

Permitting decisions - Refusal

We have decided to refuse the variation application for Ellesmere Port Wastewater Treatment Works Combustion Plant operated by United Utilities Water Limited.

The proposed facility location is Ellesmere Port Wastewater Treatment Works Combustion Plant, Little Stanney, Nr. Chester, Cheshire, CH4 5JA.

We consider that in reaching this decision we have taken into account all relevant considerations and legal requirements.

Purpose of this document

This decision document provides a record of the decision making process. It:

- highlights key issues in the determination
- gives reasons for refusal
- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account
- shows how we have considered the Consultation responses

Read the permitting decision in conjunction with the refusal notice.

Key issues of the decision

Structure of this document

Part A: Administration issues

Part B: Process description

Part C: Reason for refusal

Annex 1: Application Timeline

Annex 2: Consultation and engagement responses

Annex 3: Map showing location of the proposed Installation and surrounding area

Part A: Administration Issues

Legislative background

The Industrial Emissions Directive (IED) entered into force on 6 January 2011 and was transposed into UK law on 20 February 2013¹ by amendments to the Environmental Permitting Regulations (EPR). The IED recast the Directive on Integrated Pollution Prevention and Control (IPPC) and introduced a revised schedule of industrial activities falling within scope of its permitting requirements. The schedule of waste management activities includes the recovery 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, but excludes activities covered by the Urban Waste Water Treatment Directive² (UWWTD).

The IED seeks to achieve a high level of protection for the environment, taken as a whole, from the harmful effects of industrial activities. It does so by requiring each of the industrial installations to be operated under a permit with conditions based around the use of best available techniques (BAT).

In July 2014, we deferred the need for the Water and Sewerage Companies (WaSCs) to submit permit applications for their facilities to allow for further consideration of whether they were already covered under UWWTD. All UK environmental regulators subsequently concluded this was not the case, and therefore within the scope of the IED.

On 2 April 2019, we confirmed to the WaSCs operating in England that their sewage sludge anaerobic digestion (AD) facilities needed to comply with the requirements of the IED³.

The EPR set a deadline of 7 July 2015 for newly listed installations such as those for biological treatment of waste for recovery to obtain an environmental permit. Therefore, the implementation of this aspect of the IED had already been delayed by nearly four years at the point of our confirmation to the WaSCs on 2 April 2019.

We subsequently sought to ensure all sewage sludge AD facilities obtained and operated under an environmental permit in as short a timescale as could reasonably be achieved. We asked the WaSCs to provide a definitive list of all facilities used to carry out biological treatment of sewage sludge. A submission schedule was provided to the WaSCs, allowing applications for these facilities to be submitted to us in 3 month tranches between 1 April 2021 and 1 July 2022. The Ellesmere Port application was submitted in Tranche 1 of this programme of work.

¹ Environmental Permitting (England and Wales)(Amendment) Regulations 2013

² [Directive 91/271/EEC concerning urban waste water treatment](#)

³ [Directive 2010/75/EU - Industrial Emissions Directive](#)

The application

This application was scheduled to be submitted by 1 April 2021. United Utilities Water Limited (“the Applicant”) submitted the application to us on 1 April 2021.

The applicant already holds an environmental permit at this facility – EPR/ZP3031LJ - authorising the following waste operations:

- Combustion of Biogas (R1: Use principally as a fuel or other means to generate energy)
- Operation of the auxiliary flare (D10: Incineration on land)

This application is to vary the existing environmental permit to add the following installation activity to ensure compliance with IED as stated in the section above:

Section 5.4 A(1)(b)(i)⁴ - Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 100 tonnes per day involving biological treatment. This relates to the anaerobic digestion process.

Although the activity was not permitted at the time of application, it is already operational, apart from the surplus activated sludge plant which was proposed to commence operation in 2022. The activity applied for, included an anaerobic digestion (AD) stationary technical unit (STU) and directly associated activities (DAA), including pre- and post-digestion treatment, gas collection and storage, a combined heat and power (CHP) engine, an emergency flare, raw material storage and process/surface water collection.

The emissions from the existing, permitted CHP engines were not reassessed as part of this application as they form part of the existing permit.

The initial application stated that “full liquor treatment” would be undertaken. This was confirmed as part of the duly making checks to be part of the wastewater treatment process which did not fall within the permit boundary. As such liquor treatment was removed from the application.

The initial application was also assessed to require the physical treatment of non-hazardous waste, however following further assessment this activity was determined as not required as all waste would be received prior to the AD process and would be accepted under activity 5.4 A(1)(b)(i).

⁴ Part 2 of Schedule 1 of Environmental Permitting (England and Wales) Regulations 2016 (“EPR 2016”) (SI 2016 No. 1154) as amended

Duly making and consultation

We did not have enough information to confirm duly made status of the initial application⁵. A not duly made letter⁶ was sent to the applicant on 6 May 2021 outlining further information required to allow the application process to continue to determination stage. We requested the applicant submit additional information by 20 May 2021.

We requested the following information:

- Amendment of the charge to reflect the correct waste and installation activities, corrected costs and payment of a further £5,363.40;
- Provision of ISO 14001 certificate;
- Provision of a site plan showing the areas of impermeable and permeable surfacing;
- Provision of a site plan showing all relevant emissions points;
- Provision of site investigation reports referenced in the site condition report;
- Information on odour control units;
- Information on pressure release valves;
- Details of the characteristics of waste accepted; and
- Further information on the proposed surplus activated sludge plant to be commissioned in 2022

The applicant responded to our request on 9 June 2021, with a payment of £3,965 being made on 10 June 2021. The reduction in payment request followed confirmation that the facility would not be operating a liquor treatment plant.

Despite this additional information being requested and provided, we considered that the application significantly lacked the level of information we would need to determine it. At this point we considered whether we should:

Return the application as “not duly made”; or

Confirm the application as “duly made” and seek to obtain the additional information during the determination through information notices and requests for further information.

⁵ Section 6.4 of [Environmental permitting: Core guidance \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/91232/environmental-permitting-core-guidance.pdf)

⁶ Appendix 1: Not duly made letter dated 6th May 2021

Following further discussion with the Applicant, we agreed to confirm the application as duly made. The application was duly made on 10 June 2021⁷.

On 6 July 2021, the internal and external engagement/consultation process on the application commenced with a further consultation process being undertaken on 3 November 2021.

Information requests

Summary

The determination has been protracted due to incomplete and insufficient responses and repeated Applicant requests for extensions on Schedule 5 Notices. As at the point of refusal insufficient information had been provided in response to the Schedule 5 Notices issued to allow a variation to be granted.

We requested information from the Applicant on several occasions. This was requested through two EPR Schedule 5 Notices (22 June 2021 and 12 October 2021) and two less formal requests for information sent on the 26 November 2021 and 5 January 2022.

Following the response received to Schedule 5 Notice dated 22 June 2021 we wrote to the Applicant on 5 November 2021 expressing our concerns regarding the lack of detail, their short notice requests for extensions to the Schedule 5 Notice and deferring the provision of information to questions without prior agreement with us.

Following responses received to the Schedule 5 notices, and requests for further information we sent a subsequent letter (11 February 2022) to the applicant, giving them a final opportunity to provide information we considered necessary for the determination of the variation application.

This requested information which we considered had not been responded to or required further clarification under the Schedule 5 Notices and the requests for further information dated 26 November 2021 and 5 January 2022.

The letter outlined our concerns and deficiencies in the information provided by the Applicant in key areas of the application and included 2 questions from Schedule 5 Notice 1 dated 22 June 2021, and 14 questions from Schedule 5 Notice 2 dated 12 October 2021 which we had tried to clarify through further requests for information and an email dated 2 December 2021. The key issues for the Applicant to respond to included:

- Odour Management Planning

⁷ Duly made email dated 5th July 2021.

- Compliance with BAT 19c and 19d in relation to containment
- Identification of indirect emissions to water returned to the wastewater treatment works
- Waste pre-acceptance and waste acceptance.

We gave the Applicant a response deadline of 11 March 2022, stating that after this deadline, we would continue to determine the application on the information we had, and that we would not be making further requests for information.

We have included in Annex 1 a timeline in chronological order for each Schedule 5 Notice and request for further information. This timeline also includes the Applicant's responses and requests for extensions.

Summary

We do not consider the Applicant satisfactorily responded to all the issues in relation to this application, which we have set out in Part C below.

We also consider that if we had continued to provide further opportunities to address the deficiencies, we would still need to request a significant amount of information and potentially re-consult due to the significant revisions to the submitted management plans and further information provided in relation to containment and odour.

The information provided in the response to the Schedule 5 Notices, requests for further information, and the Final Opportunity Letter:

- Has not demonstrated that the proposal meets Best Available Techniques ("BAT") or proposed suitable alternative measures to provide the same level of environmental protection as for existing sites.
- Does not represent an acceptable risk to the environment or make satisfactory proposals to prevent or minimise the risks posed from odour.
- Has not demonstrated that the surplus activated sludge plant to be commissioned in 2022 meets BAT or proposed suitable alternative measures to provide the same level of environmental protection.

We have determined the application based on the information provided by the Applicant and consequently, we have refused the application to vary the permit.

We consider that we have afforded the Applicant numerous opportunities to provide missing information to a satisfactory standard. We consider that we have offered a greater degree of flexibility and advice than would normally be given to applicants during a determination.

Part B: Process description

Location

The facility is located in an industrial/rural area close to junction 10 of the M53 within the area administered by Chester West and Chester Unitary Authority. The proposed permit boundary is located approximately 3 km southeast of the centre of Ellesmere Port. The main access to the facility is via the A5117 which enters at the northern boundary of the site. Through the centre of the site runs Mill Brook, and approximately 550m to the east of the site runs the River Gowy. The approximate X and Y co-ordinates for the site are 342475, 374328

There are several statutory and non-statutory habitats sites within the applicable screening distances from the facility. Screening distances for emissions to air are set out in our guidance [Air emissions risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](http://www.gov.uk), and are identified as 10km for Special Protection Areas (SPA), Special Areas of Conservation (SACs), and Ramsar sites (protected wetlands), and 2km for Sites of Special Scientific Interest (SSSIs) and local nature sites. Under our guidance [Risk assessments for your environmental permit - GOV.UK \(www.gov.uk\)](http://www.gov.uk) protected sites and species should also be identified to ensure that the activity will not cause damage.

As part of this application, the following habitat sites were identified to be applicable within the relevant screening distances.

Special Areas of Conservation

- River Dee and Bala Lake – 7,937m away
- River Dee and Bala Lake (Wales) – 9,613m and 7,937m away.

Special Protection Areas

- Mersey Estuary – 9,987m and 2702m away

Ramsar Sites

- Mersey Estuary – 8,176m and 2702m away

Local wildlife sites (within 2km from the facility)

- Gowy Meadows and Ditches – 1,807 and 681m away
- Shropshire Union Canal (mainline) – 1927m away

Protected species

- European Eel migratory route
- River Lamprey

Protected Habitats

- Coastal and Floodplain grazing marsh – 93m away

Existing treatment operations

The Applicant holds an existing environmental permit for a waste operation. The permit allows the operator to operate two combined heat and power (CHP) engines with a total capacity of 3.178MWth, three 0.8MWth dual fuel boilers, and an emergency flare for the combustion of biogas to generate electricity and heat for use within the AD facility, or export to the grid.

Proposed treatment operations

The purpose of this variation application was to accept up to 1,857,120 wet tonnes per year of indigenous raw sludge (produced at the adjacent WwTW), imported raw sludge, imported thickened sludge and surplus activated sludge. Other than as stated above, this facility is not currently permitted to undertake the activities applied for. However, as detailed in Part A above, the facility is already operational, apart from the surplus activated sludge element, which was proposed to be commissioned at the end of 2021, and put into operation in 2022, and as such we have written in the present tense.

Indigenous sludge and raw imported sludge are screened and thickened prior to the AD process. Thickened sludge is received at the thickened sludge tanks for blending prior to the AD process. Surplus activated sludge is received at the pre-thickened surplus activated sludge buffer tank and is thickened prior to the AD process. As part of this process, polyelectrolyte is added, and the filtrate produced is discharged off-site to the adjacent WwTW.

The surplus activated sludge process accounts for 1,208,880 tonnes per year of the proposed feedstock. Imported raw sludge, indigenous raw sludge and imported thickened sludge account for a further 648,240 tonnes per year.

