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Tilbury IBA Facility



Blue Phoenix

Response to Further Information Request

Document approval

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1 Not Duly Made Response

1.1 Form C3, Section 3a

1. **Add the non-hazardous waste appropriate measures to the Operating Techniques you will adhere to.**

Form C3 has been updated to refer to the review of appropriate measures, as provided in response to Q2. Refer to Appendix A.

1.2 Appropriate Measures

2. **Provide an assessment of how you will meet the Non-Hazardous Waste Appropriate Measures. Include more details about how incoming wastes are kept separate from those being processed pending results of testing, waste pre-acceptance procedures, etc.**

A review of the Non-Hazardous Waste Appropriate Measures¹ has been undertaken, refer to Appendix B.

1.3 BAT Assessment

3. **Describe how you will monitor moisture levels of the IBA at different stages and confirm optimum moisture levels you adhere to. This is also to be replicated in an amended Dust Management Plan.**

As per an existing permitted facility operated by Blue Phoenix, the operator shall submit a revised Dust Management Plan (DMP) to the Environment Agency for approval.

The revised plan shall include an assessment of the risk of dust pollution associated with the permitted site operations, and a proposal for optimum moisture ranges and details of the moisture monitoring method and frequency for the IBA and IBAA. The plan shall take into account the appropriate measures for dust control specified in the appropriate measures, refer to Appendix B. Once the DMP is approved by the Environment Agency, the operator shall carry out site operations in accordance with the approved DMP, and any subsequent revisions agreed in writing by the Environment Agency.

1.4 Site Layout

4. **Provide a plan to scale showing the site layout, including all pre and post treatment storage areas, site surface type, and tipping area.**

Refer to Appendix C for drawings which show the following:

- pre and post treatment storage areas; and
- tipping areas.

Blue Phoenix can confirm that the surfacing type for the full extent of the site will be hardstanding.

¹ <https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities>

1.5 Current Tipping Area

5. Provide details about how the operator will manage the issue of structural integrity of the Site's existing tipping area.

With regards to the integrity of the existing butyl liner which is beneath the existing tipping area, this will continue to provide an impermeable surface to the ash reception area whilst the redevelopment works for the IBA Facility is undertaken. A technical note, dated March 2024, setting out the integrity of the existing liner and its suitability to provide containment of leachate/run-off from the tipping area was provided to the Area Team earlier this year (refer to Appendix D).

Due to phasing of the redevelopment works, it is not feasible to undertake improvement works on the existing tipping area until the rest of the site has been redeveloped. However, following completion of the rest of the redevelopment works, a new impermeable surface will be installed on the existing tipping area.

1.6 New Lagoons

6. Provide confirmation that the new lagoons will meet the CIRIA736 standard.

Blue Phoenix can confirm that the new lagoons will be designed and installed in accordance with the requirements of the CIRIA736 standard.

1.7 Ventilation

7. Confirm ventilation arrangements for the new treatment building.

As per current operations, there will be no ventilation arrangements in the treatment building. The generation of dust is sufficiently minimised via dust suppression measures, refer to Appendix E.

1.8 Water Management

8. Provide a new H1 assessment which demonstrates that the discharge from lagoon to sewer does not require modelling, and you can meet the new relevant limits.

An H1 assessment has been undertaken for the discharge of process effluents to sewer from the Facility – refer to Appendix F– to consider the impact of the discharge of process effluent from the lagoon to sewer.

In completing this H1 assessment, it should be noted:

1. The arrangements for the discharge of effluent to sewer will not be changing from the proposed variation – the volume of effluent and composition will be the same as currently permitted by the EA and Anglian Water.
2. There is a problem with the latest version of the H1 assessment tool and it does not allow Operators to correctly assess the impact of emissions to water/sewer. Therefore, the assessment has been undertaken using a previous version of the tool (v2.78).

For the purposes of completing the H1 assessment tool, the following assumptions have been applied:

1. Discharges to sewer are released at the emission limit values (concentrations and volumes) stated within the Trade Effluent Consent, refer to Appendix G.
2. The effluent is treated within the Tilbury Sewerage Treatment Works, which subsequently discharges into the River Thames.

