

Lower Thames Crossing Tunnels & Approaches Tilbury Landfill Environmental Risk Assessment 2026

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Lower Thames Crossing

Tilbury Landfill Environmental Risk Assessment 2026

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1 Introduction

1.1 Report context

- 1.1.1 National Highways (NH) is seeking approval for a new Environmental Permit to continue landfilling and PFA recovery at the former Tilbury Ash Disposal site formerly Environmental Permit EPR/GP3733DZ). National Highways wishes to create the required development levels for the Lower Thames Crossing scheme using waste derived from the adjacent Goshems Farm Deposit for Recovery site (formerly Environmental Permit EPR/WP3094EP).
- 1.1.2 The Site was formerly permitted to operate as a non-hazardous landfill under the conditions of an Environmental Permit, with the most recent variation (EPR/GP3733DZ/V007) issued on 09 December 2025.
- 1.1.3 The Environment Agency required an Environmental Risk Assessment to be prepared for the previous Environmental Permit. In accordance with the approach agreed with the Environment Agency, this document provides an updated assessment for the new permit, reflecting the intention to continue the activities authorised under the former permit.
- 1.1.4 This Environmental Risk Assessment is limited to a qualitative assessment of the potential risks to the environment and human health specifically related to the proposed activity. This report will identify any significant risks and demonstrate that the risk can be adequately controlled by taking appropriate mitigation action, detailed in the following documents:
- Tilbury Landfill Dust and Emissions Monitoring Plan HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000008
 - Tilbury Landfill Stability Risk Assessment HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000010
 - Tilbury Landfill Hydrogeological Risk Assessment HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000011
 - Tilbury Landfill Waste Acceptance Criteria HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000015
 - Tilbury Landfill Standard Operating Procedures HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000014

1.2 Site details

Site location and access

- 1.2.1 The site is located east of Tilbury, Essex, centred at national grid reference TQ671673 and covers an area of approximately 76ha. The main access to the site for commercial vehicles is from the former Tilbury Power Station area to the west. A second access point is located in the north of the site via Station Road, but this access is for use only by staff vehicles.

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Figure 1-1 Site Location Plan



Site History

1.2.2 The land has been subject to historical (20th century) landfilling activities with a mixture of Pulverised Fuel Ash (PFA) from the former Tilbury power station and later, inert waste.

1.2.3 Former waste management activities include:

- Tilbury Ash Disposal Site (on site, EPR/GP3733DZ)
- Goshems Farm Landfill (historical Victorian Landfill) at southeast boundary
- Goshems Farm deposit of waste to land as a recovery operation (WP3094EP/V002) at southeast boundary
- East Tilbury Marshes historical landfill 150m east at the closest point to the permit boundary

Site Operator

1.2.4 The site was originally operated by RWE nPower Ltd, who held a permit to deposit PFA from the former Tilbury power station. RWE then transferred the permit to Ingrebourne Valley Limited (IVL), who applied for a variation to allow excavation and recovery of the PFA and deposit of inert waste.

1.2.5 An application has been made under Article 68 of the DCO to surrender IVL’s permit to allow the Lower Thames Crossing scheme to proceed. The new permit is to be held by National Highways and operated by Bouygues-Murphy Joint Venture (BMJV).

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- 1.2.6 In order to facilitate the construction of the Lower Thames Crossing scheme in accordance with the plans approved by the DCO, National Highways is seeking to gain a bespoke waste disposal permit for the permanent deposit of waste at the site. This activity involves continuing the infilling of the former Tilbury Ash Disposal landfill in order to create the landform required for the construction of the Lower Thames Crossing scheme.
- 1.2.7 The waste disposal activities at Tilbury Landfill will be managed and operated in accordance with the management systems and procedures that form part of this Environmental Permit application [2]. Alongside the requirements of the Environmental Permit, the Lower Thames Crossing scheme is to be constructed in accordance with an agreed Environmental Management Plan (EMP) [1] which is to be approved by the Environment Agency, relevant Local Authorities, National Highways and the Secretary of State.