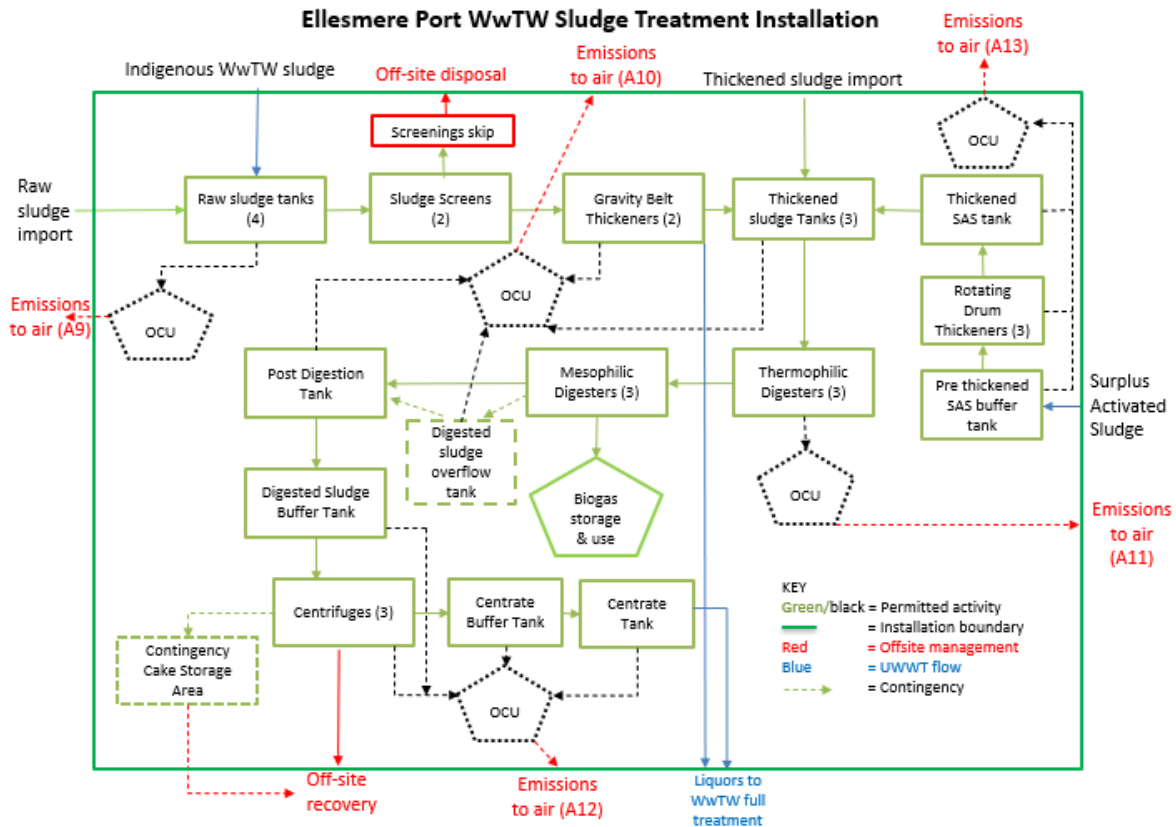
The current operational capacity of the digesters is 660m³ per day in three thermophilic digesters and three mesophilic digesters. Biogas produced is stored onsite in a biogas holder prior to use in the existing CHP engines. The remaining digestate produced from the AD process is stored in post digestion tanks onsite prior to dewatering in onsite centrifuges. The centrate (liquor) produced following dewatering is discharged to the adjacent WwTW, with the separated cake stored on site prior to land spreading⁸. Leachate from the cake storage pad is discharged to the adjacent WwTW.

All liquid process wastes that are returned to the adjacent WwTW, are discharged through an enclosed drainage system.

⁸ Subject to The Sludge (Use in Agriculture) Regulations 1989

The application also sought to increase the permit boundary to include the specified assets in the above process. The existing waste treatment operations as outlined above would remain unchanged, however the site would become an installation and consequently existing waste treatment operations would be regulated under the IED.

Figure 1 – Ellesmere Port WwTW Sludge Treatment Installation



Source – Installation activity process flow (Source; Odour Management Plan Dated; March 2022, Appendix B: Process Flow Diagram)

Part C: Reasons for Refusal

Decision

The application has been refused. The primary reasons for refusal are:

- The Applicant has not satisfactorily demonstrated they are using BAT to prevent, or where that is not practicable, reduce emissions to soil and water in relation to:
 - the provision of impermeable surfaces
 - the provision of techniques to reduce likelihood and impact of overflows and failures from tanks and vessels; and

- The design and maintenance provisions to allow detection and repair of leaks
- The Applicant has not satisfactorily demonstrated they are using BAT to prevent or, where that is not practicable, to reduce odour emissions
- The Applicant has not demonstrated that the surplus activated sludge plant to be commissioned in 2022 meets BAT or proposed suitable alternatives to provide the same level of environmental protection.

Containment and odour management are the primary reasons for reaching the decision to refuse the application. We do not consider it appropriate to issue the variation. We do not consider it appropriate to resolve these issues using improvement conditions, pre-operational conditions, or compliance visits/checks. We took this viewpoint as the Applicant had not demonstrated the use of BAT or the proposal of suitable alternatives, or where alternatives had been proposed they were vague and non-committal with proposed timescales for implementation being unacceptable with completion dates being provided in 2027. We have provided further explanation for our decisions in relation to the use of improvement conditions, pre-operational conditions, or compliance visits/checks as part of our explanation below.

We may set improvement conditions where there is sufficient information in the application to determine it, but we require an applicant to examine some issues further or take steps which it cannot reasonably be expected to take before the permit is issued. It would be inappropriate to set improvement conditions to obtain information that should be assessed during the application determination stage.

There were other aspects of the application we considered had not been satisfactorily addressed by the Applicant during determination. However, had a permit variation been issued, we would have considered it may have been appropriate to resolve these issues using improvement conditions, pre-operational conditions, or compliance visits/checks. This is discussed further in section C of the document.

How we reached our decision

In determining the Best Available Techniques (BAT) for Ellesmere Port, we primarily used the following guidance documents:

- [Waste Treatment BAT Conclusions as described in the Commission Implementing Decision](#)
- [BAT Reference Document for Waste Treatment \(the BREF\)](#)
- [Containment systems for the prevention of pollution – Secondary, tertiary and other measures for industrial and commercial premises, dated 2014 \(“CIRIA C736”\)](#)

Further guidance used included:

- [H4 Odour Management – how to comply with your environmental permit](#)
- [Appropriate measures for the biological treatment of waste](#)
- [Anaerobic Digestion and Bioresources Association \(ADBA\) Tool](#)

Containment

Containment is a fundamental principle in pollution prevention at industrial sites and waste management facilities. We assess containment provisions when determining permit applications. Secondary containment is considered to be BAT for the waste treatment sector and is a standard requirement of an environmental permit.

The Ellesmere Port AD facility stores and treats significant volumes of sludge and liquids that have the potential to cause pollution to the environment, in particular, land and water receptors. This facility is co-located with a wastewater treatment works with Mill brook running through the centre of the site. The facility is an existing operation with little in the way of secondary containment, with impermeable and permeable surfacing in place across the site providing little protection to receptors in the event of a loss of containment, and underground and partially submerged tanks with no leak detection measures in place.

The most common receptors we consider could be impacted by a loss of containment include groundwater (aquifers), water courses, conservation designations (SSSI, SAC, SPA, Ramsar, protected habitats and species etc.), the adjacent WWTW and human receptors such as residential and commercial premises.

Given the number, significance, and complexity of the WaSC sludge AD facilities that are being determined as part of this project, we provided WaSCs with additional support and advice, including two workshops specifically about containment on what the Applicant should have regard to when assessing their facilities. We consider that the advice, and timescales afforded to the WaSCs to submit supporting information, is above and beyond that which would typically be given to applicants.

For existing operational plant and infrastructure, we required that an assessment of the current operational facilities was undertaken in line with CIRIA C736 requirements, with alternative proposals submitted to provide an equivalent level of environmental protection for assets which do not meet indicative BAT. For new plant and infrastructure (in this case the activated sludge plant) the only plant we are treating as new plant we require applicants to design infrastructure and plant to meet BAT requirements taking into account relevant guidance such as CIRIA C736. Therefore, new plant and infrastructure should be compliant with BAT from the date of permit issue.

We advised the WaSCs to provide two main components of assessment to demonstrate the class of containment ('class of containment' is defined in CIRIA C736) required for the existing plant and infrastructure, and where this class was not met for existing plant and infrastructure, provide measures to provide an equivalent level of environmental protection for identified receptors. To demonstrate that new plant and infrastructure has been built to the relevant class of containment required, and that it complies with BAT requirements.

The two components are:

- Containment assessment against the recommendations of CIRIA C736 guidance - Containment systems for the prevention of pollution: Secondary, tertiary and other measures for industrial and commercial premises. This guidance is widely recognised as the industry standard for containment systems.
- Completion of the ADBA tool to identify sources, pathways and receptors, and risks.

We also advised that a spill modelling assessment needs to be provided to support this, to demonstrate the effectiveness of current containment measures and any identified improvements.

We advised the WaSCs of the requirements of containment assessments on multiple occasions, including:

- At a workshop in February 2020 specifically regarding CIRIA C736 and the ADBA tool
- During a presentation in February 2021 provided by Environment Agency Senior Advisors.
- In written advice in March 2021 including:
 - Specific sector pre-application advice note
 - BAT gap analysis template tool
 - Spill modelling seminar presented by David Cole – Member of the project Steering group of CIRIA C736
- During a presentation in August 2021, in which spill modelling was specifically discussed, along with a reiteration of application requirements.

This is in addition to any communications with or notices served on individual WaSCs. There are also various additional references to containment in guidance including:

- Waste Treatment BAT Conclusions, BAT

- [Environmental permitting guidance on the control of emissions \(gov.uk\)](#)
- How to comply with your environmental permit. Additional guidance for: Anaerobic Digestion Reference LIT 8737 Report version 1.0 dated November 2013
- [Appropriate measures for the biological treatment of waste](#) – consultation document and response comments
- [Emissions control - Non-hazardous and inert waste: appropriate measures for permitted facilities](#) - This is not directly applicable to biological treatment but will be replicated in the appropriate measures as mentioned in the above bullet
- [SR2021 No 10: anaerobic digestion of non-hazardous sludge at a waste water treatment works, including the use of the resultant biogas](#). This specifically applies to sludge AD facilities.

BAT 19 requirements

BAT 19 Conclusion of the Best Available Techniques (BAT) Reference Document for Waste Treatment states:

“In order to optimise water consumption, to reduce the volume of wastewater generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques...”.

The appropriate techniques for the prevention, or where that is not practicable, the reduction of emissions to soil and water from primary risks identified as tank failure, leakage, and the transfer and handling of wastes and raw materials are listed in table 1 an extract from this is set out below.

Table 1: BAT 19 relevant techniques

Technique		Description	Applicability
c	Impermeable surface	Depending on the risks posed by the waste in terms of soil and/or water contamination, the surface of the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.	Generally applicable.
d	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as: overflow detectors;	Generally applicable.

		<p>overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or other vessel);</p> <p>tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment;</p> <p>isolation of tanks, vessels and secondary containment (e.g. closing of valves);</p>	
h	Design and maintenance provisions to allow detection and repair of leaks	Regular monitoring for potential leakages is risk-based, and, when necessary, equipment is repaired. The use of underground components is minimised. When underground components are used and depending on the risks posed by the waste contained in those components in terms of soil and/or water contamination, secondary containment of underground components is put in place.	<p>The use of above-ground components is generally applicable to new plants. It may be limited however by the risk of freezing.</p> <p>The installation of secondary containment may be limited in the case of existing plants.</p>

CIRIA C736

CIRIA C736 is considered the industry standard of choice and is based on the source-pathway-receptor approach to risk assessment. It provides a clear methodology for demonstrating BAT, appropriate measures and compliance with permit conditions.

It is applicable for identifying and managing the risk of storing substances which may be hazardous to the environment and applies to everything from small commercial premises to large chemical facilities. It primarily considers the potential consequences of tank failure and provides a risk assessment methodology to support a classification system for containment, providing different levels of performance for different risks. The aim is to break the pathway between source and receptor.

The guidance provides containment options and examples of good practice, but it may be appropriate to use other methods.

Due to the nature of sewage sludge, cake or liquor, it is clear that this would be considered a short- and long-term hazard to the environment if released. Given the locations of these facilities, it is reasonable to conclude that any major tank failure has the potential to cause significant damage to sensitive receptors.

Where CIRIA C736 measures are not relevant, an explanation should be provided using a risk-based approach. For existing facilities where measures cannot be achieved, we expect alternative measures to be proposed which achieve an equivalent standard to provide the same level of environmental protection.

