

Data Center at Maxwells Farm West, Cheshunt

Environmental Permit Application - Environmental Risk Assessment

Reference: 1A-RP-EHS-0012

2.0 | 1 August 2023



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1. Introduction

1.1 Overview

This Report has been produced by Ove Arup & Partners Limited (Arup) on behalf of Global Infrastructure UK Ltd ('GIUK'), to accompany a bespoke application for an Environmental Permit (EP) for a Data Center on Land at Maxwells Farm West, Great Cambridge Road, Cheshunt, Broxbourne (hereafter referred to as 'the site').

A Reserved Matters application is seeking the approval for appearance, landscaping and layout of Phase 3 of outline planning permission ref. 07/21/0447/F, (which varied the original permission ref. 07/18/1181/O) for the construction of a Data Center and associated works.

Global Infrastructure UK Ltd seek to gain a bespoke environmental permit for the operation of standby generators required in the event of loss of power from the grid to power the Data Center. The EP for the site comprises the emergency back-up generation facility and the directly associated activities only, and therefore the EP is not for the whole of the Data Center.

The application is made by Global Infrastructure UK Ltd (GIUK) which is the legal entity that will be responsible for operating the generating installation.

The purpose of the Environmental Risk Assessment (ERA) is to identify any potential significant risks to the environment that may be associated with the proposed operations at the Data Center and demonstrate that the associated risks will be acceptable once the proposed mitigation and management are accounted for.

1.2 Assessment Approach

Risk assessments are an effective tool for identifying potentially hazardous or polluting consequences of activities and providing mitigation systems that reduce the risk of those activities causing pollution.

The assessment aim is to reduce the potential risk of emissions from the facility or the impact of the emissions on the environment, through specific mitigation measures identified for each specific risk.

The assessment has been completed in accordance with the Environment Agency's Technical Guidance 'Risk Assessments for your Environment Permit'¹ dated August 2022, using the following approach:

- Identify and consider risks for your site, and the sources of risks;
- Identify potential receptors which could be affected;
- Identify pathways from the sources of risks to the receptors;
- State and risk control measures; and
- Assess risks relevant to the activities and whether they can be screened out or need further detailed assessment.

1.3 Identifying Risks

The risk assessment approach is based on the potential frequency or probability of the event occurring and the resulting consequence or potential effect of the event on the environment.

These potential risks however are considered following the implementation of effective controls or mitigation to limit the potential for emissions and/or impacts. Once all of these factors are considered, the overall risk is the residual risk of any impact from the emission, following the mitigation.

As a result, assessment of the following aspects is required, where applicable:

¹ <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

- Risks from emissions to air;
- Risks to surface water from hazardous pollutants;
- Risks to surface water from sanitary and other pollutants;
- Risks to groundwater;
- Noise and vibration;
- Odour;
- Accidents and fugitive emissions;
- Global Warming Impact; and
- Installations must also decide how to treat, recycle or dispose of waste.

2. The Site

2.1 Overview

The site is situated Maxwells Farm West, Cheshunt, Waltham Cross, Broxbourne, EN8 8XH and is Centred at approximate National Grid Reference TL 35013 01461. The site is located between the villages of Cheshunt which is approximately 2km northeast of the site and Goff's Oak which is approximately 5km northwest. The site is screened by mature trees and hedgerows along its northern boundary which abuts the Maxwells West industrial estate / business park to the immediate northeast. Beyond this, the area is predominantly residential with playing fields forming part of the Goffs Churchgate Secondary School.

The western boundary of the site is delineated by timber fencing parallel to the New River. St Mary's School and Sixth Form is located further west of this. The eastern boundary of the site contains minimal screening and is delineated by the A10 Great Cambridge Road carriageway which provides travel northwards towards Cheshunt and Broxbourne and southwards towards the M25 motorway.

The southern flyover known as the 'Paul Cully Bridge', which provides a pedestrian / cycle route eastward over the A10 towards Cheshunt Football Club and Cedars Park. The south of the site is bound by Theobalds Lane and the B198 / Lieutenant Ellis Way.

The site itself comprises an agricultural field without any former historical development. Arup conducted an assessment of all previous work carried out by others together with an Arup led 2020 ground investigation. The following are the previous works completed at the site which are appended to the EP application Site Condition Report 1A-RP-EHS-0011:

- RPS Maxwells Farm West Broxbourne, Hertfordshire Phase 1 Preliminary Risk Assessment for STX - A10 Ltd (Ref: HLEI61767/001R), 2018.
- WSP (Endeavour), Saracen, Cheshunt, UK Ground Investigation Report (Phase I GI works) (Ref: 70049798), 2019.
- WYG, Project WXT Factual Ground Investigation Report (Phase II GI works) (Ref: A117846 FGIR V5), 2020.

Figure 1: Site Location Plan



2.2 Geology, Hydrogeology and Hydrology

2.2.1 Geology

According to the British Geological Survey (BGS) Geology map of Britain the superficial deposits underlying is predominantly the Enfield Silt Member comprising clay and silt. The superficial geology underlying small are of the southeast corner of the site is Kempton Park gravel member comprising sand and gravel. BGS identified London Clay Formation and the bedrock geology beneath the site which comprises clay, silt and sand.

Arup have reviewed previous ground investigations reports (see Site Condition Report 1A-RP-EHS-001 for more details). A table showing the summary of the stratigraphy encountered during previous ground investigations is presented in Table 1 below:

Table 1: Summary of geology

Stratum	Typical top of stratum	Typical Thickness	Typical Description / Formation
Topsoil/Made Ground* ¹	At surface	0.3 to 0.5m	Soft dark brown slightly sandy gravelly clay/silt with rootlets and occasional brick fragments.
Enfield Silt Member* ²	0.2 – 0.4m bgl (where present)	3.5 – 4.5m in the northwest, thinning to around 0.3 – 0.4m (none in some holes) in the southeast.	Firm orangish brown slightly gravelly silt with occasional rootlets. Presence of desiccated crust in some areas. Occasional soft descriptions.
Kempton Park Gravel Member	3.0 – 4.5m bgl in the north, rising towards 0.4 – 0.9m bgl in the south	3.0 – 3.7m in the north, thickening to around 8.3 – 8.8m in the south	Medium dense to dense orangish brown clayey sandy gravel with rare flint cobbles.
London Clay Formation* ³	7.0 – 8.5m bgl in the north, deepening towards 8.5 – 9.5m bgl in the south	12.0 – 12.5m in the north, thinning to around 10.3 – 10.7m in the south	Firm to stiff dark grey silty and slightly sandy clay underlain by stiff to very stiff grey and green glauconitic silty slightly sandy clay.
Lambeth Group (Palaeocene)	18.4 – 20.0m bgl across the site	up to 16.0m proven (base not proven)	Stiff grey, mottled brown sandy silty clay; and Greenish grey dense to very dense silty sand
<p>Note:</p> <p>*1 typically circa 0.20 to 0.30m thick of Topsoil overlying the Made Ground.</p> <p>*2 interpreted to have been encountered in BH221 and BH222 although logs suggest otherwise, refer to Section 6.3 below for further details; and,</p> <p>*3 including circa 2.7m, on average, of Harwich Formation at base.</p>			

2.2.2 Hydrogeology

According to the DEFRA's Multi-Agency Geographic Information for the Countryside (MAGIC)² Application the Aquifer designations (superficial and bedrock) for the majority of the site are considered to be unproductive strata. The south east corner of the site is situated on a Secondary A Superficial Drift Aquifer. In Arup's previous GI works, groundwater was struck within the London Clay Formation and the underlying Lambeth Group typically between 10m AOD and 17m AOD.

