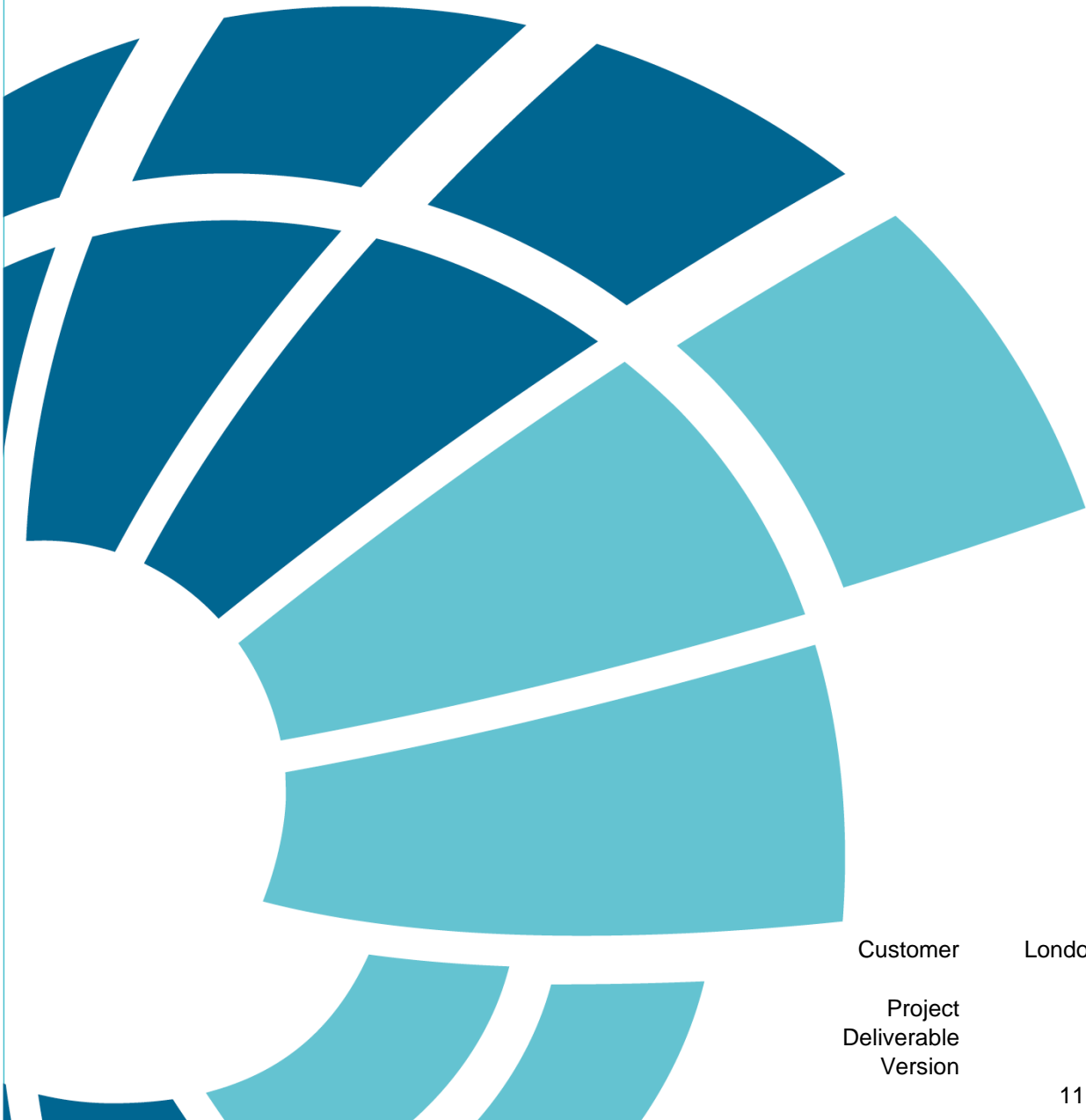


Level 2 Strategic Flood Risk Assessment



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|-------------|------------------------------|
| Customer | London Borough of Enfield |
| Project | 600819 |
| Deliverable | 02 |
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Executive Summary

The London Borough of Enfield (LBE) is an outer London borough, sharing borders with the London boroughs of Barnet, Haringey, and Waltham Forest. Approximately a third of the borough is occupied by housing; another third is Green Belt, country parks and horticulture, whilst the remaining includes commerce, industry, shops, transport, and many public and private open spaces.

The Core Strategy (2010), in conjunction with the London Plan (2008) set a target for 395 homes per year to be developed within Enfield, the target has since increased to 798 homes per year to respond to population demands. This information is in line with the latest London Plan (2021)¹.

To comply with the government “How to prepare a strategic flood risk assessment”, a Level 2 Strategic Flood Risk Assessment (SFRA L2) was required. The SFRA L2 is required to focus on areas of proposed development.

The objectives of this Level 2 SFRA are:

- In accordance with the NPPF and PPG prepare a SFRA L2 document.

Apply/review the sequential test by identifying severity and variation of risk within proposed developments.

- Establish whether proposed allocations are capable of being made safe throughout their lifetime without increasing risk elsewhere.
- Identify which development allocation sites have the least risk of flooding.
- Present information required to apply the exception test, and apply where relevant by:
 1. Showing the provision of wider sustainability benefits to the community that outweigh flood risk.
 2. Showing that development areas will be safe for their lifetime, without increasing flood risk elsewhere and where possible reduced flood risk overall.

The outputs of the L2 SFRA are:

- Detailed set of maps for the spatial options/site selection showing:
 1. Nature of flood risk from all sources.
 2. Identification of communities, features, structures, and properties affected by flood risk.
- A report and guide accompanying the maps with information detailing the application of the sequential test and exception test including:
 1. Opportunities to reduce the causes and impacts of flooding.
 2. Recommendations for addressing the flood risk.
 3. Review of the functional floodplain.
 4. Managing residual risk.
 5. Information for developers to apply the exception test to smaller scale developments.

¹ <https://www.london.gov.uk/programmes-strategies/planning/london-plan/new-london-plan/london-plan-2021>

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1 Introduction

1.1 Background

The London Borough of Enfield (LBE) carried out a Level 1 Strategic Flood Risk Assessment (SFRA) in 2021.

Within the SFRA Level 1, flood risks to LBE were considered. As part of this assessment the underlying historic risks, local and nation policies were discussed, and high-level strategic assessment was carried out.

This report detailed the number of sites at predicted/historic fluvial flood risk, within the catchments seen in Figure 1.1. Although referenced, the report did not go into detail about specific risks, or risks from other sources.

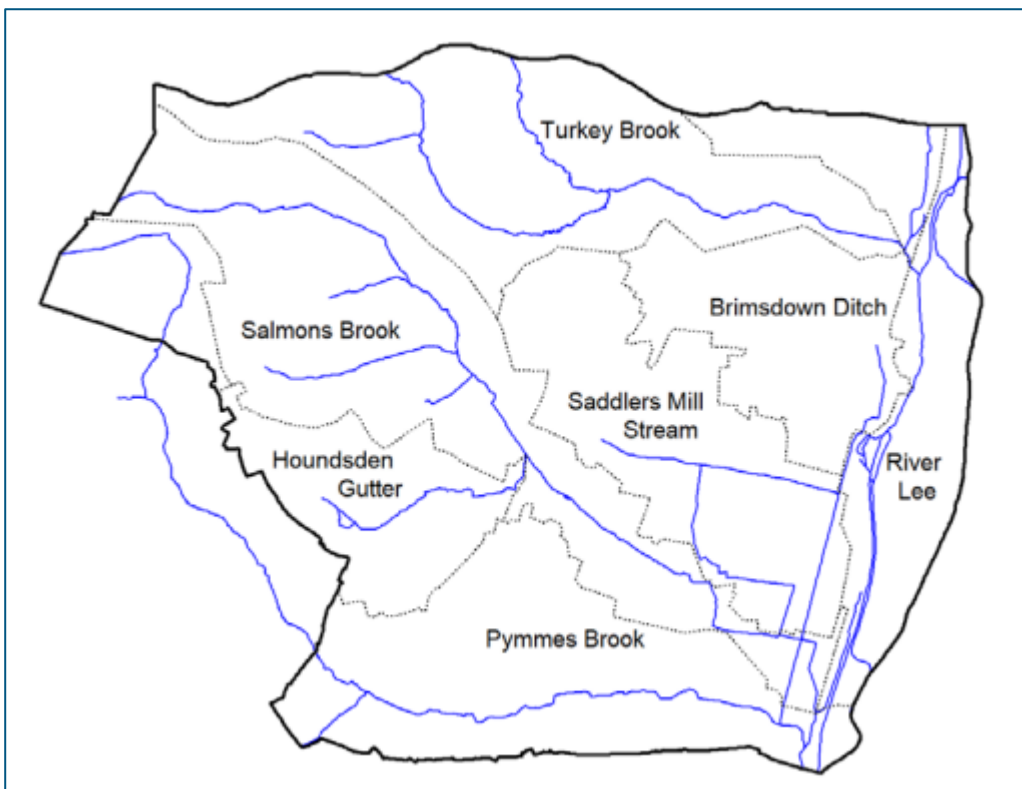


Figure 1.1 Catchment and main rivers within LBE (Source: SFRA L1)

Following the SFRA L1, LBE have identified 110 sites that require further analysis. These are the primary focus of the SFRA L2.

1.2 Purpose of the Level 2 Strategic Flood Risk Assessment

This Level 2 SFRA has been prepared in accordance with the National Planning Policy Framework (NPPF)², to provide more detail to assist with development applications. The purpose of this document is to inform the Sequential Test for the 110 identified sites.

1.3 National Policy Planning Framework

Under the NPPF³, proposed developments should be located as to: “avoiding, so far as possible, development in current and future medium and high flood risk areas”. To understand this risk, the guidance states ‘sequential testing’ should be carried out. This is the assessment of historic/current and future flood risk and if necessary, the testing should steer development to the lowest flood risk areas.

If a development cannot be moved into a lower risk zone, the exception test may be applied.

Sequential Test

The sequential tests are a series of checks to ensure that a proposed development is sited, where practicable, in the lowest flood risk.

Developers are required to carry out a sequential test if both of the following apply:

- The development is in flood zone 2 or 3.
- A sequential test has not already been done for a development of the type planned on the proposed site.

Developers are not required to carry out a sequential test if the development is ‘Minor’, or it involves a change in use. For more information, please refer to the Environment Agency (EA) guidance⁴.

Exception Test

Where a development has failed the sequential tests, the exception test can be applied. This assessed the vulnerability of a particular development, and the potential benefits the development may give.

Figure 1.2 details which vulnerability classifications require the exception test being applied dependent upon which fluvial flood zone the development is situated within.

²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

³https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

⁴ <https://www.gov.uk/guidance/flood-risk-assessment-the-sequential-test-for-applicants>

| Vulnerability Classification | | Essential infrastructure | Water compatible | Highly Vulnerable | More Vulnerable | Less Vulnerable |
|------------------------------|---------|--------------------------|------------------|-------------------|-----------------|-----------------|
| Flood Zones | Zone 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Zone 2 | ✓ | ✓ | Exception Test | ✓ | ✓ |
| | Zone 3a | Exception Test | ✓ | x | Exception Test | ✓ |
| | Zone 3b | Exception Test | ✓ | x | x | x |

Source: Table 3, NPPF Guidance - Flood risk and coastal change

Figure 1.2 NPPF guidance for Exception tests

1.4 London Borough of Enfield Local Plan

The LBE draft local plan⁵ details the vision for growth and development within the council, but this is coupled with the measures and responsibilities for both the council and developers.

Regarding flood risk, Draft Policy SE8 details “New development must avoid and reduce the risk of flooding.”⁵.

For more information, please refer to the local plan at https://www.enfield.gov.uk/__data/assets/pdf_file/0023/12668/ELP-2039-Reg-18-for-consultation-Planning.pdf.

The LBE draft local plan SE8 states Flood Risk Assessments are to be carried out for new development proposals. Please follow the links below for guidance on completing a Flood Risk Assessment (FRA) for sites located in Flood Zone 1, 2 or 3:

- Flood risk assessment in flood zone 1: www.gov.uk/guidance/flood-risk-assessment-in-flood-zone-1-and-critical-drainage-areas
- Flood risk assessment in flood zones 2 and 3: www.gov.uk/guidance/flood-risk-assessment-in-flood-zones-2-and-3

Further information is also available online at the Environment Agency (EA) Flood Map for Planning (Rivers and Sea) website at flood-map-for-planning.service.gov.uk.

1.5 Climate Change

The EA updated their guidance on climate change in May 2022⁶.

Within this guidance, it is detailed that the Upper End 2080’s fluvial flow for the Thames basin could see 54% increase in flow.

⁵ https://www.enfield.gov.uk/__data/assets/pdf_file/0023/12668/ELP-2039-Reg-18-for-consultation-Planning.pdf

⁶ <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

1.6 Levels of SFRA

A two-tiered approach is recommended by the Planning Practice Guidance (PPG)⁷:

- Level 1: To identify all flood risk areas that might affect a development.
- Level 2: Where all developments cannot be allocated land outside of flood risk areas.

⁷ <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

2 Methodology

Although individual proposed developments have been reviewed as part of this SFRA L2, these are not intended to replace Flood Risk Assessments (FRA), nor should any developer rely solely on the SFRA L2 information without carrying out their own due diligence in terms of flood risk.

A site specific FRAs are required to provide greater clarity on flood risk within a proposed development. The FRAs are required for all developments which are:

- In flood zone 2 and 3.
- Over 1ha in flood zone 1.
- Less than 1ha in flood zone 1 but will include a change in classification to a more vulnerable class and be impacted by flood sources other than fluvial.
- In flood zone 1 and identified by the EA as having a critical drainage problem.
- If there is a risk of groundwater flooding, and there is a proposed sub surface development.

To provide a resource for developers, the below table has been created to act as a prompt for undertaking the sequential and exception test.

| | | | | | |
|---|-------------------------|--|------------------------|--|------------------------------|
| 1 | Site name and Reference | | | | |
| | Date | | | | |
| | Completed by | | | | |
| 2 | Development Type | | | | |
| 3 | Vulnerability type | | Essential | | |
| | | | Highly | | |
| | | | More | | |
| | | | Less | | |
| | | | Water Compatible | | |
| 4 | Flood Risk | | Flood Zone 3a | | Surface Water |
| | | | Flood Zone 3b | | Surface Water Climate change |
| | | | Flood Zone 2 | | Groundwater |
| | | | ROFRS | | Reservoir |
| | | | Fluvial Climate change | | Other (Canals) |

Figure 2.1 Example prompt

3 Data sources

The following data sources have been used for the SFRA Level 2 for the analysis of the 110 identified sites, shown in Table 3.1. Originally LBE provided 115 sites, however later 5 of these were removed. This report focusses on the remaining 110 identified sites.