Newly built facilities and assets should be designed and built to CIRIA C736 report recommendations or an equivalent approved standard. Newly built facilities and assets not designed and built to CIRIA C736 report recommendations, or an equivalent standard would not be considered to provide suitable primary and secondary containment, and as such would not comply with BAT. Existing facilities are unlikely to be compliant with CIRIA C736 due to the viability of retrofitting to meet the recommendations. However, the same containment assessments are still required, and improvements should be proposed to demonstrate equivalent appropriate measures of environmental protection.

ADBA tool and guidance

The tool and guidance have been specifically designed as a guide for secondary containment for anaerobic digestion. The guide states “Both the guide and the classification tool draw upon the principles and methodologies within CIRIA C736. The principles within CIRIA C736 are generally accepted as good practice in the design and construction of containment systems. The principles of CIRIA C736 are distilled into this accessible guide, which attempts to draw out the parts relevant to the AD sector.”

The tool itself is clearly set out to provide an inventory of sources, pathways and receptors and aligns with the containment system class types in CIRIA C736. It provides risk ratings and allows mitigation measures to be considered.

Alternative assessment methods

Where our guidance refers to CIRIA C736 it also allows for the use of other equivalent approved standards. This provides operators/applicants with the flexibility of using other standards, but they must offer the same level of environmental protection.

Where CIRIA C736 and ADBA tool assessments, or equivalent approved standards, are not provided, it is difficult or impossible to satisfactorily assess permit applications for compliance with BAT, appropriate measures, or an environmental permit.

Summary application information

The applicant did not submit appropriate proposals or provide evidence of why such proposals were unnecessary in this case to meet BAT 19 in relation to the prevention or where that is not practicable the reduction of emissions to soil and water from primary risks identified as asset/tank failure, leaks, and the transfer and handling of wastes and raw materials in line with BAT requirements. In the

absence of any sufficient justification to the contrary we consider techniques in BAT 19c, 19d and 19h to be an appropriate combination of techniques in this case to demonstrate BAT in order to prevent pollution of soil and water.

We requested information in Schedule 5 Notice 1 dated 22 June 2021 through questions 14, 15 and 18 and Schedule 5 Notice 2 dated 12 October 2021 through question 28 these included:

- Q14 - The provision of a site plan showing areas of impermeable and permeable surfaces.
- Q15 - A request to explain how leak detection and maintenance would be carried out for underground tanks and pipework to ensure that contamination to groundwater and soil would be minimised.
- Q18 - The provision of a risk assessment, and analysis of containment measures on site in line with CIRIA C736 guidance, requesting where guidance could not be met, the proposal of alternative measures that would achieve the same level of environmental protection.
- Q28 - A request to explain how leak detection and maintenance would be carried out for underground tanks and pipework, and for confirmation of the integrity of underground tanks and pipework and when this was last checked.

We again requested information on 2 December 2021 by e-mail in relation to question 14 and 18 of Schedule 5 Notice 1, and question 28 of Schedule 5 Notice 2 as the information submitted by the Applicant had not addressed the questions we had raised.

We provided the Applicant a final opportunity to provide the information requested in the Final Opportunity Letter dated 11 February 2022, in which we stated that after the response deadline in the letter (11 March 2022), we would continue to determine the application with the information we had received.

The Applicant was given several opportunities to provide the information over an extended period. Table 2 below summarises the information submitted by the Applicant during the determination in relation to containment.

Table 2 – Requests and responses to questions in relation to BAT 19

Originally requested	Question	Response/document provided	Date provided
Request for further information dated 6 May 2021	Q1b – Provide a site plan identifying areas of impermeable surfacing, permeable surfacing, and the	IED – Site Surveys and Permitting Ellesmere Port WwTW Site surfacing plan.	11/03/2022

	location of containment kerbs		
Schedule 5 Notice 1, dated: 22/06/21	Q14 – Permeable and impermeable surfacing	IED – Site Surveys and Permitting Ellesmere Port WwTW Site surfacing plan	11/03/2022
Schedule 5 Notice 1, dated: 22/06/21	Q15 – Leak detection and maintenance of underground tanks	Applicant advised a response would be submitted as part of the containment assessment report provided in response to question 18 of Schedule 5 Notice 1, dated 22/06/2022. On assessment of this report, this question had not been addressed.	09/09/2021
Schedule 5 Notice 1, dated: 22/06/21	Q18 – Containment	Environmental Quantitative Risk Assessment at Ellesmere Port Wastewater Treatment works, Ref: 331001867R1D1, dated; November 2021. (41 pages)	30/11/2021
		ADBA Containment Classification Tool	14/01/2022
		Environmental Quantitative Risk Assessment at Ellesmere Port Wastewater Treatment works, Ref: 331001867R1, dated; March 2022. (235 pages)	11/03/2022
		Secondary Containment Modelling Assessment, revision 1, dated; 09/03/2021	16/03/2022
		Written response addressing issues raised in letter dated 11/02/2022.	11/03/2022
		Secondary Containment Modelling Assessment, revision 1, dated; 10/05/2022	27/05/2022
Schedule 5 Notice 2, dated: 22/06/21	Q19 - Overflows of tanks and vessels	Written response provided	23/11/2021
Schedule 5 Notice 2, dated: 22/06/21	Q28 d, e and f– Underground tanks and pipework	Advised the integrity and condition of the underground assets will be assessed within the CIRIA C736 containment assessment report to be provided by the 30/11/2021.	23/11/2021

Our assessment

BAT19c – Impermeable surfacing

Summary

We consider that the Applicant has not demonstrated how they would meet the requirements of BAT19c, has not demonstrated that this BAT requirement is not

applicable, and not provided suitable alternative measures that would provide the same level of environmental protection for emissions to soil and water from key risks identified as loss of containment, leaking of assets, spillages and handling and transfer of waste and raw materials. It is noted that BAT 19c is generally applicable to all sites including existing sites.

Impermeable surfacing is required in operational areas to prevent soil and water contamination. The Applicant stated in their submission that the majority of the installation area is hard surfaced so that it is impermeable with some gravelled areas which are vulnerable to leaks and spillages. The site surfacing plan identified areas within the proposed permitted boundary that are soft landscaping/made ground or mixed surfacing, all of which were not identified as impermeable in the plan. The site surfacing plan included areas of key above-ground assets including the digester tanks, post digestion tank, centrate tanks and some pipework, but did not include the full permitted area applied for, with missing areas identified as the thickened surplus activated sludge pipeline (overground), GBT filtrate return pipeline, and centrate return pipeline.

Figure 2 – Site surfacing plan



Source – IED – Site Surveys and permitting Ellesmere Port WwTW Site surfacing dated 11/03/2022

The Applicant identified within the Secondary Containment Modelling Assessment (10 May 2022) that for catastrophic containment failures, permeable areas would

be inundated, both within and outside of the proposed permit boundary. We considered that due to the nature of sewage sludge, cake or liquor, this would be considered a short- and long-term hazard to the environment if released.

The applicant stated within the Secondary Containment Modelling Assessment that *“Modelling shows that spills may pool and flow to permeable and impermeable areas of the STC” (Sludge Treatment Centre)*. The applicant advised that *“a sludge spill onto an unmade grass or gravel area will be avoided wherever possible however in some cases it could form part of an acceptable control option”*. We disagreed that this would be an acceptable control measure as it would not provide an equivalent level of environmental protection to providing impermeable surfacing, and the applicant had not carried out a risk assessment to demonstrate that the discharge of non-hazardous pollutants are within the relevant environmental standards, or in concentrations that are the same as the natural background levels in the groundwater. The Applicant proposed no solutions for areas of permeable surfacing to prevent the contamination of soil and water in line with BAT requirements.

The Applicant identified as part of their application, the storage of raw materials such as antifoam, corrosion inhibitor, polyelectrolyte and gas oil used in the operation of site activities. Table 3 below identifies the risks posed from the material safety data sheets provided.

Table 3 – Raw materials

Raw material	Environmental risk posed	Maximum quantity	Storage detail
Anti-foam	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution	1,000 litres	IBC on a bund (at point of use)
Corrosion Inhibitor	Harmful to aquatic life with long lasting effects. Avoid release to the environment. Avoid discharge into drains, water courses or onto the ground	5 litres	Boiler room on bund
Zetag 8160	Do not discharge into drains/surface waters/groundwater	6,000 kg (8 x 750 kg bags)	Dry polymer room in sealed plastic bags with an outer hessian layer
Zetag 8167	Do not discharge into drains/surface waters/groundwater	6,000 kg (8 x 750 kg bags)	Dry polymer room in sealed plastic bags with an outer hessian layer
Zetag 8180	Do not discharge into drains/surface waters/groundwater	4,500 kg	Polymer Silo
Gas Oil		15,000 Litres	Bunded tank

The Applicant did not make any proposals to implement impermeable surfacing across the proposed operational areas which include waste reception, handling/transfer, storage treatment and despatch areas. The Applicant did not demonstrate that suitable alternative options had been explored.

We consider that the risks posed by the waste and raw materials in terms of soil and or water contamination are significant enough to require that these areas are made impermeable to the liquids concerned in line with BAT 19c requirements.

We consider it would be inappropriate to use improvement conditions or pre-operational conditions to address these issues which are fundamental principles of environmental protection. The Applicant had not provided proposals for the implementation of impermeable surfacing prior to the commencement of the new surplus activated sludge plant in line with BAT 19c requirements. For existing areas the Applicant had not proposed suitable measures that would provide environmental protection for emissions to soil and water to meet the requirements set out in BAT 19c.

As such we do not have sufficient information to assess and have not been provided with suitable proposals on which we could implement an improvement condition. Whilst it may be possible to use an improvement condition to allow time for BAT to be achieved, we need to be satisfied it will be achieved. Improvement conditions are not for the Applicant to work out how they will demonstrate BAT after the application had been consulted on and determined. For a pre-operational condition, we need to be satisfied in principle that the proposals are BAT even if some of the fine detail can be provided later. So even if this had been the case, which it is not, as explained earlier, the facility is already operational so a pre-operational condition for the existing operations (excluding the surplus activated sludge plant) was not appropriate.

We therefore consider that the Applicant has failed to demonstrate its proposals are BAT or would be within a reasonable time regarding the provision of impermeable surfacing had we issued the variation.

BAT 19d – Overflows and failures

Summary

We consider that the Applicant has not satisfactorily demonstrated how they would meet the requirements of BAT19d, in relation to the provision of techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels, nor proposed suitable alternative measures.

With regards to the secondary containment aspect of BAT, the Applicant provided a 'Secondary Containment Modelling Assessment' dated: 10/05/2022 (spill modelling and improvements), an ADBA tool, and an Environmental Quantitative Risk Assessment (EQRA).

We consider that:

- the EQRA report is not an equivalent to a CIRIA C736 assessment and does not demonstrate BAT.
- the spill modelling and improvements are incomplete.
- the ADBA tool is incomplete.

We impose a standard permit condition regarding the control of emissions, which requires that:

“All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.”

As explained earlier, the facility is already operational. We therefore consider that, taking into account the containment information provided, the Applicant would have been immediately in breach of this condition had we issued the variation.

Spill modelling and improvements

The Applicant provided spill modelling, which was conducted for eleven higher risk tanks identified in Table 4 below.

