Application for an Environmental Permit - Thurrock Flexible Generating Facility 2

Environmental Risk Assessment

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Prepared by:

Tetra Tech

Alex Kingston

Environmental Consultant

20 Farringdon Street,
London, EC4A 4AB

T +44 (0)20 3691 0500

E alex.kingston@tetratech.com

Prepared for:

Statera Energy-Limited

Clara Richardson-Perez

Senior Asset Manager

5th Floor 80 Victoria Street London SW1E 5JL

T 07594355342

E crichardsonperez@stateraenergy.co.uk

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1 INTRODUCTION

1.1.1 This Environmental Risk Assessment (ERA) has been carried out in support of an application for an environmental permit for a gas-fired flexible generating facility, Thurrock 2 Flexible Generating Facility (T2FGF) at land southwest of Station Road, Tilbury, Essex, RM18 8QR.

1.1.2 The T2FGF will comprise:

- 22 x 10.58 MW_{th} gas-fired reciprocating engines,

Note: The engines may operate in high power mode for up to 15 hours per year. In high power mode the thermal input of each engine is 11.17 MW_{th}.

1.1.3 Emissions from the generators will discharge to atmosphere via 11 x 20m stacks, each housing two flues.

1.1.4 There will be no process water discharges to sewer or surface water.

1.1.5 The assessment considers the potential risk to the environment and human health from the operation of the gas fired generating facility.

1.1.6 The Environment Agency's Risk Assessments for your environmental permit1 covers a range of environmental risks. Those aspects relevant to the operation of the proposed T2FGF are covered within the following sections:

- Section 2 identifies sensitive receptors in proximity to the facility.
- Section 3 provides the environmental risk assessment of 'Amenity and Accidents' hazards associated with the variation.
- Section 4 provides a summary of the screening assessment of point source emissions to air associated with the proposed new T2FGF using the H1 Risk Assessment tool, which can be found in Appendix A to this ERA.

2 SENSITIVE RECEPTORS

2.1 The Site

2.1.1 The T2FGF site occupies approximately 0.5 hectares approximately 1000 m east of Tilbury, Essex, centred on National Grid Reference TQ 66156 76668. The nearest existing postcode is RM18 8QR.

2.1.2 The site comprises open fields crossed by pylons and above ground electricity cables. The surrounding area is mainly agricultural, however, the existing National Grid Tilbury Substation and the site of the decommissioned Tilbury Power Station both lie to the south, beyond which lies the River Thames. Other minor water bodies lie on and adjacent to the proposed site. The recently developed battery storage facility and Thurrock Flexible Generation Facility (TFGF) border the site to the south and east. A railway line passes to the northwest. Drawing 1 identifies the location in relation to its surroundings.

2.1.3 The closest residential properties to the site are located at Bryon Gardens approximately 780 m west in Tilbury. To the northeast, Walnut Tree Farm is located 1,000 m from the proposed site, in the village of West Tilbury. The closest industrial receptor is TFGF boarding the T2FGF to the east.

2.1.4 The Air Quality Impact Assessment (Appendix E to the Supporting Information document) modelled the impact of emissions at the sensitive receptors identified at the planning consent stage. These, and any additional receptors identified in an EA Nature and Heritage Screening Report included as Appendix B to this report, are presented in Table 2-1. All SPA, SAC and Ramsar sites within a 15 km screening radius are included. No SSSI are located within a 2 km screening radius.

2.1.5 An Environment Agency Nature and Heritage Conservation report identified the following ecological receptors within the relevant screening distances:

Table 2-1: Protected Habitats within Relevant Screening Distances of the T2FGF Site

Designation	Site
SPA, Ramsar, SSSI	Thames Estuary and Marshes
SPA, Ramsar	Medway Estuary and Marshes
SAC	Peter's Pit
SAC	North Downs Woodland
Local Wildlife Site	Tilbury Power Station
Local Wildlife Site	West Tilbury Hall
Local Wildlife Site	West Tilbury Church
Local Wildlife Site	Low Street Pit
Local Wildlife Site	Tilbury Marshes
Local Wildlife Site	Broom Hill
Local Wildlife Site	Hob Hill & Sandy Lane Pit, Chadwell St. Mary

2.1.6 The Nature and Heritage Conservation Screening Assessment is appended as Appendix B to this report.

2.1.7 Drawings showing human sensitive receptors within 2 km and ecological sensitive habitats within 15 km of the site are included as Drawing 2 and Drawing 3 respectively.

3 ENVIRONMENTAL RISK AND EFFECTS

3.1.1 The scope of the assessment has covered the following aspects:

- Odour,
- Noise and vibration,
- Fugitive emissions
- Visible emissions,
- Accidents.

3.1.2 For each of the above, the approach to the assessment has followed the following four stage process:

1. Identify the hazards,
2. Assess the risks (assuming that any control measures proposed are in place),
3. Choose appropriate further measures to control these risks (if required),
4. Present the assessment of overall risk.

3.1.3 Results of the assessment are provided in the following tables.

- Table 3-2 Assessment of odour risks,
- Table 3-3 Assessment of noise and vibration risks,
- Table 3-4 Assessment of fugitive emission risks,
- Table 3-5 Visible emissions,
- Table 3-6 Accidents risk assessment and management plan.

3.1.4 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- the likelihood of the hazard occurring; and
- the consequence of the hazard to the environment or human health.

3.1.5 Scores are assigned as low, medium or high.

3.1.6 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

Table 3-1: Risk Matrix

Consequence	Probability			
	High	**Medium**	**Low**	**Very Low**
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

3.1.7 In completing the assessment, prevention and control measures proposed by the operator are assumed to be in place. Where relevant, details of these measures are identified within the assessment.