² DEFRA, Multi-Agency Geographic Information for the Countryside. Available at <https://magic.defra.gov.uk/magicmap.aspx>

2.2.3 Hydrology

According to the EA Flood Map for Planning³ the site is located within a Flood Zone 3 with the annual probability of flooding classified as greater than 1 in 100 (1%) for fluvial and tidal flooding.

The nearest surface water features include New River which is located on the western boundary of the site. There is also a tributary of New River located on the southern boundary of the site.

2.3 Ecology and Cultural Heritage

Following the pre-application screening information, the EA provided a Nature and Heritage Conservation Screening Report (EPR/NP3345QX/A001) which sets out the conservation sites which should be considered in the EP Application.

2.3.1 Ecology

The results from the Nature and Heritage Conservation Screen identified two Special Areas of Conservation (cSAC or SAC) (Epping Forest and Wormley-Hoddesdonpark Woods) within 10km of the site boundary. Lee Valley which is identified as a Special Protection Area and a RAMSAR site was identified to be within 10km of the site boundary.

MAGIC map did not identify any ecological statutory designated sites. Within 2km of the site boundary one Site of Special Scientific Interest (SSSI) was identified (Turnford & Cheshunt Pits). Within 2km of the site a number of Local Wildlife Sites were identified:

- Albury Fields
- Bonney Grove Wood by B198
- Broom hills
- Burygreen Plantation
- Meadow N. of Barrow Lane
- Meadow S. of Rosedale Sports
- New River
- Old Rush Field, Broadfield Farm
- Temple Bar Meadow
- Thistly Marsh and Area W. of Cheshunt Marsh

2.3.2 Cultural Heritage

The Theobalds Palace Scheduled Monument is located within 250m from the southeast site boundary. A second Scheduled Monument (Half Moat Manor House, moated site and associated leat, Cheshunt) is located approximately 750m northwest of the site boundary.

2.4 Air Quality

Two Air Quality management Areas (AQMAs) are located within the vicinity of the application site. AQMA 6 Great Cambridge Road is located within 100m east of the site boundary. The pollutant declared within this AQMA is nitrogen dioxide NO₂

The Enfield AQMA is located approximately 1km south of the site boundary and the pollutants declared are PM₁₀ and nitrogen dioxide NO₂.

³ Gov.UK Flood Map for Planning. Available at [Flood map for planning - GOV.UK \(flood-map-for-planning.service.gov.uk\)](https://www.gov.uk/flood-map-for-planning)

2.5 Sensitive Receptors

A summary of the sensitive receptors with the potential to be affected by the Data Center are set out in Table 2 which are displayed in Figure 2: Human Receptor Plan and Figure 3: Ecological Receptor Plan.

Table 2: Sensitive Receptors

ID	Receptor	National Grid Reference		Type
		X	Y	
Human Receptors within 2km				
HR1	29 Bushbarns	534162	202720	Residential
HR2	Goffs Academy	534422	202671	School
HR3	3 Goffs Lane	534821	202677	Residential
HR4	152 Churchgate	534922	202614	Residential
HR5	Dewhurst St Mary CE Primary School	534989	202539	School
HR6	5A Churchgate	534950	202219	Residential
HR7	Goffs Churchgate Academy	535094	202104	School
HR8	Bright Stars Nursery	535308	202249	School
HR9	106 Great Cambridge Road	535292	202367	Residential
HR10	61 Great Cambridge Road	535357	202235	Residential
HR11	119 College Road	535525	202257	Residential
HR12	15 Farm Close	535316	202007	Residential
HR13	Albury Farm	535287	201681	Residential
HR14	Theobalds Lane 1	535196	201187	Residential
HR15	Travelodge Cheshunt	535246	200678	Residential
HR16	58 Leven Drive	535775	200601	Residential
HR17	Winston Churchill Way	535967	200770	Residential
HR18	St Mary's High School & Sixth Form 1	534473	201464	School
HR19	Broadfield Farm	533885	201869	Residential
HR20	51 Grovedale Close	533962	202274	Residential
HR21	Tudor Close 1	534814	201708	Residential
HR22	St Mary's High School & Sixth Form 2	534593	201553	School
HR23	68 Friends Avenue	535641	201515	Residential
HR24	58 Montayne Road	535635	201357	Residential
HR25	73 Theobalds Lane	535594	201237	Residential
HR26	72 Hillside Crescent	535615	201836	Residential
HR27	Theobalds Lane 2	535292	201243	Residential
HR28	Hawthorne Close	534882	201856	Residential
HR29	New River Court	534944	201984	Residential
HR30	24 Beadman Road	535169	201989	Residential
HR31	8 Tudor Close	534841	201791	Residential
HR32	12 Ermine Close	534759	201702	Residential
HR33	10 Ermine Close	534725	201693	Residential