3. There is no publicly available data on the flow rate within the River Thames at or near to the Tilbury Sewerage Treatment Works. The nearest monitoring station within the River Thames is at Thames at Kingston. The monitoring station indicates that there is a 7.54 m³/s freshwater flow rate (Q95)². Given that the discharge from the Tilbury Sewerage Treatment Works is into the Thames Estuary this is considered to be conservative.
4. It is assumed that the discharge is into a TraC waters – Estuary & Coastal.
5. Background data on water quality has been obtained from a report published by Thames Water titled, 'London Effluent Reuse SRO - Annex B.2.2. Water Quality Assessment Report'³.

The Trade Effluent Consent includes the emission limits presented in Table 1:

Table 1: Trade Effluent Consent Emissions Limits

Pollutant	Emission Limit (mg/l)
Chemical Oxygen Demand (COD)	250
Copper	1
Suspended solids	250
Sulphate	1000

The following substances do not have Environmental Quality Standards (EQS), therefore they have not been considered within the H1 assessment:

- COD;
- Sulphate; and
- Suspended solids.

The results of Test 1 of the H1 assessment are presented in the table below.

Table 2: Results of H1 Assessment – Test 1

Substance	Short-term (MAC EQS)		
	Release conc (µg/l)	EQS (µg/l)	Release <100% EQS
Copper	1,000	3.6	Fail
Sulphur	1,000,000		N/A

The assessment assumes continuous discharge of process effluent from the Facility at the maximum allowable flow rate to sewer. This result is a highly conservative assessment as process effluents will not be discharged continuously from the Facility.

As can be seen from the Test 1, refer to Table 2, the long-term impact of the discharge of copper cannot be screened out as insignificant. On this basis, the H1 assessment has progressed to Test 5.

Test 5 compares the discharge-specific Effective Volume Flux (EVF) with the location-specific Allowable Effective Volume Flux (AEVF) using data on background concentrations. If the EVF is less than or equal to the AEVF, then the discharge is insignificant and can be screened out. For the purposes of Test 5, it has conservatively been assumed that the discharge from the Tilbury Water Treatment Plant is 1m below chart datum.

² <https://nrfa.ceh.ac.uk/data/station/info/39001>

³ <https://www.thameswater.co.uk/media-library/home/about-us/regulation/regional-water-resources/water-recycling-schemes-in-london/gate-2-reports/Annex-B22--WQ-assessment-report.pdf>

Table 3: Results of H1 Assessment – Test 5

Substance	Background conc (µg/l)	Release conc (µg/l)	Short-term (MAC EQS)			
			Effluent flow	EVF (m³/s)	AEVF	EVF ≤ AEVF?
Copper	2.10	1,000	0.01	3.60	0.04	Pass

As can be seen from Table 3, the EVF for copper is not greater than the AEVF. Therefore, the discharge of this substance can be screened out as 'not significant' in accordance with the H1 Annex D1 guidance.

As previously described, the assessment undertaken is highly conservative in assuming continuous discharge of process effluents from the Facility. The assessment assumes the measured concentrations are discharged directly to the Thames River from sewer. In reality, the concentrations will be greatly diluted with other treated sewage and effluent streams released. In addition, no sewage treatment reduction factor (STRF) was applied for the discharge of copper from the Facility – it is likely that the concentration of copper will be reduced (alongside other metals) through treatment of the effluent at sewer prior to discharge.

1.9 Dust Management Plan

6. Provide confirmation of the maximum pile sizes and dimensions, including the tipping pile.

The Dust Management Plan has been updated to incorporate the maximum pile sizes and dimensions, refer to section 2.2.5 in Appendix E.

Appendices

A C3 Form

B Appropriate Measures

Table 4: Compliance with non-hazardous and inert waste appropriate measures

Appropriate Measure	How met or reference
2 General management appropriate measures	
2.1 Management system The facility must have and follow an up-to-date written management system, as according to the appropriate measures.	The Facility has implemented an existing documented environmental management system (EMS) which has been accredited to ISO 14001, refer to section 6 in the Supporting Information. This will be extended to include the additional area and activities requested within the application.
2.2 Staff competence The facility must be operated by staff with appropriate training, qualifications and competence. Records of training, qualifications and relevant experience must be kept.	As a part of the Facility's existing EMS, all staff are provided with appropriate training to ensure their competence. Refer to section 6.1 of the Supporting Information.
2.3 Accident management plan The written management system must include an accident management plan, as according to the appropriate measures.	As a part of the Facility's existing EMS, an accident management plan is in place. Refer to section 6.2 of the Supporting Information.
2.4 Contingency plan and procedures The facility must implement a contingency plan, as according to the appropriate measures.	As a part of the Facility's existing EMS, a contingency plan and associated procedures are in place. Refer to section 6.3 of the Supporting Information.
2.5 Facility decommissioning A decommissioning plan must be considered, implemented, and maintained. For existing facilities where potential risks are identified, a programme of design improvements must be implemented.	The Facility has an existing site closure plan, refer to section 6.4 of the Supporting Information.
3 Waste pre-acceptance, acceptance and tracking	
3.1 Waste pre-acceptance Waste pre-acceptance procedures must be implemented, as according to the appropriate measures.	Point 4, 6, 7 is not relevant to the operation of the Facility. <ul style="list-style-type: none"> Blue Phoenix has existing waste acceptance procedures, which include pre-acceptance requirements. These will be extended to include the additional area and activities requested within the application.

