisation of the waste gas stream. Has an updated gas inventory been produced based on the new waste input streams treated during trials or successive monitoring?

Yes. During the trial undertaken emissions (ammonia and hydrogen sulphide) were analysed as per the evidence attached.

An updated waste gas characterisation inventory is currently being established. In a small study, gas samples are being taken for GCMS analysis to characterise the profile of VOCs emitted at various stages during the heating of sewage sludge using a scientific oven. The results of the analysis will be compared with the wide range of VOC profiles published within the literature measured during the drying/ composting of sewage sludge as Appendix 1 to the Envar Cambridge Abatement Improvement Plan v1.0. The worst-case scenario will be used to inform the appropriate design of the odour abatement control technology.

The current proposal is that abatement shall be provided using the following in series:

1. A water scrubber
2. An acid scrubber
3. Dehumidification
4. Polishing carbon
5. Stack point source emission

We request that the wording of the abatement technology requirements in the permit allows for reasonable design refinements, following installation and monitoring ensuring that minor adjustments do not trigger the need for an additional permit variation.

a) **The abatement plant consists of a two-stage scrubber and biofilter, provide evidence and demonstrate that the BAT-AELs for ammonia and other relevant substances can be achieved when undertaking treatment of the new waste input streams.**

The current system is being re-designed and will now include the steps listed above.

b) The site currently has a limit in place for Ammonia (NH3) for the channelled emissions from the abatement plant. As a result of this variation, which includes the introduction of additional waste streams and treatment through a biodrying process, the site will be expected to meet the BAT-AEL emission limit for odour concentration.

The following limit and monitoring will be added to the permit;

i) **An odour emission limit of 1,000 ouE/Nm3**
ii) **Monitoring standard: EN 13725**
iii) **A minimum monitoring frequency of: once every six months**

Provide written confirmation that the site understands this requirement and demonstrate that the odour limit can be achieved.

The Site understands this requirement for the purposes of Biodrying.

The Site is happy to commit to these limits for the emissions associated with this activity.

Our understanding is that these limits would only be applicable to tunnel system and reception of G7-11 tunnels which would be Biodrying and served by the new abatement system.

Remaining tunnels G3-G6 are served by the second existing biofilter system and would be used as currently for in vessel composting of green and food waste and would continue to be operated at the current permit limits.

Note: When limits are set for both ammonia and odour, you should monitor these emissions periodically. This is to demonstrate that the abatement plant keeps performing as designed through its: operation and maintenance.

The Site currently monitor every 6 months on a rolling basis and would intend to continue monitoring as per Envar MS 2.41 Sampling and Monitoring Plan v2.

3. The waste treatment BAT conclusion 34 requires emission limits for the mechanical biological treatment (MBT) of waste which includes biodrying processes. In addition to the odour concentration limit mentioned in Section 1 Q2 above. Channelled emissions from the biodrying process to the abatement plant will need to meet emission limits for;

a) **Total volatile organic compounds (TVOC) of 40mg/Nm^3 and;**
b) **Dust 5mg/Nm^3**

The inclusion of the TVOC and Dust limits are for the biodrying of wastes to produce a fuel. VOCs and Dust must be abated by a combination of one or more techniques described in the Waste Treatment BAT Conclusions (BATc 34 and Section 6.1).

Acknowledged. As previously the appropriate abatement would be designed to achieve this, and its efficacy will be substantiated through monitoring and modelling.

4. **Section 7.7 of the OMP lists several options for abatement plant improvements that may become necessary to abate emissions produced.**

   a) **Have any of the improvements discussed in Section 7.7 been identified has being required following the completion of the treatment trial?**

As previously discussed Envar are replacing the current leachate scrubber and biofilter system with a new abatement system the outputs of which will be modelled to support the design.

Section 2 - EWC codes, provided in Appendix B and storage operations

1. **The waste code 19 08 05 may describe raw sewage sludge that has not been dewatered or screened. Provide a description of how this waste is accepted. E.g. Has the waste undergone screening and dewatering prior to it arriving at the site?**

Note: Describe any pre-treatment steps undertaken on-site as part of your response (e.g. screening, mixing and blending).