Table 3.1 Data Sources

| Data Description | Date | Data Source |
|---|-----------|-------------------------------|
| Location of 110 Identified Sites | Jun-23 | LBE |
| Topography | May-23 | DEFRA |
| Main Watercourses | May-16 | Provided by LBE |
| UK Soil Classifications | 2023 | UK Soil, BGS |
| Susceptibility of Groundwater Flooding Classification | Jun-23 | BGS |
| Susceptibility of Groundwater Flooding (%) | Feb-16 | EA, provided by LBE |
| Groundwater Resources and Vulnerability | Feb-16 | EA, provided by LBE |
| Flood Risk from Rivers and Sea | Feb-16 | EA, provided by LBE |
| Flood Risk Zones, including Defences | Feb-16 | EA, provided by LBE |
| Flood Risk Zones, including Zone 3B | May-23 | EA, provided by LBE |
| Fluvial Flooding | May-23 | Provided by LBE |
| Surface Water Flooding | May-23 | Provided by LBE |
| Pluvial Flooding | May-23 | Provided by LBE |
| Sewer Flooding History | May-23 | Thames Water, provided by LBE |
| Risk of Flooding from Reservoirs | May-23 | EA |
| Historic Flood Events | Feb-16 | EA, provided by LBE |
| Records of Past Flood Events | Jun-23 | EA |
| Locations where overtopping has occurred historically | May-23 | Canal River Trust |
| Existing Flood Defences | Feb-16 | EA, provided by LBE |
| Flood Alert Areas | 2015/2016 | EA, provided by LBE |
| Flood Warning Areas | 2015/2016 | EA, provided by LBE |
| Flood Risk Areas | Feb-16 | EA, provided by LBE |

3.1 Site overview

The 110 identified sites have a range of current planned uses, with the main proposed use being residential. The identified sites, along with the topography (downloaded from DEFRA in May 2023), are shown in Figure 3.1.

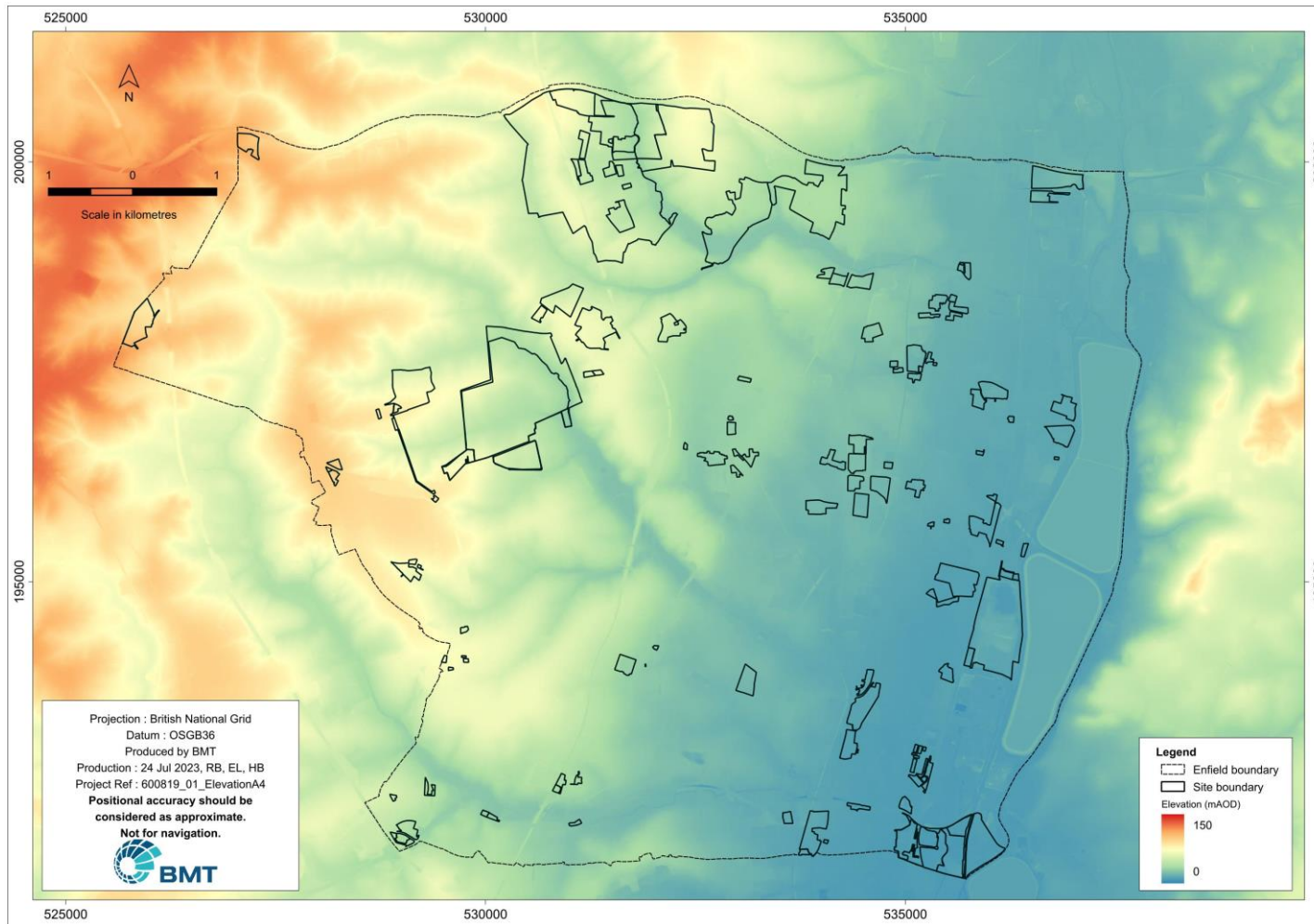


Figure 3.1 Topography

Data from 2016, supplied by LBE, has been used to identify 'main' watercourses in the vicinity of LBE. Out of the 110 sites identified, 56 sites are within 200m of a 'main' watercourse. Figure 3.2 shows this main watercourse dataset along with the location of the 56 sites that are within 200m of them. LBE Draft Local Plan SE9 states that "an adequate set back from the watercourse (open or culverted) to allow for maintenance". What is classified as an appropriate distance is to be decided based on consultation with the key stakeholders:

- Lead Local Flood Authority (LLFA),
- EA,
- Thames Water,
- Canals & Rivers Trust.

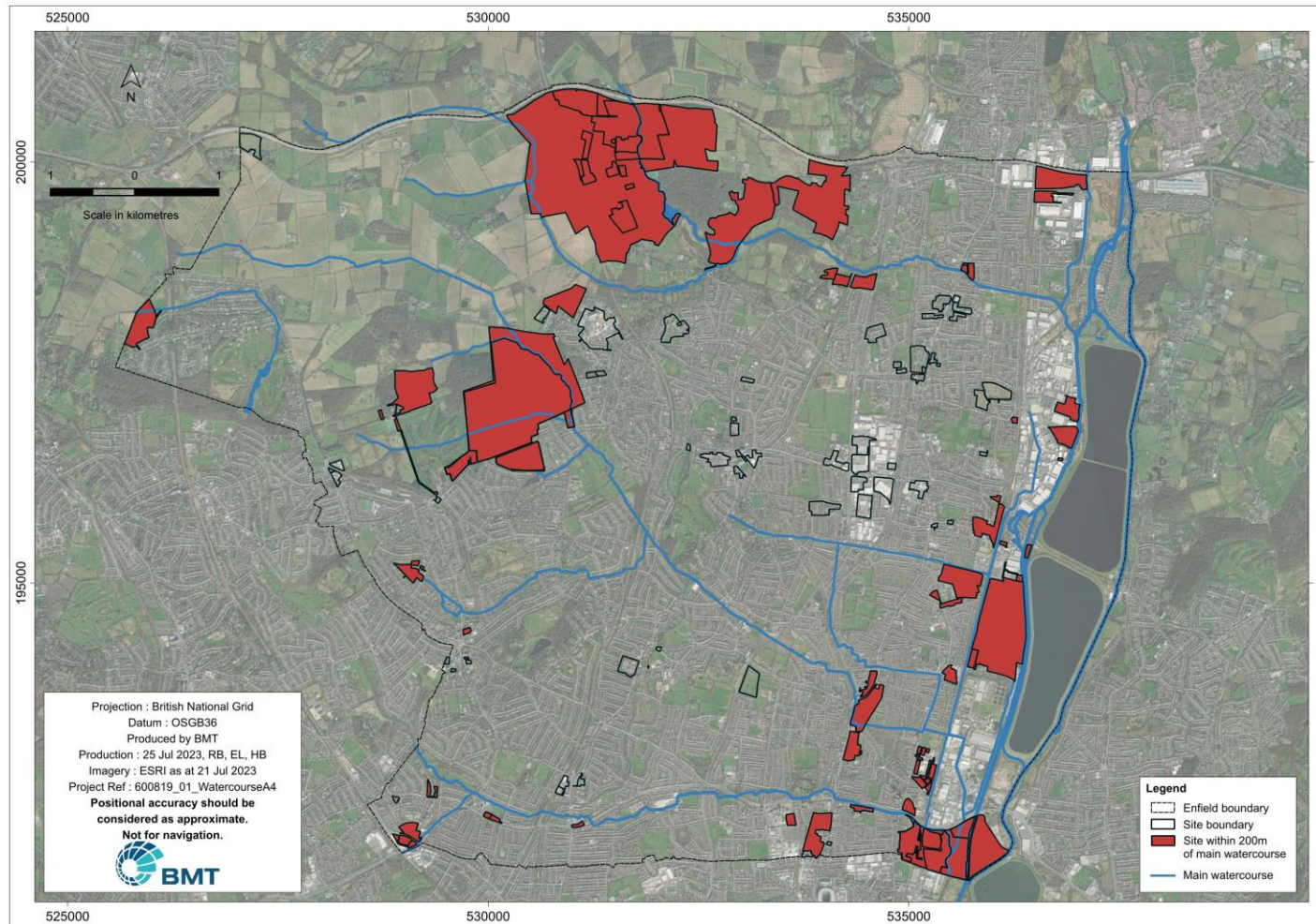


Figure 3.2 Groundwater Flooding

3.2 Groundwater information

Soil (ID)

Data from the UK Soil Observatory has been used to identify the soil type at each of the 110 identified sites (Contains British Geological Survey materials ©NERC [2023])⁸. This shows a range of different soil types covering the 110 identified sites, with the majority of sites containing pre-quaternary marine estuarine sand and silt.

Susceptibility of Groundwater Flooding (British Geological Society Information)

Groundwater flooding is the emergence of groundwater at the ground surface. It can occur in a variety of geological settings including valleys in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels. Groundwater flooding happens in response to a combination of already high groundwater levels (usually during mid or late winter) and intense or unusually lengthy storm events. Groundwater flooding often lasts much longer than flooding caused by a river overflowing its banks. It may last many months and can cause significant social and economic disruption to the affected areas.

As per LBE draft policy SE⁸, developments must “apply appropriate construction techniques to limit potential disturbance to natural groundwater flows”. In addition, “groundwater FRA will be required where basement levels are proposed.”.

Figure 3.3 maps data from the British Geological Society (BGS) from June 2023, this has three areas of classification for flood susceptibility¹⁰.

- Limited potential for groundwater flooding to occur.
- Potential for groundwater flooding of property situated below ground level.
- Potential for groundwater flooding to occur at surface.

According to Figure 3.3 there is potential for groundwater flooding to occur at many of the sites, with there being more potential for groundwater flooding in the east of the borough. Of the 110 sites identified, 86 are included within this groundwater flooding dataset. 29 of those overlap with “Limited potential for groundwater flooding to occur”, 27 overlap with “Potential for groundwater flooding of property situated below ground level” and 66 overlap with “Potential for groundwater flooding to occur at surface”. It should be noted some sites contain multiple groundwater flooding categories, and some sites overlap each other. The British Geological Survey website holds further information, including FAQs and advice on groundwater flooding¹¹.

⁸ <https://mapapps2.bgs.ac.uk/ukso/home.html>

⁹ https://www.enfield.gov.uk/__data/assets/pdf_file/0023/12668/ELP-2039-Reg-18-for-consultation-Planning.pdf

¹⁰ <https://www2.bgs.ac.uk/groundwater/datainfo/GFSD.html>

¹¹ <https://www2.bgs.ac.uk/groundwater/flooding/groundwaterHomesFAQ.html>

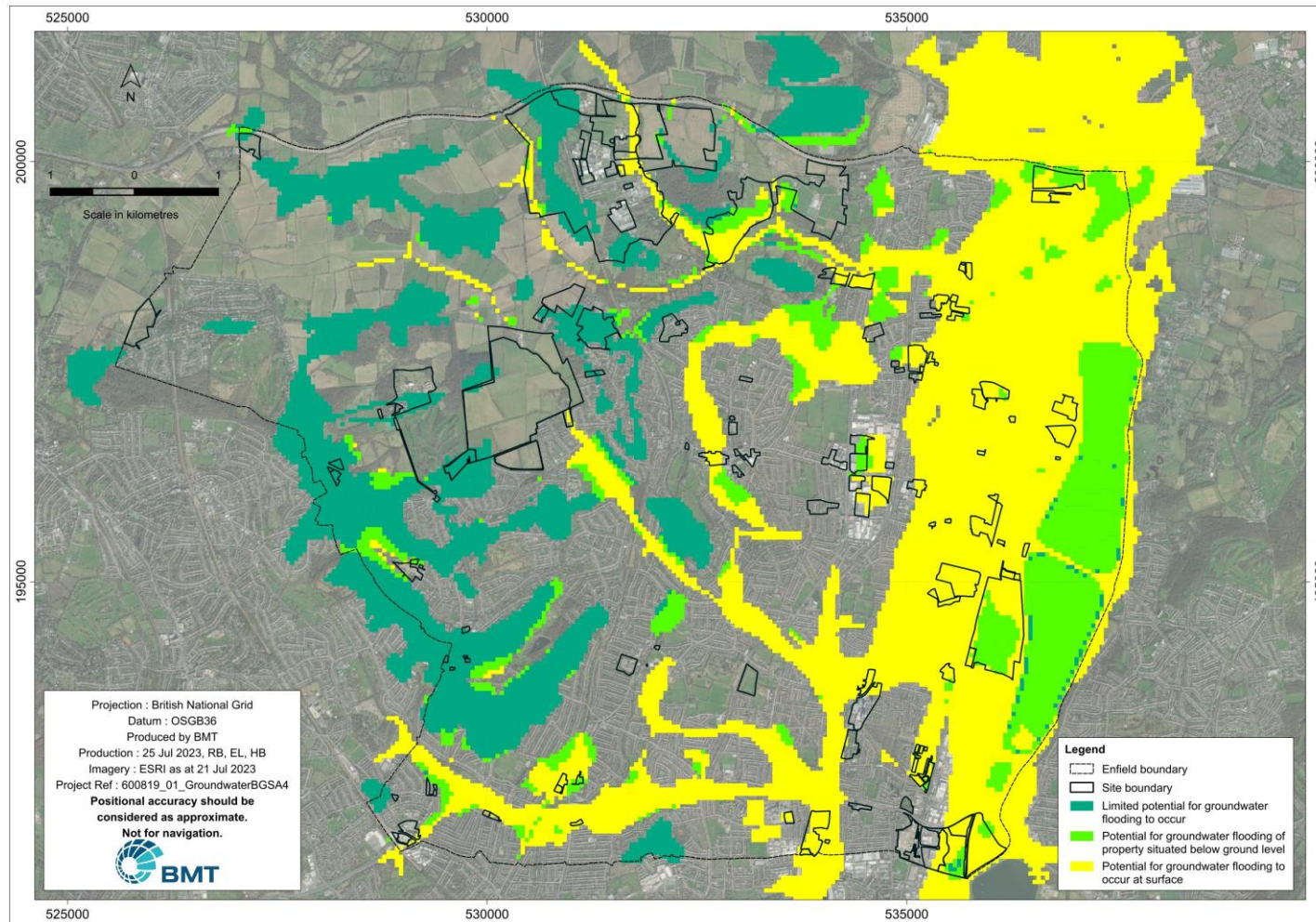


Figure 3.3 Groundwater Flooding

Susceptibility of Groundwater Flooding (Environment Agency)