Table 4 – Applicants identified high risk tanks

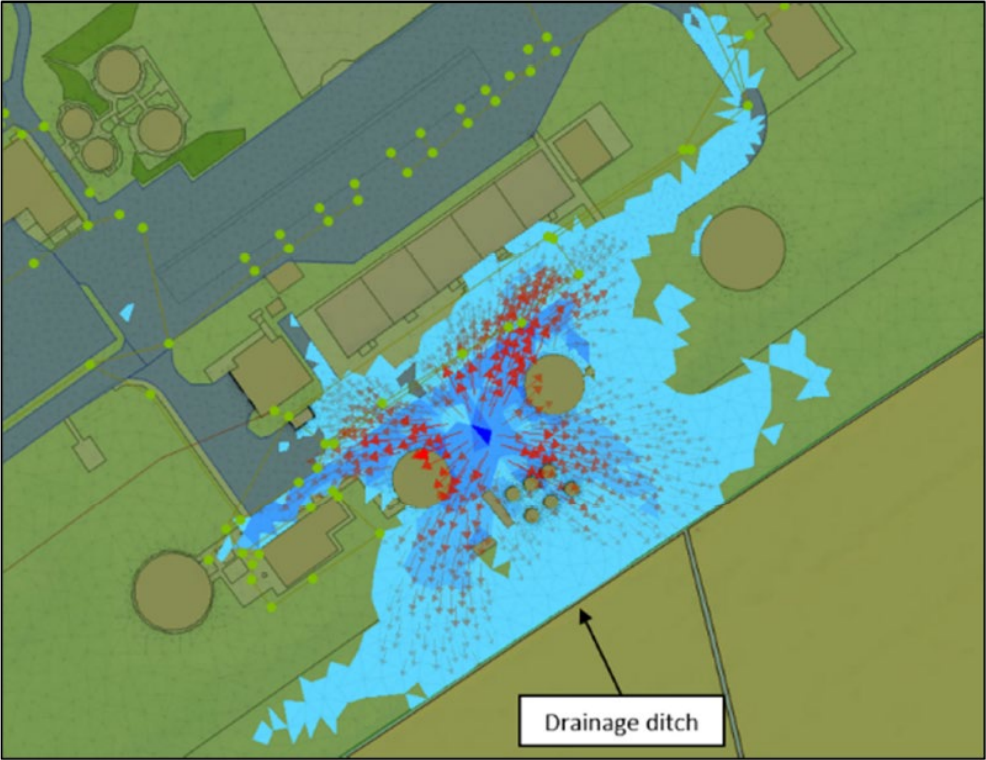
Tanks	Number of tanks	Volume m ³	Description	Leak detection system present	Secondary containment in place
Mesophilic Digesters	3	10,200 (1,992 above ground each)	Partially buried (7 m below ground), fixed roof digesters constructed of reinforced concrete. Surrounded by impermeable cover and grass coverage.	No	No
Thermophilic Digesters	3	360	Above ground, steel tanks. Located on impermeable surface but surrounded by gravel and grass coverage	No	Yes ^[1]
Post Digestion Tank	1	2,200	Above ground tank constructed of glass fused to steel.	No	No

Centrate Tank	1	1,200	Above ground tank constructed of glass fused to steel.	No	No
Centrate Buffer Tank	1	40	Above ground tank constructed of glass fused to steel. Surrounded by impermeable ground cover.	No	Yes ^[1]
Thickened surplus activated sludge Tank	1	834	Above ground tank constructed of glass fused to steel	No	Yes ^[1]
Unthickened Surplus Activated Sludge Tank	1	469	Above ground tank constructed of glass fused to steel	No	Yes ^[1]
Note [1] – Applicant advised as part of the EQRA (March 2022) Appendix D EQRA workbook that effective secondary containment was in place. No explanation, type, or class of containment in line with CIRIA C736 was provided for the tank identified.					

The spill model impact was limited by the boundary set in the model which did not allow any spillage impacts to be identified past the Shropshire Union Canal to the west of the site, the highway A5117 to the north of the site and the drainage ditch to the southern edge of the site. This was particularly relevant as a protected habitat had been identified at the boundary of the drainage ditch to the southern edge of the boundary, and the potential impacts on this site could not be determined.

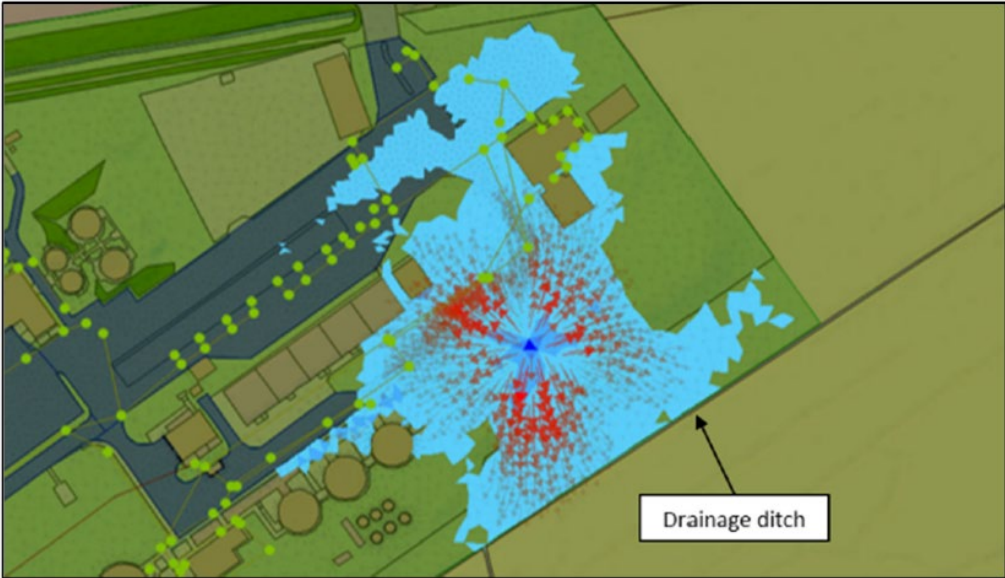
The modelling illustrates that in the event of a catastrophic failure of these tanks, with the current infrastructure, waste could spread to permeable ground, breach the permit boundary, breach the wider site boundary, and potentially impact the WwTW and identified receptors, including Mill Brook. Figures 3, 4, 5 and 6 below are taken from the report.

Figure 3 – Mesophilic Digester Tank Failure



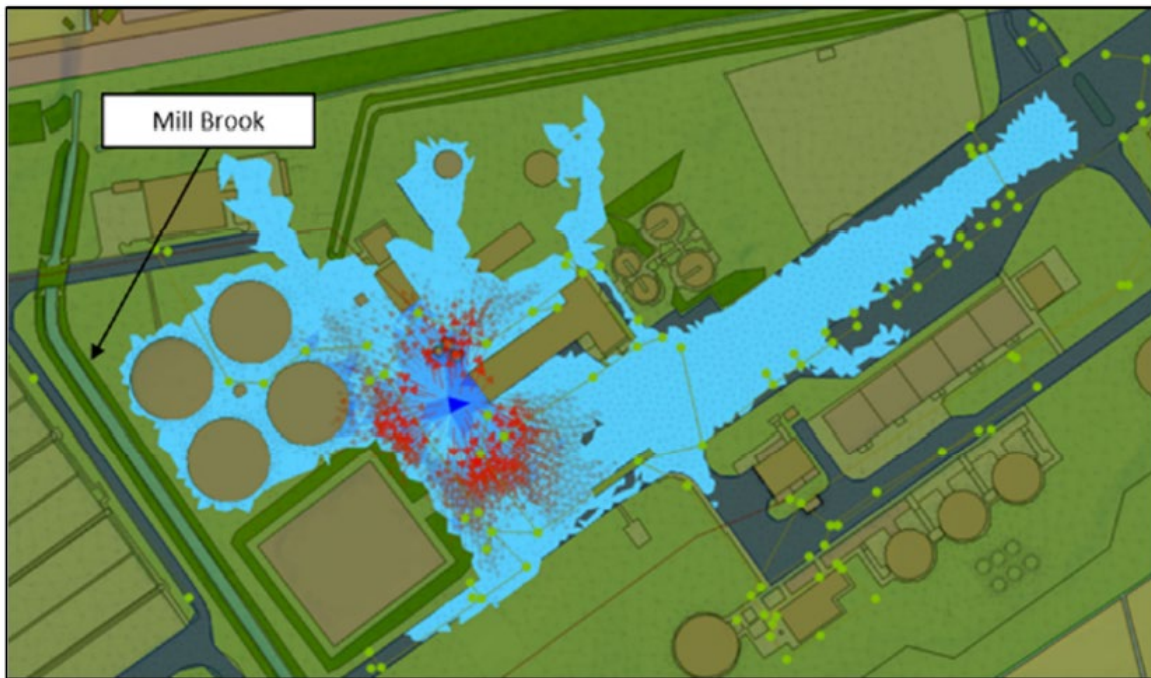
Source: Secondary Containment Modelling Assessment Dated 10/05/2022 - (Figure: 10: Ellesmere Port STC predicted flow paths following Mesophilic Digester tank burst.

Figure 4 – Post Digestion Tank Failure



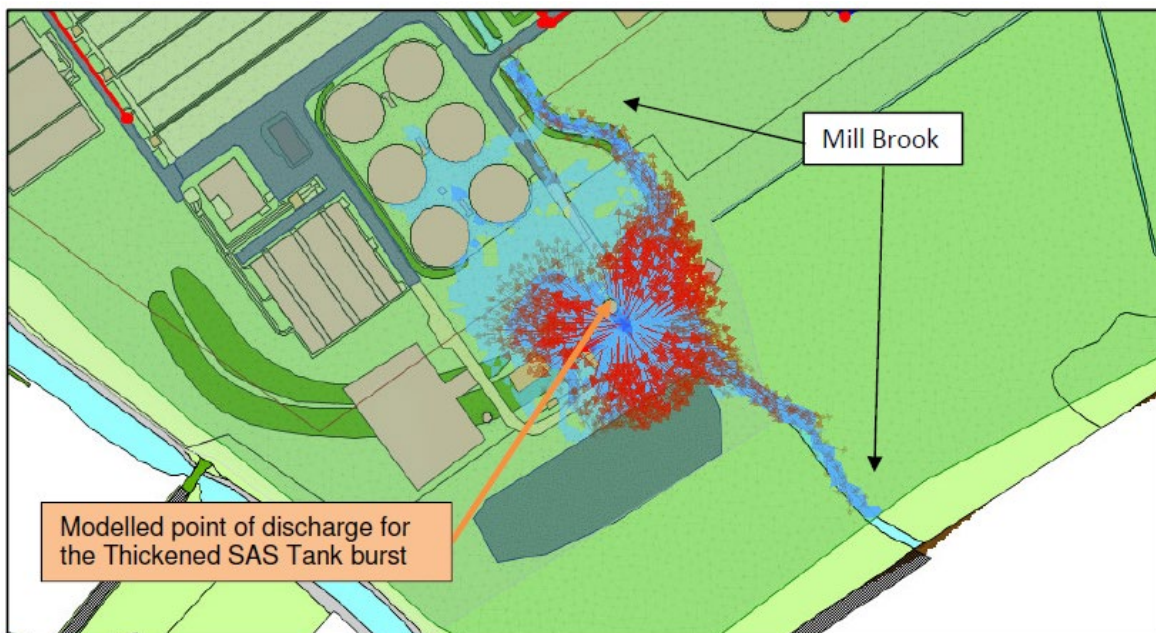
Source: Secondary Containment Modelling Assessment Dated 10/05/2022 - (Figure: 12: Ellesmere Port STC predicted flow paths following Post Digestion Tank burst.

Figure 5 – Centrate tank failure



Source: Secondary Containment Modelling Assessment Dated 10/05/2022 - (Figure 14: Ellesmere Port STC predicted flow paths following Centrate tank burst).

Figure 6 – Thickened SAS Tank Failure



Source: Secondary Containment Modelling Assessment Dated 10/05/2022 - (Figure 16: Ellesmere Port STC predicted flow paths following Thickened SAS tank burst).

The Applicant did not include all relevant above ground tanks in the spill model. Relevant Tanks in CIRIA C736 are identified as tanks that store substances which may be flammable/combustible or hazardous to the environment. Relevant above

ground tanks identified by the Applicant in the EQRA under Table 2.1 sludge treatment assets have been identified in table 5 below.

Table 5 – Relevant above ground tanks

Tanks	Volume m ³	Description	Leak detection system present	Secondary containment in place
Two Raw Sludge Tanks	660	Partially submerged 1.2m below ground constructed of reinforced concrete	No	No
Duty Enviroscreen and Standby Strain Press	N/A	Located off the ground next to the raw sludge tanks.	Not advised	Yes ^[1]
Two Gravity Belt Thickeners	Not provided	Located inside a building	Not advised	Yes ^[1]
Polyelectrolyte storage tanks	Not provided	Powder and liquid polyelectrolyte storage. Located inside the GBT building below ground and inside the centrifuge building above ground.	No	Yes ^[1]
Three Heat Exchangers	Not provided	Above ground, steel tanks.	Not advised	Yes ^[1]
Digested Sludge Buffer Tank	30	Above ground tank constructed of glass fused to steel.	No	Yes ^[1]
Three Centrifuges	Not provided	Above ground inside building	Not advised	Yes ^[1]
Three Rotating Drum Thickeners	140m ³ /hr		Not advised	Yes ^[1]

Note [1] – Applicant advised as part of the EQRA (March 2022) Appendix D EQRA workbook that effective secondary containment was in place. No explanation, type, or class of containment in line with CIRIA C736 was provided for the tank identified.