The sewage sludge arriving at site for Biodrying would be screened , dewatered raw sludge or non-conforming biosolids. The pre-treatment steps are described as per the SOP for the Biodrying of sewage sludge, which is provided as part of this response.

Envar shall use appropriate codes for the sludge that is accepted on site, the sludge Waste Codes are included in the table below and have been further clarified from the complete list Appendix B to the application Non-Technical Summary (315160 Envar Composting Ltd Non-Technical Summary_April 2024 V2).

Table 1 Sewage sludge waste codes and descriptions

Waste Code	Description (aligned with RPS231)
19 02 06	• 19 02 06 Sludge from the dewatering of sludge with the use of chemical additives • 19 02 06 Sludge stabilised using non-waste lime • 19 02 06 Sludge mixed with non-waste straw, non-waste wood or other non-waste plant tissue material • 19 02 06 Septic tank sludge stabilised using non-waste lime • 19 02 06 Septic tank sludge from the dewatering of septic tank sludge with the use of chemical additives • 19 02 06 Septic tank sludge mixed with non-waste straw, non-waste wood or other non-waste plant tissue material
19 05 03	• 19 05 03 Compost from aerobic treatment of sludge with non-waste straw, wood or other non-waste plant tissue
19 06 06	• 19 06 06 Digestate from anaerobic treatment of sludge with the addition of treated sewage effluent produced at the sludge producer's waste water treatment plant • 19 06 06 Digestate from anaerobic treatment of septic tank sludge
19 08 05	• 19 08 05 Sludges from the treatment of urban wastewater (screened and dewatered only)

Waste code 19 08 05 would only be accepted if it was sludge that has been treated through primary filtration and subsequently de-watered. Liquid sludge would not be accepted through the process. This would be pre-arranged and checked as per our acceptance criteria (Envar MS 2.31).

2. **19 02 06 / 19 06 06 (as well as other wastes in Appendix B) may produce hydrogen sulphide H_2S dependent upon the processes they arise from, treatment they have been subjected to, pH and temperature of the waste. What processes are in place to inhibit H_2S as part of the process and is the abatement plant able to effectively treat the gas.**

The primary control mechanism within the process is the maintenance of strictly aerobic composting and drying conditions. The tunnel system is designed to provide continuous forced aeration, maintaining positive oxygen levels throughout the mass and preventing the development of anaerobic zones. Oxygen concentration, temperature and moisture content are actively managed and monitored live to ensure aerobic microbial activity dominates.

Hydrogen sulphide formation is typically associated with reducing conditions. By maintaining aerobic conditions, the biological pathway required for H_2S generation is inhibited.

During the enclosed tunnel trial, no H_2S was detected, including during the most biologically active phase. This confirms that under controlled aerobic operation, H_2S generation is not significant. All process air is extracted and treated via the Site abatement system. Should trace quantities of reduced sulphur compounds be generated, the scrubber media and carbon media can wash out or capture, i.e. remove H_2S. However, trial data shows H_2S is prevented in the first instance by maintaining aerobic conditions as discussed.

3. For clarity, are the final EWC code lists for the biodrying process are as stated in Appendix B of the non-technical summary document, dated 02/04/2025?

These codes have been amended to align with RPS231 see Table 1 above.

4. In relation to document "Standard Operating Procedures (SOPs) for bio drying systems". (Section 6 and 7)

a. Provide a full description of how and where the post treatment material (for the purpose of creating a fuel) is stored following treatment in the IVC.

Envar SOP for the Biodrying of Sewage Sludge_V1.0 has been updated and accompanies this response.