3.1.8 The environmental risk assessment for the site is set out below.

Table 3-2: Odour Risk Assessment and Management Plan

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Odour emissions from operation of the T2FGF	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Air	The operations at the T2FGF are not anticipated to be odorous. The natural gas to be used within the T2FGF will not be odourised and will be handled in fully enclosed pipework with no storage onsite, therefore minimising the potential for odour. In the event of a complaint, the operator will follow a complaints procedure to record the complaint and take appropriate action or provide further monitoring as necessary.	Very Low	Very Low	Very Low

Table 3-3: Noise and Vibration Risk Assessment and Management Plan

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Noise from vehicle movements onsite	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Air	There will be no deliveries associated with the transmission of natural gas fuel. The T2FGF will be remotely operated, hence staff vehicle movements will be low. Additional vehicle movements will be associated with planned servicing, maintenance campaigns and deliveries, e.g., infrequent deliveries of lubricating oil and collections of waste oil, which will take place during normal working hours. In the event of a complaint, the operator will follow a complaints procedure to record the complaint and take appropriate action or provide further monitoring as necessary.	Low	Very Low	Very Low
Noise from operation of the TFGF, including gas engines, air intake, fin-fan coolers etc.	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations	Air	The T2FGF is designed to operate when demand is high and will not operate continuously. Operating hours will be limited to 1,500 hours in any year. Typically, the facility would be required to operate between 1 and 7 hours per day, between 8 am and 8 pm. Operation	Low	Low	Low

Hazard **What has the potential to cause harm?**	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
	(nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.		during night time, although not impossible, is less likely as peak demand hours are outside of night time periods. Engines and associated plant will be enclosed within individual cells. A silencer will be incorporated on each exhaust stack, and other mechanical equipment will be housed within acoustic enclosures. In the event of a complaint, the operator will follow a complaints procedure to record the complaint and take appropriate action or provide further monitoring as necessary. A Noise Impact Assessment is included as Appendix F of the supporting information document. The NIA found that the design incorporates mitigation measures to minimise noise to the lowest reasonably practicable level, and that noise will be mitigated such that it does not cause a significant impact.			
Vibration from the operation of the TFGF	Local residents (nearest residential receptor is Bryon Gardens	Land	Significant vibration effects are not anticipated for the plant. Engines will be mounted to their frames by	Very Low	Very Low	Very Low

Hazard **What has the potential to cause harm?**	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
	approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.		means of anti-vibration mounts. In the event of a complaint, the operator will follow a complaints procedure to record the complaint and take appropriate action or provide further monitoring as necessary.			

Table 3-4: Fugitive Emissions Risk Assessment and Management Plan

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
To Air						
Dust	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Air	There are no significant dust-generating activities or dusty materials used or stored within the installation. In the event of a complaint, the operator will follow a complaints procedure to record the complaint and take appropriate action or provide further monitoring as necessary.	Very Low	Very Low	Very Low
Leaks within natural gas pipework.	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations	Air	The gas supply system will be designed, installed and tested as to comply with the requirements of EN 14161, ATEX and other local regulations applicable, as well as complying with relevant National Fire Protection Association (NFPA)	Low	Medium	Low

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
	(nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.		or equivalent standards to ensure increased safety and reduced hazard from fuel gas handling. Gas detection and alarm equipment will be in place. Scheduled inspections of natural gas containment/pipework will help to prevent a risk from leakage of unburned natural gas.			
Fumes (VOCs) from delivery and storage of Lubricating oils (and collection of waste oil.	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Air	Bulk storage of oils is limited to lubricating oil and waste oil. These are stored in fully bunded areas and will be subject to routine inspection during routine site maintenance visits. Usage of oils will be minimal.	Low	Low	Low

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
To Water						
Leakage of clean and waste lubricating oils from delivery and storage	Site drainage system. Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Surface water drainage systems	Oil is stored in 22 No. clean lubricating oil tanks of 200 litre capacity. These tanks are double skinned, with a capacity of at least 110% of the oil storage tanks and held within bunded engine rooms of a 15,750 litre capacity. Tanks will be subject to routine inspection during site maintenance visits. Waste oil will be transferred to IBCs for collection from site for reprocessing or appropriate disposal. During transfer of waste oil, IBCs will be placed upon temporary bunds. Spill kits will be provided in areas where oil is delivered, stored and collected. The operational part of the site will be laid to a concrete base and, therefore, the opportunity for direct contact to surface water is minimal. Surface water run-off will be retained in an onsite swale pending discharge as necessary, following a visual assessment.	Very Low	Low/Medium	Very Low

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Litter						
Litter from waste storage and removal from site.	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Windblown to air	Minimal solid waste generation is anticipated on site. The main source of general waste will be packaging from maintenance materials. All staff will be trained in waste management procedures.	Very Low	Very Low	Very Low
Pests						
Pests Flies, and other pests or vermin.	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations	Land/air	Not relevant to the operation, operational activities have very limited potential to attract flies, pests and vermin.	Very Low	Very Low	Very Low

Hazard **What has the potential to cause harm?**	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
	(nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.					

