Partial Permit Surrender Application

Site Condition Report

Tilbury Water Recycling Centre

Anglian Water Services Ltd

May 2024

SITE CONDITION REPORT TEMPLATE

For full details, see H5 *SCR guide for applicants* v2.0 4 August 2008

COMPLETE SECTIONS 1-3 AND SUBMIT WITH APPLICATION

DURING THE LIFE OF THE PERMIT: MAINTAIN SECTIONS 4-7

AT SURRENDER: ADD NEW DOC REFERENCE IN 1.0; COMPLETE SECTIONS 8-10; & SUBMIT WITH YOUR SURRENDER APPLICATION.

1.0 SITE DETAILS	
Name of the applicant	Anglian Water Services Limited
Activity address	Tilbury Sludge Treatment Centre, Fort Road, Tilbury, Essex RM18 7NR
National grid reference	TQ 65521 75777

Document reference and dates for Site Condition Report at permit application and surrender	Date of Original Permit Issue: 10th August 2010. Due to the age of this permit and that there was no requirement of a SCR for the issue of a Standard rules permit, there is no existing SCR to be updated. Therefore, this document serves as the SCR on the current condition of the site with specific reference to the permitted storage area of the Tilbury STC permit that is to be surrendered. Date of Permit Variation: 18th August 2016. However, an SCR was not created for this permit variation as it solely involved a minor technical variation relating to the change of company address. .

Document references for site plans (including location and boundaries)	Appendix A Site location Plans: Figure 1. Appendix A Figure with annotated red line boundary of permitted area to be surrendered: Figure 2. Appendix A Site plan showing red line boundary of permitted area to be surrendered: Figure 3 Appendix A. Site drainage plan: Figure 4. Appendix A Site surfacing / infrastructure: Figure 5.

Note:
In Part A of the application form you must give us details of the site's location and provide us with a site plan. We need a detailed site plan (or plans) showing:

- Site location, the area covered by the site condition report, and the location and nature of the activities and/or waste facilities on the site.
- Locations of receptors, sources of emissions/releases, and monitoring points.
- Site drainage.
- Site surfacing.

If this information is not shown on the site plan required by Part A of the application form then you should submit the additional plan or plans with this site condition report.

2.0 Condition of the land at permit issue	
Environmental setting including: • geology • hydrogeology	**Site setting** The Storage area of the permitted area to be surrendered is in eastern part of Tilbury Sludge Treatment Centre (STC) as shown on Figure 2 and Figure 3 in Appendix A. The site consisted of a

• surface waters	yard with concrete hardstanding and provided a storage area. The remaining Tilbury Sludge Treatment Centre surrounding the storage area comprises waste-water treatment infrastructure to the west and south and which includes numerous tanks (sludge tanks, settling tanks, chemical storage tanks etc), pipework and other plant and equipment. To the north is an unsurfaced area and to the east is the WwTW site boundary with commercial / industrial facilities beyond. The WwTW itself is located on the north bank of the River Thames and to the south east of Tilbury, in a predominantly commercial / industrial area (Figure 1 Appendix A). The storage area is generally flat and was selected as the storage area as a result of this and having impermeable surfacing and controlled drainage. The exact date when the part of the permitted site to be surrendered stopped being used for storage purposes is not recorded. Information from the AWS operational team staff indicates that the storage area has not been used for a considerable amount of time and not since 2012. **Published Geology – British Geological Survey** Desk survey using the British Geological Survey interactive online map shows; The surrounding superficial geology of the site includes clay, silt, sand and peat. Superficial deposits formed up to 2 million years ago in the Quaternary Period. The setting is sedimentary rock which are shallow-marine in origin. The parent bedrock material is shown as Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation - Chalk. Sedimentary bedrock formed between 93.9 and 72.1 million years ago during the Cretaceous period. **Hydrogeology** The site is not within a groundwater source protection zone. **Surface Waters** A watercourse detailed as ‘Bill Meroy Creek’ is approximately 160m to the south west of the site at its nearest point and flows in a southerly direction towards the River Thames, which is approximately 360m to the south. Flooding from surface water is shown to be a very low risk to the sites operations as Tilbury WRC. Flooding from rivers and the sea was deemed a very low risk as the site is suitably above sea level. There has never been a flooding event at Tilbury WRC. Tilbury There is low risk of flooding from surface waters and very low