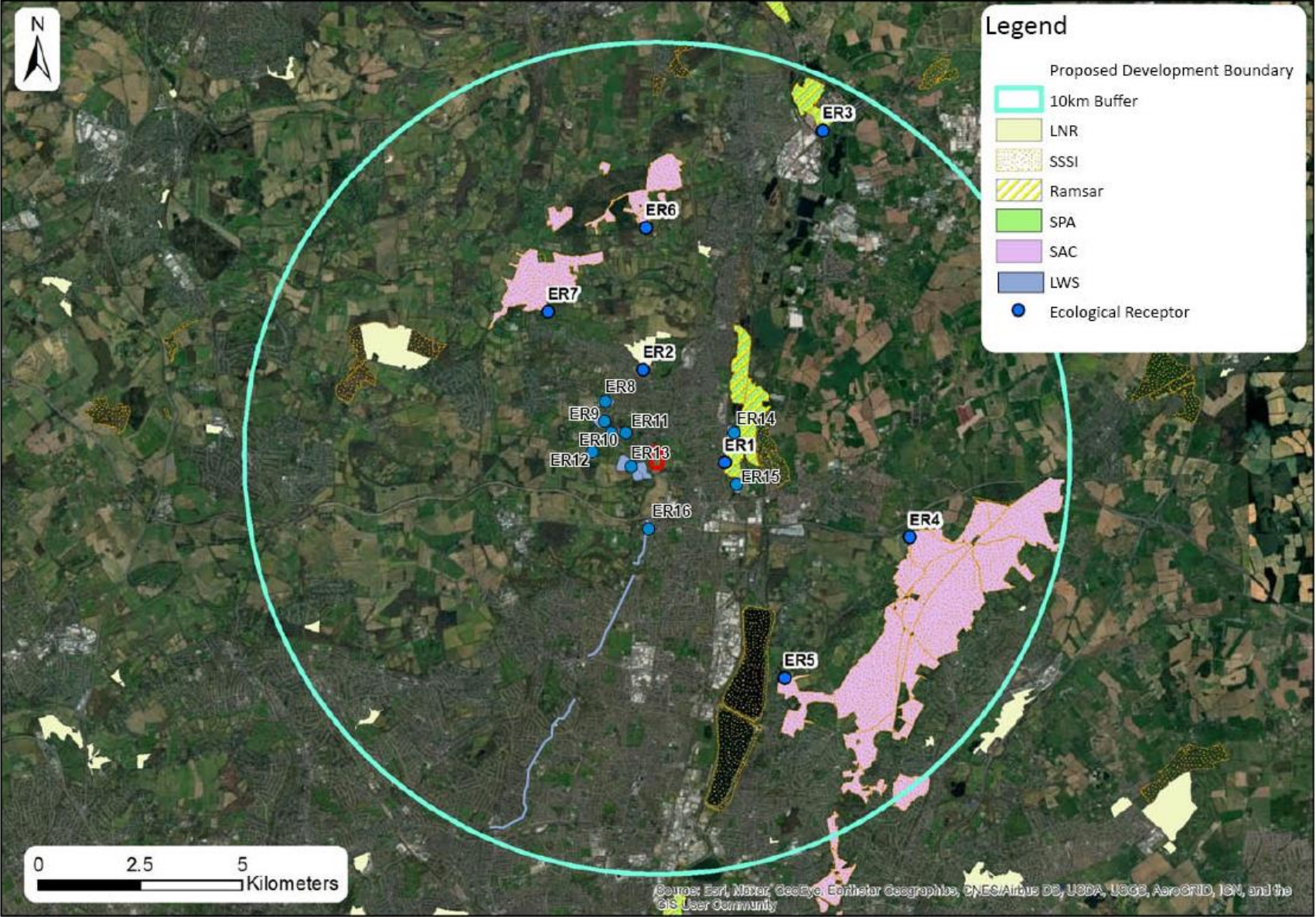
ID	Receptor	National Grid Reference		Type
		X	Y	
HR34	17 Tudor Close	534830	201759	Residential
HR35	Tudor Close 2	534816	201736	Residential
HR36	School playing field receptor 1	534777	201643	School
HR37	School playing field receptor 2	534776	201607	School
HR38	School playing field receptor 3	534773	201563	School
HR39	School playing field receptor 4	534763	201496	School
HR40	School playing field receptor 5	534768	201451	School
HR41	School playing field receptor 6	534773	201408	School
HR42	School playing field receptor 7	534900	201794	School
HR43	School playing field receptor 8	534950	201783	School
HR44	School playing field receptor 9	535009	201768	School
HR45	School playing field receptor 10	535070	201756	School
AQMA 1	AQMA 6 Great Cambridge Road (A10) 1	535226	201678	AQMA
AQMA 2	AQMA 6 Great Cambridge Road (A10) 2	535220	201525	AQMA
AQMA 3	AQMA 6 Great Cambridge Road (A10) 3	535215	201387	AQMA
Ecological Receptors within 10km				
ER1	Lee Valley SPA, SSSI, RAMSAR & Turnford & Cheshunt Pits SSSI	536612	201393	SPA, SSSI
ER2	Cheshunt Park LNR	534607	203679	LNR
ER3	Lee Valley SPA, SSSI	539016	209557	SPA, SSSI
ER4	Epping Forest SAC, SSSI	541137	199555	SAC, SSSI
ER5	Epping Forest SAC	538079	196106	SAC
ER6	Wormley-Hoddesdonpark Woods SAC, SSSI	534667	207161	SAC, SSSI
ER7	Wormley-Hoddesdonpark Woods SAC	532269	205102	SAC
ER8	Local Wildlife Site 1	533671	202933	LWS
ER9	Local Wildlife Site 2	533556	202459	LWS
ER10	Local Wildlife Site 3	533816	202222	LWS
ER11	Local Wildlife Site 4	534104	202302	LWS
ER12	Local Wildlife Site 5	533343	201697	LWS
ER13	Local Wildlife Site 6	534370	201312	LWS
ER14	Local Wildlife Site 7	536761	201956	LWS
ER15	Local Wildlife Site 8	536888	201018	LWS
ER16	Local Wildlife Site 9	534692	199994	LWS

Figure 2: Human Receptor Plan



Data Center at Maxwells Farm West, Cheshunt

Figure 3: Ecological Receptor Plan



3. Environmental Risks Assessment

3.1 Overview

The following tables in this section assess the potential risk to receptors from the following hazards, taking into account the measures proposed to reduce those risks.

The method relies on a scoring system that is based on the frequency or probability of the event occurring and the resulting consequence or potential effect of the event on the environment.

Controls or mitigation are also identified in the assessment, which consist of measures or actions that can be carried out to limit the potential for impacts.

The probability of exposure is the likelihood of the receptors being exposed to the hazard, and is defined as low, medium or high. These terms are qualified as follows:

- Low: exposure is unlikely, barriers in place to mitigate against exposure;
- Medium: exposure is fairly probable, barriers to exposure less controllable; and
- High: exposure is probable, direct exposure likely with few barriers.

The aim is it to reduce the risk of fugitive emissions from the facility or the impact of the emissions on the environment, through specific mitigation measures identified for each specific risk.

Control and mitigation measures have been identified for all risks identified in the assessment, based on the Best Available Techniques (BAT) measures set out in the guidelines and on operational experience. The measures specific to each risk are described in the assessment. The mitigation measures will be incorporated into the site management processes and site operatives will be made aware of these measures during training.

More general mitigation measures to avoid emissions, in line with indicative BAT standards, are also set out in the relevant sections of the Summary Technical Report (1A-RP-EHS-0010).

Figure 4: Risk Assessment Matrix

Consequence	Exposure probability		
	Low	Medium	High
Low	Low Risk	Low Risk	Medium Risk
Medium	Low Risk	Medium Risk	High Risk
High	Medium Risk	High Risk	High Risk

3.2 Primary Risks

The primary risks to the environment as a result of the Installation are considered to be from emissions to air as a result of the generator use, together with the potential for leaks from associated fuel tanks and delivery systems to water and land. These items are set out in the tables below in Section 3.5.

Other potential environmental Risks such as Noise and Vibration, Odour, Accidents and fugitive emissions, Global Warming Impact and Climate Change.

3.3 Emissions to Water

There are no point source emissions to and from the generators or associated fuel storage.

3.4 Waste Generation

There will be no industrial waste generated on-site and therefore it is not discussed any further in this risk assessment.

Minimal solid waste generation is anticipated on site. In general staff will only be required on site during testing and routine inspections. All staff will be trained in waste management procedures by their supervisors.

All wastes produced during maintenance tasks will be immediately removed by vendors (specialist contractors) from the installation following completion of the relevant maintenance task.

3.5 Risk Assessment Tables

The following section contains the assessment tables following the EA’s risk assessment approach for potential factors which could cause environmental impact.