Table 3-5: Visible Emissions Risk Assessment and Management Plan

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Plume from emission stacks	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Visual	Visible plumes are not anticipated to occur for the majority of operational time due to the natural gas being combusted, resulting high exhaust gas temperatures.	Low	Low	Low

Table 3-6: Accidents Risk Assessment and Management Plan

Hazard **What has the potential to cause harm?**	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs – who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Operator error	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Variable - dependent on nature of the error	The facility will be automatically controlled which will minimise potential for operator error on site. The automatic control system will include alarms and warning lights in the control centre to alert of potential operational problems. Any manual tasks will be undertaken within bunded areas by trained operators. All staff (including contractors) will be qualified for the role to be carried out and trained specifically to carry out their responsibilities in relation to the T2FGF.	Low	Low	Low
Loss of power	None	N/A	During operational periods plant will be powered by electricity generated onsite. In the event of a loss of power to the site during non-operational periods the plant may not be able to start-up and therefore no operations can commence.	N/A	N/A	N/A

Hazard **What has the potential to cause harm?**	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Loss of containment during storage or transfer of oil (transformer and lubricating oil)	Water and land. Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Surface water drainage system or direct contact with land.	Bulk storage tanks and IBCs will be bunded, with a capacity of 110% of the stored volume of the largest tank within the bund and will be subject to routine inspection and maintenance. All tanks will be compliant with the Oil Storage Regulations. Spill kits will be provided, and all maintenance staff will be trained in the actions to take in the event that an oil spill is detected. Anyone using spill kit materials will be required to ensure replacement materials are ordered. Leaks and spills will be recorded as part of the site incident procedures and will be subject to follow-up and review to ensure any further actions are instigated, as appropriate. Inspections and maintenance will be carried out to ensure the integrity of plant and infrastructure is maintained. The operational part of the site will be laid to concrete with run-off contained by the site drainage system.	Very Low	Low/Medium	Very Low

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
Fire causing emissions to air	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Direct release of combustion gases to air	Fire detection and protection systems will be in place. This will include smoke and gas detectors and gas / electrical isolation. Further fire management procedures will be set out in the AMP. There will be an automatic link between fire detection systems on site and the control centre. In the event of a fire, a local engineer will be alerted, will respond directly and will then call the local fire and rescue service (FRS) to attend if necessary. Fire procedures will be held onsite, and copies will also be made available to the FRS and maintenance contractor, as well as centralised copies being held at the control centre.	Low	Low - Medium	Low
Fire causing emissions to water	Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Surface water drainage system	It is unlikely that firefighting using water/foam would be used to tackle a fire at the T2FGF. Should a fire occur in one of the engines then the likely approach would be to stop the gas feed and allow the fire to burn out residual fuel. There are no fire hydrants in proximity to the site. The only potential for	Low	Medium	Low

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
			firewater/foam would be from supplies on a fire appliance and onsite swale, which, if used, would collect within the site drainage system and discharge back into the swale which can be isolated to enable surface water run-off to be contained.			
Failure of combustion control system	Local residents (nearest residential receptor is Bryon Gardens approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Stack/Air	The combustion control system will link to automatic alarm systems in the control room to alert the remote operators and enable appropriate action to be taken to prevent a system failure, where possible, or to trigger a safe plant shutdown. Operational staff (including contractors) will be trained in the actions to take in the event of control system alarms being triggered.	Low	Low	Low
Vandalism	Local residents (nearest residential receptor is Bryon Gardens	Various	A security fence will be in place around the facility. CCTV surveillance (including infrared CCTV) will be provided to monitor	Low	Low to Medium - depending on	Low

Hazard What has the potential to cause harm?	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
	approximately 780 m west of the site). Nearby industrial and commercial installations (nearest receptor is TFGF). Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.		the perimeter fence or intruders and also to provide coverage within the main plant areas. The CCTV system will feed back to the control centre and the onsite office. An intruder alarm system is in place which, if triggered, will alert the control centre and the Security Contractor.		nature of the event.	
Flooding	Buildings and structures on site; neighbouring land. Protected habitats and Local Wildlife sites identified in Table 2-1, downstream of the site, the closest being Tilbury Marshes LWS, on site.	Surface water drainage system; local surface watercourses	Flood risk has been addressed in a Flood Risk Assessment, which was prepared to support the DCO application. The site lies in a Flood Zone 3a, meaning there is a high risk of flooding prior to considering any flood protection measures. The Thames has tidal flooding defences designed to defend against 1 in 1,000-year flood events. Door sill levels will be raised to flood levels to prevent entry of flood water into engine rooms. The risk of tidal flooding is, therefore, low. The site is at risk from surface water	Low	Medium	Low

Hazard **What has the potential to cause harm?**	Receptor What is at risk? What do I wish to protect?	Pathway How can the hazard get to the receptor?	Risk management What measures will you take to reduce the risk? If it occurs – who is responsible for what?	Probability of exposure How likely is this contact?	Consequence What is the harm that can be caused?	What is the overall risk? What is the risk that still remains? The balance of probability and consequence.
			flooding, but mitigation measures will be incorporated into the design. Potentially polluting materials will be stored in accordance with the Environmental Permit and regulatory requirements, including secondary containment to capture any leaks. No significant adverse effects on surface water contamination from run-off are predicted. Emergency procedures will be developed within the Accident Management Plan and will describe actions to take should a flood event occur.			

4 EMISSIONS TO AIR

4.1 Introduction

4.1.1 This section provides a screening assessment of point source emissions to air from the installation. The assessment has been completed in accordance with the Environment Agency's Risk Assessments for your environmental permit using the latest version of the Environment Agency's H1 software (version 9.2).

4.1.2 The scope of the assessment has covered the following aspects:

- Release point characteristics,
- Air emissions screening

4.1.3 Air emissions screening using the H1 software has identified emissions that warrant further modelling. The H1 tool can be found in Appendix A to this Environmental Risk Assessment. The results of the additional detailed modelling for the emissions identified are presented in the air quality report in Appendix E of the main application supporting information.