The Applicant did not consider the Gravity Belt Thickeners (GBT), centrifuges and centrifuge polyelectrolyte storage tanks as they stated that the tanks were located inside a building. We disagreed with this approach as the GBT building showed open access doors where potential spillages could exit, and no evidence or justification for discounting these tanks was provided.

The Applicant also identified 2650m of pipe work, which was capable of holding 130m³ of material, advising that “it is assumed that the benefit provided will be minimal and therefore has not been modelled”. We disagreed with this approach as it was identified that pipework would cross permeable ground, and sensitive

receptors such as Mill Brook. The Applicant provided no proposals to mitigate potential leaks or breaches from pipework in the documents provided.

It is noted that as part of the EQRA, the Applicant advised that for some tanks, suitable secondary containment had been provided, however no information on what class of containment in line with CIRIA C736 was provided, and as such we could not determine whether containment was suitable.

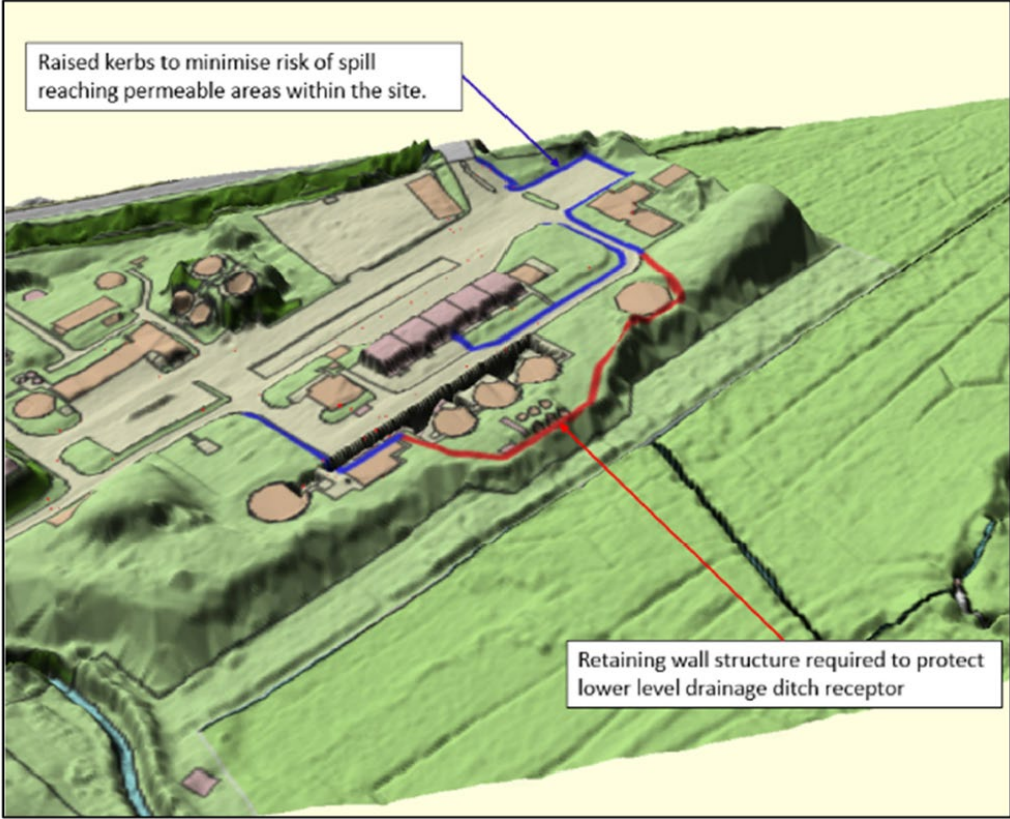
The tanks identified as the pre-thickened surplus activated sludge buffer tank, three rotating drum thickeners and thickened surplus activated sludge tank were identified by the Applicant as new assets due to commence operation in 2022. These assets had been built after the WaSCs were advised in 2019 that their sewage sludge anaerobic digestion (AD) facilities needed to comply with the IED⁹. The Secondary Containment Modelling Assessment report did not identify suitable secondary containment in place to mitigate spillages, leaks and tank failures with tank failure from these assets able to enter identified receptors (mill brook) and travelling across permeable surfacing. It was further noted that in the EQRA assessment provided, pipework assets associated with the surplus activated sludge process had been defined as “not BAT or BAT equivalent” and had also been identified as not built to CIRIA C736 standards. Newly built facilities and assets should be designed and built to CIRIA C736 report recommendations or an equivalent approved standards. The applicant did not provide evidence that the pre-thickened surplus activated sludge buffer tank, three rotating drum thickeners and thickened surplus activated sludge tank had been designed and built to CIRIA C736 report recommendations, or an equivalent standard.

For the eleven tanks modelled, the Applicant did outline proposals for secondary containment which they grouped into 4 main areas of the site. However, the proposals provided were vague, did not demonstrate that containment capacities would be suitable for the volumes required to be contained and stated that identified that solutions would contain spillages “wherever possible”

As an example of this, the Applicant identified solutions to mitigate a tank failure from the mesophilic digesters and post digestion tanks. The Applicant’s supporting information showed that in the event of a failure sludges would flow back into the site across permeable ground, down the embankment on the southern edge of the sludge treatment centre and into the drainage ditch receptor. The applicant proposed raised concrete kerbing to a depth of 325mm advising that this is “to contain the spillage within the impermeable areas wherever possible” It also identified a precast concrete 1m high retaining wall to be constructed along the edge of the embankment to minimise the risk of contamination to the drainage ditch stating that the wall height had not been confirmed due to the existing ground profile.

⁹ [Directive 2010/75/EU - Industrial Emissions Directive](#)

Figure 7 – Proposed mitigation measures for the mesophilic digesters and post digestion tanks



Source: Secondary Containment Modelling Assessment Dated 10/05/2022 - (Figure 18: Proposed Mitigation Measures for Group 1 and 2 assets).

On assessment of this solution the “*raised kerbs to minimise risk of spill reaching permeable areas within the site*” (identified as a blue line on figure 7 above), would have contained a spill within areas identified in the site surfacing as soft landscaping / made ground, and mixed surfacing e.g. gravel, concrete paving or soft landscaping” which have not been identified as impermeable surfaces. No calculations were provided to demonstrate that the solutions proposed would allow for the containment of 110% of the largest tank, or 25% of the total volume of the tanks, and no spill modelling had been undertaken to demonstrate the impacts of a tank failure following the implementation of the site improvements identified.

The proposals lacked the detail required for us to adequately assess improvements, they did not explain or provide information on existing containment in place, they did not address failures in tanks not included in the spill modelling, and they were not run through the spill modelling to show the impact following implementation or installation of the solutions/improvements.

The information provided in the application submissions did not satisfactorily demonstrate that the Applicant had adequately considered how they will meet BAT for new or existing tanks in relation to the provision of suitable secondary

containment or propose suitable alternative measures that would provide the same level of environmental protection.

Initial EQRA¹⁰

The EQRA submitted on 30 November 2021 was in draft format, did not include identified appendices, and set out an alternative approach to CIRIA C736. On assessment we did not consider that it provided an equivalent approved standard to CIRIA C736, and we advised the Applicant on 2 December 2021 that their response did not address question 14 and 18 in Schedule 5 Notice 1. We again communicated this to the Applicant in our Final Opportunity Letter dated 11 February 2022, outlining that we had found significant deficiencies in the EQRA assessment against CIRIA C736 standards, and directly conflicting information against the ADBA assessment provided.

Final EQRA

The Applicant submitted a revised EQRA on 11 March 2022. The assessment was intended to propose an alternative assessment method to CIRIA C736 and included a lengthy report with conflicting information and conclusions when compared with the ABDA tool and Secondary Containment Modelling assessment provided. This made it difficult to assess key aspects which we have identified below.

The report stated that it was based on a source, pathway, receptor model following the principles of:

- The Anaerobic Digestion and Bioresources Association (ADBA) report: Secondary Containment at AD Plants: An Industry Guide, 2016
- The Construction Industry Research and Information Association (CIRIA) C736 report: Containment Systems for the Prevention of Pollution, 2014

The EQRA contained a conceptual model and qualitative risk assessment which had been adapted from the risk classification system of CIRIA 552 (2001) rather than CIRIA C736. The assessment concluded that due to the probability of an event occurring being “low” or “very low”, the overall risks were insignificant. We disagreed with this finding and on comparison with the Secondary Containment Modelling Assessment provided, found that this directly conflicted with the results of the spill modelling, which identified that in the event of a catastrophic failure impacts on receptors would be significant. We therefore concluded that the conceptual model and qualitative risk assessment undertaken could not be used as part of the determination process.

¹⁰ Environmental Quantitative Risk Assessment at Ellesmere Port Wastewater Treatment Works, Dated 26 November 2021

The EQRA section of the report provided an alternative method to CIRIA C736 for the classification of containment, allocating a 'BAT or BAT equivalent status' for assets according to the perceived likelihood of fugitive emissions to cause harm to controlled waters allocating a 'Risk of Harm' score.

The risk of harm score provided that any asset allocated a score of 4.9 or below would be considered 'BAT or BAT equivalent', with a zero-score allocation if no source-pathway-receptor linkage was identified. On assessment of this approach we could see no justification that a score of 4.9 or below would provide the same level of environmental protection as CIRIA C736.

Further concerns were identified within the scoring allocation with examples including:

- Scores could only be allocated for tanks up to 1000m³, with all tanks above this capacity being allocated the same score.
- Statutory habitats were scored based on the number of habitats, we could see no consideration of the habitat type, location, proximity or sensitivity being taken into account in the score allocation.
- Scores for specific areas were allocated based on a decimal point approach. E.g., a score of 0.2 was allocated for each statutory habitat identified up to 0.6 (three or more), where no further score allocation could be provided.
- Risk of harm score was based on the Total Leak Likelihood x Total Pathway rating x Total receptor rating. Due to the allocation of decimal point scores as identified above this could potentially reduce risk scores with no justification provided.
- Some assets were allocated a risk of harm score of 0 as the Applicant determined that the source-pathway-receptor linkage had been broken. This included the thickened SAS tank, which was allocated a score of 0 for leak likelihood based on mitigating factors being in place to reduce the leak likelihood. No explanation of mitigating factors in place was provided apart from the indication in the score allocation. This score directly conflicted with the spill modelling report which showed that a tank failure would enter Mill Brook and migrate across permeable ground.

CIRIA C736 guidance is considered the industry standard of choice and is based on the source-pathway-receptor approach to risk assessment, providing a clear methodology for demonstrating BAT, appropriate measures and compliance with permit conditions. The ADBA classification tool draws upon the principles and methodologies within CIRIA C736 and when compared to the findings of the Applicant's completed EQRA assessment and allocation of 'BAT or BAT equivalent status' for identified assets directly conflicted with the finding of the Applicants submitted ADBA tool where a minimum of 'Class 2' containment was required. We therefore concluded that the EQRA could not be used as part of the determination process.

We do not consider the applicant's EQRA report meets the recognised CIRIA C736 standard requirements or demonstrates that they have used a suitable alternative approach that would provide the same level of environmental protection. Some key areas of concern have been identified below:

- The findings of the EQRA directly conflicted with the findings of the Applicant's ADBA tool and spill modelling assessment which identified that a 'Class 2' containment system was required, as per CIRIA C736. For example, the EQRA allocated a score of 1.9 for the centrate tank and allocated a 'BAT or BAT equivalent' status to the tank. The spill modelling showed a catastrophic failure would breach the permit boundary, flowing across permeable ground, and potentially impacting the operability of the adjacent WwTW.
- The source-pathway-receptor linkages identified were qualitatively assessed to have a 'low' risk as the pathway itself was considered to be very unlikely. As such this assessment does not consider catastrophic failure in the 'BAT or BAT equivalent' assignment.
- The 'risk of harm' score provides that a score of below 4.9 determines the asset is 'BAT or BAT equivalent'. This appears to be an entirely arbitrary threshold. We can see no justification for how a score below 4.9 will provide the same level of protection as providing containment in line with BAT requirements.
- A score of zero is provided when no source, pathway, receptor linkage is identified, however not all potential receptors have been included within the assessment.
- The EQRA provides no details on the existing secondary containment present, apart from a Yes/No answer.

ADBA tool

The Applicant provided an ADBA assessment. The report determined that the site's overall risk rating was medium with 'Class 2' containment required.

The three classes of containment are defined by increasing requirements in terms of design and construction integrity. Class 1 containment systems are provided where the risk of pollution arising from the storage of the inventory is relatively low, whereas class 3 containment systems are provided where this risk is relatively high.

On assessment of the ADBA tool, it did not include all relevant tanks identified in the EQRA report or include all relevant receptors.