Areas Susceptible to Groundwater Flooding is a strategic scale map showing groundwater flood areas on a 1km square grid. It was developed specifically by the Environment Agency for use by Lead Local Flood Authorities (LLFAs) for use in Preliminary Flood Risk Assessment (PFRA) as required under the Flood Risk Regulations. The data was produced to annotate indicative Flood Risk Areas for PFRA with information to allow LLFAs to determine whether there may be a risk of flooding from groundwater. It is also being made available to LLFAs to support PFRA, so that LLFAs can obtain a broad feel for the wider areas which might be at risk from groundwater flooding. It covers England and Wales.

This data has used the top two susceptibility bands of the British Geological Society (BGS) 1:50,000 Groundwater Flood Susceptibility Map and thus covers consolidated aquifers (chalk, sandstone etc., termed 'clearwater' in the data attributes) and superficial deposits. It does not take account of the chance of flooding from groundwater rebound. It shows the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater might emerge. The susceptible areas are represented by one of four area categories showing the proportion of each 1km square that is susceptible to groundwater emergence. It does not show the likelihood of groundwater flooding occurring. If an area is not covered by the dataset, it means that no part of that square is identified as being susceptible to groundwater emergence.

Figure 3.4 presents the information from the Areas Susceptible to Groundwater Flooding dataset downloaded in 2016 from the EA. This shows that the majority of the borough and 55 of the identified sites are covered by less than 25% susceptibility to groundwater flooding, with some areas in the east of the borough being more than 75% susceptible to groundwater flooding, this includes 24 of the identified sites. It should be noted some sites contain multiple groundwater flooding categories. Only 1 site (SA45) was in an area where no part is susceptible to groundwater emergence.

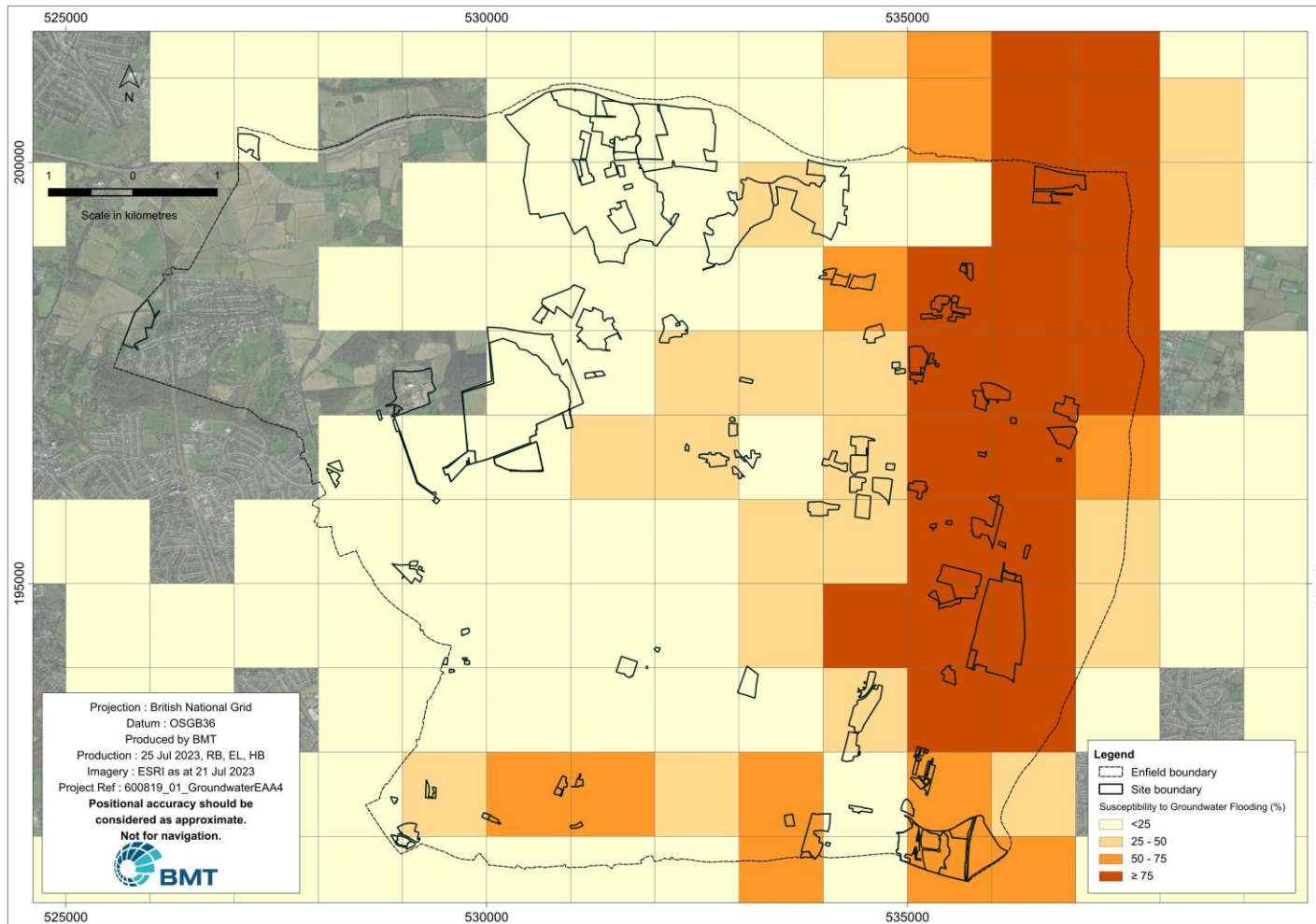


Figure 3.4 Susceptibility to Groundwater Flooding

Groundwater Resources

The Environment Agency has produced a series of datasets to broadly define areas relevant to the protection of groundwater. These are based on the maps and concepts that are described in a document known as the Policy and Practice for the Protection of Groundwater (PPPG). The guidance has since been updated to Groundwater Protection: Principles and Practice (GP3¹²). This approach considers: the vulnerability of the groundwater resources as a whole; and the specific importance of areas which form the catchments to the main sources of supply.

Groundwater resources are assigned a vulnerability class. This is subdivided into minor (variably permeable groundwater) and major (highly permeable ground water).

Figure 3.5 presents the Environment Agency dataset downloaded in 2016 and shows that only minor groundwater resources cover any of the sites, with 78 sites containing areas of minor groundwater resources, and there are no major groundwater resources within the borough.

¹² <https://www.gov.uk/government/publications/groundwater-protection-principles-and-practice-gp3>

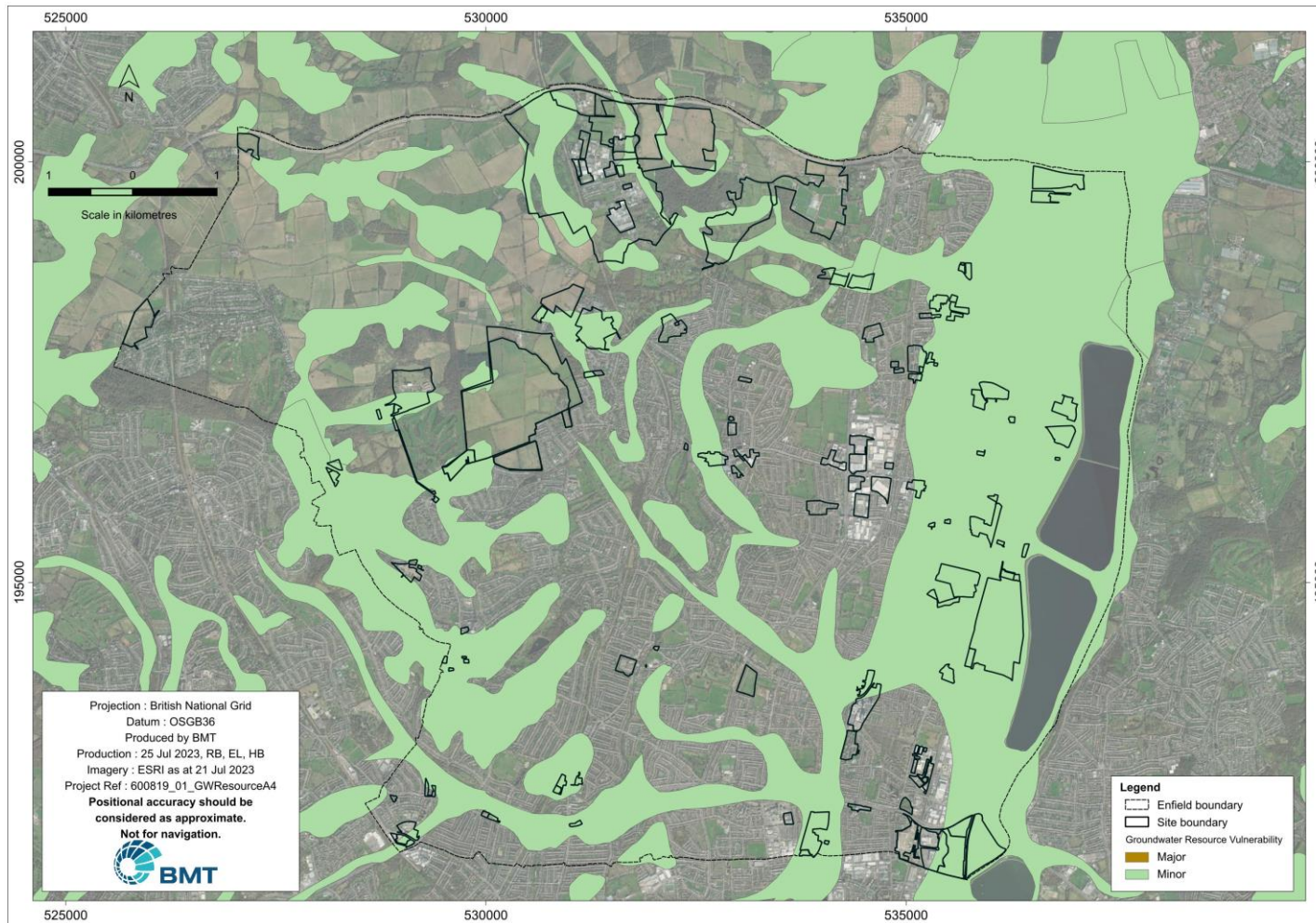


Figure 3.5 Groundwater Resources

Groundwater Vulnerability

The ground water vulnerability, as defined by the Environment Agency and covered in the section above (Groundwater Resources), can be used to indicate where groundwater resources may be vulnerable from activities carried out on the surface land. Other information, such as the depth of groundwater and thickness and type of overlying cover, will always be required for a site-specific assessment. This dataset is only for use on undisturbed natural soils, otherwise has been superseded by the Aquifer Designation Maps. There are six groundwater vulnerability classes, which are based on soil type and underlying geology type.

- Major H: Highly permeable groundwater with high leaching potential
- Major I: Highly permeable groundwater with intermediate leaching potential
- Major L: Highly permeable groundwater with low leaching potential
- Minor H: Variably permeable groundwater with high leaching potential
- Minor I: Variably permeable groundwater with intermediate leaching potential
- Minor L: Variably permeable groundwater with low leaching potential

The section above ([Groundwater Resources](#)) and Figure 3.5, which is based on the same dataset, show that there are no major groundwater resources in the borough. Figure 3.6 presents the same Environment Agency dataset from 2016, showing how the different minor groundwater vulnerability classes are distributed across the borough. This illustrates that most of the minor water resources are classed as Minor H (variably permeable groundwater with high leaching potential), this includes 67 sites. Whilst in the north-west of the borough there is an area where the majority of the water resources are classed as Minor L (variably permeable groundwater with low leaching potential), which include 14 sites. Only 3 of the identified sites include any area of Minor I. It should be noted some sites contain multiple groundwater vulnerability categories.

Groundwater Summary

Based on this data, a groundwater FRA will be required for many of the sites.