4.2 Emission Release Points

4.2.1 Emissions to air will result from the combustion of natural gas within 22 x 9.896 MWe gas engines, which will be released into the atmosphere via dedicated 11 "grouped" exhaust stacks.

4.2.2 The primary air pollutants of concern with the potential to impact on human health and/or the environment from these emission points are Nitrogen oxides (NO_x expressed as NO_2) and Carbon monoxide (CO).

Table 4-1: Emission Point Characteristics

Parameter	Unit	Value
Emission points	No.	22
Stacks	No.	11
Stack height	m	20
Efflux velocity	$m.s^{-1}$	29.9
Normalised volumetric flow (dry, 0°C, 15% O_2)	$Nm^3.s^{-1}$	13.9
NO_x emission concentration (dry, 0°C, 15% O_2)*	$mg.Nm^{-3}$	95
CO emission concentration (dry, 0°C, 15% O_2)*	$mg.Nm^{-3}$	400

4.2.3 To align with the air quality report and modelling, the H1 assessment has been carried out on the basis of 11 emission points, each with double the normalised flow rate i.e., 27.8 $Nm^3.s^{-1}$ for each of the 11 emission points.

4.2.4 The H1 screening assessment has considered modelled long and short-term emissions of NO_x at the maximum predicted Process Contribution (PC)

- The maximum long-term PC is 4.50 $\mu g.m^{-3}$.

- The maximum short-term PC 98.30 µg.m^{-3}.

4.2.5 For CO as there is no long term EAL, the modelled short-term concentration is with a PC of 644 µg.m^{-3} (8-hour).

4.3 Emissions Screening

4.3.1 Estimated emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Emissions standards are based on statutory air quality objectives where available, and upon human health protection Environmental Assessment Levels (EALs) as given in H1 guidance.

4.3.2 Process contributions (PCs) have been calculated using atmospheric dispersion modelling, details of which are given in the Air Quality Impact Assessment (AQIA) in Appendix E to the Supporting Information document. It should be noted that the H1 Screening Assessment whilst the H1 tool has recognised the long-term modelled PC, the tool only recognises the H1 predicted PC for the short-term calculation. If the short-term modelled PC for NO_x was used the %PC/EAL would be 98.3/200 = 49.15%. Similarly for CO using the short-term modelled PC %PC/EAL would be 644/10,000 = 6.44%. Emissions which are lower than 1% of the relevant emissions standard for long-term exposure and lower than 10% of the relevant limit for short-term exposure are screened out as insignificant. Figure 4-1 below shows the emissions screening results at Stage One.

4.3.3 The impact of long and short-term NO_x emissions has not screened out as insignificant at the stage one assessment. Short-term impacts of CO have also not screened out. Therefore, a second stage of screening is required.

4.3.4 The second stage of screening assesses the predicted environmental concentration (PEC) against EALs. Background concentrations have been obtained from the AQ assessment provided in Appendix E and a description of the data sources is provided in that document. Note that the highest background concentration with cumulative developments has been used, however the value used is significantly higher than the background date at the receptor with the highest PC and therefore the assessment is conservative and will have over predicted the impacts from the facility. PECs which are lower than 70% of the relevant long-term emissions standard and lower than 20% of the relevant short-term standard minus two times the background concentration are screened out as insignificant. Those not screened out as insignificant are recommended for further detailed assessment. Figure 4-2 below shows the emissions screening results at Stage Two. It should be noted that if the modelled short-term PC for NO_x was used in the stage 2 screening calculation would be 98.3/(200-2x40) = 81.9% and with the modelled PC for CO this would calculate as 644/(10,000-2x322) = 6.88%.

4.3.5 The stage two screening assessment indicates that both long- and short-term NOx impacts fail the assessment. Consequently, further assessment is required. Using the modelled CO PC, the short-term PC as a percentage of the EAL-2x background concentration is less than 20%. On this bases CO would screen out from further assessment. Detailed modelling is presented in an Air Quality Impact Assessment, details of which are given in Appendix E of the main application supporting information.

Figure 4-1:

Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	%PC of EAL (long term)	>1% of EAL? (long term)	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of EAL (short term)	>10% of EAL? (short term)
Nitrogen dioxide	40	4.5	11.25%	fail	200	1396.4335	698.22%	fail
Carbon monoxide	0	644			10000	8025.8178	80.26%	fail

Figure 4-2:

Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	Air Background conc (ug/m3)	%PC of headroom (long term)	PEC Long term (µg/m3)	%PEC of EAL% (Long term)	%PEC of EAL>70%? (long	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of the EAL-2*background	%PC of headroom >=20%? (short term)
Nitrogen dioxide	40	4.5	42.4	100%	46.90	117.25%	fail	200	1396.4335	1212.18%	fail
Carbon monoxide	0	644	322	100%	966.00			10000	8025.8178	85.78%	fail