Site Classification

- 1.2.8 The site has previously operated as a non-hazardous landfill, due to the presence of historical deposits of PFA. Following this application for a new permit, the Site will continue to operate as a non-hazardous landfill, accepting inert waste with the recovery of excavated PFA.

Waste Types Accepted

- 1.2.9 The previous permit allowed inert wastes to be accepted, with a derogation from the inert Waste Acceptance Criteria for certain waste streams. It is proposed to continue to accept inert wastes to the site, derived from the adjacent Goshems Farm Deposit for Recovery site. The waste types accepted are set out in the Waste Acceptance Procedures document HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000015.

2 Site Setting and Receptors

2.1 Site setting

Land Use

- 2.1.1 Surrounding land-uses and receptors are identified in the Environmental Setting and Installation Design (ESID) of this variation application HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000005 and are summarised in Table 2-1 below.

Table 2-1 Identified receptors

Receptor	Receptor type	Distance from site permit boundary (m)	Direction
West Tilbury Marshes Complex Local Wildlife Site (LWS) (Th39)	Ecological	Within permit	South, east, west
River Terrace Deposits secondary aquifer	Water body	Within permit	Within permit
Chalk principal aquifer	Water body	Within permit	Within permit

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Receptor	Receptor type	Distance from site permit boundary (m)	Direction
Port of Tilbury Ltd depot (Tilbury 2) (former Tilbury B Power Station and substation)	Industrial	Adjacent	West
Agricultural land	Agriculture	Adjacent	North, east, west
Surface water features including drainage ditches, Tilbury Main	Water body	Adjacent	South, east, west
Tilbury Riverfront LWS, formerly Coalhouse Fort Marshes (Th89)	Ecological	Adjacent	South
Grade II Buckland	Listed building	100	East
East Tilbury Landfill	Industrial/Public open space	150	East
Bowaters Farm	Residential	150	Northeast
WWII anti-aircraft battery	Scheduled monument	150	Northeast
Coastal Footpath	Footpath	340	South
Gravel Pit Farm and cottages	Residential	350	North
Condozers Scout Activity Centre	Public open space	350	North
River Thames estuary	Water body	440	South
Goshem's Farm	Residential	550	Northeast
Low Street Pit LWS	Ecological	450	North
Tilbury Marshes LWS	Ecological	650	West
Barvills Farm solar farm	Industrial	900	East
Earthworks near Church	Scheduled Monument	930	West
Tilbury	Residential area	950	West
Tilbury Fort	Scheduled Monument	970	Southwest
Industrial estate	Industrial	1100	Northeast
West Tilbury	Residential area	1300	North
Broom Hill LWS	Ecological	1200	West
Mucking Flats and Marshes SSSI	Ecological	1275	East
Princess Margaret Road	Residential area	1400	East
South Thames Estuary and Marshes SSSI	Ecological	1450	South
East Tilbury	Residential area	1500	North
St. Catherine's Churchyard LWS	Ecological	1500	East

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Receptor	Receptor type	Distance from site permit boundary (m)	Direction
Thames Estuary and Marshes RAMSAR SPA	Ecological	1550	East
Coalhouse Fort battery and artillery defences	Scheduled monument	1870	East
East Tilbury battery	Scheduled monument	1870	Northeast
East Tilbury Pit LWS	Ecological	1900	East

2.2 Geology

Published Geology

- 2.2.1 A review of the British Geological Survey (BGS) geological map reveals that the Site is underlain by a bedrock of Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated) – Chalk. In the area this is expected to have a typical thickness of around 100m.
- 2.2.2 Superficial deposits underlying the Site are mapped to consist of Alluvium – Clay, Silt, Sand and Peat, with possible River Terrace Deposits – Sands and Gravels.

2.3 Encountered Geology

- 2.3.1 A series of intrusive ground investigations have been completed for the Lower Thames Crossing scheme, which included exploratory holes within the former Tilbury Ash Disposal site. A summary of the encountered ground conditions is presented in Table 2-2.