Table 3: Emissions to air

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Emissions from generator stacks during routine maintenance/testing; emergency outage	Receptors listed in Table 2	Air	<p>A detailed air quality assessment has been undertaken and is provided as part of the Application (1A-RP-EHS-0013). The assessment looks at both routine testing and an emergency scenario. For testing scenario 1 (annual test) no significant effects are predicted for human and ecological receptors for all pollutants.</p> <p>No significant effects are predicted for human and ecological receptor for scenario 2 (3 yearly test) for all pollutants.</p> <p>For testing scenario 3 (6 yearly test) no significant effects were identified for human receptors from all pollutants. The modelling did identify an exceedance of the air quality standard of 200µg/m³ for the NO₂ hourly mean concentration. As such the exceedance was further assessed using statistical analysis (hypergeometric distribution). This assumes 48 hours (3 yearly test) and 96 hours (6 yearly test) of operation, to assess the probability of exceeding the NO₂ hourly mean objective. This showed that an exceedance would be highly unlikely (<1% probability) for the 3 yearly test and unlikely (<5% probability) for the 6 yearly test. These impacts are therefore considered as insignificant.</p> <p>For testing scenario 3, potential exceedances of the NO_x daily mean critical level are predicted and this is considered to be potentially significant on ecological receptors. However, this scenario would only occur once every 6 years so it is not considered to be significant and therefore no additional mitigation measures are considered necessary.</p> <p>An emergency scenario (scenario 4), assuming all generators would be operating continuously for 30 hours was also assessed, with predicted exceedances of the NO₂ hourly mean objective, and NO_x daily mean critical level. These are considered to be potentially significant. Statistical analysis using the hypergeometric distribution was used to assess the probability of exceeding the NO₂ hourly mean objective and this indicated that an exceedance would be highly unlikely (<1% probability). The risk of this scenario occurring is also very unlikely. This is based on the</p>	Low due to chosen generator with SCR emissions abatement, stack height and limited operational hours and regular maintenance.	Low adverse impact on human health and ecological receptors in surrounding area.	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
			<p>sites inbuilt electrical resilience as the site will draw on power from a 132/22KV substance with two separate circuits from two separate feeders from the Brimsdown 400/132kV upstream substation; therefore, in the event of a loss of supply from a single source, 50% of the development is still on the alternative source, while the remaining 50% is on standby emergency generators temporarily until the site's own distribution system can be rearranged to resume supply from the available source.</p> <p>A stack height assessment was undertaken as part of the design process. The generators located closest to the sensitive receptors (generators A-a to A-h) will have a stack height of 13m, all other generators will have a stack height of 15m. The location of the generators is shown on Drawing Number X1A-C-1400-DCH-DR-EP-001 Site Layout and Emissions Points. The generators have been assessed and are considered to be in-line BAT (see 1A-RP-EHS-0010 document).</p> <p>The emergency scenario was also compared against the US Acute Exposure Guideline Levels (AEGLs) for NO2. Exceedances of the lower AEGL 1 limit were predicted under the emergency scenario at a small number of modelled receptors immediately adjacent to the western boundary. The AEGLs guidance states that effects of exposure to AEGL 1 are "not disabling and are transient and reversible upon cessation of exposure". The predicted concentrations at all receptors however were well below the AEGL 2 and 3 limits and this is therefore not considered to be significant.</p> <p>Plant will be maintained in line with manufacturer's recommendations. This includes checking for deterioration of plant conditions. Repairs will be undertaken as appropriate to rectify any identified defects.</p> <p>Where an emergency scenario occurs, the local authority and EA will be informed immediately.</p>			
Visible generator emissions during start-up	Receptors listed in Table 2	Air	<p>Plant will be maintained in line with manufacturer's recommendations. This includes checking for deterioration of plant conditions. Repairs will be undertaken as appropriate to rectify any identified defects.</p> <p>The operator will implement visual checks for visible emissions from the generators during start up.</p>	Low due to limited operational hours and regular maintenance.	Low adverse impact on human health and ecological receptors in surrounding area.	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
			<p>Visible plumes are not anticipated to occur for the majority of the time the generators are in use due to the diesel being combusted and resulting high exhaust gas temperatures. The engines will not be in operation the majority of the year when there would be zero visible plume during this time.</p> <p>Any visible plumes observed during normal operation will be reported and investigated.</p>			

Table 4: Fugitive emissions

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
To air						
Vapour release through leakages from fuel tanks and pipes during fuel delivery	Receptors listed in Table 2	Air	<p>All tanks, pipes and valves are designed to appropriate industry standards and flanged connections between pipes are kept to a minimum by the proximity of the tanker fill point which are located within designated laybys with separate drainage.</p> <p>All transport fuel lines will be double skinned and fitted with leak detection. All fuel tanks will be integrally bunded to a capacity of 110% of the volume of the primary tank and will be fitted with leak detection.</p> <p>All tanks, silos, pipes and valves have a preventative maintenance programme to ensure ongoing integrity and effectiveness.</p> <p>Fuel tank filling will be carried out by trained fuel tanker drivers. This removes any significant risk of vapour release and spillages during deliveries.</p> <p>The diesel tanks will be fitted with vents which have the potential for fumes to escape, however this is unlikely.</p> <p>No other oils will only be stored on site. Lubricating oil is present within the generators but this will be within a closed loop system with no emissions.</p>	Low due to design and on-site management processes.	Low adverse impact on human health and ecological receptors in surrounding area.	Low
Dust generating activities or dusty materials	Off-site receptors	Air	There are no significant dust generating activities or dusty materials used or stored within the installation.	Low due to design and on-site	Low adverse impact on human health and	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
	identified in Table 2.		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.	management processes.	ecological receptors in surrounding area.	
To water and land						
Spillage of waste, fuels or other materials	Water / Land	Surface water / ground water	<p>All fuel storage tanks are enclosed and integrally bunded to 110% to contain any spills / tank failure and will have internal means of leak detection.</p> <p>All tanks, pipes and valves are designed to appropriate industry standards.</p> <p>All transport fuel lines will be double piped and fitted with leak detection. All fuel tanks will be integrally bunded to a capacity of 110% of the volume of the primary tank and will be fitted with leak detection.</p> <p>The operator will carry out regular checks for signs of leakage.</p> <p>Both refuelling laybys have a site drainage system which passes through oil interceptors before connecting the main drainage system for the wider site. The oil interceptors will have a capacity of 10,000 litres which will be able to retain the full loss of the contents of one compartment of a road tanker.</p> <p>All tanks, pipes and valves have a preventative maintenance programme to ensure ongoing integrity and effectiveness.</p> <p>High standards of housekeeping will be maintained across the site.</p> <p>Fuel tank filling will be carried out by trained fuel tanker drivers. This removes any significant risk of vapour release and spillages during deliveries.</p> <p>Trained personnel will ensure that any spills are cleaned as soon as practicably with the correct safety measures being taken.</p> <p>In the event of a spill within the refuelling laybys spill kits will be available to deal with any spills/leaks.</p> <p>Relevant spill response equipment will be situated at various locations around the site designed for the particular hazard characteristics of the materials (fuel) present. All spillages will be logged, investigated and corrective action will be taken.</p>	Low due to design and on-site management processes.	Medium adverse impact on ground / water courses	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
			<p>Fuel polishing will take place within a mobile internally banded unit which will be connected to the generator fill points using a hose fitted with hi-flow dry release coupling. All pipeline connections will be placed over drip trays with rain cover and will be fitted with leak detection. The hose will also be fitted with safety breakaway coupling which will seal the hose in the unlikely event of damage impact or drive off.</p> <p>All fuel polishing will be undertaken by approved third party contractors.</p>			
Leaks from tanks, containers or pipework	Water / Land	Surface water /groundwater	<p>All fuel storage tanks are enclosed and internally banded to 110% to contain any spills / tank failure and will have internal means of leak detection.</p> <p>All tanks, pipes and valves are designed to appropriate industry standards and flanged connections between pipes are kept to a minimum by the proximity of the tanker fill point. The underground fuel pipe between the top-up tank to the banded generator area is double piped with leak detection and alarm.</p> <p>Fuel tank filling will be carried out by trained fuel tanker drivers. This removes any significant risk of spillages and leaks.</p> <p>The operator will carry out daily checks for signs of leakage.</p> <p>The risk of fuel escaping from the storage of oil is therefore considered to be minimal. In the event fuel does escape containment a spill procedure will be implemented</p> <p>The operation of the mobile fuel polishing unit will be undertaken by trained personnel.</p> <p>Relevant spill response equipment will be situated at various locations around the site designed for the particular hazard characteristics of the materials (fuel) present. All spillages will be logged, investigated and corrective action will be taken.</p>	Low due to design and on-site management processes	Medium adverse impact on groundwater / water courses	Low