5 CONCLUSIONS

5.1.1 The following hazards from the operation of the proposed T2FGF have been assessed:

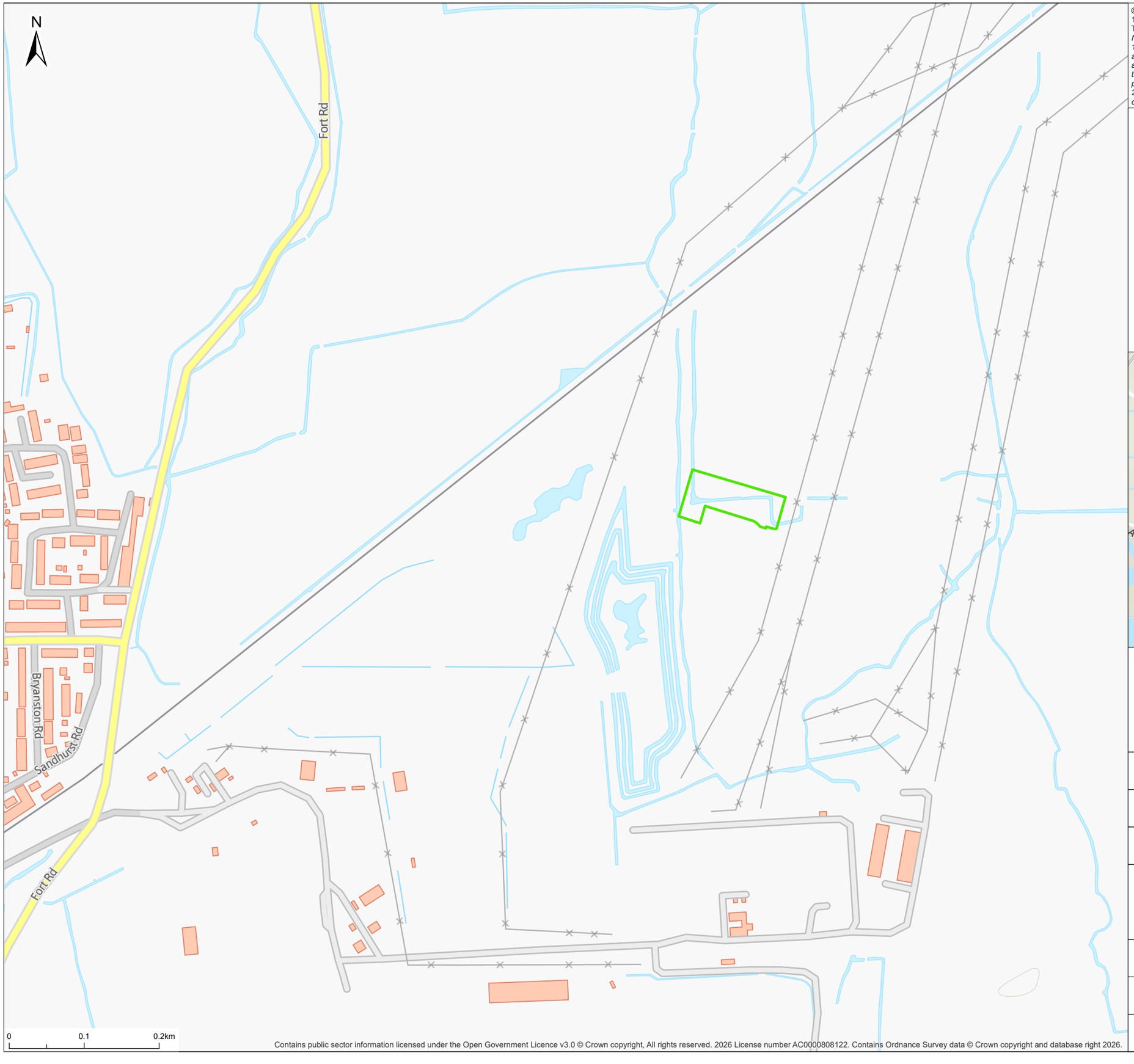
- Odour,
- Noise and vibration,
- Fugitive emissions,
- Visible emissions, and
- Accidents

5.1.2 The assessment has concluded that the overall risks associated with the identified hazards, including the proposed management measures are very low to low.

5.1.3 Detailed assessments of potential air emission impacts and noise have been carried out. Air Quality Impact Assessment (provided in Appendix E of main application supporting documents) concluded that the effects are insignificant. The Noise Assessment (provided in Appendix F of main application supporting documents) concluded that significant adverse impacts would not occur.

5.1.4 The H1 risk assessment software tool has been used to support this Environmental Risk Assessment. The completed H1 software can be found within the Appendix A to this Environmental Risk Assessment. Stack emissions to air for relevant air pollutants have been subject to detailed modelling and it has been concluded that the resulting air quality effect of the proposed development is considered to be ‘not significant’ overall.

Drawings



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T: +44(0)1235 821 888 E: rps.ox@tetratech.com W: rpsgroup.com

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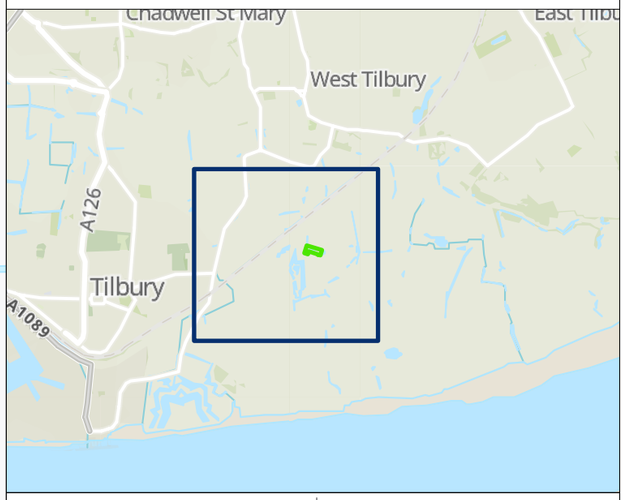
LEGEND

Site Boundary



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Client	**Statera Energy Ltd.**
Project	**Thurrock 2**
Project No.	**794-ENV-EPC-23409**
Title	**Site Location Plan**