Appropriate Measure	How met or reference
	<ul style="list-style-type: none"> • The waste acceptance procedures include a requirement to supply the Non-Hazardous WM2 paperwork which is supplied from the waste producer. The waste will only be retained and processed if it is suitable to be processed at the Facility. If not, it will be rejected and returned to the waste producer. • All waste is received with an accompanying consignment note which includes the relevant requirements within the appropriate measures. Furthermore, in accordance with the waste acceptance procedures the following information is recorded: supplier, date, place of origin, quantity by weighing/volume, and carrier. • Analysis of samples is carried out by UKAS/MCERTs accredited laboratories. • No additional EWC codes are proposed for acceptance to the Site. Blue phoenix retains pre-acceptance records for all incoming IBA for more than three years.
<p>3.2 Waste acceptance Waste acceptance procedures must be implemented, as according to the appropriate measures.</p>	<p>Refer to section 2.3 of the Supporting Information.</p> <ul style="list-style-type: none"> • Blue Phoenix has existing waste acceptance procedures. These will be extended to include the additional area and activities requested within the application. • In accordance with the waste acceptance procedures: <ul style="list-style-type: none"> – the Facility’s overall storage capacity is continuously monitored. Waste is only accepted on Site if there is sufficient storage capacity. – waste is visually inspected before being accepted. – transfer documentation is checked and validated before waste is accepted on to Site. – Waste containing unburnt material will be rejected in quarantine, pending collection. – Incoming IBA is weighed at weighbridges on arrival and recorded.

Appropriate Measure	How met or reference
	<ul style="list-style-type: none"> As per current operations, the staff carrying out waste acceptance checks are competent and trained (refer to section 6.1 in the Supporting Information). Offloading and reception areas are located on an area of hardstanding with self-contained drainage.
<p>3.3 Quarantine The facility must have a dedicated waste quarantine area/s. They must be operated as according to the appropriate measures.</p>	<ul style="list-style-type: none"> Refer to Appendix C. Blue Phoenix has an existing waste acceptance and storage procedure which outlines how Blue Phoenix manage loads not meeting the Site's Waste Acceptance Criteria. No changes are proposed to waste quarantine procedures employed at the Site.
<p>3.4 Waste tracking A waste tracking record system must be used, as according to the appropriate measures.</p>	<p>Blue Phoenix have existing waste acceptance and storage procedures for the tracking of waste throughout its lifetime on the Site, as according to the appropriate measures. These will be extended to include the additional area and activities requested within the application.</p>
<p>4 Waste Storage</p>	
<p>4.0 The facility must conduct waste storage in line with the appropriate measures.</p>	<ul style="list-style-type: none"> Point 8, 9, and 10 are not relevant to the operation of the Facility. As part of the existing EMS, Blue Phoenix maintains an inventory of the waste streams generated at the existing Facility, a waste acceptance criteria and procedure, and a waste transfer procedure. These will be extended to include the additional area and activities requested within the application (refer to section 6 of the Supporting Information). Waste is stored in locations that minimise the unnecessary handling of waste. Refer to section 2.4 of the Supporting Information. Waste handling is carried out by competent staff using appropriate equipment (refer to section 6.1 of the Supporting Information). The Facility is located within the Port of Tilbury. Access to the Site is closely controlled by the Port's security arrangements.