Table 5: Nuisances

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
To water and land						
Mud/litter carried onto highway	Water / Land	Public	All internal roads, storage and processing areas will be hard-surfaced with concrete or tarmac and swept when required.	Low due to design and on-site management processes	Low adverse impact on ground and water courses.	Low
Pest, vermin and scavengers	Land	Staff and Public	Waste that is likely to attract pests, vermin and scavengers will be transferred to the main waste handling area. The facility will contract a local specialised company to implement a pest control management plan. This will include vermin, flies and birds.	Low due to design and on-site management processes	Low adverse impact on ground	Low
Waste generation	Land	Staff and Public	Minimal solid waste generation is anticipated on site. In general staff will only be required on site during testing and routine inspections. All staff will be trained in waste management procedures by their supervisors. All wastes produced during maintenance tasks will be immediately removed by vendors (specialist contractors) from the installation following completion of the relevant maintenance task.	Low due to design and on-site management processes	Low adverse impact on ground	Low

Table 6: Noise

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Noise from operation of generators during routine maintenance / testing; emergency power outage	On-site staff. Receptors listed in Table 1	Air	The noise assessment found that for ‘normal’ and ‘generator testing’ operational scenarios, the results show that predicted plant noise would not exceed the noise limits during the day and night-time periods at the nearest sensitive receptors. Routine testing and maintenance would also only occur during the day-time hours. Plant will be maintained in line with manufacturer's recommendations. This includes checking for deterioration of plant conditions (e.g. bearings becoming worn). Repairs will be undertaken as appropriate to rectify any identified defects.	Low due to design mitigation, limited operational hours and regular maintenance.	Statutory nuisance - low	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Noise from vehicles delivering fuel	On-site staff. Receptors listed in Table 1	Air	<p>Heavy Goods Vehicle reversing will be minimised where possible. Fuel deliveries will be in daytime working hours to minimize potential disturbances out of hours. Engines will be switched off when not in use.</p> <p>Personnel responsible for the generator installation will be part of the staffing of the wider Data storage installation site therefore there will be no additional staff vehicle movements over and above those employed within the adjacent Data Center.</p> <p>Additional vehicle movements will be associated with planned maintenance and deliveries which will take place during normal working hours.</p> <p>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 if necessary.</p>	Low due to on-site management processes.	Statutory Nuisance - low	Low
Vibration from the installation	On-site staff. Receptors listed in Table 1	Ground	<p>Significant vibration effects are not anticipated for 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.</p>	Low due to design mitigation, limited operational hours and regular maintenance	Statutory Nuisance - low	Low

Table 7: Odour

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Odour from the loading and storage of fuel	On-site staff. Receptors listed in Table 1	Air	<p>Fuel tank filling will be carried out by trained fuel tanker drivers. Staff training will include raising employee awareness with respect to normal plant operational odour levels and actions to be taken to rectify any faults.</p>	Low due to on-site management processes.	Statutory Nuisance - low	Low
Odour release from generator	On-site staff. Receptors listed in Table 1	Air	<p>Regular maintenance of the generators will reduce the level of emissions from the combustion process.</p>	Low due to on-site management processes.	Statutory Nuisance - low	Low

Table 8: Accidental Releases

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Fuel delivery						
Major vehicle accident – leading to significant loss of fuel	On-site staff. Receptors listed in Table 1	Air Ground Water	<p>Traffic entering site will be managed by the reception.</p> <p>The internal road layout is designed to accommodate the vehicles that will visit the facility. Junction radii, carriageway widths and layouts are designed to minimise the risk of vehicle conflicts.</p> <p>The use of mobile phones will be prohibited during driving.</p> <p>Drainage will be regularly maintained to keep standing water off roads and site roads will be cleaned regularly to remove any scum, oils etc.</p>	Low due to on-site management processes	Medium adverse impact on air / ground / water courses	Low
Fuel tanks overfill	On-site staff. Receptors listed in Table 1	Groundwater	<p>All tanks, pipes and valves are designed to appropriate industry standards and flanged connections between pipes are kept to a minimum by the proximity of the tanker fill point.</p> <p>All transport fuel lines will be double piped and fitted with leak detection and alarm. All fuel tanks will be integrally bunded to a capacity of 110% of the volume of the primary tank and will be fitted with leak detection and alarm.</p> <p>Fuel tank filling will be carried out by trained fuel tanker drivers. This removes any significant risk of spillages and leaks.</p> <p>The operator will carry out regular checks for signs of leakage.</p> <p>Relevant spill response equipment will be situated at various locations around the site designed for the particular hazard characteristics of the materials (fuel) present. All spillages will be logged, investigated and corrective action will be taken.</p>	Low due to on-site management processes	Medium adverse impact on air / ground / water courses	Low
Fuel polishing						
Accidental drive off	On-site staff. Receptors listed in Table 1	Groundwater	<p>Fuel polishing will take place within a mobile internally bunded unit which will be connected to the generator fill points using a hose fitted with hi-flow dry release coupling. All pipeline connections will be placed over drip trays with rain cover and will be fitted with leak detection. The hose will also be fitted with safety breakaway coupling which will seal the hose in the unlikely event of damage impact or drive off.</p>	Low due to procedures in place to contain to ensure the fuel is contained	Medium adverse ground / water courses	Low

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
			All fuel polishing will be undertaken by approved third party contractors.			
General site issues						
Fire	On-site human and ecological receptors	Air Land Water	<p>The site will benefit from a fire alarm system and associated fire suppression systems inside the Data Center building.</p> <p>External fire hydrants will be located around the perimeter of the electrical yard and mechanical yard containing the generators which will be supplied by onsite water storage tanks. Portable fire extinguishers will be placed around the site in line with EN 3 and BS 5306-8:2012.</p> <p>The generator areas are proposed to be fitted with automatic detection and alarms.</p> <p>There will be a minimum of 2m separation distance between generators.</p>	Low due to on-site management processes	Medium adverse impact on air / ground / water courses	Low
Security and vandalism	On-site human and ecological receptors	Air Land Water	<p>The site will be secured by a perimeter fence and lockable gates.</p> <p>Access will only be available via a secure entrance requiring reporting to the site reception.</p> <p>CCTV equipment will be positioned around the site including the external and internal fence perimeters. In addition, thermal camera will be mounted to a 10m concrete pole that will be able to detect and determine the location of an intruder. The system will control a PTZ camera to follow the intruder and zooming for identification.</p>	Low	Low adverse impact on the environment	low
Flooding	On-site human and ecological receptors	Land Water	Surface water drainage design includes consideration of potential flooding events. The system has been designed for no flooding during the 1 in 100 year storm (see Appendix B of the 1A-RP-EHS-0010).	Low	N/A	Low

Table 9: Global warming potential

Hazard / Process	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Overall risk
Generation of CO ₂ e emissions	National and global climate change	air	<p>Operation of the generators will involve the combustion of diesel fuel to generate electricity for use at the site in the event of an emergency power outage.</p> <p>The generators will be subject to planned maintenance and testing will result in the generation of CO₂e emissions of 866 tonnes per year (t/yr) for the Scenario 1 annual test.</p> <p>Every third year and six year this will temporarily increase to 1515 t/yr and 2164 t/yr, respectively due to increased testing runs in these periods. All years in between will be expected to result in 866 t/yr.</p> <p>This figure is based on the operational regime and generator fuel use set out in the Summary Technical Report, using the gas oil (diesel) emission factors contained within the 2022 UK Government GHG Conversion Factors for Company Reporting, together with a CO₂ factor of 0.25 from H1 Annex F.</p>	Low	Low adverse impact on the environment	Low