Table 2-2 Summary of ground conditions (Tilbury Ash Disposal site)

Stratum	Depth to top (mbgl)	Depth to base (mbgl)	Thickness (m)	Elevation top (mOD)	Elevation base (mOD)
Anthropogenic fill (PFA and inert waste)	0	1.5 to 10.3	1.5 to 10.3	9.1 to 2.3	3.9 to -1.8
Alluvium	1.5 to 10.3	14.9 to 22.5	11.7 to 17.8	3.9 to -1.8	-9.5 to -17.2
River Terrace Deposits	14.9 to 22.5	19.2 to 28.0	1.5 to 7.5	-9.5 to -17.2	-16.8 to -21.9
White Chalk	19.2 to 28.0	>50.3*	>25.60*	-16.8 to -21.9	<-45.2*
* Not confirmed					

2.4 Hydrogeology

- 2.4.1 A detailed description of the hydrogeology of the area is presented in the Hydrogeological Risk Assessment HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000011 that accompanies this permit application. The following summary is provided.

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Aquifer Designations

- 2.4.2 The alluvial deposits beneath the Site are classified by the Environment Agency as a Secondary (undifferentiated) Aquifer. The bedrock chalk which lies beneath the alluvium is classified as a Principal Aquifer.
- 2.4.3 The River Terrace Deposits are considered to be in direct hydraulic continuity with the underlying Chalk aquifer and therefore these two aquifers can be considered a single receptor.

Source Protection Zones and Licensed Abstractions

- 2.4.4 The majority of the Site lies within a groundwater source protection zone (SPZ) 3 Total Catchment, for an abstraction located approximately 2.5km to the north at Linford. This abstraction is not currently used.
- 2.4.5 Three licensed abstractions within a 2km radius of the Site, all three are located to the north-east of the Site near West Tilbury and source groundwater for industrial or agricultural purposes.

Groundwater Vulnerability

- 2.4.6 The Groundwater Vulnerability layer on Multi-Agency Geographic Information for the Countryside (MAGIC) Website map reveals that the Site lies within an area classified at Medium-High vulnerability, with Soluble Rock Risk.

2.5 Hydrology

- 2.5.1 The application Site lies close to the River Thames, which lies 440m to the south. At this point on the river, the Thames exhibits strong tidal influence and is estuarine in nature. The river flows in an easterly direction, discharging into the North Sea.
- 2.5.2 The Tilbury Main and a network of surface water drainage channels are present on the boundaries of the site. The Tilbury Main outfalls to the River Thames via a sluice gate.
- 2.5.3 The Environment Agency's Flood Zone maps indicate that the Site lies within a flood plain. The northern area and a small area to the south of the Site lies within a Flood Zone 3 (flooding from rivers and seas without defences).

2.6 Ecology

- 2.6.1 There are two Sites of Special Scientific Interest (SSSI) and one RAMSAR and Special Protection Area (SPA) within 2km of the Site.
- 2.6.2 The nearest ecologically designated site is the Mucking Flats and Marshes SSSI which is located approximately 1275m to the east. The South Thames Estuary and Marshes SSSI and Thames Estuary and Marshes RAMSAR and SPA are located around 1.5km to the south and east.
- 2.6.3 The Mucking Flats and Marshes SSSI comprise of an extensive stretch of the Thames mudflats and saltmarsh, together with sea wall grassland. Wintering wildfowl and waders reach both nationally and internationally important numbers on the mudflats, roosting and feeding on adjacent saltmarsh and disused silt lagoons.