	risk from sea/rivers, as shown on the EA's long term flood risk calculator. The STC including the storage area is not in Air Quality Management Area.
Pollution history including: • pollution incidents that may have affected land • historical land-uses and associated contaminants • any visual/olfactory evidence of existing contamination • evidence of damage to pollution prevention measures	**Pollution History** The site has not had any pollution incidents. Any pollutions, if any, on the STC have already been shared with the Environment Agency. There have been 8 odour complaints between 2018 and 2022. There were EA non complaince (CAR) forms issued in January 2023 and September 2022 relating to amenity odour related to non functional biofilter. These would not have been associated with the storage area of the permit to which this partial permit surrender relates to. **Pollution incidents that may have affected land** It was reported by AWS operational teams that there were no pollution incidents recorded for the storage area. Evidence of pollution prevention methods the following pollution prevention measures were present at the site: Engineering site containment and drainage system: this comprised impermeable pavement, sealed drainage systems, fixed bay storage area for digested cake and on the wider area for bulk bags of dried pelletised product. Bioaerosol emissions: There are not understood to be any specific engineered pollution prevention measures for bioaerosols associated with the storage area. Upon detection or notification that bioaerosol emissions were, or were likely to be, transported outside of the site boundary at such levels that harm to human health was likely, action would be taken to identify and supress the source. Dusts, fibres and particulates: There are not understood to be any specific engineered pollution prevention measures for dusts, fibres and particulates. This source would be managed by visual monitoring of aerial emissions during any waste-handling operations. If visible aerial emissions were detected to likely be transported past the site boundary, then immediate actions were to be taken to stop the waste-handling operations causing the emissions and to suppress the aerial emissions from the waste. Odour: There are not understood to be any specific engineered pollution prevention measures for odours. Odour controls were

	managed by inventory control process control, operation planning and scheduling, with appropriate action and review. Upon detection or notification of aerial odorous emissions which were, or were likely to be, transported beyond the site boundary at such levels which they were likely to cause environmental pollution or harm to human health, or serious detriment to the amenity of the locality, immediate action would be taken to stop the waste-handling operations giving rise to such an emission and to suppress the aerial emissions of the waste. Other nuisance/ amenity management issues: Pest infestations, (scavenging birds and other scavengers) and litter were also monitored but are not considered as pollution sources for the purposes of this assessment. The following observations are made: - Hardstanding to prevent migration of liquids into the subsurface: this was in good condition and therefore is considered to have been effective. - Contained drainage: The storage area is relatively flat with a natural fall from east to the western edge adjoining the roadway. Along the western edge of the storage area there are arco drains. Drains on site drain back to the adjacent WwTW for treatment. The existing drainage at Tilbury is collected in a number of sumps, yard gullies and channel drains which then connect to a below-ground gravity piped network. The pipe diameters range from 375mm diameter to 475mm diameter which outfall to a Low Level Inlet Pumping Station south of the site. The below ground condition of the system is not known but there was no evidence of damage. (see Figure 4 Appendix A and Photographs 3, 4 and 5 Appendix B) - No other engineered pollution prevention measures are known to be present on site.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	**<u>Evidence of Historic Contamination</u>** To the best of AWS's knowledge there is no historic contamination. This STC site has been operating for a number of years and had a standard rules permit since 2010. The storage area that this surrender relates to ceased being used in 2012. There has been no site investigations within the storage area as part of this partial permit surrender application.
Baseline soil and groundwater reference data	**<u>Baseline soil and groundwater reference data</u>** There is no known baseline soil and groundwater reference data for the storage area of the Tilbury STC site.
Supporting	The following sources were used in the production of this site

information	condition report: ● BGS online Geology viewer

3.0 Permitted activities

Permitted activities	**Overview of site processes** When determined (10/08/2010), the Tilbury STC site including the storage area had a Standard Rules Permit SR 2008 No 19 with reference number: EPR/KP3090VY. The storage operation within the storage area was covered by the list of activities within the SR permit. The specified activities are as shown in Table 2.1. of the permit see below table from eh current permit.

Table 2.1 activities

Description of activities	Limits of activities
D15: Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where it is produced) R13: Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) D9: Physico-chemical treatment of waste not specified elsewhere in Annex IIA which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D8 and D10 to D12 R3: Recycling/reclamation of organic substances which are not used as solvents	Treatment consisting only of blending, mixing, separation, digestion, thickening and/or compaction of waste for disposal, (no more than 50 tonnes per day) or recovery.

The specified waste management operation for the area of the permit to be surrendered was the storage of

- Dried pelletised product in large bags 9 (see photographs 1 and 2 in Appendix B)
- Digested cake product within the defined bay.

The storage process involved:

● Delivery of material from the on site treatment process to the storage area (see photograph 1 Appendix B)

● Storage of material in the storage area of the permit to be surrendered (photograph 2 Appendix B and figure 2 Appendix A)

● Removal off site for beneficial use. (see photograph 1 Appendix B)

There was contained drainage for both surface water and foul water and that all drainage systems return for usual treatment in the WwTW as detailed above and shown in Figure 4 Appendix A.

Non-permitted activities undertaken	As far as we are aware, no non-permitted activities have been or are currently being taken at the storage area of the Tilbury STC site. The water recycling centre operates under the urban waste water treatment directive.

Document references for: • plan showing activity layout; and • environmental risk assessment.	Activity layout: Figure 2 in Appendix A. The Environmental Risk Assessment is included in Appendix D.