Appropriate Measure	How met or reference
	<ul style="list-style-type: none"> • The Site’s stockpile volumes are based on the maximum pile heights agreed through the planning process which have been into Blue Phoenix’s EMS. As such, the existing management system clearly documents the maximum storage capacity of facility and designated storage areas. • As per current operations, all waste storage areas are clearly marked and signed to indicate the type of waste stored. • As per current operations, wastes will not accumulate. • As per current operations, storage bays and containers are cleaned thoroughly on a regular basis. • IBA will be delivered to the Facility in ISO containers, which are subsequently returned to the IBA producer for re-use. All waste containers are fit for purpose, as according to the appropriate measures. • As per current operations, storage areas, containers and infrastructure are regularly inspected and recorded to ensure that there is no loss of containment.
<p>4.1 Segregation Different types of waste should be kept segregated if contamination would inhibit the recovery of the waste. Where paper, plastic, metal or glass have been collected separately, they must not be mixed with other waste or material.</p>	<ul style="list-style-type: none"> • As per current operations, IBA, ferrous and non-ferrous metals, and IBAA are stored in separate stockpiles.
<p>5 Waste treatment</p>	
<p>5.0 The waste treatment process must be monitored and optimised. Emissions from the waste treatment process must be identified and appropriately controlled at the source. There must be accurate and up-to-date written details of: treatment activities, abatement, control equipment, characteristics of the waste to be treated, and the waste treatment process.</p>	<ul style="list-style-type: none"> • As per current operations, the waste treatment process is monitored and optimised. The Facility will implement all of the measures listed within BAT 34 to increase the resource efficiency from the treatment process. • At the pre-acceptance stage, waste that is considered unacceptable (i.e. the content of deleterious material is too high) will be rejected and

Appropriate Measure	How met or reference
<p>There must be up-to-date written details of the measures to be taken during abnormal operating conditions to ensure that the Facility continues to comply with the permit conditions.</p>	<p>quarantined. As such, unwanted/unsuitable material is prevented from entering the IBA treatment process.</p> <ul style="list-style-type: none"> • As part of the existing EMS, Blue Phoenix keeps accurate and up-to-date written details of the following: <ul style="list-style-type: none"> – treatment activities; – abatement; – control equipment; – characteristics of the waste to be treated; and – the waste treatment process. • Blue Phoenix will extend this to incorporate the operation to the entire Facility. • As part of the existing EMS, Blue Phoenix has abnormal operating condition measures. These will extend to include the additional area and activities requested within the application.
<p>5.1 Soils and inert waste Soil and aggregate washing outputs must be categorised as set out in Technical Guidance WM3.</p>	<p>The Facility will not be washing soil and/or aggregate. Therefore, this appropriate measure is not applicable.</p>
<p>5.2 Waste treatment outputs, including fines Outputs must be appropriately classified following WM3. Any hazardous waste taken from the facility must be consigned following the EA’s ‘Dispose of hazardous waste’ guidance. Appropriate measures must be implemented to prevent and minimise risks of pollution from non-waste and waste materials.</p>	<p>The IBAA is appropriately classified following WM3. All materials transferred out of the Facility are delivered by road within enclosed or covered vehicles to reduce dust emissions.</p>
<p>5.3 Waste treatment for landfill If waste is being handled or treated before being sent to landfill, the facility must follow the EA’s ‘Dispose of waste to landfill’ guidance.</p>	<p>The Facility will not be handling or treating waste to be sent to landfill. Therefore, this appropriate measure is not applicable.</p>
<p>6 Emissions control</p>	

Appropriate Measure	How met or reference
<p>6.1 Enclosure within buildings If appropriate to the Facility, activities can be undertaken in enclosed buildings, as according to the appropriate measures.</p>	<p>All IBA processing will be undertaken within an enclosed IBA processing building.</p>
<p>6.2 Point source emissions to air Point source emissions to air must be reduced, as according to the appropriate measures. An assessment of the fate and impact of the substances emitted to air must be made, as according to the EA's 'Risk assessments for your environmental permit' guidance.</p>	<p>There are no point source emissions to air. Therefore, this appropriate measure is not applicable.</p>
<p>6.3 Fugitive emissions to air Fugitive emissions to air (including dust, mud and litter, odour and noise and vibration) must be prevented and minimised, as according to the appropriate measures.</p>	<ul style="list-style-type: none"> • The Facility has an existing DMP that sufficiently minimises and prevents fugitive dust emissions. The existing EP does not require Blue Phoenix to implement a Noise Management Plan at the existing facility. IBA is not inherently odorous and so does not require an Odour Management Plan, as stated in the existing EP. • Blue Phoenix's existing waste pre-acceptance and acceptance procedures identifies and manages waste that could cause fugitive emissions to air. • The Facility has an existing maintenance programme which will continue with the proposed variation. • Refer to section 3.1 of the Supporting Information.
<p>6.4 Point source emissions to water (including sewer) Point source emissions must be controlled, as according to the appropriate measures.</p>	<ul style="list-style-type: none"> • As a part of the Facility's inventory of emissions, main chemical constituents of point source emissions to sewer are identified. There are no point source emissions to water. • Process effluents are discharged to sewer in accordance with a Trade Effluent Consent granted by Anglian Water. • The impact of released substances to sewer are not significant, refer to the response to Q8.