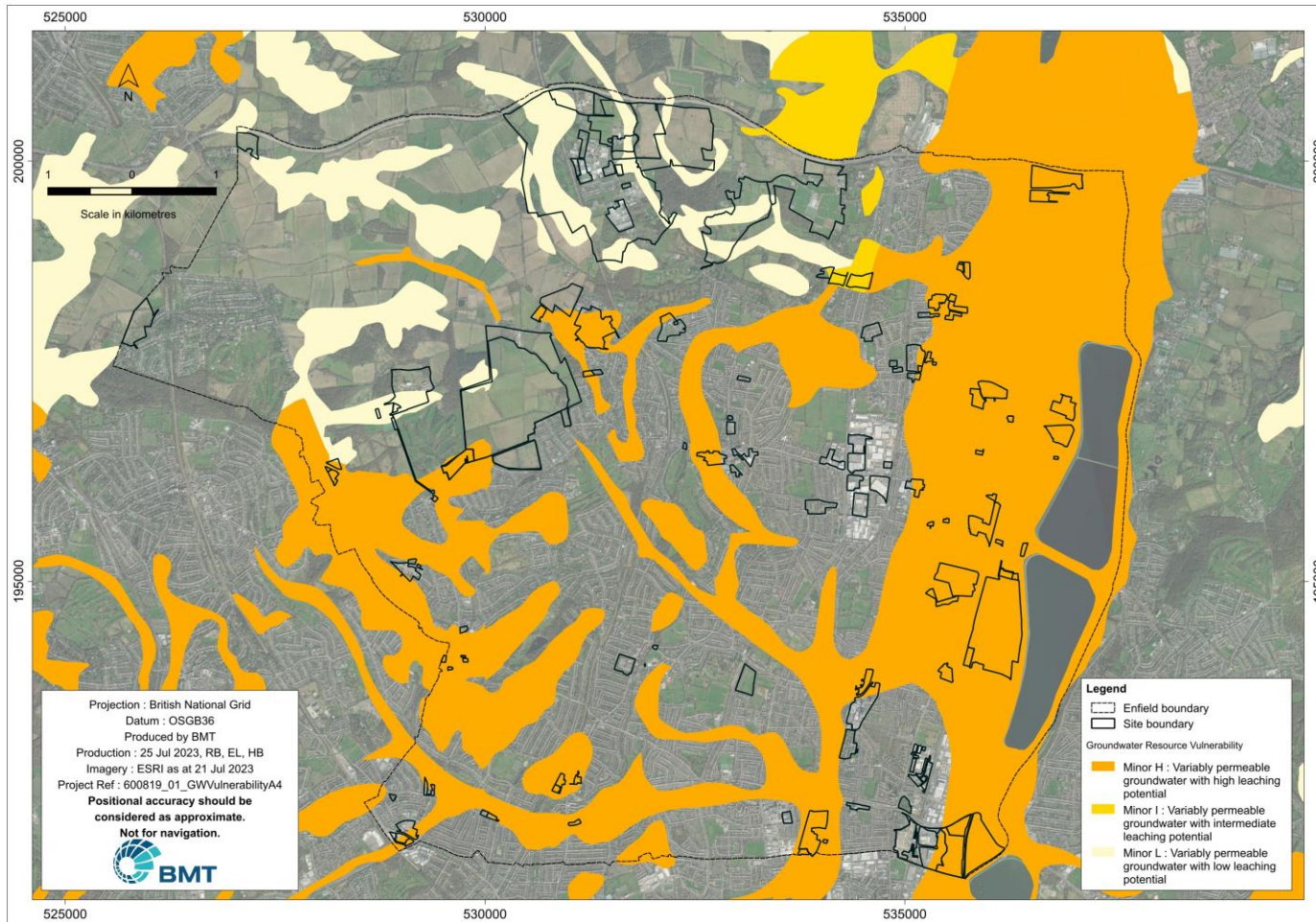


Figure 3.6 Groundwater Vulnerability

3.3 Predicted Flood Risk Assessment

Risk of flooding from Rivers and Sea

The predicted flooding from rivers and sea dataset by the EA shows the chance of flooding from rivers and the sea. The information presented is split into four categories and the mapping considers the influence of any of flood defences, and the condition they are in. This data has been collected from the Environment Agency and is considered 'National Scale' and should be used to guide/inform.

The Environment Agency data is a spatial dataset with the floodplain split into 50m x 50m cells and each allocated one of four flood risk likelihood categories.

- High: each year, there is a chance of flooding of greater than 1 in 30 (3.3%).
- Medium: each year, there is a chance of flooding of between 1 in 30 (3.3%) and 1 in 100 (1%).
- Low: each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%).
- Very Low: each year, there is a chance of flooding of less than 1 in 1000 (0.1%).

Figure 3.7 presents the Environment Agency dataset from 2016, showing that across the borough there is a chance of flooding from the rivers and the sea. This risk affects 36 of the identified sites and for 24 of these sites the risk is high, meaning each year there is a chance of flooding of greater than 1 in 30 (3.3%).

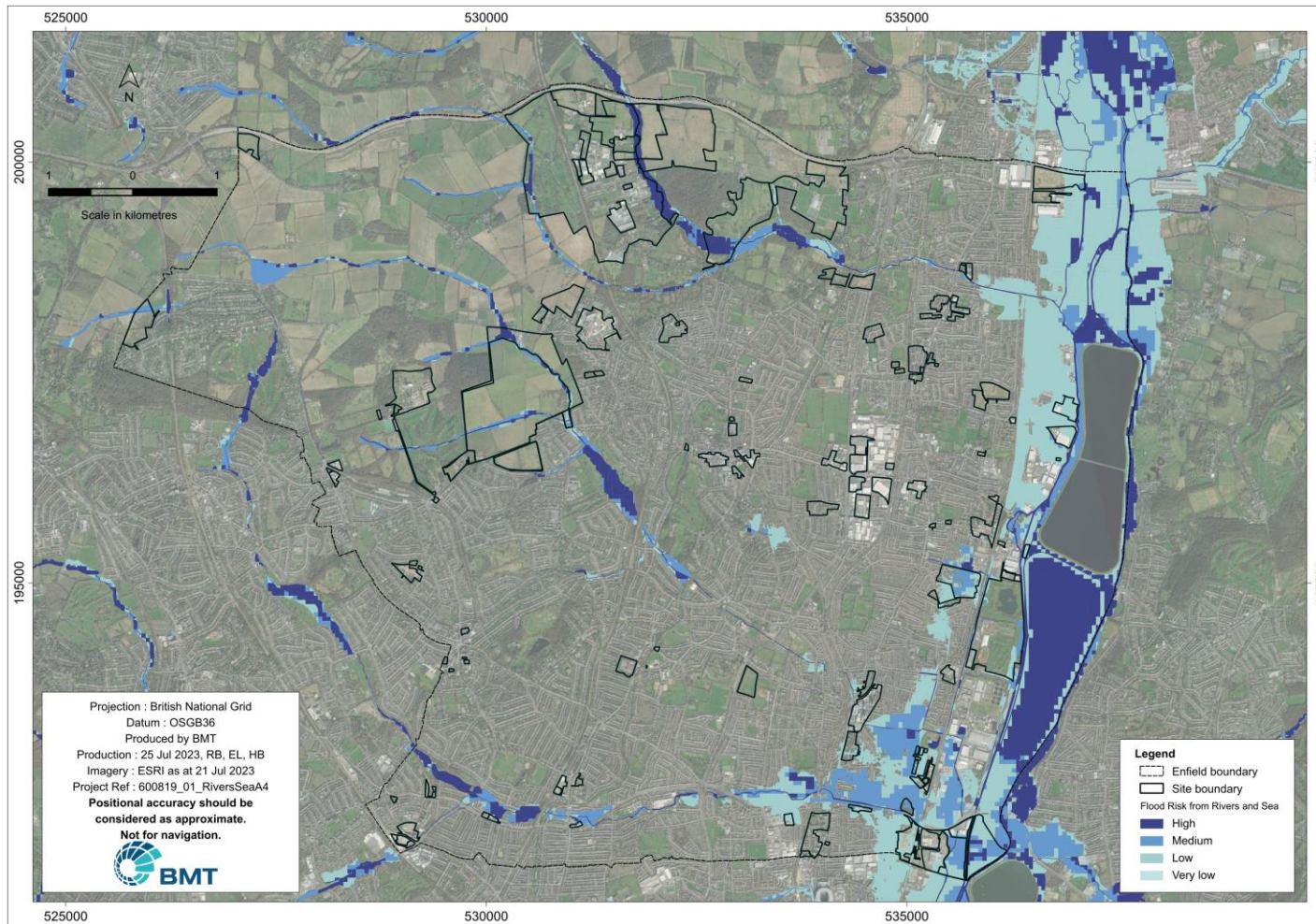


Figure 3.7 Flood Risk from Rivers and Sea

Flood Risk Zone (EA)

The Environment Agency (EA) Flood Zones refer to the probability of river and sea flooding, ignoring the presence of any natural or constructed defences. The Flood Zone definitions are provided in the National Planning Policy Framework¹³. For ease of understanding, this is considered 'National Scale' and is relatively coarse.

The Environment Agency Flood Map for Planning dataset from 2016 is presented in Figure 3.8, showing that some sites do include areas of Flood Zones 2 and 3, after ignoring the presence of local flood defences. 28 of the sites contain areas of Flood Zone 3, and four of the sites contain areas benefiting from defences.

¹³https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

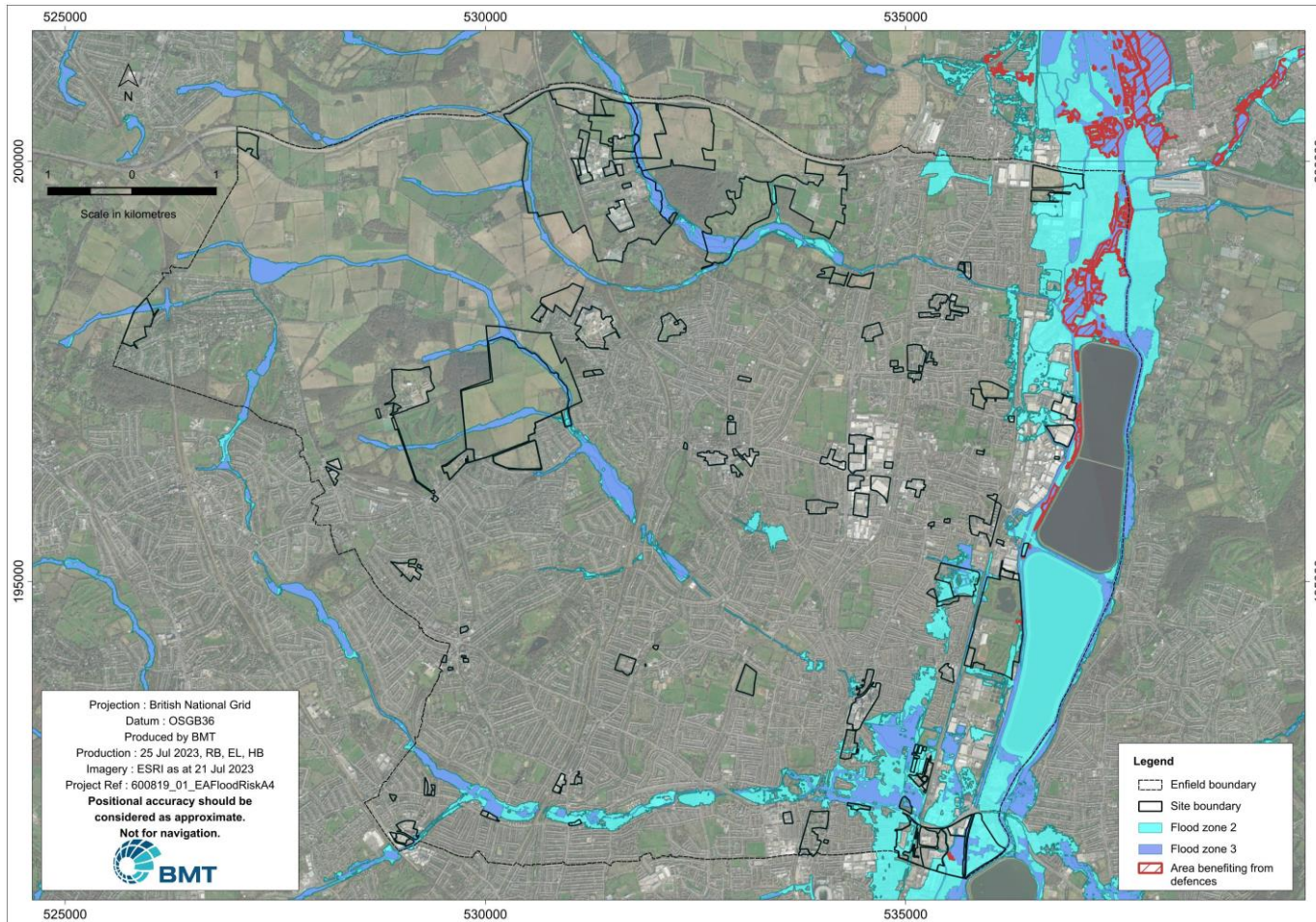


Figure 3.8 Flood Zones

Flood Risk Zone (provided by [Enfield.gov.uk](https://enfield.gov.uk); Source: EA)

Further to the section above, LBE provided additional EA Flood Risk Zone data that included Flood Zone 3B in May 2023. Although this data didn't include the Areas Benefitting from Defences dataset. These datasets provided by LBE are shown in Figure 3.9. 30 of the 110 identified sites overlap with the Flood Zone 3B dataset.

The Environment Agency (EA) Flood Zones refer to the probability of river and sea flooding, ignoring the presence of any natural or constructed defences. The Flood Zone definitions are provided in the National Planning Policy Framework¹⁴. These flood zones are generally produced via enhanced models when compared to the National scale results.