Drawing No.	Figure No.	Revision	Status
23409-0001-03	01	03	FINAL

Date	Drawn By	Checked By	Revision By
FEB 2026	JM	AK	XX

Scale @ A3	Datum
1:5,000	OSGB 1936

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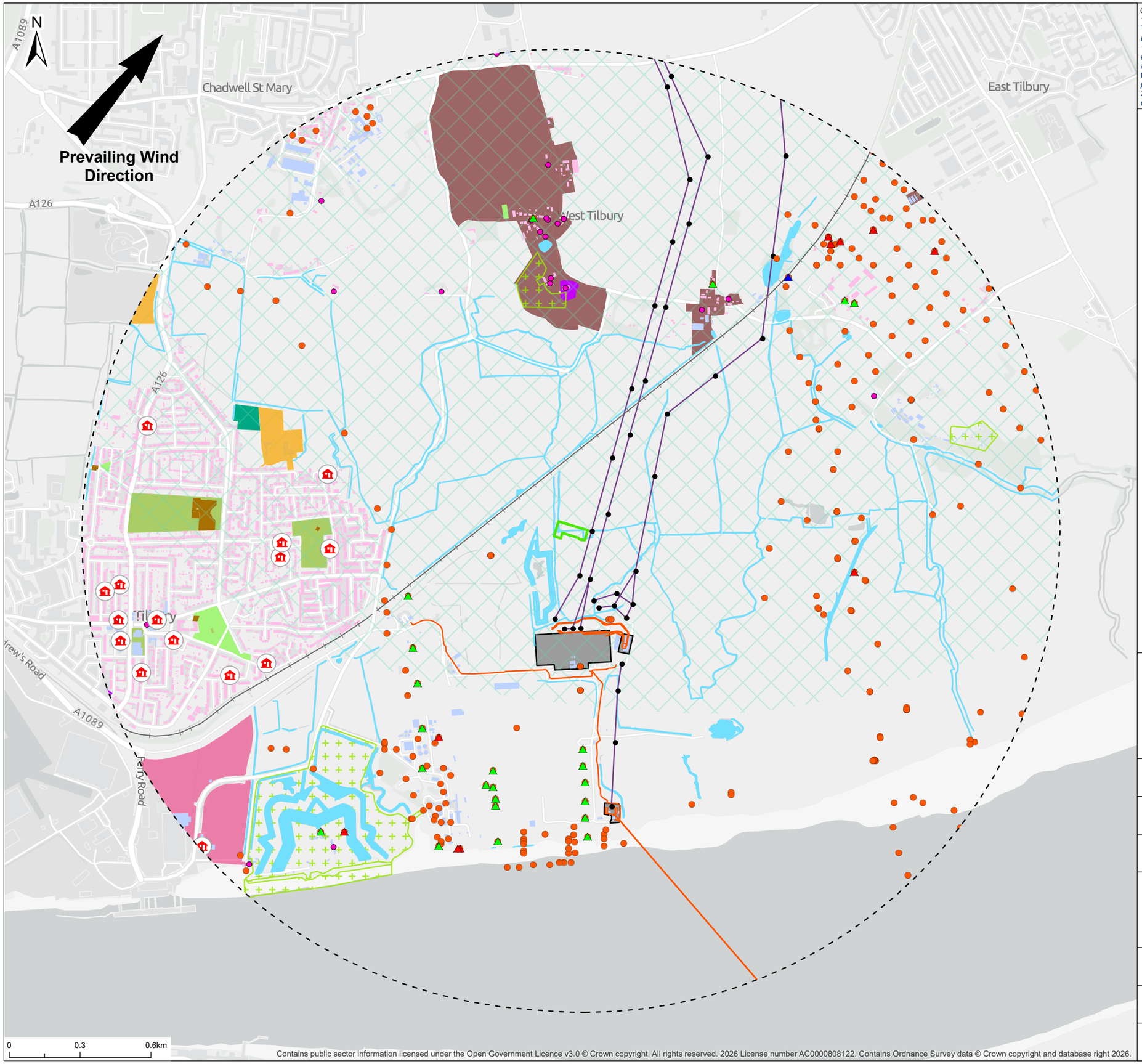

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LEGEND

- Site Boundary
- 2km Buffer
- GP / Dental / Care Centres
- Commercial
- Residential
- Education
- Allotments
- Recreational Facilities
- Play Space
- Public Park Or Garden
- Religious Grounds
- Water Transport
- Railway
- National Grid - Towers
- National Grid - Cable
- National Grid - OHL
- National Grid - Substation
- Listed Building
- Scheduled Monument
- Conservation Area
- Water well - 0 - 10m
- Water well - 10 - 30m
- Water well - 30m+
- Borehole
- Source Protection Zone
- Surface Water

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Client	**Statera Energy Ltd.**
Project	**Thurrock 2**
Project No.	**794-ENV-EPC-23409**
Title	**Human Sensitive Receptors**