Appropriate Measure	How met or reference
	<ul style="list-style-type: none"> The Facility requires a significant volume of water for dust suppression and processing purposes. The water used within the process is primarily supplied by rainwater and supplemented with mains water. Run-off from processing areas is collected for re-use. On this basis, it is not appropriate to have separate systems for the collection of surface water run-off and process effluent. <p>Refer to section 3.2 of the Supporting Information.</p>
<p>6.5 Fugitive emissions to land and water Fugitive emissions must be controlled, as according to the appropriate measures.</p>	<p>There are no fugitive emissions to land and water. Therefore, this appropriate measure is not applicable.</p>
<p>6.6 Pests A pest management plan must be created, implemented, and regularly reviewed as according to the appropriate measures.</p>	<p>The activities on Site are not considered to give rise to pests. Therefore, this appropriate measure is not applicable.</p>
<p>7 Emissions monitoring and limits</p>	
<p>7.1 Emissions to air Emissions to air must be monitored, as according to the appropriate measures.</p>	<ul style="list-style-type: none"> There are no point source emissions to air. As such, the Facility does not require an emissions inventory as according to this appropriate measure. In accordance with Blue Phoenix's existing dust management plan (DMP), fugitive emissions of dust and particulates are monitored, which will continue with the proposed variation. The existing dust management plan describes a monitoring programme, which will continue with the proposed variation.
<p>7.2 Medium combustion plant directive If you operate a medium combustion plant, emissions must be monitored following the EA's 'Monitoring stack emissions: low risk MCPs and specified generators' guidance.</p>	<p>The Facility is not a medium combustion plant. Therefore, this appropriate measure is not applicable.</p>

Appropriate Measure	How met or reference
<p>7.3 Emissions to water and sewer Emissions to water and/or sewer must be monitored, as according to the appropriate measures.</p>	<p>As per current operations, the Facility's emission inventory includes information about the relevant characteristics of point source emissions to water and sewer, as according to the appropriate measures. Key process parameters are monitored at the appropriate locations and it is not proposed that these will change with the proposed variation.</p>
<p>8 Process efficiency appropriate measures</p>	
<p>8.1 Energy efficiency As according to the appropriate measures, an energy efficiency plan and energy balance record must be created, implemented, and regularly reviewed and updated. Measures must be in place to avoid gross energy inefficiencies. Operating, maintenance and housekeeping measures must be in place. Additional efficiency measures should be implemented, as according to the 'Energy efficiency standards for industrial plants to get environmental permits' guidance.</p>	<p>Blue Phoenix has an existing energy efficiency plan and energy balance record that will extend to incorporate the operation to the entire Facility. The Facility is designed with insulation and containment methods to avoid gross energy inefficiencies. Where relevant, the Facility is designed in accordance with the 'Energy efficiency standards for industrial plants to get environmental permits' guidance.</p>
<p>8.2 Raw materials As according to the appropriate measures, raw materials must be listed alongside their properties, regularly reviewed, justified, and have quality assurance procedures.</p>	<p>As part of the existing EMS, Blue Phoenix monitors the annual raw material consumption. Blue Phoenix will extend this to incorporate the operation of the entire Facility.</p>
<p>8.3 Water use As according to the appropriate measures, water consumption must be measured, optimised, reviewed, reused, and reduced where appropriate.</p>	<p>As part of the existing EMS, Blue Phoenix measures, optimises, reviews, reuses, and reduces water consumption where relevant and as according to the appropriate measures. Blue Phoenix will extend this to incorporate the operation of the entire Facility.</p>
<p>9 Waste minimisation, recovery and disposal</p>	
<p>9.0 You must have and implement a residues management plan, as according to the appropriate measures.</p>	<p>As part of the existing EMS, Blue Phoenix has and implements a residue management plan, as according to the appropriate measures. Blue Phoenix will extend this to incorporate the operation of the entire Facility.</p>

C Plans & Drawings

D IBA Liner Review

E Updated Dust Management Plan

F H1 Assessment

G Trade Effluent Consent

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