¹⁴https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

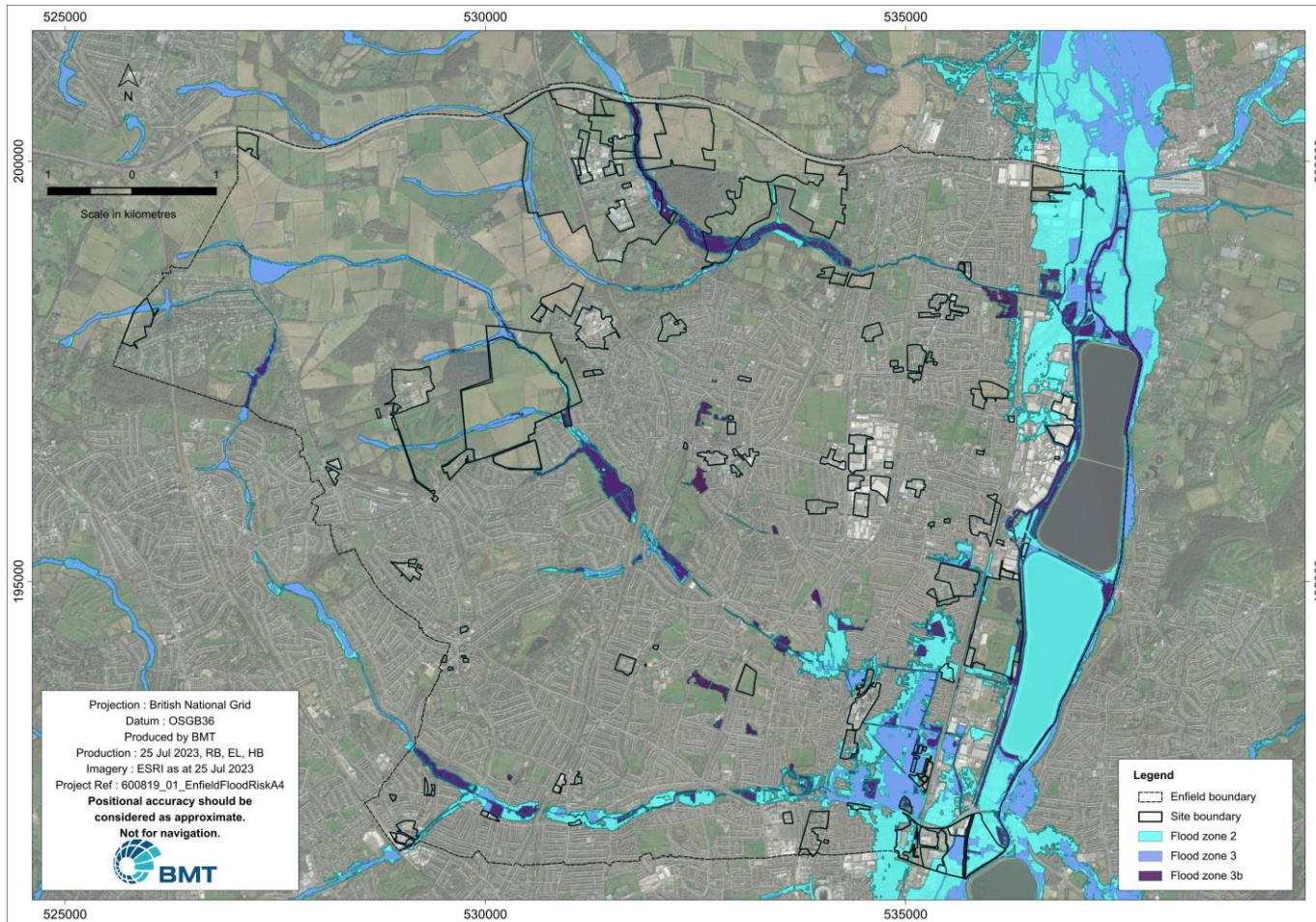


Figure 3.9 Flood Zones

Fluvial Flooding – Climate Change

The impact of climate change means flooding events will happen with increased frequency and with greater magnitude. The EA dataset presented in Figure 3.10 shows data for a 17% increase in fluvial flow. Depending upon the exact nature of the development, more extreme flow scenarios may need to be considered. Please refer to the EA guidance for further information at www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

Figure 3.10 presents the EA data provided by LBE in 2023, showing that 39 sites are at risk of fluvial flooding during a 1 in 100 year event, after the 17% increase due to climate change has been considered.

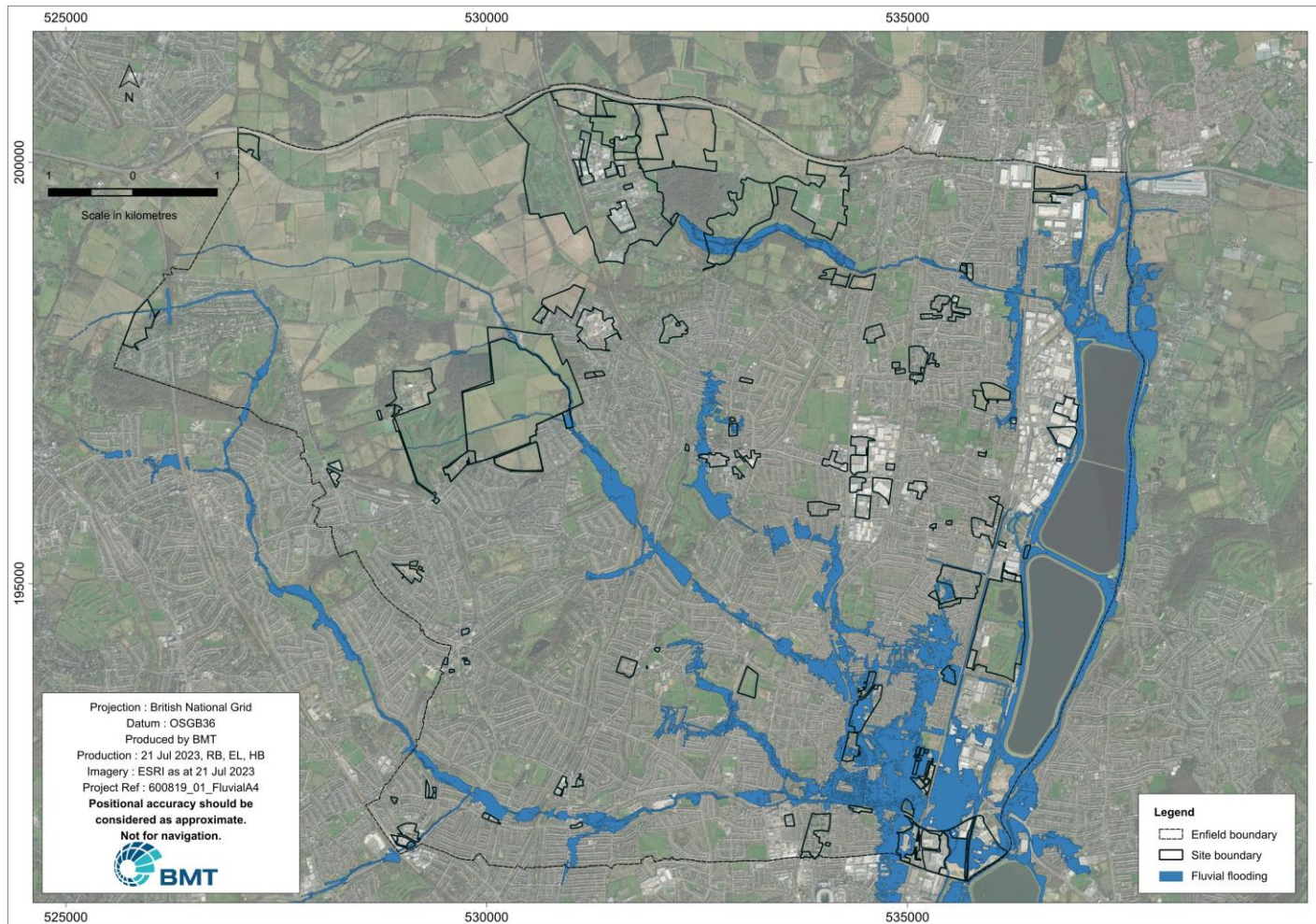


Figure 3.10 Fluvial Flooding (1 in 100 year + 17% CC)

Surface Water Flooding (EA)

The EA dataset containing the surface water flooding zones was provided by LBE in May 2023. The sites within surface water flooding zones may be at risk of flooding during an intense storm event. Similar flood mitigation measures to those suggested for sites within in the EA Flood Zones 2 and 3 should also be considered in surface water flooding zones (detailed in the above sections, Flood Risk Zone (EA) and Flood Risk Zone (provided by Enfield.gov.uk; Source: EA)).

This dataset is presented in Figure 3.11 and shows that surface water flooding affects 86 of the 110 identified sites.

If the development is located within a surface water flooding zone, follow the recommendations in the Surface Water Management Plan¹⁵.

LBE draft local plan SE10¹⁶ requires the inclusion of Sustainable Drainage (SuDS) in all new developments, particularly major developments, to manage surface water. If located within the buffer zone of a surface water flooding zone, run-off from the site could exacerbate flooding in the vicinity. It is therefore important to consider and implement suitable SuDS, even in small-scale developments in these zones.

¹⁵ https://www.enfield.gov.uk/__data/assets/pdf_file/0017/5228/flooding-information-surface-water-management-plan.pdf

¹⁶ https://www.enfield.gov.uk/__data/assets/pdf_file/0023/12668/ELP-2039-Reg-18-for-consultation-Planning.pdf

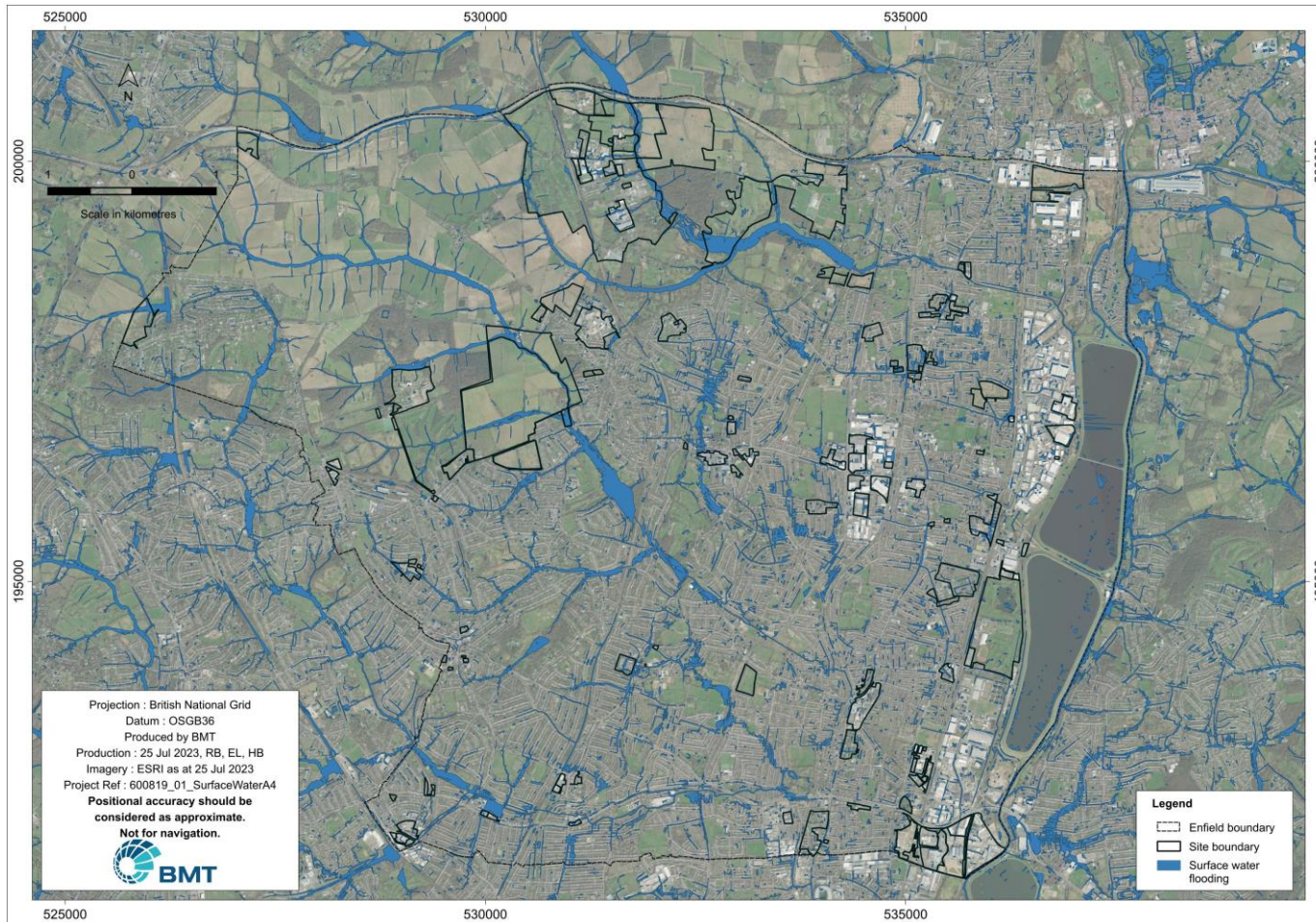


Figure 3.11 Site Area that has a Chance of Flooding of Between 1 in 100 (1%)

Surface Water Flooding – Climate Change

As per the impact of climate change on fluvial flooding, surface water flooding will happen with increased frequency and with greater magnitude. Climate change will also impact pluvial (surface water) flooding. This could be as a result of more intense rainfall, or ground which has less capacity to infiltrate due to the weather conditions. Depending upon the exact nature of the development, more extreme rainfall scenarios may need to be considered. Please refer to the EA guidance for further information at www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

Figure 3.12 presents EA data provided by LBE in May 2023, showing sites at risk of pluvial flooding during a 1 in 100 year event after the 17% increase due to climate change has been considered. This shows that 75 of the 110 identified sites are at risk.