Note:

In Part B of the application form you must tell us about the activities that you will undertake at the site. You must also give us an environmental risk assessment. This risk assessment must be based on our guidance (*Environmental Risk Assessment - EPR H1*) or use an equivalent approach.

It is essential that you identify in your environmental risk assessment all the substances used and produced that could pollute the soil or groundwater if there were an accident, or if measures to protect land fail.

These include substances that would be classified as 'dangerous' under the Control of Major Accident Hazards (COMAH) regulations and also raw materials, fuels, intermediates, products, wastes and effluents.

If your submitted environmental risk assessment does not adequately address the risks to soil and groundwater we may need to request further information from you or even refuse your permit application.

4.0 Changes to the activity	
Have there been any changes to the activity boundary?	Available information indicates that the Tilbury STC boundary has not changed and therefore the storage area activity boundary has not changed until this application to partially surrender the part of the permit for the storage area.
Have there been any changes to the permitted activities?	On 18/08/2016, an application variation was issued which had no influence on the permitted activities or site processes as it related to the change of the company address. The storage area that this partial permit surrender relates to ceased to be used for storage in 2012. Photographs 6 and 7 Appendix B show the site condition after operations had ceased and prior to decommissioning taking place.
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	None known.
Checklist of supporting information	• Plan showing any changes to the boundary – None before this application • Description of the changes to the permitted activities (where relevant) - None • List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant) – None Known • Notice of variation with introductory note: variation application number: EPR/KP3090VY/V002

5.0 Measures taken to protect land	
As discussed in Section 3 (Pollution History), the engineered pollution prevention measures are considered to have been effective and there was no evidence of pollution. It is reported by AWS operational teams that there were no pollution incidents for the Tilbury STC site in particular the storage area to which this partial permit surrender is related. In recent years the only CARs have been related to odour not associated with the storage area. Based upon the findings of the Environmental Risk Assessment (Appendix D) the risk to defined receptors from the operational and the decommissioned phases of the storage area is assessed as very low to low risk.	
Checklist of supporting information	• Inspection records and summary of findings of inspections for all pollution prevention measures • Records of maintenance, repair and replacement of pollution prevention measures

6.0 Pollution incidents that may have had an impact on land, and their remediation	
No pollution incidents in relation to the operation and use of the storage area to which this partial permit surrender relates are known to have occurred.	
Checklist of supporting information	• Records of pollution incidents that may have impacted on land • Records of their investigation and remediation

7.0 Soil gas and water quality monitoring (where undertaken)	
No soils gas or groundwater monitoring within the storage area of the permitted site boundary being surrendered have taken place over the duration of the permitted activity.	
Checklist of supporting information	• Description of soil gas and/or water monitoring undertaken • Monitoring results (including graphs)

8.0 Decommissioning and removal of pollution risk	
A Site Closure Plan has not been produced as this document relates to a single asset within the wider Tilbury STC site. The storage area stopped being utilised for storage in 2012. The storage area that this partial permit surrender relates to has been fully decommissioned including the removal of all structures and the break up of the impermeable surfacing that was reused as type 1 material on site to create the new surface. The work undertaken is shown in Photographs 8 to 11 Appendix B. The material prior to being reused as type 1 material was assessed and successfully tested as being a suitable type 1 material the test results are in the standalone document “STUK 3820-1 PSD Report (Type 1 Stockpile)” in the application folder. The storage area post decommissioning and after the application of the type 1 reused material is shown in photographs 12 to 14 Appendix B. Therefore, there are not considered to be any residual sources of pollution risk either during or since decommissioning.	
Checklist of supporting information	• Site closure plan • List of potential sources of pollution risk • Investigation and remediation reports (where relevant)

9.0 Reference data and remediation (where relevant)	
No ground investigation has been undertaken based upon the information in Sections 3, 4, 5 and Appendix D (Environmental Risk Assessment) of this report	
Checklist of supporting information	• Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken)

10.0 Statement of site condition

It is confirmed that the permitted storage activities within the storage area that this partial permit surrender relates to have ceased. It is reported by AWS operational teams that the storage area of the site was closed in 2012.