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- 2.6.4 The South Thames Estuary and Marshes SSSI from Gravesend to the eastern end of the Isle of Grain forms a major component of the Greater Thames Estuary. The site consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes.
- 2.6.5 The Thames Estuary and Marshes RAMSAR and SPA include both marine and terrestrial habitats, and the marine area is also termed a European Marine Site. The marshes extend for around 15km along the south side of the estuary and include some intertidal areas found on the north bank. It encompasses brackish, floodplain grazing marsh ditches and saline lagoons as well as intertidal saltmarsh and mudflat. The site supports internationally important bird populations of avocet and hen harrier and also migratory species including ringed plover, grey plover, dunlin, knot, black-tailed godwit and redshank. The SPA site also supports an internationally important selection of waterfowl, which include gadwall, shoveler, tufted duck and pochard.
- 2.6.6 The site is located within West Tilbury Marshes Complex Local Wildlife Site (LWS), which is designated for invertebrate importance. The LWS originally only covered the area of Goshems Farm, but in 2022 was extended to cover a much larger area including all land within the proposed new permit boundary. Highly disturbed areas provide habitat resource for invertebrates, therefore the designation of the active landfill and deposit for recovery areas may have been part of the reason for designation. As disturbance of the ground will continue during landfilling within the new permit area, no detrimental impact is considered to be likely and the LWS has not been considered further as a receptor in this assessment. The Tilbury Riverfront LWS lies adjacent to the south of the site but will not be directly disturbed as part of the proposed new landfill activity.

2.7 Cultural Heritage

- 2.7.1 There are several scheduled monuments located within 2km of the application Site. They are as follows:
- Grade II listed property at Buckland (100m north);
 - Second World War anti-aircraft battery at Bowaters Farm (150m north-east);
 - Earthworks near Church (930m west);
 - Tilbury Fort (970m southwest);
 - Coalhouse Fort battery and artillery defences (1870m east).

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3 Environmental Risk Assessment

3.1 Methodology

3.1.1 This environmental risk assessment complies with EA regulatory guidance¹ and uses the following approach for identifying and assessing the risks in six steps:

- Identify and consider risks for your 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 your site.
- Identify the possible pathways from the sources of the risks to the receptors.
- Assess risks relevant to your specific activity and check they are acceptable and can be screened out.
- State what you will do to control risks if they are too high.
- Submit your risk assessment as part of your permit application.

3.1.2 In the case of this permit application, the source is considered to be the waste deposition at the site, receptors are identified and discussed in Section 2 and the pathways that link them are discussed in this section, together with an assessment of risks and mitigation requirements.

3.1.3 The risk assessment must identify whether any of the following risks could occur and what the environmental impact could be:

- any discharge, for example sewage or trade effluent to surface or groundwater;
- accidents;
- odour (not for standalone water discharge and groundwater activities);
- noise and vibration (not for standalone water discharge and groundwater activities);
- uncontrolled or unintended ('fugitive') emissions, for which risks include dust, litter, pests and pollutants that should not be in the discharge; and
- visible emissions, e.g. smoke or visible plumes.

3.1.4 There will be point source emissions to surface water from the surface water drainage system to be constructed within the site. This will be subject to a separate Environmental Permit for discharge to surface watercourses. There will be no point source emissions to groundwater or air resulting from the proposed development and neither will there be any site waste arising or global warming potential. Therefore, a standard assessment is provided in this section, which includes the consideration of odour, noise and vibration, fugitive emissions (including dust, mud, litter and pests) and accidents in relation to the proposed development.

¹ [Risk assessments for your environmental permit - GOV.UK](https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit)

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3.2 Environmental risk assessment

3.2.1 Table 3-1 presents the assessment of hazards posed, receptors and pathways, along with management and residual risks for the following hazards:

- any discharge, for example to surface or groundwater
- accidents
- odour
- noise and vibration
- uncontrolled or unintended ('fugitive') emissions, including dust, litter, pests and pollutants that should not be in the discharge

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Table 3-1 Environmental risk assessment and management plan

Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Odour						
Earthworks causing release of odour during excavation and placement	Residential receptors upwind of Site (based on prevailing wind direction from southwest): Bowaters Farm Buckland listed building Goshem's Farm	Airborne	Only inert wastes which are not odorous in nature will be accepted on Site. Strict waste acceptance procedures will ensure only uncontaminated materials are delivered to Site. In the event that odorous materials are delivered to Site they will be assessed further in accordance with the Waste Acceptance Procedures HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000015. Existing PFA waste that remains within the Site that is to be excavated for recovery is not odorous. The Site Manager will be responsible for implementing risk management measures.	Low	Odour causing nuisance to nearby land users	Low if Waste Acceptance Procedures are followed
Noise and vibrations						

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Earthworks causing noise and vibration during excavation and placement	Receptors sensitive to noise and vibration within 500m of the site: Tilbury Riverfront LWS Grade II listed property at Buckland Bowaters Farm WWII anti-aircraft battery Gravel Pit Farm and cottages Condovers Scout Activity Centre Goshem's Farm	Airborne and land	Site operations will be restricted to the hours specified in the Environmental Management Plan (EMP2). Site haul roads will be kept in good condition with condition assessments carried out to inspect for defects such as potholes. Hoarding will be installed and maintained around areas where noise is likely to be generated that causes nuisance. Plant and machinery will be turned off when not in use. All vehicles and mobile plant will be maintained such that loose body fittings or exhausts do not rattle or vibrate. Silenced equipment will be used where available, in particular silenced generators. No music or radios will be played for entertainment purposes outdoors on site. Site layout will be planned to ensure that reversing is kept to a practicable minimum. Reversing manoeuvres will be supervised by a trained banksman/vehicle marshal to	Low – Mobile, intermittent and during operational hours only.	Intermittent disturbance to local residents and wildlife sites during operational hours only.	Not significant

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
	Low Street Pit LWS		<p>ensure they are conducted safely and concluded quickly.</p> <p>BMJV will proactively engage with the local community to let them know of any upcoming noisy/vibratory works and provide contact details.</p> <p>Noise and vibration monitoring will be carried out in accordance with the Noise and Vibration Management Plan prepared as part of the Environmental Management Plan for North Portal surface works [1].</p> <p>The Site Manager will be responsible for implementing risk management measures.</p>			
Fugitive emissions						
To air						
Earthworks causing dust to be generated in dry and windy weather from exposed soils.	Receptors sensitive to dust upwind of Site (based on prevailing wind direction from southwest):	Airborne	<p>The waste delivered to the Site will be mainly clay or clay bound material which is cohesive in nature. The addition of lime may be required where the material is too wet to achieve the required compaction.</p> <p>The waste deposit involves the movement of waste from Goshems Farm Deposit for</p>	Low	Nuisance – dust on cars, and windows of houses	Not significant

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
	Bowaters Farm Buckland listed building Goshem's Farm		<p>Recovery area into Tilbury Landfill. All materials movement will be completed using internal haul roads. Only unacceptable materials will be taken offsite.</p> <p>A Dust and Emissions Monitoring Plan (DEMP) has been prepared as part of this permit application and an Air Quality Management Plan has been prepared as part of the control documents within EMP2.</p> <p>Water-assisted sweepers will be used on the access road and local roads to remove material tracked out of site.</p> <p>Vehicles entering and leaving site will be securely covered.</p> <p>Wheel washes will be used for vehicles leaving the site.</p> <p>Internal haul roads will be kept in good repair.</p> <p>Generation of stockpiles will be minimised as far as practicable.</p> <p>Daily visual inspections will be carried out by BMJV, comprising a site walk with observations of any dust emissions.</p> <p>Particular attention will be paid to any areas</p>			

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			<p>where professional experience suggests that current operations have a higher than normal risk of dust emissions. Dust soiling checks will be carried out weekly.</p> <p>In the event that significant dust is identified beyond the site boundary, a Dust Event Form will be completed and investigation/remedial action taken.</p> <p>If exceptional dust emissions occur, or any complaints are received, they will be investigated by BMJV.</p> <p>Dust suppression will be implemented, including water spraying in dry weather and covering stockpiled material.</p> <p>Dusty materials, bulk cement and other fine powders will be stored with suitable emission control systems to prevent escape.</p> <p>The Site Manager will be responsible for implementing risk management measures.</p>			
Vehicle exhaust emissions causing	Receptors sensitive to emissions	Airborne	A Dust and Emissions Monitoring Plan (DEMP) has been prepared as part of this permit application and an Air Quality	Low	Nuisance – fumes and	Not significant