Table 10: Climate change risk assessment

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
1) Summer daily maximum temperature may be around 7°C	An increase in cooling water temperature may cause a drop in efficiency, higher temperature discharge or decreased operation	1	3	3	A temperature limit will be set. Return fuel oil shall not exceed 50°C.	n/a	n/a	n/a
	Potential for greater use of back-up	1	2	2	The National Grid recognise that with increasing temperatures there is also an	n/a	n/a	n/a

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
	generators on-site (with increased emissions to air and diesel use) through more frequent				increase in potential for impact on electricity supply through damage to assets. The Air Quality Assessment (1A-RP-EHS-0013) states that an emergency scenario there is a risk of significant effect. However, the risk of this scenario occurring is also very unlikely based on electrical grid reliability Data for the area and inbuilt design resilience. In addition, the site has built in redundancy so that the emergency generators are only used as a last resort. The site will have a dual redundant circuit providing security of supply in the event of a fault or loss of supply from one source, the other circuit is capable of supplying full load to the site (see 1A-RP-EHS-0010 Section 3.4).			
2) Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present resulting in potential impacts on the site.	No negative impact expected	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3) Daily rainfall intensity could increase by up to 20% on today's values resulting in flooding on the site.	Flash flooding on site Surface water run-off systems need to be cleared and account for increased flows to	1	3	3	See section 4.3 of the drainage report (Appendix B of 1A-RP-EHS-0010 Rev 1) which is based on a flood risk assessment. Section 4.3 outlines the allowances for climate change. The system has been designed for no flooding during the 1 in 100 year storm.	n/a	n/a	n/a

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
	prevent them being overwhelmed Potential for increased site surface water flooding				The drainage system for the permitted area will feed into the drainage system serving the wider site. The wider site drainage flows into two attenuation pond which have a combined capacity of 5,860m ³ with additional storage provided in the pipe networks. No further mitigation will therefore be implemented.			
4) Average winter rainfall may increase by over 40% on today's averages resulting in potential increased risk of site surface flooding and could impact site wide drainage capacity.	As above	1	3	3	See section 4.3 of the drainage report (Appendix B of 1A-RP-EHS-0010 Rev 1) which is based on a flood risk assessment. Section 4.3 outlines the allowances for climate change. The system has been designed for no flooding during the 1 in 100 year storm. The drainage system for the permitted area will feed into the drainage system serving the wider site. The wider site drainage flows into two attenuation pond which have a combined capacity of 5,860m ³ with additional storage provided in the pipe networks. No further mitigation will therefore be implemented.	n/a	n/a	n/a
5) Sea level rise which could be as much as 0.6m higher compared to today's level.	Fluvial flooding on the site	1	1	1	The Flood Risk Assessment (FRA) completed for the site determined the risk of fluvial and tidal flooding is low and therefore no mitigation is necessary.	n/a	n/a	n/a
6) Drier summers which could see potentially up to 40% less rain than now.	No negative impact is expected. Water use is not integral to the back-up generator use. On site water tanks will be available on site for the use of the	1	1	1	n/a	n/a	n/a	n/a

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
	fire hydrants in the event of a fire.							
7) Flows in river could be 50% more than now as its peak and 80% less than now at its lowest	The site may be subject to cooling water restrictions of temperature and volume.	1	1	1	n/a	n/a	n/a	n/a
	Surface flooding	1	3	3	See section 4.3 of the drainage report (Appendix B of 1A-RP-EHS-0010 Rev 1) which is based on a flood risk assessment. Section 4.3 outlines the allowances for climate change. The system has been designed for no flooding during the 1 in 100 year storm. The drainage system for the permitted area will feed into the drainage system serving the wider site. The wider site drainage flows into two attenuation pond which have a combined capacity of 5,860m ³ with additional storage provided in the pipe networks. No further mitigation will therefore be implemented.	n/a	n/a	n/a
	Potential for increased impact on the river due to an increased temperature and the impact of the emission on lower flows.	1	1	1	n/a	n/a	n/a	n/a

Appendix A

Nature and Heritage Conservation

Nature and Heritage Conservation

Screening Report: Bespoke Installation

Reference	EPR/NP3345QX/A001
NGR	TL 35013 01462
Buffer (m)	120
Date report produced	10/03/2023
Number of maps enclosed	5

The nature conservation sites identified in the table below must be considered in your application.

Nature and heritage conservation sites	Screening distance (km)	Further information
Special Areas of Conservation (cSAC or SAC)	10	Joint Nature Conservation Committee
Epping Forest		
Wormley-Hoddesdonpark Woods		
Special Protection Area (pSPA or SPA)	10	Joint Nature Conservation Committee
Lee Valley		
Ramsar	10	Joint Nature Conservation Committee
Lee Valley		
Sites of Special Scientific Interest (SSSI)	2	Natural England
Turnford & Cheshunt Pits		
Local Wildlife Sites (LWS)	2	Appropriate Local Record Centre (LRC)
Albury Fields		
Bonney Grove Wood by B198		

Broom Hills

Burygreen Plantation

Meadow N. of Barrow Lane

Meadow S. of Rosedale Sports

New River

Old Rush Field, Broadfield Farm

Temple Bar Meadow

**Thistly Marsh and Area W. of
Cheshunt Marsh**

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.

Please note we have screened this application for protected and priority sites, habitats and species 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.

Please note 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.