Drawing No.	Figure No.	Revision	Status
23409-0002-02	02	02	FINAL

Date	Drawn By	Checked By	Revision By
FEB 2026	JM	AK	XX

Scale @ A3	Datum
1:16,000	OSGB 1936

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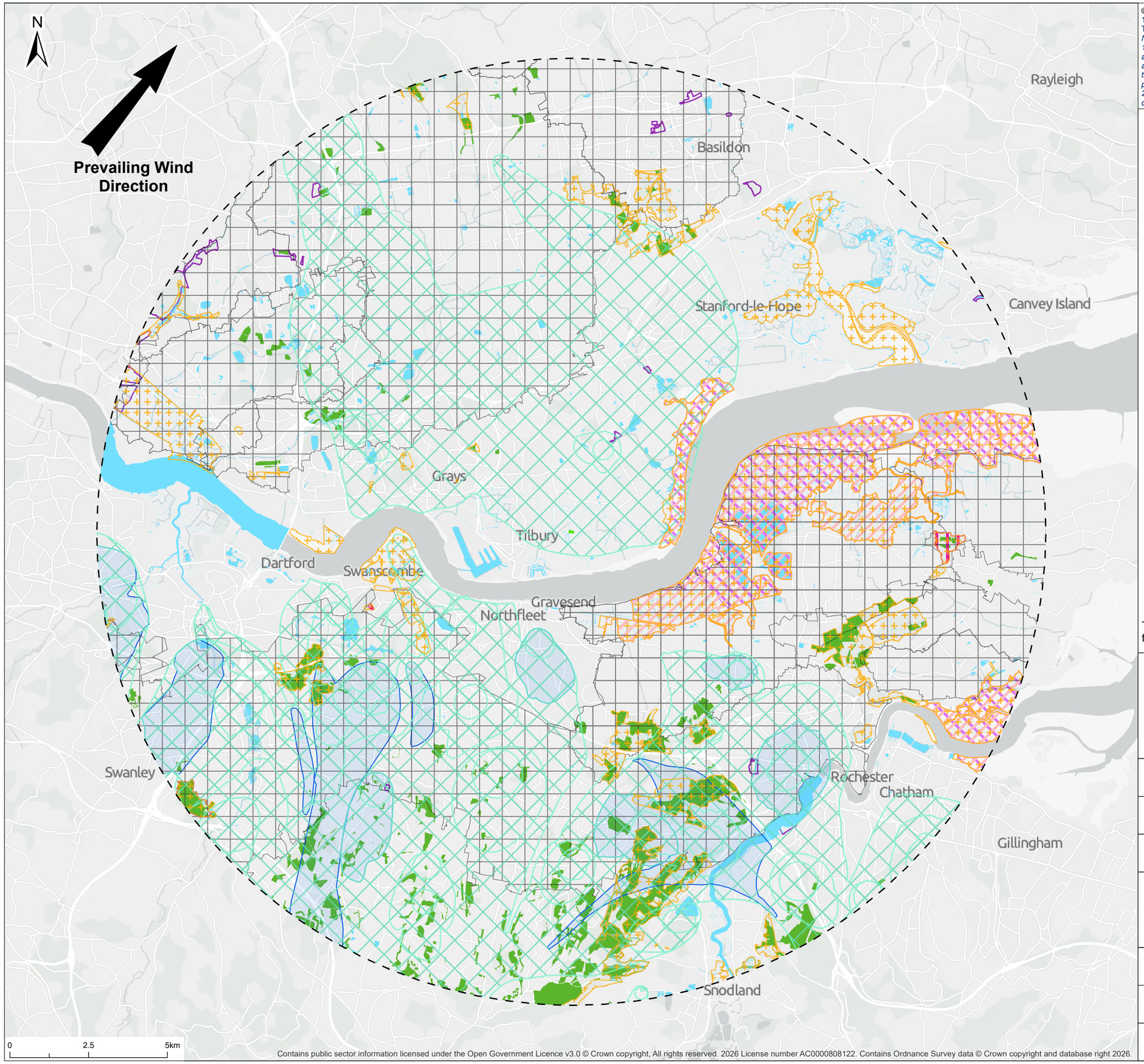

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LEGEND

- Site Boundary
- 15km Buffer
- Site of Special Scientific Interest
- Source Protection Zone
- Nitrate Vulnerable Zone
- Drinking Water Safeguard Zones - Groundwater
- National Nature Reserve
- Ramsar
- Special Protection Area
- Special Area of Conservation
- Surface Water
- Ancient Woodland
- Local Nature Reserve

The site falls within a Medium-High risk and Soluble Rock Risk category area for Groundwater Vulnerability

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Client	**Statera Energy Ltd.**
Project	**Thurrock 2**
Project No.	**794-ENV-EPC-23409**
Title	**Ecological Sensitive Receptors**

Drawing No.	Figure No.	Revision	Status
23409-0003-02	03	01	FINAL

Date	Drawn By	Checked By	Revision By
FEB 2026	JM	AK	XX

Scale @ A3	Datum
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Appendices

Appendix A H1 Assessment

Appendix B Conservation Screening Report

Nature and Heritage Conservation

Screening Report: Large emitter (greater than 50MW)

Reference	**EPR/MP3529MF/P001**
NGR	**TQ 66156 76668**
Buffer (m)	**60**
Date report produced	**29/01/26**
Number of maps enclosed	**1**

This nature and heritage conservation report

The nature and heritage conservation sites, protected species and habitats, and other features identified in the table below **must be considered in your application**.

In the further information column, there are links which give more information about the site or feature type and indicate where you are able to self-serve to get the most accurate site boundaries or feature locations.

Most designated site boundaries are available on Magic map. Using Magic map allows you to zoom in and see the site boundary or feature location in detail, Magic map also allows you to measure the distance from these sites and features to your proposed boundary. Help videos are available on Magic map to guide you through.

Where information is not publicly available, or is only available to those with GIS access, we have provided a map at the end of this report.