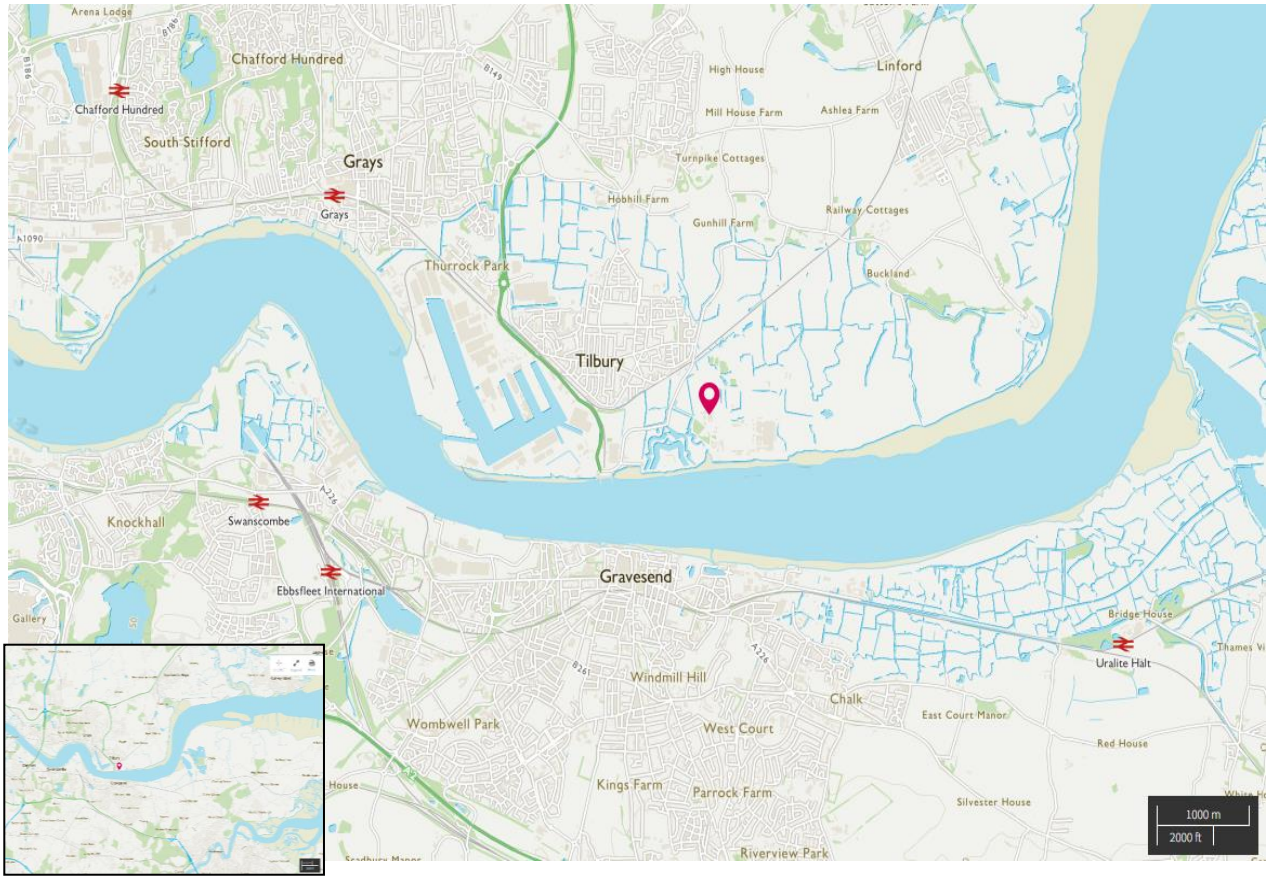
The decommissioning has been completed including the reuse of the surface material as type 1 material on site and any potential pollution sources from the storage site operations have been removed.

The site is not considered to present a significant pollution risk.

Based upon the findings of the data gathered in this report, the decommissioning that has taken place and the Environmental Risk Assessment at Appendix D of this report, the land is considered to be in a satisfactory condition and that a low risk partial surrender of the permit is appropriate.