customer service line
03708 506 506


incident hotline
0800 80 70 60

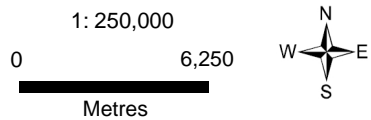
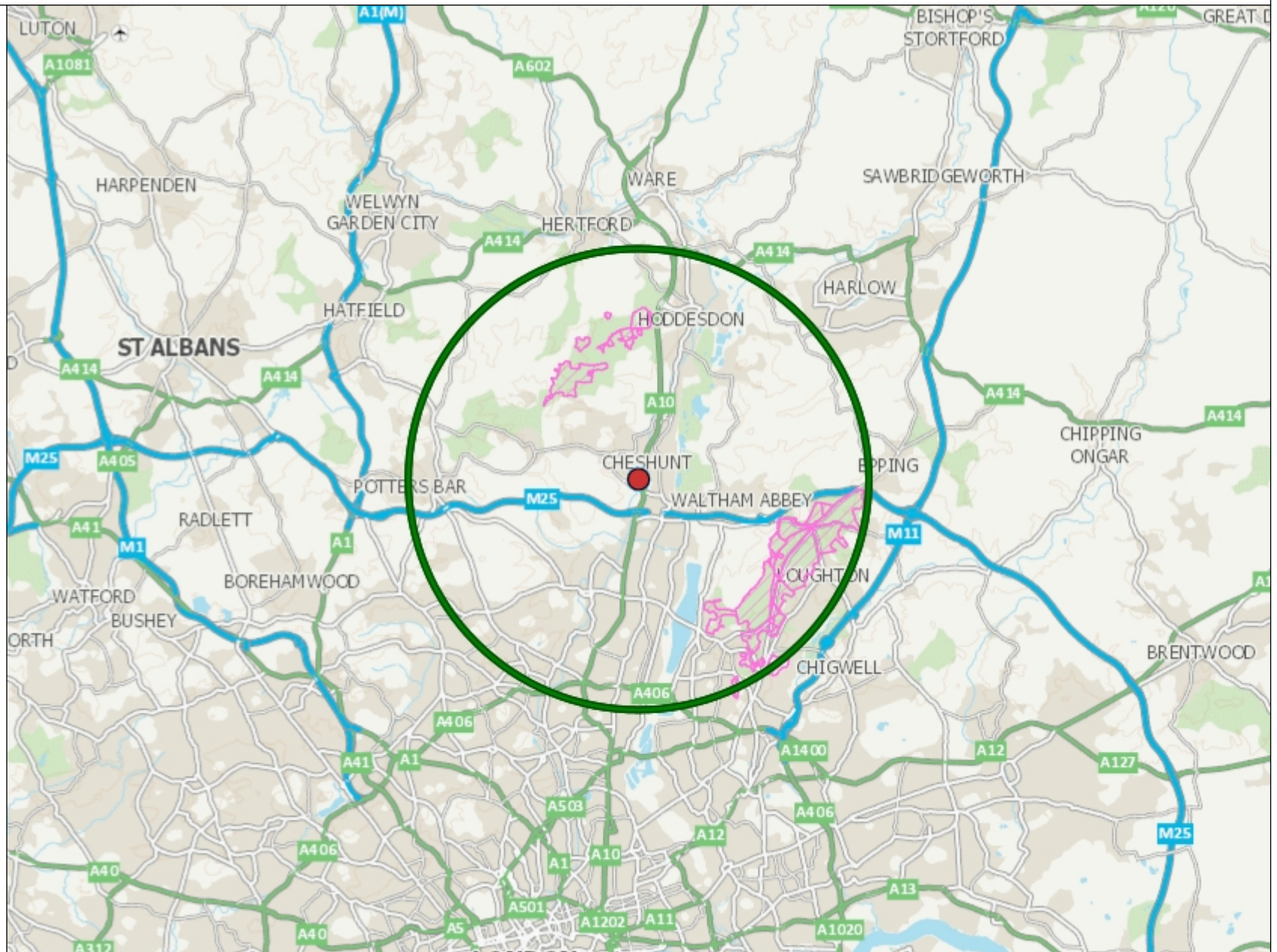
floodline
0845 988 1188

www.environment-agency.gov.uk

Special Areas of Conservation

Legend


 SAC (England)

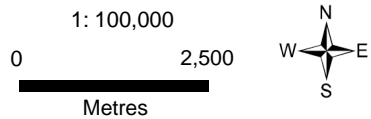
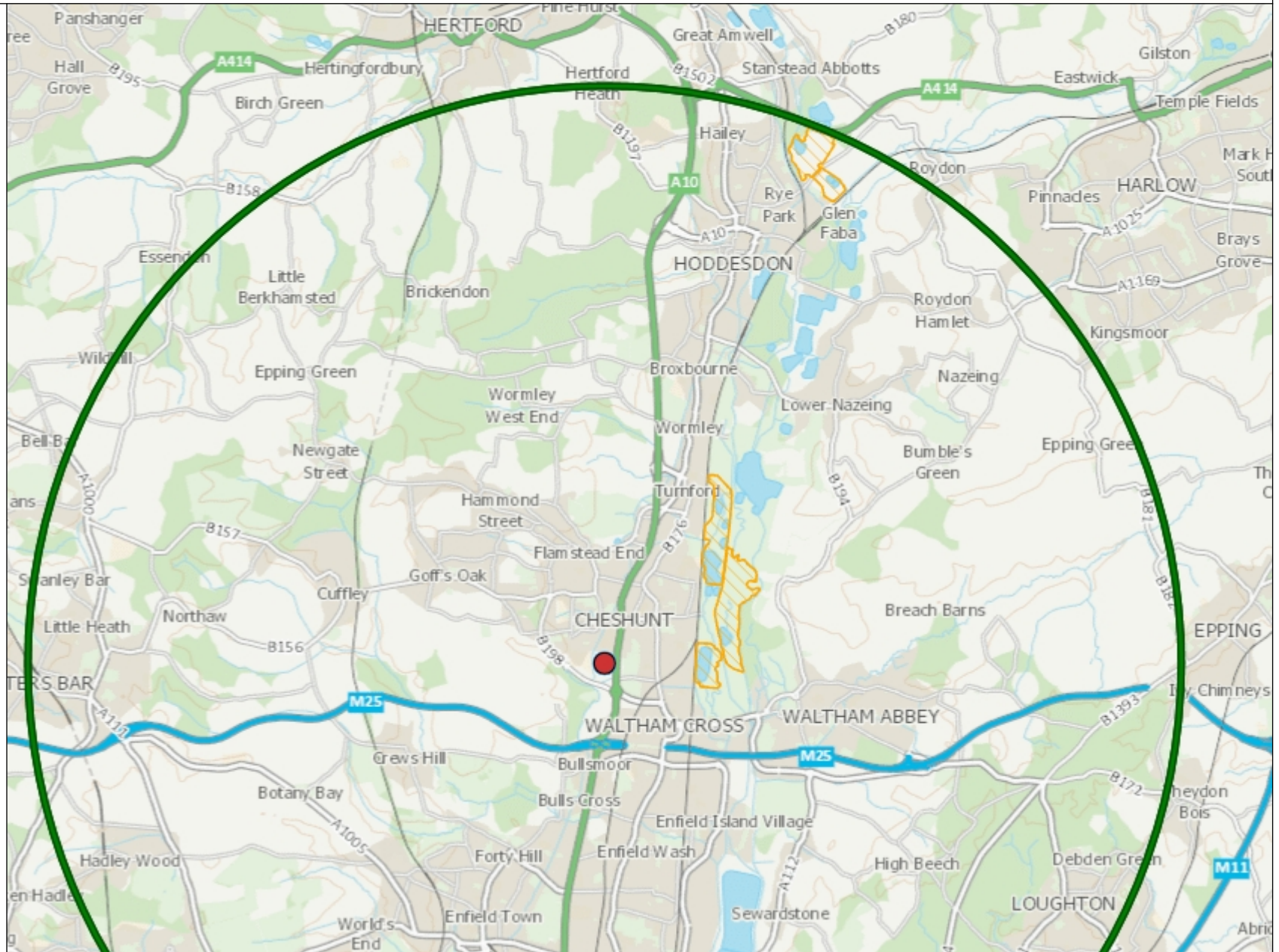


Special Protection Areas



Legend


 SPA (England)