Sites and Features within screening distance	Screening distance (km)	Further Information
Special Areas of Conservation (cSAC or SAC)	15	Joint Nature Conservation Committee and Magic map
North Downs Woodlands		
Peters Pit		

Special Protection Area (pSPA or SPA)	15	Joint Nature Conservation Committee and Magic map
Thames Estuary & Marshes		
Ramsar	15	Joint Nature Conservation Committee and Magic map
Thames Estuary & Marshes		
Medway Estuary & Marshes		
Local Wildlife Sites (LWS) (see map below)	2	Appropriate Local Record Centre (LRC)
Tilbury Power Station		
West Tilbury Hall		
West Tilbury Church		
Tilbury Marshes		
Low Street Pit		
Broom Hill		
Hob Hill & Sandy Lane Pit, Chadwell St Mary		
Flood Risk Zone 3	Within zone	Flood zone 3

The relevant Local Records Centre must be contacted for information on the features within local wildlife sites. A small administration charge may also be incurred for this service.

The following nature and heritage conservation sites, protected species and habitats, and other features have been checked for, where they are relevant for the permit type requested, but have not been found within screening distance of your site unless included in the list above.

Special Areas of Conservation (cSAC or SAC), Special Protection Area (pSPA or SPA), Marine Conservation Zone (MCZ), Ramsar, Sites of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserve (LNR), Local Wildlife Sites (LWS), Ancient Woodland, Flood Risk Zone.

Please note we have screened this application for features for which we have information. It is however your responsibility to comply with all environmental and

planning legislation, this information does not imply that no other checks or permissions will be required.

The nature and heritage screening we have conducted as part of this report is subject to change as it is based on data we hold at the time it is generated. We cannot guarantee there will be no changes to our screening data between the date of this report and the submission of the permit application, which could result in the return of an application or requesting further information.

Local Wildlife Sites

Environment Agency

Local Wildlife Sites

Local Wildlife Sites

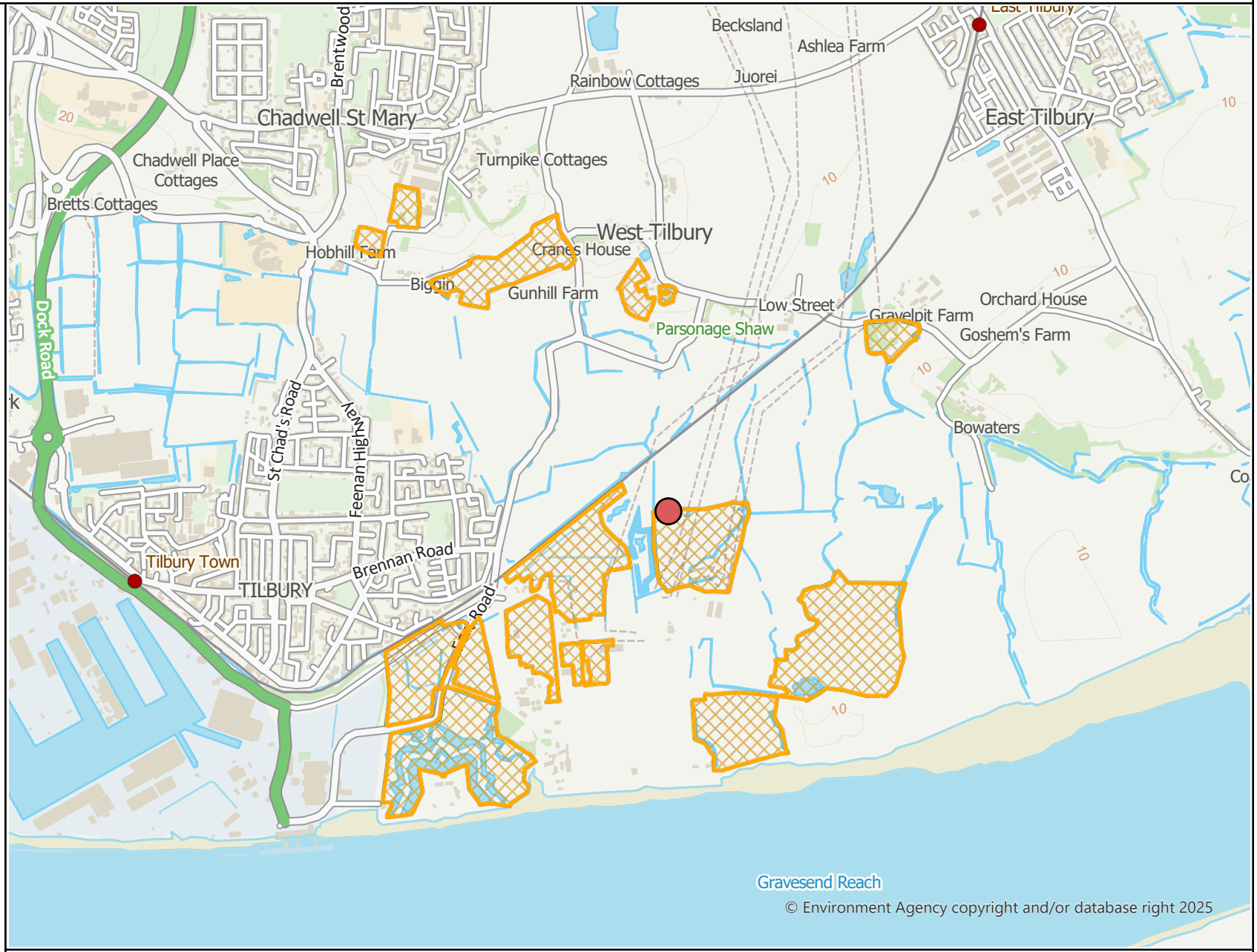
Markup

Override 1

Override 2

Override 1

Override 1



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0 0.2 0.4 0.6 0.8 1 km

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