As such we could not determine if the risk level associated with the ADBA assessment was suitable for the risk posed.

Conclusion

We consider that the information submitted to demonstrate compliance with BAT 19d is conflicting and incomplete. We have provided multiple opportunities for the Applicant to provide the information requested through Schedule 5 Notice 1 and requests for further information.

We consider that the Applicant's proposals to manage potential leaks or catastrophic failures does not meet BAT or provide an appropriate alternative level of protection. We do not consider that the Applicant has demonstrated that the risk posed by the liquids and sludges contained in the tanks and vessels in terms of soil and/or water contamination will be controlled by suitable techniques, which are identified as suitable secondary containment in BAT 19d. This requires that site secondary containment should be 110% of the largest tanks or 25% of the aggregated tank volume, whichever is greater, taking into consideration rainfall and firewater, and allowing for suitable freeboard.

The Applicant did propose timescales for the implementation of containment by 2027. However, the proposal lacked details, did not include all relevant tanks or provide clarity on how a solution would be achieved. We determined that an implementation date of 2027 was unacceptable when it should have been achieved from August 2022. Nor was it clear that any containment provided would adequately protect the environment.

The Applicant identified new plant and assets as part of the surplus activated sludge plant, this included a pre-thickened surplus activated buffer tank, rotating drum thickeners and thickened surplus activated sludge tanks. These assets were identified as commencing operation during 2022. The Applicant stated in the EQRA dated 11 March 2022 that these tanks had effective secondary containment present, however no information on what effective secondary containment is present was provided, and this was contradicted by the Secondary Containment Modelling report dated 10/05/2022 which identified that secondary containment was required to be retrofitted with spill modelling showing that failure of the thickened sludge tank was predicted to reach Mill Brook which had been identified as a sensitive receptor. As such we determined, based on the information provided by the Applicant, that the new plant had not been designed and developed to meet BAT which requires that tanks for liquids are located in a suitable secondary containment.

We do not consider it appropriate to use improvement conditions or pre-operational conditions to address the issues identified which are fundamental principles of environmental protection. While the Applicant provided a timescale for the implementation of proposals by 8 June 2027, this timescale was not acceptable, the proposals did not include sufficient information for the implementation of overflow measures, suitable secondary containment, or the isolation of tanks, vessels and secondary containment to demonstrate that they could be considered BAT.

As such we do not have sufficient information to assess and have not been provided with suitable proposals on which we could implement an improvement condition. Whilst it may be possible to use an improvement condition to allow time for BAT to be achieved, we need to be satisfied it will be achieved. Improvement conditions are not for the Applicant to work out how they will demonstrate BAT after the application had been consulted on and determined. For a pre-operational condition, we need to be satisfied in principle that the proposals are BAT even if some of the fine detail can be provided later. So even if this had been the case, which it is not, as explained earlier, the facility is already operational so a pre-operational condition for the existing operations (excluding the surplus activated sludge plant) was not appropriate.

BAT 19h – detection and repair of leaks

Summary

We consider that the Applicant has not satisfactorily demonstrated how they would meet the requirements of BAT19h and did not propose suitable alternative measures.

The facility has identified several partially submerged and fully submerged tanks identified in table 6 below.

Table 6 – Partially submerged and fully submerged tanks.

Tanks	Volume m³	Description	Leak detection system present	Secondary containment in place
Raw Sludge Tanks (x2)	660	Partially submerged 1.2 m below ground constructed of reinforced concrete	No	No
Raw Sludge Tanks (x2)	660	Fully submerged covered tanks to 1.5 m depth constructed of reinforced concrete	No	No
GBT Feed Well	Not provided	Fully buried well	No	No
Polyelectrolyte storage tanks	Not provided	Powder and liquid polyelectrolyte storage. Located inside the GBT building below ground and inside the centrifuge building above ground.	No	Yes ^[1]
GBT Supernatant Well	Not provided	Fully buried to 9.5m depth	No	No
Thickened Sludge Tanks (x3)	2,640	Fully buried to 7m depth	No	No
Mesophilic Digesters (x3)	10,200	Partially buried (7m below ground), fixed roof digesters constructed of reinforced concrete	No	No

Digested sludge overflow tank	880	Fully buried tank to 7m depth of reinforced concrete	No	No
Note [1] – Applicant advised as part of the EQRA (March 2022) Appendix D EQRA workbook that effective secondary containment was in place. No explanation, type, or class of containment in line with CIRIA C736 was provided for the tank identified.				

We requested information on how leak detection and maintenance would be carried out in question 15 of Schedule 5 Notice 1 dated 20 June 2021, and question 28 of Schedule 5 Notice 2 dated 12 October 2021. The Applicant advised that site inspection tours would be carried out daily by site staff, and monthly by the site’s Environmental Regulatory Advisor. These checks would include a visual inspection of asset integrity, where possible, and general ground conditions, with process control monitoring used to assess tank and pipework integrity, e.g., comparison of flow meters throughout the system to identify any losses. They advised that the integrity and condition of the underground assets would be assessed within the CIRIA C736 containment assessment report, which the Applicant proposed to review every five years, advising that further information would be supplied in response to question 18 of Schedule 5 Notice 1.

On assessment of the EQRA report (March 2022) which was provided in response to question 18 of Schedule 5 Notice 1, the report identified a condition score for underground assets, however no information was provided on how this score had been determined for tanks, only pipework.

The report identified in Appendix D that the underground/submerged tanks did not have leak detection in place and identified that “a leak would bypass the surface hardstanding cover and drainage systems, and infiltrate directly into the ground.”

As stated in BAT 19h, we recognise that the installation of secondary containment may be limited in the case of existing plant, but they do need to justify this and demonstrate that the facility will adequately control the risk. Demonstrating this will either require them to show there is not risk or that they have or will have suitable measures in place. However, the Applicant has not demonstrated how they would regularly monitor for potential leaks in line with BAT requirements or proposed suitable alternative measures.

The approach provided by the Applicant would not provide a robust system to determine potential leaks, no trigger points for investigation were provided for flow measurements, and it was unclear how visual inspections would be carried out for tanks that could not be seen.

We do not consider that the Applicant has demonstrated that the risk posed by the liquids contained in the underground tanks and vessels in terms of soil and/or water contamination will be controlled by suitable techniques to minimise the environmental risk from leaks.

Odour management

Summary

The two most significant sources of odour were identified as:

- Odour emissions from the import and dewatering of indigenous and imported sludge.
- The operation of the anaerobic digestion process.

We consider that the applicant has not demonstrated that the facility is using BAT. Neither of these operations fully meet the BAT requirements.

The applicant provided an OMP with their application. We reviewed the plan against the relevant BAT and considered whether the Applicant had given sufficient regard to our guidance on odour management¹¹.

We requested information from the Applicant on multiple occasions in relation to odour management. This resulted in four revisions to the OMP being submitted. The most recent version was received 11 March 2022. We assessed this version for our determination.

We consider that the Applicant did not respond to all the questions we asked in our requests. We consider that the Applicant did not provide the necessary information with sufficient clarity or detail.

We were therefore not able to approve the Applicant's OMP.

Table 7 – Odour Management Plan submitted revisions.

Information	Originally requested	Received
Odour Management Plan (OMP), Version 4, January 2020 [SUPERSEDED]	n/a	Received with application
Odour Management Plan (Version 10, 10th August 2021) [SUPERSEDED]	22 June 2021 Q28 to Q47 of Schedule 5 Notice 1	17 September 2021
Odour Management Plan (Version; Draft for EA review, 14th January 2022) [SUPERSEDED]	12 October 2021 Q29 to Q48 of Schedule 5 Notice 2	14 January 2022

¹¹ [Additional guidance for - H4 Odour Management - How to comply with your environmental permit](#)

<p>Odour Management Plan (Version; Second draft for EA review, 11th March 2022)</p>	<p>12 October 2021 Clarifications of Q29 to Q48 of Schedule 5 Notice 2 and subsequent letter dated 11 February 2022</p>	<p>11 March 2022</p>
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BAT 8 – monitor channelled emissions

BAT is to monitor channelled emissions to air, at defined frequencies, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

For odour and waste treatment processes identified as 'biological treatment of waste' and "treatment of water-based liquid waste". BAT specifies that:

- H₂S should be monitored once every six months (no EN standard available)
- Odour concentration should be monitored once every six months to EN 13725 standards
- NH₃ once every six months (no EN standard available)
- HCl should be monitored once every 6 months to EN 1911 standards
- Total volatile organic compounds (TVOC) should be monitored once every 6 months to EN 12619 standards

The BAT conclusion states that odour may be monitored instead of NH₃ and H₂S. For TVOC and HCl the monitoring only applies when the substance concerned is identified as relevant in the waste gas stream based on the inventory in BAT 3, however the applicant had not undertaken the characterisation of the gas stream and as such could not demonstrate that TVOC and HCl was not present.

The Applicant's OMP (March 2022), section 4.3 proposed to monitor for NH₃ and H₂S every six months from the Odour Control Units (OCUs) identified as emissions points A9, A10, A11, A12 and A13. However, the OCUs had been identified as non-operational in the OMP Version: 4 dated; January 2020. It stated that odour control units were not operational due to varying factors including no replacement of OCU media, imploded OCU units and, OCUs being deemed not fit for purpose. The OMP stated that H₂S and NH₃ would only be monitored once the odour control units were replaced or reinstated in 2027. As such no solution for the monitoring of channelled emissions to air was proposed in line with BAT 8 until 2027. There was no proposal for a recognised BAT abatement technology which we have addressed under BAT 34. As such we cannot make an assessment of air

emissions against BAT. It should be noted that no quantitative risk assessment was submitted to determine the current emissions from channelled emissions from the process areas of the installation.

The Applicant provided in their response to our Final Opportunity Letter, the measures to be taken to re-instate the identified units, advising that investigation works and installation would be completed by 2027.

The Applicant did propose the use of a Jerome H₂S monitor or photo-ionisation detector, however the Applicant did not commit to a defined frequency of testing, demonstrate that the proposed method would provide an accurate reading, or propose this for channelled emissions to air as the Jerome H₂S monitor is for ambient air monitoring not channelled emissions. The Applicant did not propose to monitor NH₃ until the re-instatement or replacement of the odour control units had been undertaken. There were no proposals to monitor Odour in the interim, and no proposals to monitor TVOC or HCl or to show this was not required in line with BAT requirements.

We consider that the Applicant has not demonstrated BAT for the monitoring of channelled emissions to.

BAT 10 – Odour monitoring

BAT is to periodically monitor odour emissions.

Odour can be monitored using:

- EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure);
- When applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

The monitoring frequency is determined in the OMP (BAT12).

The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.

The submitted OMP (March 2022) states in section 4.2 that odour dispersion modelling was undertaken to identify the sources requiring abatement, however this modelling was not provided. Section 5.4 of the Applicant OMP states that:

“Until such time that the OCUs are operating, olfactory monitoring (‘sniff’ testing) will be undertaken on a weekly basis at the locations shown in Appendix G. At each location observations shall be made concerning odour intensity, persistence and character. Subject to instrument availability, this will include the use of a Jerome hydrogen sulphide monitor or a photo-ionisation detector.”

While the Applicant proposed the use of the Jerome H₂S monitor or photo-ionisation detector, this monitoring standard is not to a recognised EN standard and it has not been demonstrated to provide data of an equivalent standard. The Applicant had not clearly identified that monitoring would be undertaken to a suitable standard, or that they would periodically monitor odour emissions in line with BAT 10. The Jerome monitor was identified for ambient monitoring and not point source monitoring.

BAT 12 – odour management plan

In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system, that includes a protocol containing actions and timelines, and an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures

The submitted OMP (March 2022) proposed odour control measures that would be implemented to reduce odour potential. On our assessment of this we found that whilst the Applicant had proposed actions to be carried out, no clear timescales had been provided.

The Applicant identified mitigation measures to reduce the residual risk of odour which we could not be implemented. An example of this included the reduction of the odour potential from the four raw sludge tanks which was assigned a ‘high’ odour potential prior to odour control measures being carried out, and ‘low’ following the control measures implemented. The control measures stated that “All four tanks are connected to an odour control unit comprising a biological filter bed (woodchip) and two activated carbon units (emission point A9)” and “six monthly monitoring of the OCU emissions for H₂S and ammonia”. This OCU identified in the mitigation measure had been identified as not operational with an expected timeline for re-instatement of June 2027.

The OMP (March 2022) included further references to operational odour control units in Appendix C: Design Operating Parameters for Odour Control Units and Appendix D: General Inspection and Maintenance, which would be implemented to prevent or reduce odour emissions. All of which would not be implementable until the OCUs were operational again, by 2027.