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
nuisance/poor air quality on local roads around the site	surrounding the site: Bowaters Farm Buckland listed building Goshem's Farm Local Wildlife Sites		<p>Management Plan has been prepared as part of the control documents within EMP2.</p> <p>The waste deposit involves the movement of waste from Goshems Farm Deposit for Recovery area into Tilbury Landfill. All materials movement will be completed using internal haul roads.</p> <p>All on-road heavy goods vehicles will comply with the standards set within the London Low Emission Zone (LEZ) for the relevant class of vehicle.</p> <p>All Non-Road Mobile Machinery (NRMM) net power 37kW to 560kW will comply with the engine emission standards set by London's Low Emission Zone for NRMM. NRMM will be required to meet emission standard Stage IV as a minimum.</p> <p>All vehicles and plant on site should not be left running or idling unnecessarily.</p> <p>Low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices where reasonably practicable.</p> <p>Use ultra-low sulphur fuels in plant and vehicles where reasonably practicable.</p>		emissions from vehicles Health – poor air quality from vehicle emissions	

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			<p>Keep vehicles and plant well maintained, routine servicing is to be completed in accordance with the manufacturer's guidance and records maintained for the work undertaken.</p> <p>The Site Manager will be responsible for implementing risk management measures.</p>			
To water						
Runoff of soil and sediment into watercourses during rainfall Infiltration of rainwater into the waste and lateral flow into watercourses	The local drainage network around the site, the River Thames to the south of the site, groundwater	Land	<p>Unnecessary creation of stockpiles will be avoided.</p> <p>The materials to be deposited in the landfill will be transported from Goshems Farm Deposit for Recovery area and placed in their final location where possible.</p> <p>Where stockpiles are required, they will be created in a controlled area and managed appropriately to prevent runoff into nearby surface waters.</p> <p>Surface water will be managed in accordance with the Environmental Permit for surface water discharge. Surface water will be captured in a series of attenuation basins, which will allow any suspended</p>	Low – inert or low-risk non hazardous waste (PFA) only being handled at the site. Preventative management measures in place.	Surface water and groundwater contamination	Not significant

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			<p>solids to settle out before discharging into surface watercourses.</p> <p>Where unacceptable levels of silt are identified, silt busters will be used.</p> <p>It is anticipated that surface water discharges will be required to meet standards to be set in the Environmental Permit.</p> <p>Oil interceptors will be provided in areas of hardstanding and roadways/haul routes.</p> <p>Waste to be placed in the landfill is to be compacted to minimise the infiltration of leachate through the waste.</p> <p>Waste acceptance procedures will prevent the acceptance of non-permitted waste into the landfill.</p> <p>Groundwater and surface water quality is to be monitored in accordance with the monitoring requirements of the new permit and also in line with the Long Term Monitoring plan document [3].</p> <p>The Site Manager will be responsible for implementing risk management measures.</p>			

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Accidental release of fuels or other contaminants into surface waters and groundwater	The local drainage network around the site, the River Thames to the south of the site, groundwater Thames Estuary and Marshes SSSI/SPA/Ramsar	Land	<p>The site will be operated in accordance with the Pollution Prevention Management Plan (PPMP) which forms part of the Environmental Management Plan (EMP).</p> <p>Fuel (HVO) is to be stored and dispensed in a designated area within the site. Fuel will be stored in double skinned tanks which will be appropriately banded and other materials such as cement or lime will be stored in silos in a designated area.</p> <p>All site vehicles are to be maintained to prevent leaks from occurring.</p> <p>Oil interceptors will be provided in areas of hardstanding and roadways/haul routes.</p> <p>Groundwater and surface water quality is to be monitored in accordance with the requirements of the new permit for monitoring.</p> <p>The Site Manager will be responsible for implementing risk management measures.</p>	Low – site operations will be controlled in accordance with the PPMP. Preventative management measures in place.	Surface water and groundwater contamination	Not significant
Pests						