Appendix A Plans and figures

Figure 1 Site Location Plans



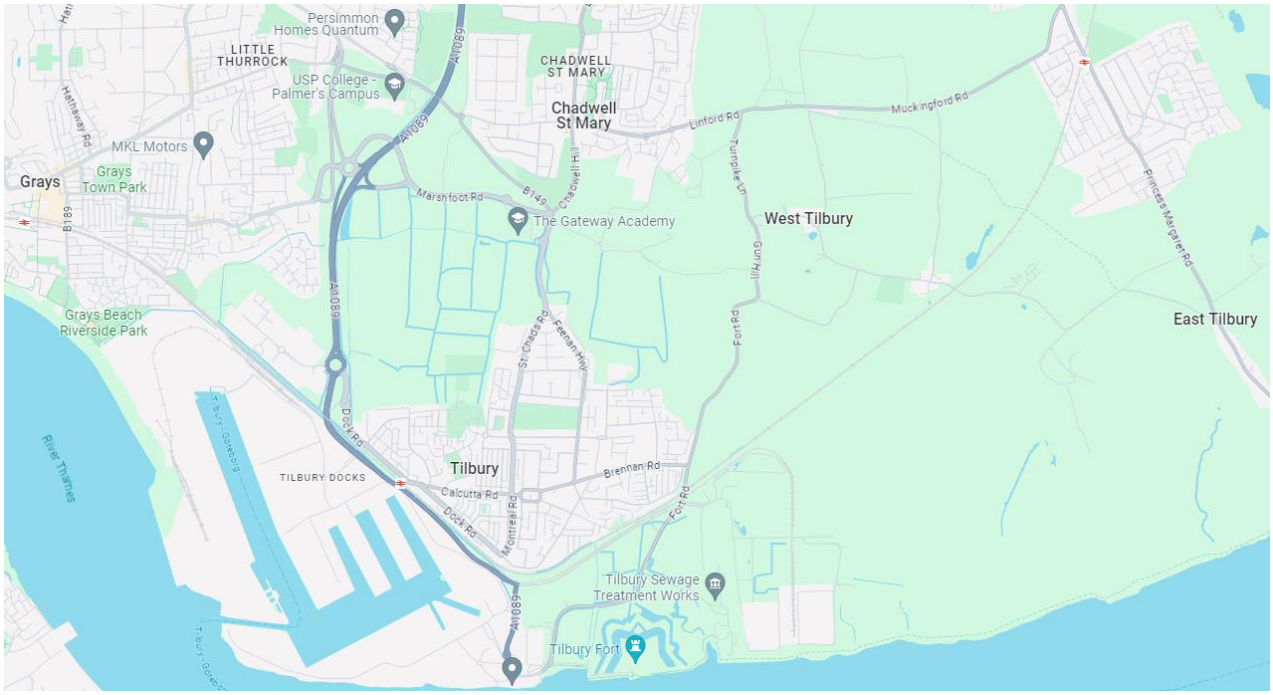


Figure 2: Tilbury Sludge Treatment Centre with red line boundary of permit area to be surrendered

Figure 3: Site permit boundary plan with red line boundary of permit area to be surrendered
(This is also provided as a standalone document – “Tilbury STC Permit Area surrender”)