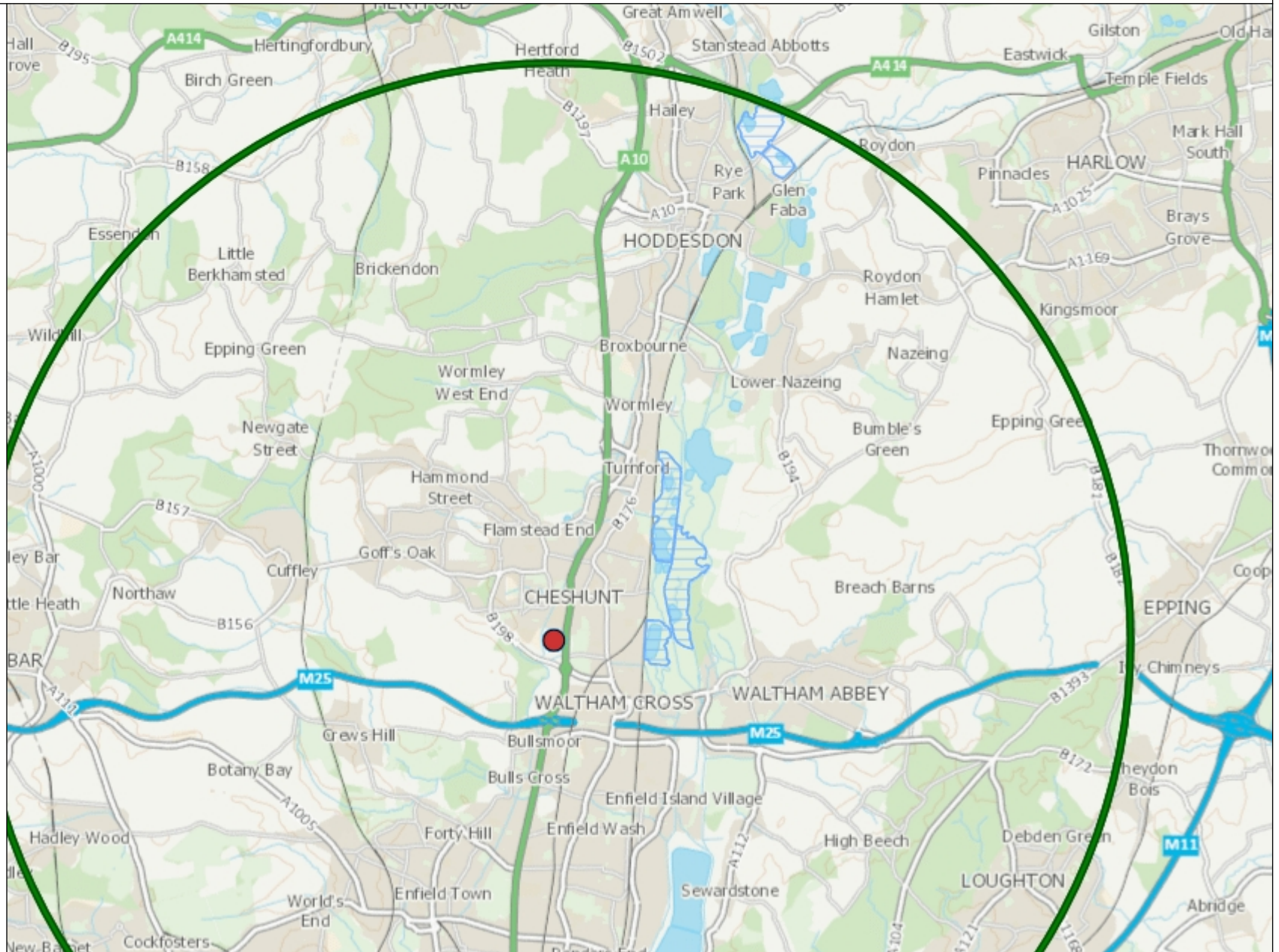


Ramsar Sites



Legend

 Ramsar (England)



1: 100,000


0 2,500

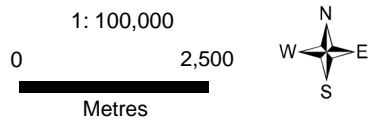
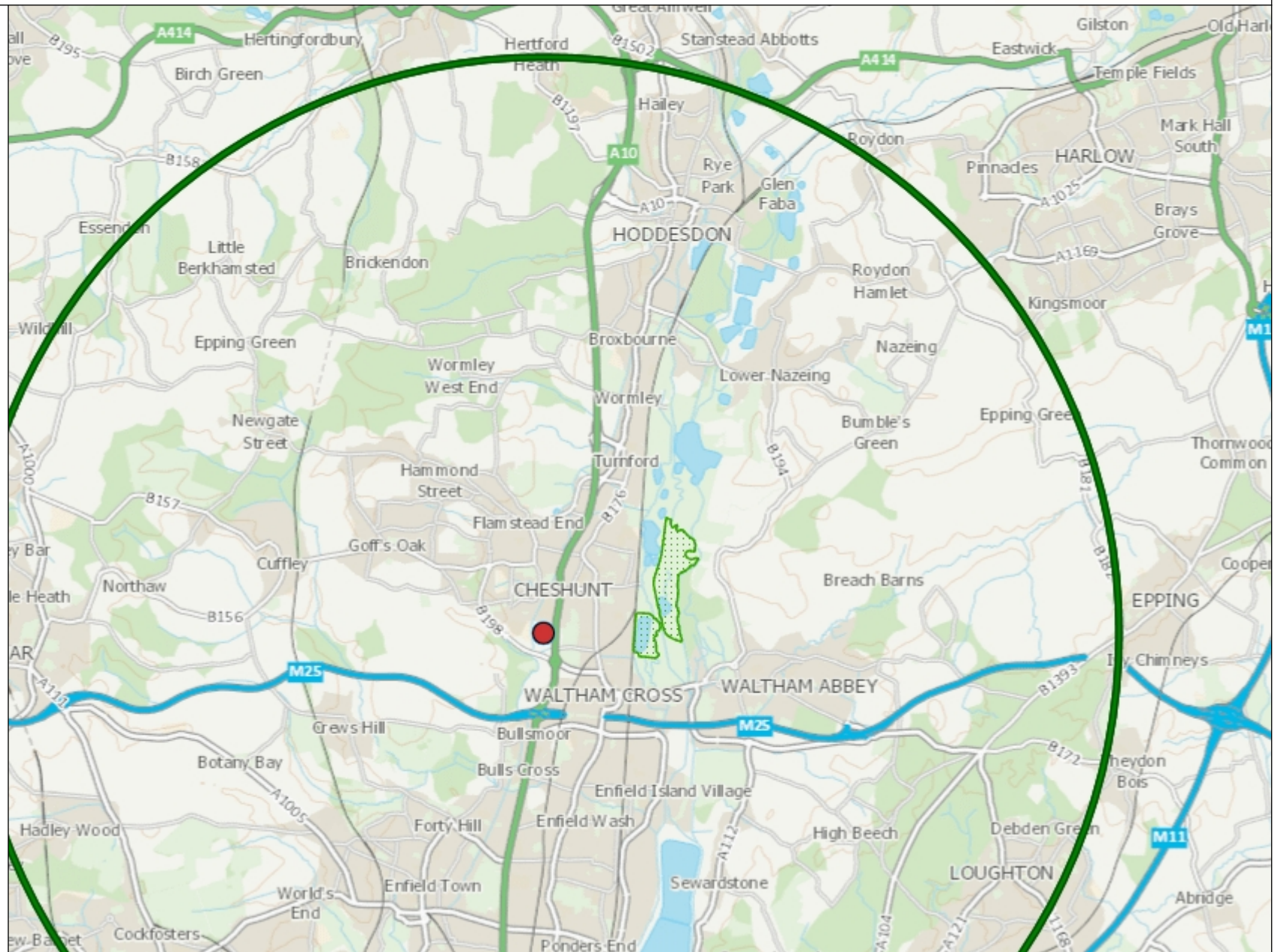
Metres



Sites of Special Scientific Interest

Legend

 SSSI (England)



Local Wildlife Sites

Legend

 Local Wildlife Sites