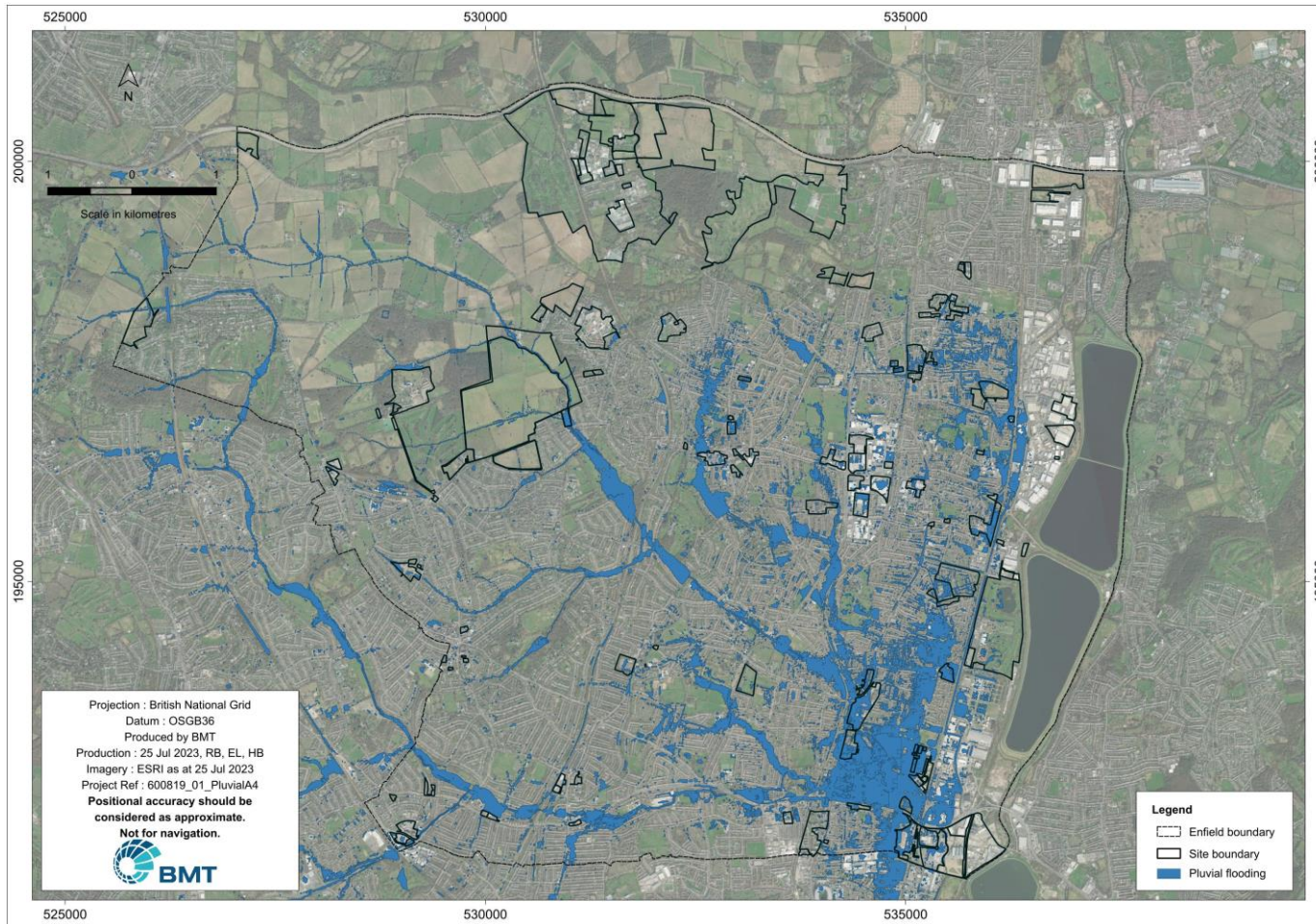


Figure 3.12 Pluvial Flooding (1 in 100 year + 17% CC)

Sewer Flooding History

Sewer Flood Records from Thames Water, provided by LBE in May 2023 for the Enfield area indicates that flooding from sewers is a risk for the majority of the borough, with only 4 of the 39 provided postcodes not having any record of sewer flooding. Overall, there are 263 records of flooding with 108 of those being internal flooding to a property and 155 of those being external. The postcode with the most records is N14 4, where there were 12 internal records and 21 external records.

Where a new development is proposed at basement or lower ground floor level and new bathrooms, kitchens, showers and/or utility rooms are proposed, the FRA should confirm the inclusion of a non-return valve or similar device to help protect against the risk of sewer surcharging.

Risk of Flooding (Artificial Sources): Reservoirs

Reservoir flood maps show EA datasets downloaded in May 2023, these indicate where water may go in the unlikely event of a dam or reservoir failure. There are two flooding scenarios shown on the reservoir flood maps. They are a “dry-day” and a “wet-day”, Figure 3.13 and Figure 3.14 respectively. The “dry-day” scenario predicts the flooding that would occur if the reservoir failed when rivers are at normal levels. The “wet day” scenario predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood. More than one reservoir could affect a location at the same time.

The ‘fluvial-only extent’ shown on Figure 3.15 is the extent of the river flooding we used in the model for the “wet-day” scenario. It is not the same as Flood Zone 2 or 3 shown in the Flood Map for Planning on GOV.UK but is considered to be an extreme flood. You should only use the ‘fluvial-only extent’ to see the impact the reservoir flooding has.

Figure 3.13, Figure 3.14 and Figure 3.15 presents that there is a high risk of flooding from reservoirs under all scenarios in the borough, this particularly affects the east of the borough.

Out of the 110 identified sites, 34 are affected by the “dry day scenario” and 35 are affected by the “wet day scenario”. There are concerns over the quality of this dataset, and this should be reviewed as part of any FRA.

Please note, whilst some sites are at a predicted risk of reservoir flooding, this is not necessarily prohibiting for development, as reservoir safety is outside of the developer’s responsibility. However, the developer should consider the hazard posed and manage the risks, especially in terms of ensuring a safe evacuation route.

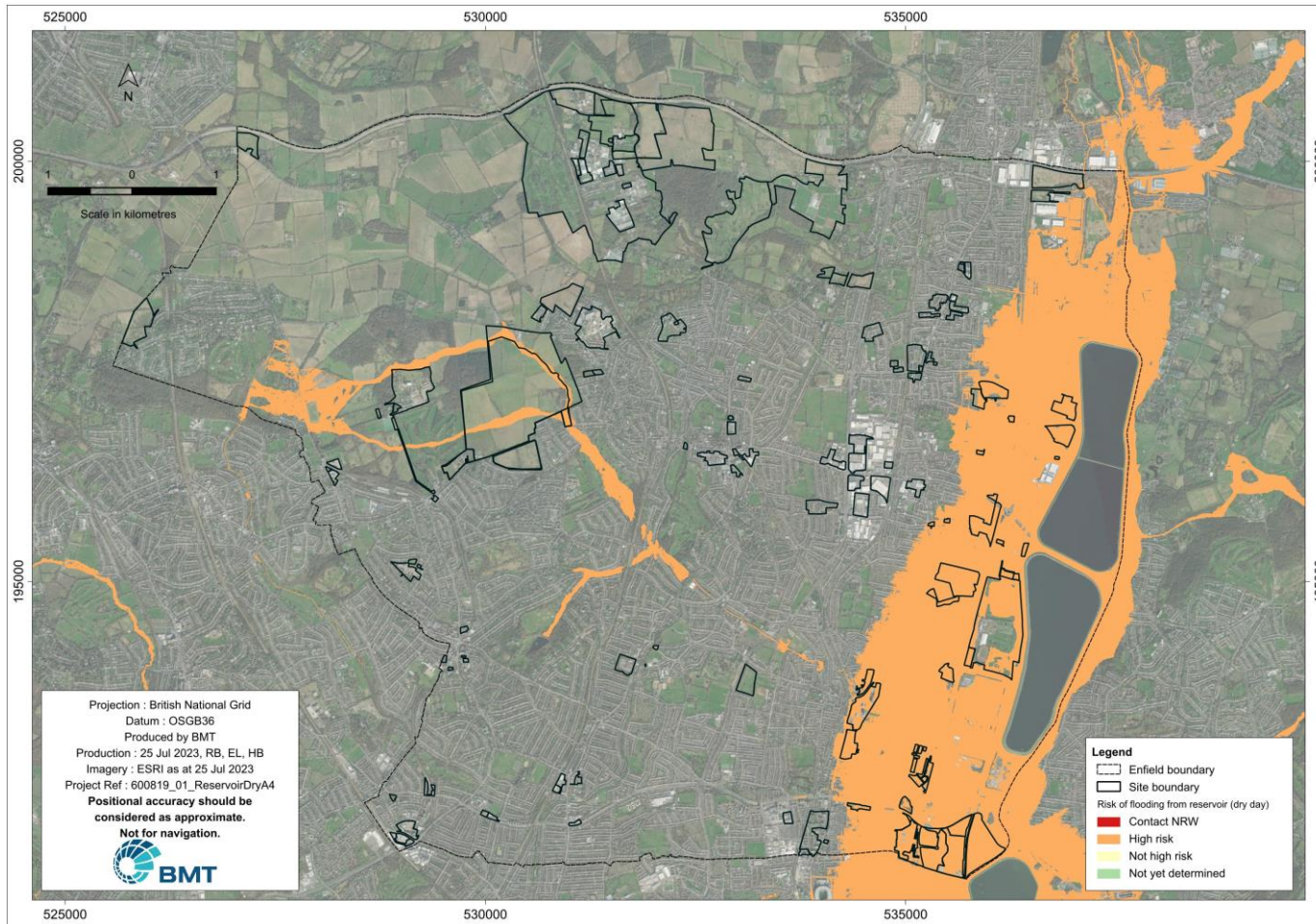


Figure 3.13 Risk of Flooding from Reservoirs (Dry Day)

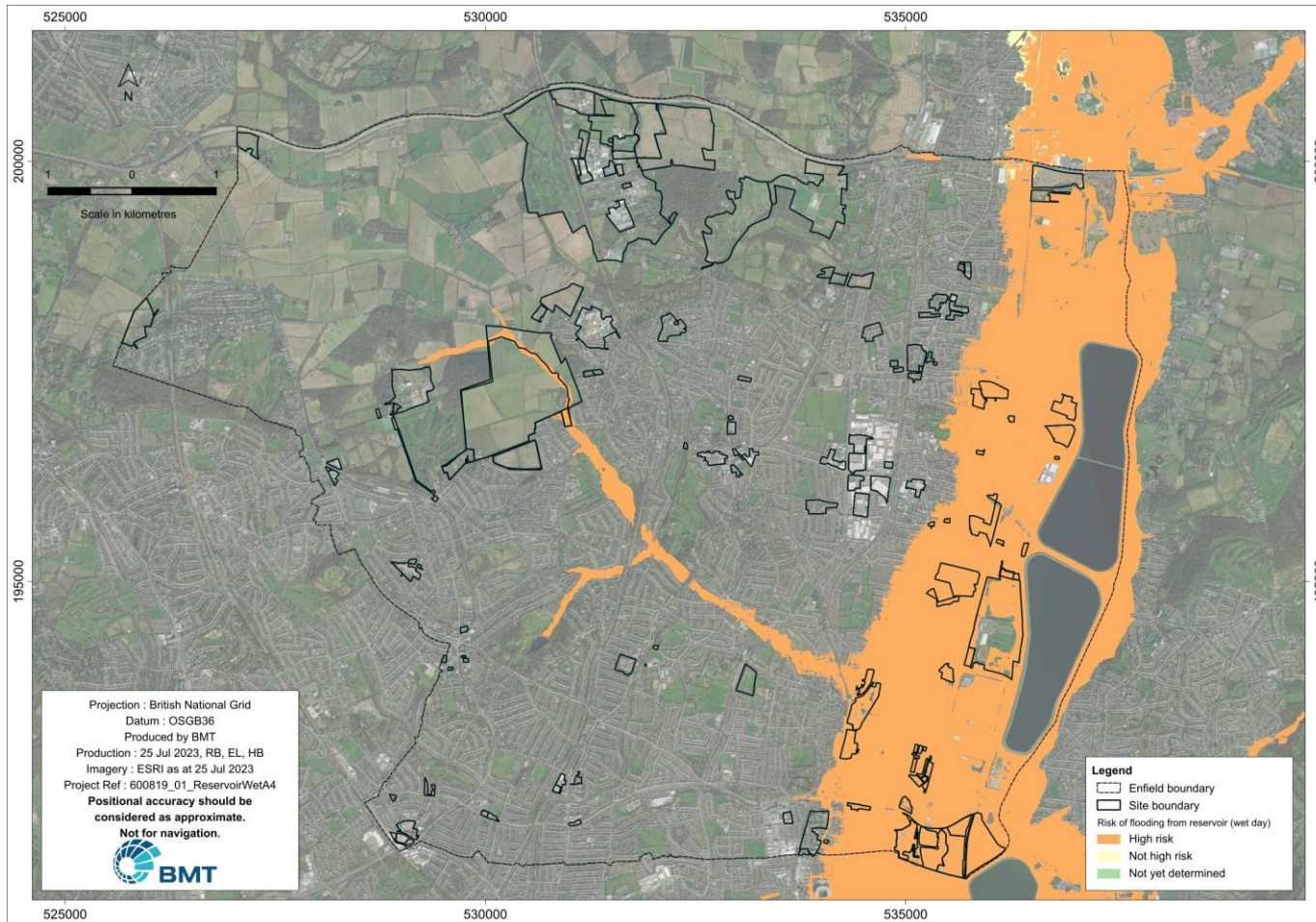


Figure 3.14 Risk of Flooding from Reservoirs (Wet Day)

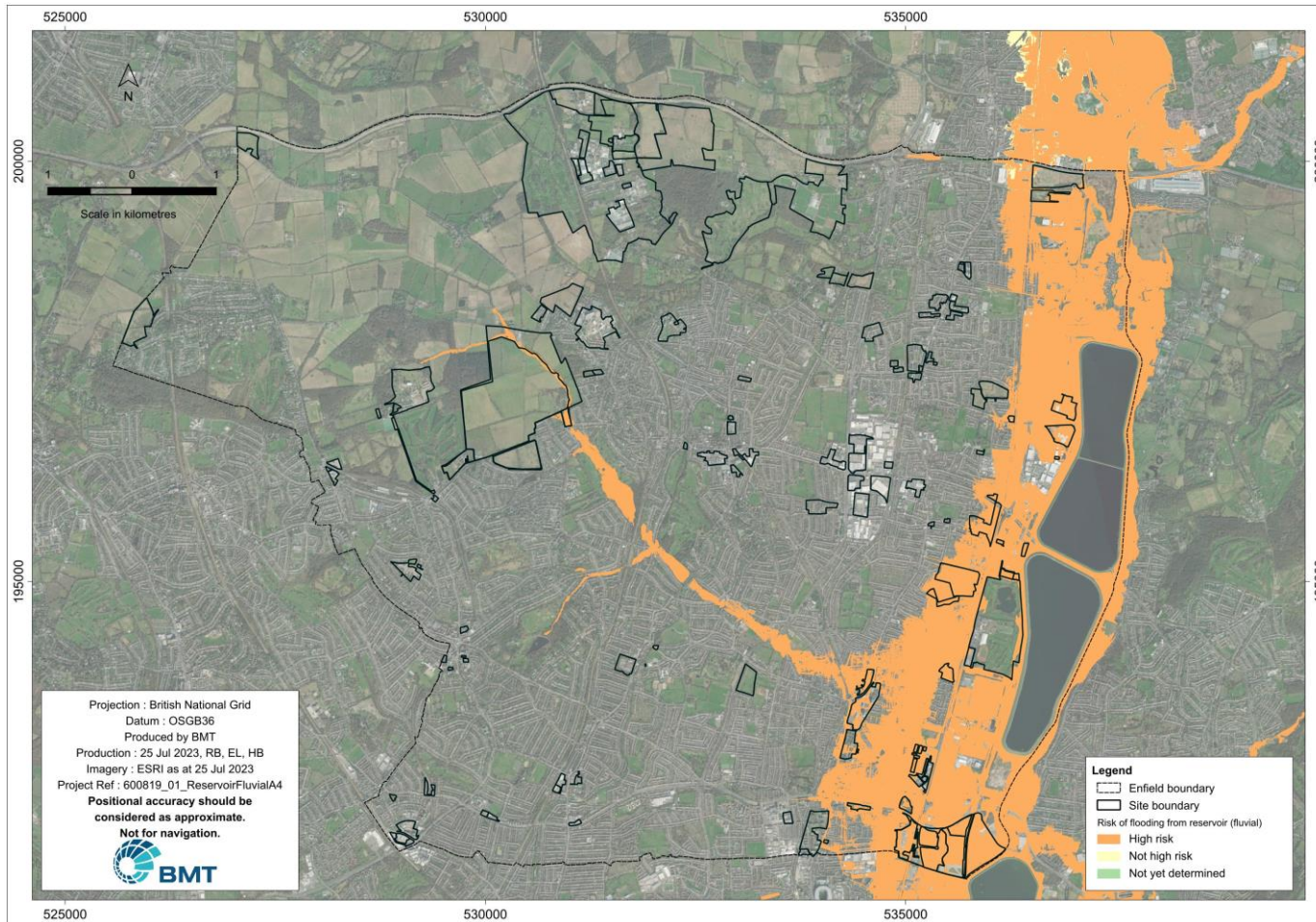


Figure 3.15 Risk of Flooding from Reservoirs (Fluvial Extend)

3.4 Historic Flood Risk Assessment

Environment Agency Records

Fluvial / Pluvial

Figure 3.16 presents the EA dataset from 2016 of records of past flood events, for an unknown time period, (the Historic Flood Map dataset). The Historic Flood Map dataset shows the combined extents of known flooding from rivers, the sea, and groundwater.