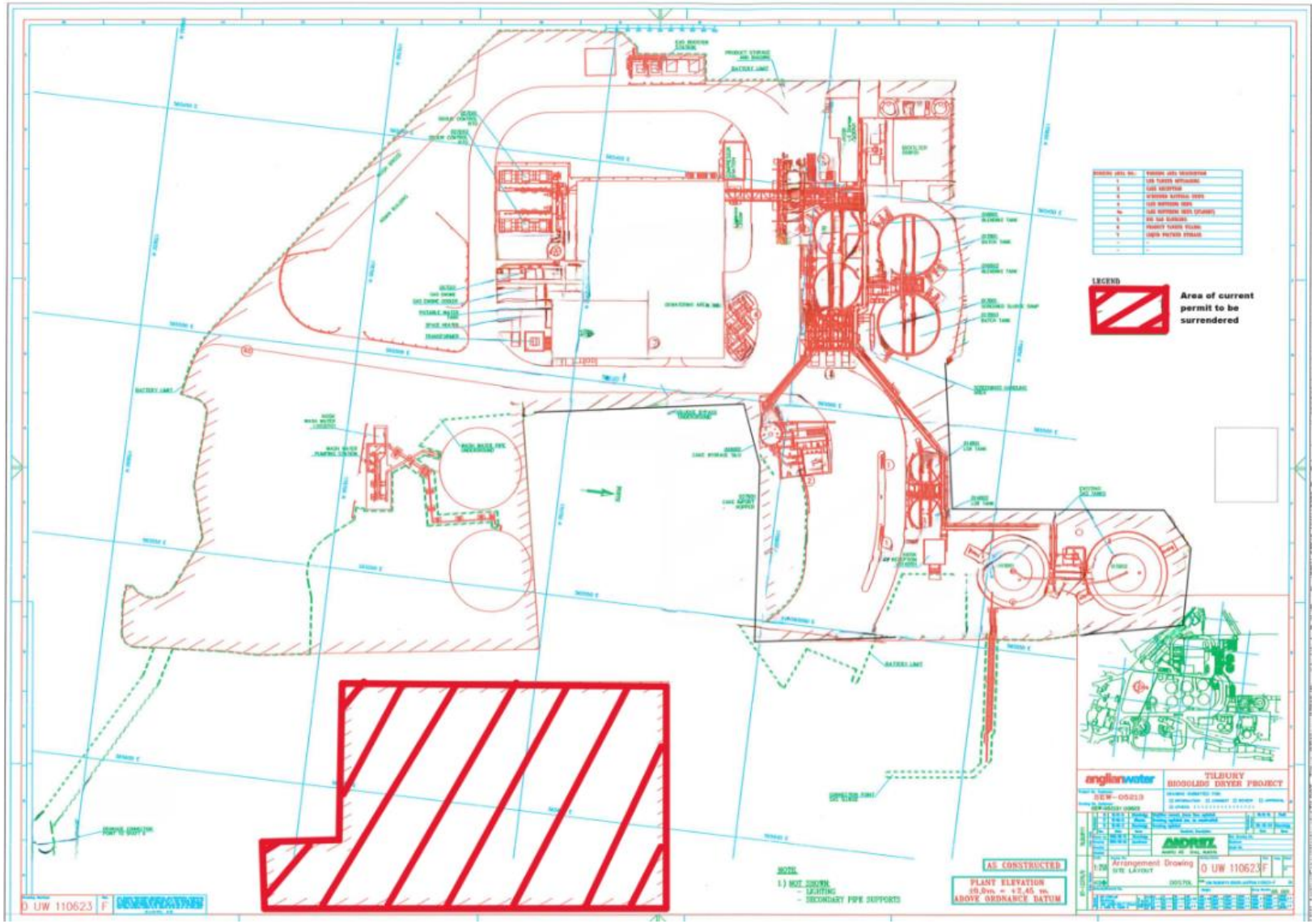


Figure 4: Site drainage plan with red line boundary of permit area to be surrendered
(This is also provided as a standalone document – " Site drainage plan with red line boundary of permit area to be surrendered" There is also a wider site drainage plan provided – "Wider Tilbury STC drainage plan")

Figure 5: Site surfacing / infrastructure plan (red boundary area shows the area of the current permit to be surrendered)
(This is also provided as a standalone document – "Tilbury Site Infrastructure Plan partial permit surrender")

Appendix B Site photographs

Photographs 1 and 2 from the operational phase of the storage area

Photographs 3,4 and 5 showing the drainage at the western edge of the Storage area

Photographs 6 and 7 from the post operational phase of storage area looking south.

Photographs 8, 9, 10 and 11 from the decommissioning and site clearance phase of the storage area


Erith

Photographs 12, 13 and 14 showing the current status of storage area after the decommissioning works have been completed


09:26 21/03/2024

Appendix C Type 1 classification testing results for the reuse material produced from the decommissioning of the storage site

STUK 3820-1 PSD Report (Type 1 Stockpile).pdf

Appendix D Environmental Risk Assessment

The Environmental Risk Assessment to support this SCR will cover the following aspects:

- Identify and consider risks for the site, and the sources of the risks.
- Identify the receptors (people, animals, property and anything else that could be affected by the hazard) at risk from the site.
- Identify the possible pathways from the sources of the risks to the receptors. Assess risks relevant to the specific activity and check they are acceptable and can be screened out.
- State what will be done do to control risks if they are too high

Framework for the assessment of contamination risk

The key aspects of the framework are the development of a Conceptual Site Model (CSM), which demonstrates the connectivity and interaction between the potential sources and receptors on-site. The CSM may be refined or reviewed as more information and understanding is obtained through the risk assessment process.

For risk of pollution or environmental harm to occur all of the following must be present:

- A source – a substance capable of causing pollution or harm;
- A receptor – something that could be adversely affected by the contaminants; and
- A pathway – a route by which the contaminant source can reach the receptor.

If one of the above is absent, there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptors and the nature of the migration pathway. Potential sources, pathways and receptors have been identified in the sections below and the risks associated with possible pollutant linkages have been identified. The assessment has been undertaken for both the operational phase and the current decommissioned phase to determine if any unacceptable impacts to the environment may have occurred.

Development of Conceptual Site Model

1 Sources

Based on information obtained on the site (Section 2) and the storage area usage, several potential sources based upon the operation and decommissioning of the area have been considered:

- Materials at the site: Storage materials after processing could potentially be a source of contamination. Contaminants could include ammoniacal nitrogen (NH4), dissolved solids, and elevated Biological Oxygen Demand (BOD). In addition, fuels or oils in plant/ machinery or vehicles at the site could represent a potential, although minor, contamination source. This could include contaminants such as hydrocarbons and metals/ inorganics.
- Waste at the site: It is considered that appropriate waste storage was undertaken at the site and therefore any significant releases of waste to the environment would be unlikely. Therefore, this is not considered to be a potential source of pollution for the operation and decommissioning phases of the storgae area.
- Discharge to surface or groundwater: Discharge of contaminative materials at the site (listed above) is considered unlikely due to contained drainage system at the site. However, the condition of the drainage system is unknown and therefore leaks to the subsurface could have occurred

- Accidents: This source is considered to be accidental leaks/ spills of fuels/ oils from plant/ machinery or vehicles at the site and/ or leaks and spills of materials during storage. The AWS operational teams are not aware of any accidents in the storgae area.
- Odour: Potential odour risks during operation of the facility however it is assumed that these were managed under the requirements of the Environmental Permit for the storage area and the wider site Environmental Management System. No residual contamination is considered to have occurred. Odour emissions are considered unlikely to represent a residual source of contamination.
- Noise and vibration: Noise and vibration from the storage area are not considered to be significant based on the overall industrial use of the site.
- Fugitive emissions: None known and considered unlikely to have occurred. These emissions are considered unlikely to represent a residual source of contamination.
- Smoke/visible emissions: None known and considered unlikely to have occurred. These emissions are considered unlikely to represent a residual source of contamination.
- Release of bioaerosols/ dust: Not known to have occurred at the site. These emissions are considered unlikely to represent a residual source of contamination.