The Applicant’s OMP included control measures which would not be in effect until 2027, with no proposals for how the Applicant would be BAT compliant in the interim between August 2022 and June 2027. We determined this as exceeding a reasonable time period from the BAT implementation date of August 2022, with no proposals being provided as part of determination to confirm the specific abatement techniques that would be implemented to control odour in line with BAT requirements.

We provided the Applicant with an opportunity to revise the proposed timeline for re-instatement of the OCUs in our Final Opportunity Letter dated 11 February 2022 which was not forthcoming.

The OMP does not include actions and timelines that would be implemented at permit issue. Key identified odour prevention and/or reduction programmes identified as odour control units are not proposed to be implemented for prevention and reduction measures until 2027 as they are not scheduled to be reinstated or replaced until this date. This has not been justified.

We did not have sufficient information to assess prevention and/or reduction measures for the period between August 2022 and June 2027 as alternatives proposed to the operation of OCUs were not to a recognised standard. No quantitative risk assessment or modelling had been undertaken for point source emissions to identify potential impacts and implement suitable abatement or reduction techniques. As such we do not have sufficient information to assess and have not been provided with suitable proposals on which we could implement an improvement condition. Whilst it may be possible to use an improvement condition to allow time for BAT to be achieved, we need to be satisfied it will be achieved. Improvement conditions are not for the Applicant to work out how they will demonstrate BAT after the application had been consulted on and determined. For a pre-operational condition, we need to be satisfied in principle that the proposals are BAT even if some of the fine detail can be provided later. So even if this had been the case, which it is not, as explained earlier, the facility is already operational so a pre-operational condition for the existing operations (excluding the surplus activated sludge plant) was not appropriate.

We therefore determined that the OMP did not meet the requirements set out in BAT 12.

BAT 14d – diffuse emissions

In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of techniques.

This includes the containment, collection and treatment of diffuse emissions through collecting and directing the emissions to an appropriate abatement system via an air extraction system and/or air suction system close to the emission sources.

The OMP (March 2022) identified diffuse and point source emissions in table 3.2. In section 4.2.1, five odour control units were identified including:

- A biological filter bed (woodchip) and single activated carbon unit serving the raw sludge tanks (emission point A9);

- A biological filter bed (woodchip) and two activated carbon units serving the GBT building, thickened sludge tanks and digested sludge tank (emission point A10);
- A woodchip biological filter bed serving the three TAD [thermophilic anaerobic digestion] vessels (emission point A11);
- A single activated carbon unit serving the centrifuge building, centrate buffer tank and centrate tank (emission point A12).
- A two-stage process with a trickling bio-filter (pumice stone media) followed by a second stage carbon filter (emission point A13).

The OMP stated that the odour control units are not currently operational, with engineering studies being undertaken to allow for a programme of refurbishment (or if necessary, replacement). In response to our Final Opportunity Letter dated 11 February 2022, the Applicant provided the proposed OCU reinstatement /replacement schedule in table 30.2, and scope of works to be carried out in table 30.1. The Applicant did not explain how they would demonstrate BAT in the interim, from August 2022 until June 2027.

Table 8 – Applicant’s proposals for OCU reinstatement timeline

Project Phase	Expected delivery date	Additional notes
Solution developed	07.10.2022	<p>The initial phase will include a review of existing information and may require additional monitoring, modelling or detailed inspection of asset condition to confirm the scope of work.</p> <p>The remainder of the project timeline assumes major capital works will be required. If smaller scale solutions are identified at this stage, then delivery times will be revised with the expectation that work will be completed sooner.</p> <p>The proposed solution design, including any revised delivery dates, will be confirmed to the EA for review and approval, as necessary.</p>
Issue tender	28.03.2023	Following approval by the EA (if required), the contract will be issued for tender.
Award contract	19.10.2023	The contract will be awarded in accordance with UU governance procedures.
Mobilisation to site	02.08.2024	Following contract award, the design will be finalised and site works will commence.
Project in use	08.06.2027	The project will be fully commissioned and the assets in use.

Table 30.1: OCU reinstatement details – Taken from response to EA letter dated 11 February 2022.

It was noted that the non-operational OCUs were the only control for diffuse emissions from assets identified as:

- Four raw sludge tanks
- Two Gravity belt thickeners
- Three Thermophilic anaerobic digesters
- Digested sludge storage tank
- Digested sludge buffer tank
- Three Dewatering centrifuges
- Centrate storage and buffer tank vents

We consider that the information submitted to demonstrate compliance with BAT 14d does not demonstrate that the Applicant will collect and direct emissions to an appropriate abatement system within a reasonable timescale as the odour control units identified are not operational, and no suitable alternative measures have been proposed prior to re-instatement or replacement in June 2027.

BAT 34 – channelled emissions

In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H₂S and NH₃, BAT is to use one or a combination of the listed techniques including;

- (a) Adsorption
- (b) Biofilter
- (c) Fabric filter
- (d) Thermal oxidation
- (e) Wet scrubbing

The BAT conclusion further sets BAT-associated emission levels (AELs) for channelled NH₃ and odour, which are applicable for this facility. This BAT directly links to BAT 8 which has been addressed above.

The OMP (March 2022) identified five odour control units. Four existing units and one new unit to be commissioned for the new surplus activated sludge (SAS) process, identified as emission point (A13). Section 4.3 identified that the four existing odour control units are not currently operational, with the OMP version: 4, dated: January 2020 stating that odour control units were not operational due to

varying factors including no replacement of OCU media, imploded OCU units and, OCUs being deemed not fit for purpose.

The Applicant reported in section 4.2 of the OMP (March 2022) that “engineering studies are being undertaken to allow for a programme of refurbishment (or if necessary, replacement) of the existing OCUs to be costed and funding secured for implementation of the works”. In the response to the Final Opportunity Letter dated 11 February 2022, the Applicant proposed the completion of this work by June 2027, with no suitable alternative measures being proposed to demonstrate BAT between August 2022 and June 2027.

We determined that the Applicant would not be compliant with BAT 34 if the permit variation had been issued as they would not have an appropriate technique or techniques for reducing channelled emissions to air in place. While the Applicant proposed the replacement/reinstatement of the four OCUs in June 2027, we did not consider this to be a reasonable or acceptable timescale given that the Applicant was informed in April 2019 that they needed to comply with IED, and therefore was required to be BAT compliant at the point of permit issue.

For the OCU identified as emission point A13 serving the buffer tank, rotating drum thickeners and thickened SAS storage tank, we would have considered a pre-operational condition to address the implementation of the OCU and updating of the OMP, however it was noted that the information provided in relation to this OCU advised that it was not commissioned, with the location being indicative,

H4 Odour management guidance

The Applicant submitted the 4th revision of their OMP (March 2022) in response to our Final Opportunity Letter dated 11 February 2022. This was assessed against Environment Agency Guidance “Environmental Permitting: H4 Odour Management”. A large number of deficiencies were noted raising significant concerns regarding the proposed management and control of site operations and infrastructure to minimise the potential for significant environmental impact specifically in relation to odour management. As such we were not satisfied that the Applicant had a robust management and operational system in place to control odour. Further deficiencies are outlined below:

- The OMP includes section 6.2 incidents and emergencies, but not all common accident/incident types such as loss of containment, or OCU malfunction have been included. The OMP identifies control measures and recovery steps, but no clear timescales for rectification have been provided.
- The OMP specifies control measures, monitoring and maintenance processes that would not be implemented prior to the re-instatement/replacement of odour control units in 2027.
- Section 4.2 of the OMP stated that odour modelling had been carried out for the site to identify the sources requiring abatement, however this modelling

was not provided, and no further justification for the odour control units placement was provided to substantiate the odour risk levels identified.

- The OMP identifies the residual risk of odour following the implementation of control measures as “low” or “moderate” however non-operational OCUs have been used as control measures, with no demonstration as to how odour risk has been reduced. Further information on the risk classification and justification for the sources identified would be required, and how non-operational OCUs have effectively reduced the odour risk.
- The OMP does not consider all relevant control measures such as holding times, age of waste received, or maintenance regimes.
- The OMP proposes that process monitoring will be carried out in section 4.1, however no trigger levels, or actions to be taken if trigger levels are breached have been provided for key measures.
- Section 5.1 of the OMP advises that complaints will be passed to the production manager within 24 hours (except on weekends). H4 guidance specifies that complaints should be dealt with promptly. The applicant has not identified that 24 hours is sufficiently prompt, with no clear timescale being provided for weekends. We consider that we are unable to approve the OMP as acceptable to demonstrate that the Applicant would manage and control odours resulting from site operations.

Other issues not resolved

The containment and odour aspects are our main reasons for refusal. We are not satisfied that areas identified as waste pre-acceptance and acceptance, characterisation of wastewater streams and emission points were adequately addressed. However, had the permit variation been issued, we would have sought to address specific deficiencies and missing information through improvement conditions, or compliance visits/checks. We did not identify the below as reasons for refusal.

Waste pre-acceptance and acceptance

The Applicant submitted a Waste Characterisation and Acceptance procedure, (Version 2, 11th March 2022), Technical Evaluation Review Form (WwTW Sludge Imports) and WwTW Sludge Waste Declaration Form on the 11 March 2022. Sections 5 and 6 of the Waste Characterisation and Acceptance procedure explain how the pre-acceptance and acceptance system will operate.

While the Applicant provided a range of potential parameters that could be checked as part of pre-acceptance process, no commitment from the operator was provided on what would be checked stating that this would be determined by the technical resource completing the assessment. It was not clear how the Applicant would carry out pre-acceptance checks to ensure that they understood the effects

of potential sources on the biological treatment process, or which parameters would be checked as a minimum.

For waste acceptance, the Applicant stated in section 6 of the Waste Characterisation and Acceptance procedure, (Version 2, 11th March 2022) that the sampling of imports on arrival to Ellesmere Port WwTW is not required as the material consists of sewage sludge from WwTW. We disagree with this statement as the facility will be operated under IED which seeks to achieve a high level of protection for the environment by requiring each of the industrial installations to be operated under a permit with conditions based around the use of BAT. While not all loads must be sampled, a representative approach should be adopted, with clear parameters and guidance on processes to be carried out.

Pre-acceptance and acceptance measures and requirements are set out in the draft [Appropriate measures for the biological treatment of waste](#), which has been consulted on. Although the Applicant does not strictly need to apply these measures currently, they will be published shortly, at which point the Applicant will be expected to put these measures in place.

We could not determine that waste pre-acceptance procedures would ensure that waste received at site would be suitably assessed to understand the effects of potential sources on the biological treatment process as no clear sampling parameters were provided.

We could not determine that waste acceptance procedures would be in place to confirm the characteristics of the waste, as identified in the pre-acceptance stage, or what characteristics would be verified upon the arrival of the waste at the plant, as well as the waste acceptance and rejection criteria.

However following consideration and subject to the publishing of the 'Appropriate measures for the biological treatment of waste' guidance, we would have addressed this through an improvement condition.

Characterisation of wastewater streams

The Applicant identified various emissions of process effluents and surface run-off being discharged to the adjacent WwTW. This includes filtrate (R1), centrate (R2), boiler blowdown (R3), future surplus activated sludge filtrate (R4), contingency cake storage pad run-off (R5), humus return well (including centrate, cake bay runoff and surface water) (R6) and gravity belt thickener liquor well and surface water (R7).

The Applicant has not provided a full characterisation of the wastewater streams as required by BAT 3 which we requested in question 6 of Schedule 5 Notice 2 dated 12 October 2021. In response to Schedule 5 Notice 2, the Applicant provided a partial characterisation of emissions returned to the WwTW which did not include all emissions or provide a full characterisation in line with BAT 3 requirements. Following further discussions with the Applicant, we agreed for

returns to the WwTW to be addressed through the inclusion of improvement conditions which would implement a monitoring and sampling procedure to fully characterise emissions and carry out subsequent further assessment if required.

Emission Points

As part of the emissions returned to the WwTW, the Applicant submitted a revised emission point plan on the 11 March 2022. This identified emission point R6 as the humus return well which would receive centrate, cake bay leachate and runoff, and clean surface water. On assessment of emission point R6, this was outside of the permit boundary. Under Regulatory Guidance Series, No RGN 2, Understanding the meaning of regulated facility an “Installation” means:

- a stationary technical unit where one or more activities are carried on, and
- any other location on the same site where any directly associated activities are carried out.