The material is removed from the IVC tunnels and stored in the dedicated dispatch hall, within the same fully enclosed building which from which air is treated through the abatement system, as marked on the site plan. The vehicle loading process would be treated in the same way as unloading feedstock material IE; vehicle in the building, doors closed and abatement running. Please see SOP for Biodrying for details around storage of treated material.

b. Provide details of how the site will prevent odour arising from the treated materials post biodrying and that no further biological activity is taking place following treatment.

As above the material will be stored in a dedicated dispatch hall within a building with odour abatement and for a maximum period of 14 days.

The material is stabilised at the end of the process and at the correct moisture content (30-40% DM) for dispatch for use as a fuel. The stockpile's temperature and moisture content will be monitored whilst in storage and must reach the finished specification of the customer.

Controls will be implemented to ensure no reactivation of biological activity takes place such as segregated storage, no re-wetting the material and monitoring of stockpile's will be undertaken as per the site sampling and monitoring plan (Envar MS 2.41 Sampling and Monitoring Plan V2.0).

NB – output material was tested as part of the process to ensure it was suitable – we have attached this report and classification report also.

Section 3 – Wash Plant Activity

1. The wash plant description identifies that effluent produced by the process drains to leachate tanks and held prior to off-site disposal.

a. Are the leachate tanks located on an impermeable surface within the sealed drainage system?

Yes, leachate tanks shall be located on an impermeable surface with a sealed drainage system.

b. Are the leachate tanks provided with secondary containment bunds and designed to the CIRIA 736 standards with the appropriate storage capacities? (110% or 25% of the total volume where tanks are hydraulically connected).

Yes, as above – bunding/containment shall be, as per appropriate measures, designed in line with the relevant regulations/guidance of the time of construction by a qualified and competent engineer.

2. The addendum states that waste will be discharged onto concrete hard standing within a designated storage bay. Provide further information about the storage bay(s) including but not limited to the following.

a. Does the bay have its own drainage to capture any runoff or residue liquids?

Yes, the bay will be impermeable and sealed and will drain to a collection sump to be reused in the process or stored and taken for treatment.

b. Is the bay enclosed? What measures are in place to prevent wind whipping of loose materials and escape of dust.

Yes, the bay will be enclosed. It is unlikely that the wind would whip the materials due to the nature of the material itself. However, to reduce the risk of this a 1m freeboard would be maintained at the top of the bay.

3. Where temporary storage takes place awaiting screening, provide further detail of the storage bays;

a. Are the bays enclosed and on an impermeable surface?

Yes, as per the previous answer all bays will be the same

b. What measures are in place to prevent escape of emissions such as dust and odour (where relevant).

Please see the updated Dust and Emissions Management Plan. Measures to prevent dust are as follows:

- The bays shall be constructed to ensure top wall freeboard of 1m.
- The materials shall be generally high moisture from the washing process
- Dust monitoring as per the Dust and Emissions Management Plan, which has been updated and is provided as part of this response.
- Suppression of dust if required based on monitoring and daily checks.

4. Confirm that the conveyors and separation and transfer equipment within the plant are enclosed in accordance with the appropriate measures' guidance.

Odour risk is low for the proposed materials being washed. However the following measures shall be included for risk prevention, and this has been included in the OMP.

Girt storage shall be on impermeable surface with sealed drainage in a covered bay. The grits shall be stored for a max 14-day period within the designated area and shall be monitored for odour as per the Odour Management Plan.

All conveyors and equipment shall be covered.

Section 4 – Air emissions impact assessment (TVOCs)

Provide an air emissions risk assessment for the release of relevant VOC emissions. If you release volatile organic compounds into the air, you should provide details of all emissions. If you cannot identify what all the substances in them are, treat the unknowns as 100% benzene in your risk assessment. If you want to treat them as something else, you'll need to explain why.

Envar requests that an improvement or pre-operational condition is included within the permit requiring submission of the final abatement system design together with dispersion modelling demonstrating its efficacy. The modelling will assess emissions from the upgraded system on the basis that upper BAT AELs are achieved, and these assumptions will be validated through the routine monitoring required by the permit. As described previously work is being undertaken to identify relevant VOC emissions though characterisation.