Based on the data above, the following sources are taken forwards for the risk assessment:

S1: Materials at the site: materials after processing during storage could potentially be a source of contamination, specifically ammoniacal nitrogen (NH4), dissolved solids, and elevated Biological Oxygen Demand (BOD). In addition, fuels or oils in plant/ machinery or vehicles at the site could represent a potential minor contamination source. This could include contaminants such as hydrocarbons and metals/ inorganics.

S2: Leaks of site drainage run off from the drainage system (subsurface pipes).

2 Receptors

The following receptors of potential contamination at the application site, during both the operational and decommissioned phases of operation of the storage area, are summarised in Table 6.

Table D1: Potential Receptors

CSM Ref	Potential Receptor
R1	On-site commercial workers (both at the STC and wider WwTW site)
R2	Off-site commercial workers (both at the STC and wider WwTW site)
R3	Groundwater
R4	A watercourse surface water ‘Bill Meroy Creek’ is approximately 160m to the south west

The closest residents are at a distance of over 600m from the site and therefore are not considered within this assessment due to the distance from the site

The operation and decommissioning of the site has not involved any disturbance of the underlying ground and therefore construction workers are not considered as receptors.

The site sits outside 200m of an a European Site, Ramsar Site, or a Site of Special Scientific Interest (SSSI). The closest designated is South Thames Estuary and Marshes SSSI, just over 1.9km to the south east of the site. Mucking Flats and Marshes is designated as a SSSI, approximately 3.3km to the east of the site. These sites are therefore not included as a receptor due to the distance from the site

3 Pathways
Pathways for contamination have been identified at any proposed development, summarised in Table 7.

Table D2: Potential Pathways

CSM Ref	Pathway
P1	Human uptake through ingestion, dermal contact, or inhalation of dust/vapours from soil and/or groundwater
P2	Leaching or movement of mobile contamination through unsaturated strata
P3	Leaching or movement of mobile contamination through saturated strata.
P4	Movement of mobile contamination through man-made structures e.g. along the length of the duct.
P5	Surface water runoff

Figure 6: Locations of potential contamination receptors

R = Receptor

Risk Assessment

Risk Estimation and Evaluation
The term risk is widely used in different contexts and circumstances, often with differing definitions. In UK Government publications about the environment, the standard definition is that "Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence" (Environment Agency, 2020).

Following the development of the conceptual model and the identification and assessment of potential pollutant linkages, a preliminary assessment can be made of risk estimation and risk

evaluation, as discussed in LCRM and CIRIA C552, to determine whether an unacceptable contamination risk is likely to exist.

LCRM defines risk estimation as predicting the magnitude (or consequence) and probability of the risk occurring that may arise as a result of that hazard. This is also identified in CIRIA C552 in which the risk assessment methodology uses qualitative descriptors of consequence, probability and thus risk. These descriptors are adopted for the purposes of this risk assessment. A description of the risk assessment methodology adopted is given in Appendix E.

The Risk Assessment is presented in Table 8.

Table D3: Conceptual Site Model and Risk Assessment Summary

Source	Pathway	Receptor	Probability	Consequence	Risk	Comments
S1: Materials at the site: materials after processing during storage could potentially be a source of contamination, specifically ammoniacal nitrogen (NH4), dissolved solids, and elevated Biological Oxygen Demand (BOD). In addition, fuels or oils in plant/ machinery or vehicles at the site could represent a potential minor contamination source. This could include contaminants such as hydrocarbons and metals/ inorganics.	**P1** Human uptake through ingestion, dermal contact, or inhalation of dust/vapours from soil and/or groundwater	**R1** On-site commercial workers (both at the STC and wider WwTW site) **R2** Off-site commercial workers (both at the STC and wider WwTW site)	Unlikely	Minor	Very low	It is considered unlikely that on site (STC and WwTW) and off-site human health receptors were impacted during the operational phase due to operational controls in place and, even more unlikely following decommissioning of the site.
	P2 Leaching or movement of mobile contamination through unsaturated strata **P3** Leaching or movement of mobile contamination through saturated strata. **P4** Movement of mobile contamination through man-made structures e.g. along the length of the duct.	**R3** Groundwater **R4** A watercourse surface water 'Bill Meroy Creek' is approximately 160m to the south west	Unlikely	Medium	Low	Due to the contained drainage system at the site which would capture any spills/ losses, there is considered to be an unlikely probability of migration of pollutants into the groundwater. There are no known man-made structures which would act as rapid transport pathways into the groundwater or surface water / river.
	P5 Surface water runoff	**R3** Groundwater **R4** A watercourse surface water 'Bill Meroy Creek' is approximately 160m to the south west	Unlikely	Medium	Low	Surface runoff is considered unlikely as the drainage system should capture any runoff before it can infiltrate to ground. It is unlikely any surface runoff would migrate overland to.'Bill Meroy Creek' 160 m away.