The term “technical unit” is not defined in the Regulations, but the Part A Guidance clarifies that it must be some type of plant or machinery. Machinery includes equipment for monitoring for releases, control rooms, and equipment needed to run the plant and move materials around the Installation. As such emission point R6 should be relocated within the permit boundary, or the boundary increased to include the emission point R6. As such we were not satisfied that all emissions points are included within the permit boundary and we would have looked to address this through further clarification of the permit boundary, or emission point location.

Growth Duty

Section 108 Deregulation Act 2015 - Growth Duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 100 of that Act in deciding whether to grant this permit variation.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Annex 1 – Application Timeline

Schedule 5 Notice 1

22 June 2021

We served a Schedule 5 Notice¹² (“Schedule 5 Notice 1”) requesting information which we considered to be necessary to determine the application and included 47 questions for the Applicant to respond to. Given the large amount of information required, we agreed an extended timescale for the information to be provided, with a response deadline of 13 August 2021.

12 August 2021

The Applicant e-mailed to request a two-week extension for the submission of information, to 27 August 2021.

17 August 2021

We spoke to the Applicant and confirmed that we would agree to an extension until 27 August 2021, which we confirmed in writing on 20 August 2021. The applicant verbally requested a further extension to 3 September 2021.

3 September 2021

The Applicant advised that they would not be able to submit all information on 3 September 2021 but advised information would be received by 6 September 2021.

6 September 2021

We did not receive a response to the Notice. We contacted the applicant by e-mail to follow up on the Notice.

9 September 2021

We contacted the Applicant by e-mail again, to follow up on the Notice, advising that if no response was received by 10 September 2021, we would deem the application to be withdrawn. The Applicant provided a part response to the Notice. This included responses to questions 1 to 13, 15 to 17 and 19 to 27. It did not include a response to questions 14 and 18, which were in relation to containment and impermeable surfacing. The Applicant stated a response would be provided by 27 September 2021. We had not agreed to this extension.

The Applicant also did not respond to questions 28 to 47, which were in relation to the odour management plan (OMP). The Applicant stated a response would be provided by 17 September 2021. We had not agreed to this extension.

17 September 2021

We held a meeting to discuss responses to Schedule 5 Notice 1 received so far with the Applicant contact.

¹² Notice of request for more information under paragraph 4 of Part 1 of Schedule 5 of the Environmental Permitting (England and Wales) Regulations (“the EPR 2016”)

17 September 2021

The Applicant provided a new OMP Version 10 dated; 10 August 2022, and a response to questions 28 to 47.

27 September 2021

No response was received to questions 14 and 18, contrary to the indication given by the Applicant on 9 September 2021.

1 October 2021

The Applicant requested a further extension to the Notice response deadline, until 30 November 2021 with respect to questions 14 and 18.

8 October 2021

We confirmed with the Applicant that the Notice response deadline had been extended to 30 November 2021 for questions 14 and 18 in relation to containment, as requested.

30 November 2021

The Applicant responded to question 18 with a draft Environmental Quantitative Risk Assessment (EQRA) which did not include all identified appendices and was 41 pages. No response was received to question 14.

2 December 2021

We wrote to the Applicant to confirm that their response to question 18 did not adequately address the question, and we had not received a response to question 14. We advised that we would extend the period to respond to Schedule 5 Notice 1 until 14 January 2022.

14 January 2022

The Applicant provided a response to question 18 with the addition of a completed Anaerobic Digestion and Bioresources Association (ADBA) tool. No response was received to question 14 in relation to impermeable surfacing, and no updated EQRA was provided.

No further responses were received until after we had sent the Final Opportunity Letter to the applicant on 11 February 2022, which is detailed below.

Request for information e-mail dated 6 September 2021**6 September 2021**

We requested via email¹³ and not a Schedule 5 Notice, further information from the Applicant regarding the site condition report. We gave the Applicant until 1 October 2021 to respond.

¹³ Request for further information dated 6 September 2021.

1 October 2021

We did not receive a response to this request. As this is necessary information, and a requirement of IED, we included the request in a further Schedule 5 Notice. This is detailed below.

Schedule 5 Notice 2**12 October 2021**

We served a further Schedule 5 Notice (“Schedule 5 Notice 2”) requesting further information which we considered to be necessary to determine the application.

The notice included 48 questions for the Applicant to respond to.

We gave the Applicant a response deadline of 22 November 2021.

22 November 2021

The Applicant contacted us by e-mail to request an extension to respond to questions 29 – 31 until 17 December 2021, and questions 32-48 until 31 January 2022. These questions were in relation to the control of odour.

23 November 2021

We received responses to questions 1 – 28.

24 November 2021

In response to the Applicant’s extension requests on 22 November 2021, we rejected the Applicant’s request for an extension in relation to odour and requested the Applicant respond by the 26 November with alternative proposals.

26 November 2021

The Applicant e-mailed us to confirm that they had now instructed a consultant to prepare a new OMP and requested an extension to the deadline to respond to questions 29 – 48 until 14 January 2022.

29 November 2021

We wrote to the Applicant to confirm the extension date of the 14 January 2022 for questions 29-48.

30 November 2021

The Applicant responded to question 25b which related to the contingency cake storage pad, and question 28, which related to underground tanks and pipework.

2 December 2021

We wrote to the Applicant to confirm that the response we had received for question 28 on 30 November 2021 did not answer the questions raised. We requested that a further response be provided by 14 January 2022.

14 January 2022

The Applicant provided a response to questions 29 – 48 of the Notice. This response included a new OMP Version: Draft for EA review Dated; 14 January 2022.

No further responses were received until after we had sent the Final Opportunity Letter to the applicant on 11 February 2022, which is detailed below.

Request for Further information dated 26 November 2021

26 November 2021

We requested via e-mail¹⁴ further information from the Applicant regarding questions 2, 3, 5, 6, 7b, 8, 11, 14 and 18 of Schedule 5 Notice 2 dated 12 October 2021 that had not been adequately addressed. This included further clarification on:

- Waste Characterisation and Acceptance
- Emission point plan
- Inventory of wastewater and gas streams
- Adequate storage capacity
- Emissions to water
- Leak detection and repair plan
- Emission point locations
- Sediment assessment

We agreed a response date of 17 December 2021 and to extend the deadline to respond to the Schedule 5 Notice 2 until this date.

17 December 2021

The Applicant provided a response to the question raised on the 26 November 2021 which included a new emission point plan, waste acceptance procedure and revised leak and detection plan as well as responses to the questions.

Request for Further information dated 5 January 2022

5 January 2022

We wrote to the Applicant¹⁵ requesting further clarification on questions 2 and 3 relating to waste characterisation and acceptance, and questions 5 and 8 relating

¹⁴ Request for further information dated 26 November 2021

¹⁵ Request for further information dated 5 January 2022

to the emission point plan and emissions to water. We requested a response by 14 January 2022.

14 January 2022

The Applicant provided a response to questions 2 and 3. This response included a revised Waste Acceptance procedure. The Applicant advised that they would respond to questions 5 and 8 by 21 February 2022 which we did not agree.

No further responses were received until after we had sent the Final Opportunity Letter to the Applicant on 11 February 2022, which is detailed below.

Other correspondence

5 November 2021

We wrote to the Applicant¹⁶ to express our concerns regarding the lack of response and their continued requests for extensions. We also stated we were concerned that in their Schedule 5 Notice responses, they were deferring their responses to questions without prior agreement with us.

12 November 2021

The Applicant responded to our concerns we had highlighted on 5 November 2021, stating that *“This has been due to strict governance processes we have in place at UU to authorise the additional work required.”*

Meetings

During the determination, we attended meetings with the Applicant on:

- 17 September 2021
- 29 November 2021
- 7 December 2021
- 13 December 2021
- 20 December 2021

These were to provide clarity on questions raised in the Schedule 5 Notices and requests for further information.

Final opportunity letter

11 February 2022

We wrote a letter to the applicant¹⁷ (the “Final Opportunity Letter”). This requested information which we considered had not been responded to or required further

¹⁶ Email dated 5 November 2021 regarding Schedule 5 responses

¹⁷ Final Opportunity Letter dated 11 February 2022

clarification under Schedule 5 Notice 1 and 2 and the requests for further information dated 26 November 2021 and 5 January 2022. We deemed this information necessary to determine the application.

The letter outlined our concerns and deficiencies in the information provided by the Applicant in key areas of the application and included 2 questions from Schedule 5 Notice 1 dated 22 June 2021, and 14 questions from Schedule 5 Notice 2 dated 12 October 2021 which we had tried to clarify through further requests for information and an email dated 2 December 2021. The key issues for the Applicant to respond to included:

- Odour Management Planning
- Compliance with BAT 19c and 19d in relation to containment.
- Identification of indirect emissions to water returned to the wastewater treatment works
- Waste pre-acceptance and waste acceptance.

We gave the Applicant a response deadline of **11 March 2022**, stating that after this deadline, we would continue to determine the application that the Applicant had provided to us, and that we would not be making further requests for information.

21 February 2022

We held a meeting with the Applicant to discuss the information requested in the letter dated 11 February 2022.

11 March 2022

The Applicant provided:

- Site Surfacing Plan (Drawing No. 80063025-ELLES-DR-C-000001)
- EQRA Report (Report No. 331001867R1, March 2022)
- Odour Management Plan (March 2022)
- Waste Characterisation and Acceptance Procedure plus appendices (Version 2, March 2022).
- Emission Points Plan (Figures 1 to 3)

14 March 2022

The Applicant submitted a revised Ellesmere Port WwTW Leak Detection Repair Plan (LDR) Version 1.

16 March 2022

The Applicant submitted a Secondary Containment Modelling Assessment, Version 1, dated 9 March 2021 in draft format.

10 May 2022

The Applicant contacted us verbally to advise that their contract for spill modelling at the site should be completed by the 27 May 2022, and that further information would be provided after this date. No commitment in relation to what was to be provided was given.

27 May 2022

The Applicant submitted a revised Secondary Containment Modelling Assessment dated 10 May 2022.

No further information has been provided.

Annex 2 - Consultation and Engagement Responses

Consultation Notice

We carried out consultation on the application in accordance with the EPR 2016 and our statutory Public Participation Statement. We consider that this process satisfies, and frequently goes beyond the requirements of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which are directly incorporated into the IED, which applies to the Installation and the Application. We have also taken into account our obligations under the Local Democracy, Economic Development and Construction Act 2009 (particularly Section 23). This requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of representatives of interested persons in the exercise of our functions, by providing them with information, consulting them or involving them in any other way. In this case, our consultation already satisfies the Act's requirements.

The application was received and determined as a substantial variation to the existing United Utilities Water Limited permit.

We publicised the application by placing a notice on our website, which contained all the information required by the Industrial Emissions Directive, including informing the public where and when they could see a copy of the application. The notice ran from 6 July 2021, with a deadline for responses to be submitted by 1 December 2021.

We sent copies of the application to the following organisations, which includes those with whom we have "Working Together Agreements":

UL Health Security Agency (formerly Public Health England)

Director of Public Health – Chester West and Chester

Health and Safety Executive

Food Standards Agency

Environmental Health Department, Chester West and Chester

Consultation responses

The following summarises the responses to the notice, and the way in which we have considered these in the determination process.

Response received from UK Health Security Agency

Brief summary of issues raised:

The main emissions of potential concern from this installation are odorous emissions, primarily in the form of hydrogen sulphide (H₂S) however, the applicant has submitted an Odour Management Plan containing appropriate mitigation measures, which should prevent any odours generated impacting on nearby receptors and an appropriate complaint investigation procedure is in place.

Based on the information contained in the application supplied to us, UKHSA has no significant concerns regarding the risk to the health of the local population from the installation.

This consultation response is based on the assumption that the permit holder shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.

Summary of actions taken:

We do not consider that the applicant will take all appropriate measures to prevent or control pollution in accordance with the relevant sector guidance and industry best practice. Therefore, the assumption underlying the response is not correct.

We requested in Schedule 5 Notices 1 and 2 that the operator provide significant further information on the management of odour arising from waste storage, handling and processing. We are not satisfied that the additional detail provided fully addressed our concerns and we have not approved the OMP (March 2022). The Applicant advised that the Odour Control Units which are identified as appropriate mitigation measures are not currently operational, with plans for re-instatement/replacement in 2027.

Due to the odour control units not being operational we determined that the applicant had not provided suitable evidence of mitigation of odorous emissions like hydrogen sulphide (H₂S), or that they would adequately address the release of odorous emissions in line with BAT requirements and we have therefore decided to refuse the application. Please also see the odour section in the main body of this document.

Annex 3 - Map Showing Location of Proposed Installation and Surrounding Area