Figure 3.16 shows that the borough has previously experienced flooding, however this has only affected 21 of the 110 identified sites. This flooding has primarily occurred in the east of the borough.

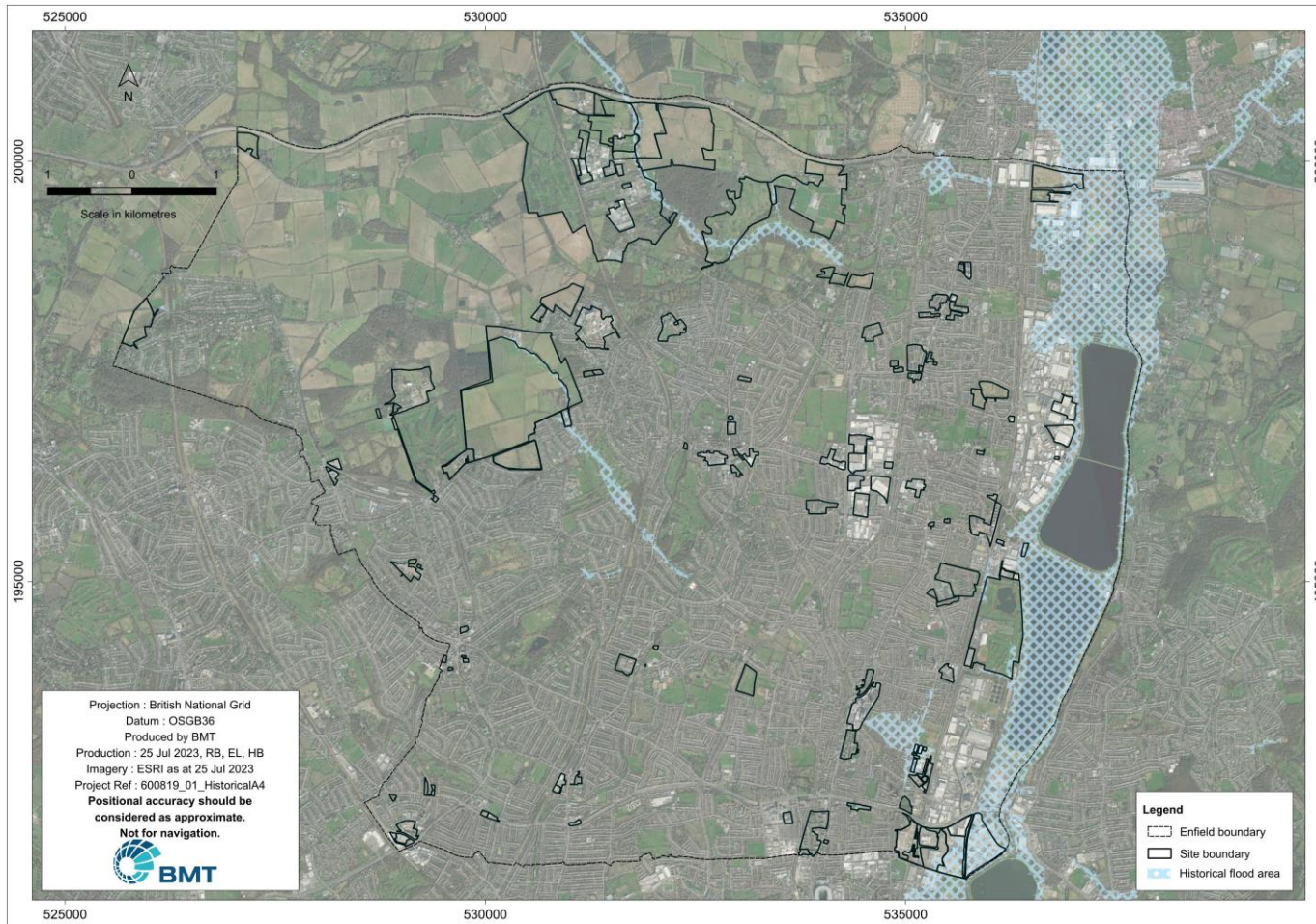


Figure 3.16 Areas Flooded in the Past

Groundwater

EA data from June 2023 contains records on groundwater flooding in the Enfield area, ranging from July 2002 to March 2021. This contains 38 records, covering 10 of the 11 postcode districts, with only EN1 not containing any records.

Canals

Overtopping of a river levee occurs when the flood wave generates a water stage above the levee crest. Figure 3.17 presents the Canal River Trust dataset from May 2023, showing previous overtopping events recorded in the borough, this shows that there has only been one overtopping event in the borough, and this does not occur in any of the 110 identified sites.

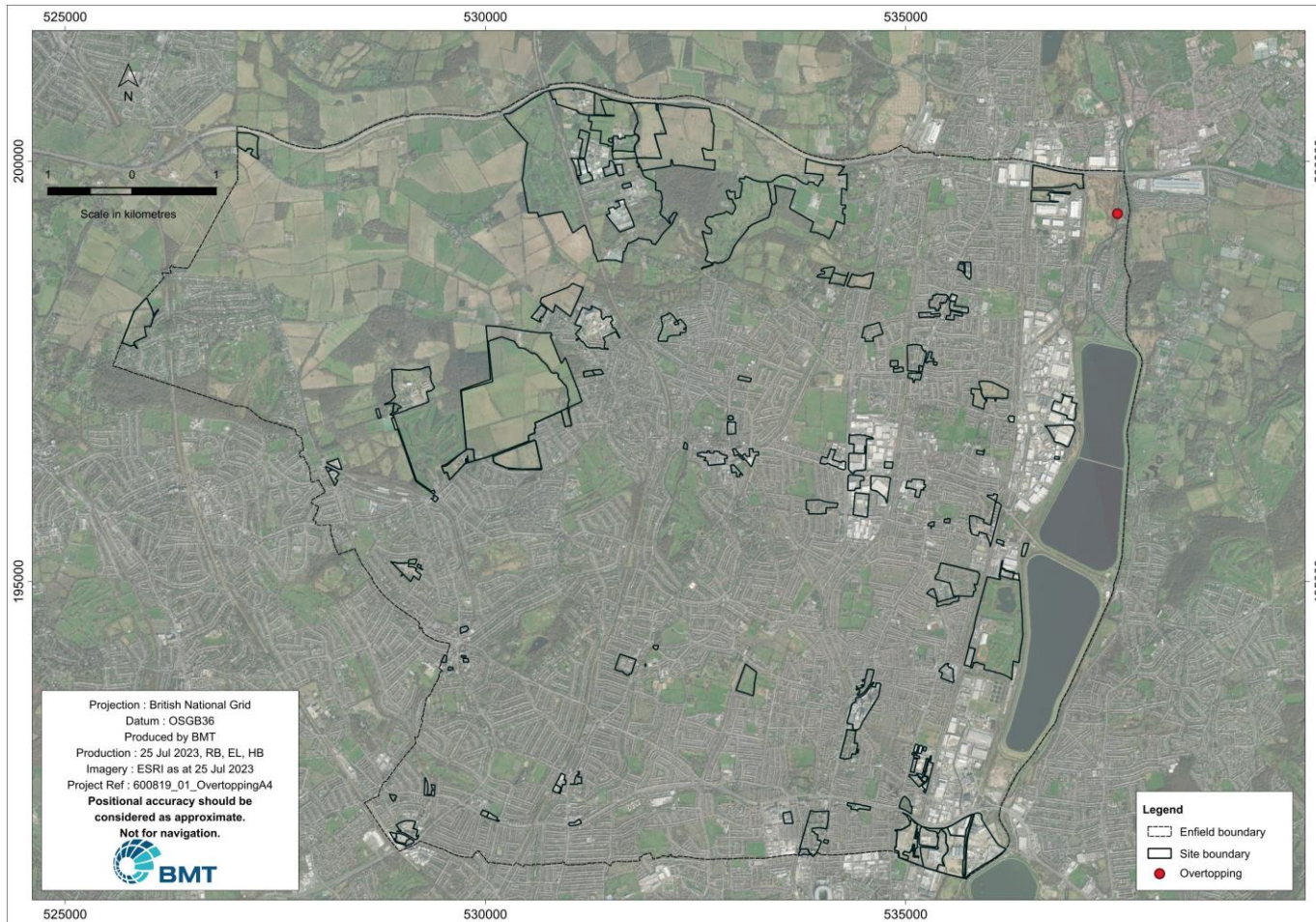


Figure 3.17 Overtopping

3.5 Alerts / Warning and Defences

Location of Nearest Flood Defence

Figure 3.18 presents the EA dataset from 2016 showing the locations of formal flood defence within the vicinity of the borough and includes any that have permission to be constructed. Please refer to the EA recommendations for working on or near a defence at www.gov.uk/permission-work-on-river-flood-sea-defence. Figure 3.18 displays the location of linear raised flood defences such as embankments and walls, and show they affect very few of the sites.

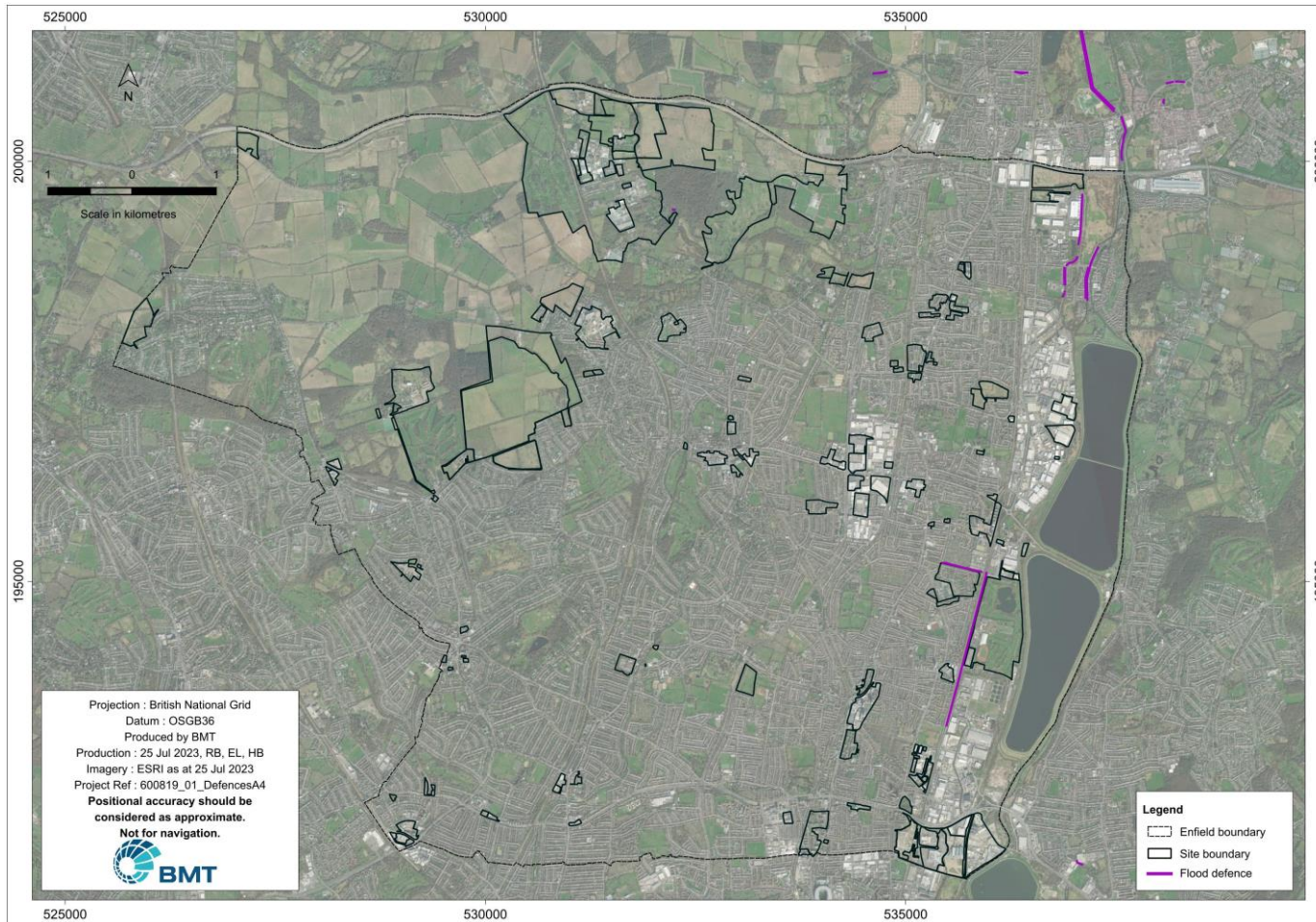


Figure 3.18 Flood Defences

Flood Alert Areas

The Flood Alert Areas dataset is an EA dataset downloaded in 2015/2016. Flood Alert Areas are geographical areas where it is possible for flooding to occur from rivers, sea and, in some locations, groundwater. Figure 3.19 presents this dataset showing locations covered by flood alerts. This shows that 37 of the 110 identified sites contain areas that have flood alerts.

Flood Warning Areas

The Flood Warning Areas dataset is an EA dataset downloaded in 2015/2016. These defined locations within the Flood Warning Service Limit that represent a discrete community at risk of flooding. Figure 3.19 presents this dataset, showing that 27 of the 110 identified sites include areas that are covered by flood warnings, with there being more flood warning areas in the south east of the borough.