Source	Pathway	Receptor	Probability	Consequence	Risk	Comments
S2: Leaks of site drainage run off from the drainage system (subsurface pipes).	**P2** Leaching or movement of mobile contamination through unsaturated strata **P3** Leaching or movement of mobile contamination through saturated strata **P4** Movement of mobile contamination through man-made structures e.g. along the length of the duct . .	**R3** Groundwater **R4** A watercourse surface water 'Bill Meroy Creek' is approximately 160m to the south west	Unlikely	Medium	Low	The condition of the contained drainage system at the site is unknown but is considered likely to be in reasonable condition due to its age and the CQA requirements at construction. Therefore, there is considered to be an unlikely probability of migration of pollutants into the underlying groundwater. There are no known man-made structures which would act as rapid transport pathways into the groundwater or surface water / river.

Summary

Based upon the data available and the understanding of the previous site operations and decommissioning, the environmental risk assessment has resulted in a very low to low risk from the operational and decommissioned phases for the storage area of the tilbury STC site that relates to this partial permit surrender and covered by this site condition report.

Appendix E Contaminated Land Risk Methodology

E.1 General

The methodology for the Phase II assessment of potential land contamination adopted in this report is based on current guidance documents, in particular CIRIA Report C552 (CIRIA, 2001).

E.2 Classification of Risk

The potential consequences of contamination risks occurring at this site are classified in accordance with the following table (Table D.1), which is adapted from the CIRIA 552 guidance.

Table E.1: Classification of Consequence

Classification	Definition of Consequence
Severe	Short-term (acute) risks to human health. Short-term risk of pollution of sensitive water resource or ecosystem. Catastrophic damage to crops/buildings/property/infrastructure, including off-site soils.
Medium	Medium/long-term (chronic) risks to human health. Medium/long-term risk of pollution of sensitive water resource or ecosystem. Significant damage to crops/buildings/property/infrastructure (on or off-site). Contamination of off-site soils.
Mild	Easily preventable, permanent health effects on humans. Pollution of non-sensitive water resources. Localised damage to crops/buildings/property/infrastructure (on or off-site)
Minor	Easily preventable, non-permanent health effects on humans, or no effects. Minor, low-level and localised contamination of on-site soils. Easily repairable damage to crops/buildings/property/infrastructure.

The probability of contamination risks occurring at this site will be classified in accordance with Appendix E.2, which is also adapted from the CIRIA guidance. Note that for each category, it is assumed that a pollution linkage exists. Where a pollution linkage does not exist, the likelihood is zero, as is the risk.

Table E.2: Classification of Probability

Classification	Definition of Probability
High Likelihood	Circumstances are such that an event appears very likely in the short-term or almost inevitable in the long-term; or there is already evidence that such an event has occurred.
Likely	Circumstances are such that such an event is not inevitable, but is possible in the short-term and is likely over the long-term.
Low Likelihood	Circumstances are such that it is by no means certain that an event would occur even over a longer period, and it is less likely in the short-term.
Unlikely	Circumstances are such that it is improbable that an event would occur even in the very long-term.

For each possible pollution linkage (source-pathway-receptor) identified, the potential risk can be evaluated, based on the following principle:

Contamination risk = Probability of event occurring x Consequence of event occurring

This relationship can be represented graphically as a matrix, which is adapted from the CIRIA guidance

Table E.3: Overall Contamination Risk Matrix

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Low Risk
	Likely	High Risk	Moderate Risk	Moderate Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate Risk	Low Risk	Very Low Risk
	Unlikely	Low Risk	Low Risk	Very Low Risk	Very Low Risk

The definitions of the risk categories identified in the above matrix are given in Table D.4, together with the investigatory and remedial actions that are likely to be necessary in each case. The risk categories apply to each pollutant linkage, not just to each hazard or receptor.

Table E.4: Classification of Consequence

Risk Category	Definition and likely actions required
Very High	Severe harm to a defined receptor is very likely, or has already occurred. The risk is likely to result in a substantial liability. Urgent investigation (if not already undertaken) is likely to be required. Urgent remediation is likely to be required.
High	Harm to a defined receptor is likely. The risk, if realised, may result in a substantial liability. Urgent investigation (if not already undertaken) is likely to be required. Remediation is likely to be required in the long term, possibly sooner.
Moderate	Harm to a defined receptor is possible, but severe harm is unlikely. Investigation is likely to be required to clarify the level of potential liability and risk. Some remediation may be required in the longer term
Low	Harm to a defined receptor is possible, but is likely to be mild at worst. Liabilities could theoretically arise, but are unlikely. Further investigation is not required at this stage. Remediation is unlikely to be required.
Very Low	Harm to a defined receptor is unlikely, and would be minor at worst. No liabilities are likely to arise. Further investigation is not required at this stage. Remediation is very unlikely to be required