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Potential risk linkage			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Birds, vermin and insects attracted to Site	Receptors sensitive to vermin immediately surrounding the site: Bowaters Farm Buckland listed building Goshem's Farm Local Wildlife Sites Coastal path users	Land and Air	The proposed waste types accepted on Site will not change from previous activities and strict waste acceptance procedures will ensure only permitted materials are delivered to Site. The inert and low risk non-hazardous nature of the waste handled on Site means that the Site is unlikely to attract birds, vermin and insects. Regular inspections will be undertaken to check for signs of infestation, and control measures implemented if necessary. The Site Manager will be responsible for implementing risk management measures.	Low	Nuisance and health issues to local residents, amenity users and wildlife sites.	Not significant
Mud/litter						
Mud from vehicles using the site	Local roads leading to properties at: Bowaters Farm	Tracked from the site to the roads by vehicles leaving the Site.	No waste will be delivered to site via external roads, as the material to be deposited is located within Goshems Farm Deposit for Recovery site, which is accessed via internal haul roads.	Low	Nuisance or hazard from mud on local roads	Not significant

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
	Buckland listed building Goshem's Farm Local Wildlife Sites		Mud may be dropped from vehicles leaving the site. Internal haul roads will be subject to maintenance and repair to reduce mud. Vehicles leaving the site do so via a wheel wash located at the western access to the site, via Port of Tilbury land. Local roads will be cleaned using a road sweeper to be kept on site.			
Easily windblown materials brought onto Site.	Bowaters Farm Buckland listed building Goshem's Farm Local Wildlife Sites	Windblown litter.	The type of waste to be used within the site comprises soil and stones, rather than household or construction waste. The waste has been through waste acceptance procedures prior to deposit within Goshems Farm Deposit for Recovery or Tilbury Ash Disposal Site and is not expected to contain significant quantities of litter-generating material. Waste acceptance procedures will continue to ensure only waste with a low litter generation potential is delivered to Site. Any litter generating waste will be collected and placed in containers in accordance with the Site Waste Management Plan [4] which forms part of the Environmental	Low	Nuisance from litter	Not significant

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
What has the potential to cause harm?	What is at risk and what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			Management Plan (EMP) before disposal offsite. The Site Manager will be responsible for implementing risk management measures.			
Accidents						
Accidental release of fuels or other contaminants into surface waters and groundwater	The local drainage network around the site, the River Thames to the south of the site, groundwater Thames Estuary and Marshes SSSI/SPA/Ramsar	Land	The site will be operated in accordance with the Pollution Prevention Management Plan (PPMP) which forms part of the Environmental Management Plan (EMP). Fuel (HVO) is to be stored and dispensed in a designated area within the site. Fuel will be stored appropriately banded tanks and other materials such as cement or lime will be stored in silos in a designated area. All site vehicles are to be maintained to prevent leaks from occurring. Oil interceptors will be provided in areas of hardstanding and roadways/haul routes. Groundwater and surface water quality is to be monitored in accordance with the monitoring requirements of the new permit.	Low – site operations will be controlled in accordance with the PPMP. Preventative management measures in place.	Surface water and groundwater contamination	Not significant

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Hazard	Receptor	Pathway		Probability of exposure	Consequence	Overall risk
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			The Site Manager will be responsible for implementing risk management measures.			
Fire relating to Site plant	Site operatives and local residents at: Bowaters Farm Buckland listed building Goshem's Farm Local Wildlife Sites. Thames Estuary and Marshes SSSI	Air	The proposed activities under this new permit are not considered to increase the risk of fire on Site compared to the previous permit. Consequently, the management techniques in place are considered sufficient to manage the risk on Site, as detailed below: All Site plant and machinery will be operated and maintained in accordance with manufacturer's specifications. The Site Manager will be responsible for implementing risk management measures.	Low – due to preventative maintenance programme	Danger to Site operatives and nearby properties. Reduction in air quality.	Not significant
Flooding	Site, site operatives and surrounding land and property at: Bowaters Farm	Run off entering local drainage channels and land	A flood risk assessment was completed as part of the Environmental Statement prepared for the Lower Thames Crossing scheme [5]. This did not identify any increased risk of flooding as part of the proposed ground levels to be created under this permit. The proposed activities under this new permit are the same as under the previous	Low - due to proposed surface water management measures	Dangerous working conditions, risk to local residents' homes.	Not significant

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	Buckland listed building Goshem's Farm Local Wildlife Sites		permit, in that they comprise a land raise above original ground level. Surface water drainage from the site will be controlled under an Environmental Permit for discharge to surface water. A series of attenuation ponds is to be constructed within the site which will be sized appropriately to contain rainfall events. The Site Manager will be responsible for implementing risk management measures.			
Unauthorised waste receipt	Site operatives and local residents at: Bowaters Farm Buckland listed building Goshem's Farm Local Wildlife Sites. Thames Estuary and Marshes SSSI	Air, land and water	The waste has been through waste acceptance procedures prior to deposit within Goshems Farm Deposit for Recovery or Tilbury Ash Disposal Site and is not expected to contain unauthorised materials. Strict waste acceptance procedures will continue to be implemented to ensure only permitted materials are delivered to Site. These procedures are detailed in the Waste Acceptance Procedures document HE540039-BMJ-EAC-TA_SNZ_ZZ-RP-GS-000015.	Very low- due to management measures.	Odour nuisance, Water contamination	Not significant

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			This will be confirmed by sampling of imported soils if necessary. The Site Manager will be responsible for implementing risk management measures.			
Security and Vandalism	Site infrastructure	N/A	Security measures are to be implemented within the site and more widely as part of the construction of the Lower Thames Crossing scheme. Security measures will include the provision of appropriate site fencing or hoarding. These measures will be implemented, inspected and maintained to prevent unauthorised access. The Site Manager will be responsible for implementing risk management measures.	Very Low - due to management measures.	Damage to Site infrastructure	Not significant

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4 Conclusions

- 4.1.1 This ERA has been undertaken in accordance with the EA regulatory guidance. The assessment is provided as part of the application for a new permit for the deposit of waste, which is a continuation of the previous landfilling activities carried out by IVL within Tilbury Ash Disposal site.
- 4.1.2 This qualitative risk assessment has considered odour, noise, fugitive emissions, dust, releases to water, litter and potential for accidents and incidents.
- 4.1.3 The implementation of the risk management measures outlined in this document, together with the environmental management requirements of the Lower Thames Crossing construction detailed in the Environmental Management Plan [1], will render potential hazards from the proposed new permit not significant and no further assessment is required.

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5 Reference Documents

Document title	Document number /Link
[1] Lower Thames Crossing Environmental Management Plan 2, North Portal Surface Works (Work No. 5)	HE540039-BMJ-EGN-TA_S07_ZZ-PL-ZZ-000001
[2] Lower Thames Crossing, Long Term Monitoring Strategy	HE540039-BMJ-EGT-TA_STZ_ZZ-RP-GS-000007
[3] Lower Thames Crossing Site Waste Management Plan – North Portal Surface Works (Work No. 5)	HE540039-BMJ-EMW-TA_S07_ZZ-PL-ZZ-000002
[4] Lower Thames Crossing Appendix 6.3 Environmental Statement Appendices – 14.6 Flood Risk Assessment Part 10	TR010032-005260-National Highways - Other- 6.3 ES Appx 14.6 - Flood Risk Assessment - Part 10 v2.0 clean.pdf

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