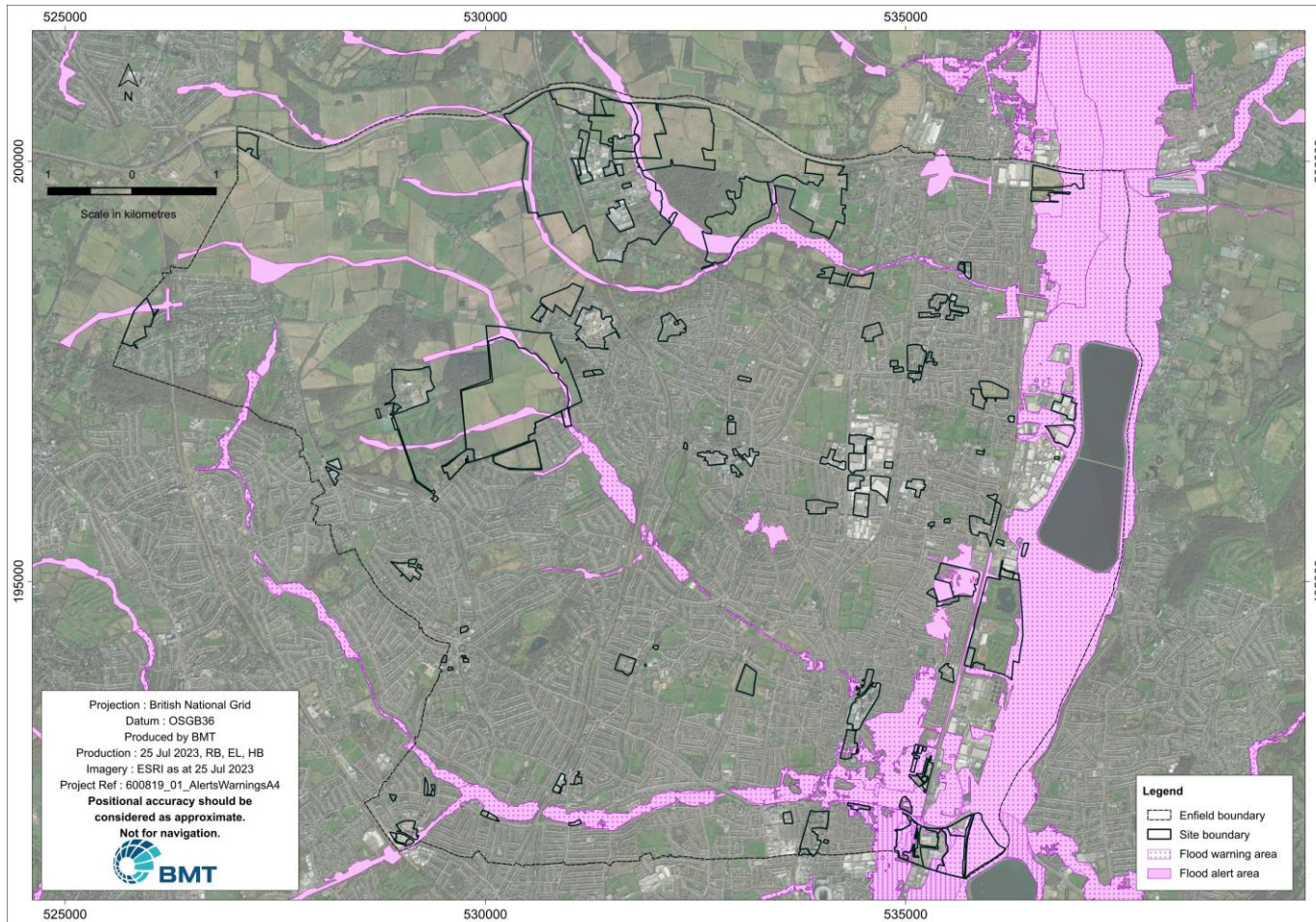


Figure 3.19 Flood Alert Areas

Flood Risk Area

The Flood Risk dataset is from the EA, downloaded in 2016, and shows areas at risk of flooding from any source, now or in the future.

Figure 3.20 presents this dataset, showing that the majority of the borough is in a flood risk area either now or in the future, with the exception of 12 sites in the north west of the borough.

For guidance please visit: Flood management plan of Enfield Council at <https://www.enfield.gov.uk/services/environment/flood-management>.

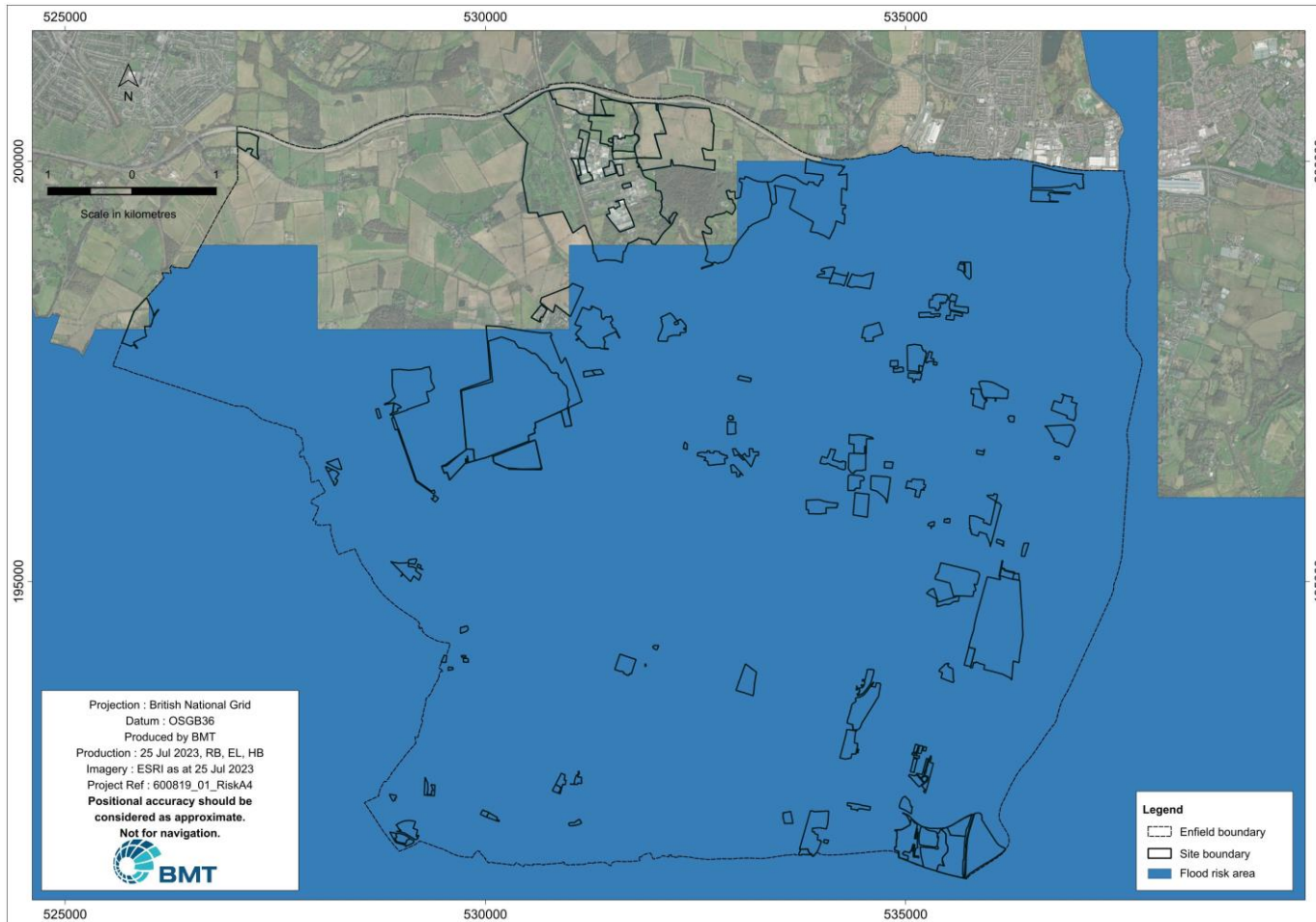


Figure 3.20 Flood Risk Areas

4 Conclusions

Due to the flood risk in the area from river, groundwater, artificial sources, and surface water flooding, analysis has been undertaken to support the production of FRAs and application of the sequential and exception tests. This has the aim of locating developments in areas with the overall lowest risk of flooding.

This analysis has indicated that there are sites that do not pass the test.

Table 4.1 Conclusion – Sites where development may pass the sequential/exception tests

| Test | Initial review | Post-initial review |
|------------|----------------|---------------------|
| Sequential | 63 | 88 |
| Exception | 3 | 11 |
| Total | 66/110 | 99/110 |

11 sites which, following review, still fail to meet the exception test are:

SA19 Broad Location, CFS261, CFS264, ELC3, HIC10, UPC1 and UPP24, however, of the 11, three have already been granted consent: CFS139 (flood study), EHP34, and USP21b and one site has already passed the exception test, Upp32.

Three sites, which pass sequential testing, have also been granted consent: CFS281, SGC1, SGC2,

Table 4.2 is the site-specific summary table, it details the full 115 site, including the 5 removed sites. The table details whether a site will have passed or failed the sequential and exception tests. It also details those sites that ‘may’ pass one of the tests provided certain conditions are met.

For those sites which do not pass the sequential/exception tests a site level exception test report should be requested from the developer, the site also needs to have a requirement for a site-specific FRA referred to in the site allocation.

For sites that are at high risk of groundwater and/or include below ground elements to the development are required to produce a site-specific groundwater assessment, again, the requirements for this should be referred to in the site allocation.

It should be noted that although this assessment has highlighted sites which do not pass the sequential/exception, this does not necessarily mean the land is not developable. Careful consideration of site specifics (exact development usage and vulnerability classification), engagement with stakeholders, flood risk studies and potential mitigation measures are all methods which may allow development.

Table 4.2: Site Specific Summary table

| Reg 19 SA Ref | SFRA Ref | Address | Usage | Sequential Test | Exception test | Risks to be considered | Comments |
|---------------|----------------|--|---------------------------|-----------------|----------------|---|---|
| REMOVED | 19_03802_RE4 | Reardon Court 26 Cosgrove Close London N21 3BH | Residential & Care homes | Passed | | Predicted Groundwater Historic Sewer Flooding | |
| SA90 | 21_00804_FUL | Snowbird foods extension, Snowbird Foods Ltd.14 Wharf Road Enfield | Industrial usage | Passed | | Predicted Surface Water Predicted & Historic Groundwater Predicted Reservoir Historic Sewer Flooding | |
| SA87 | 21_01816_FUL | The Royal Chace Hotel, The Ridgeway, Enfield EN2 8AR | Mixed Use | Passed | | Predicted Surface Water Predicted & Historic Groundwater Historic Sewer Flooding | |
| SA91 | 21_04302_FUL | Riverwalk Business Park 24 Riverwalk Road, Enfield, postcode EN3 7QN | Industrial usage | Passed | | Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | |
| REMOVED | BOC5 | Tottenham Rd, postcode N13 6DJ | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA19 | Broad location | Meridian Water postcode N18 3 | Residential and Mixed Use | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | Significant flood zone 2 and 3. |
| SA27 | Broad location | Crews Hill, postcode: EN2 9DX | Residential | May Pass | | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| SA28 | Broad location | Chase Park, postcode EN2 8JZ | Residential | Passed | | Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | |
| SA19 | CFS139 | Harbet Road Industrial Estate, Harbet Road, postcode N18 3HT | Mixed Use | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | Significant flood zone 2 and 3. Information provided post initial review, states that this development has been included as part of a detailed flood alleviation study. This new information states that this has been approved by, and as such the flood alleviation study, is likely to supersede this document. |
| SA23 | CFS150 | Alan Pullinger Centre, 1 John Bradshaw Road, Southgate, postcode N14 6BT | Residential | Passed | | Predicted Groundwater Historic Sewer Flooding | |
| SA29 | CFS162 | rear of 66 The Ridgeway (west), postcode EN2 8JA | Residential | Passed | | Predicted & Historic Groundwater Historic Sewer Flooding | |

| | | | | | | | |
|------|----------|--|---------------------------|----------|----------|---|--|
| SA18 | CFS165 | South-east corner of the North Middlesex University Hospital Trust of Sterling Way, London, postcode N18 1QX | Residential | Passed | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir | |
| SA12 | CFS166 | Tesco, Ponders End, 288 High Street, Enfield, postcode EN3 4DP | Residential and Mixed Use | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA60 | CFS171 | Sloemans Farm postcode EN2 9HW | Green Infrastructure | May Pass | | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Historic Sewer Flooding | As the details are currently unknown, for purpose of this document it will be assumed that a sequential test is required, green infrastructure would be considered water compatible. |
| SA29 | CFS177 | Arnold House, 66 The Ridgeway (east) postcode EN2 8JA | Care home | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA7 | CFS178 | Oak House, 43 Baker Street, postcode EN1 3ET | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA23 | CFS189 | Minchenden CP- adjacent to Leigh Hunt drive, postcode N14 6BT | Residential | Passed | | Predicted Groundwater Historic Sewer Flooding | |
| SA5 | CFS191 | Civic Centre, postcode EN1 3XA | Mixed Use | Passed | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA47 | CFS198-1 | Kenninghall Open Space South, Kenninghall Road, London, N18 2PE | Mixed Use | Failed | May Pass | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Following initial review, this area was highlighted as being an area in current use. As such, depending upon the details of the proposed development, this may pass the exception test |
| SA42 | CFS201 | Ford's Grove Car Park, Ford's Grove, Enfield, postcode N21 3DN | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA43 | CFS204 | Lodge Drive Car Park Palmers Green including depot, postcode N13 5LB | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA41 | CFS207 | Albany Leisure Centre and Car Park, 55 Albany Road, Enfield, postcode EN3 5XH | Care home | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA40 | CFS217 | Brimmsdown Sports Ground, Goldsdown Road, Enfield, postcode EN3 7RN | Mixed Use | Passed | | Predicted Surface Water Historic surface water and fluvial Predicted Reservoir Predicted Groundwater Historic Sewer Flooding | |
| SA75 | CFS235 | Morrisons. 19 Alderman's Hill, Palmers Green, postcode N13 4EU | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |

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|------|--------|---|------------------|----------|----------|--|---|
| SA63 | CFS237 | Langhedge Lane Industrial Estate, postcode N18 2TJ | Mixed Use | Passed | | Predicted Groundwater Historic Sewer Flooding | |
| SA76 | CFS238 | Corner of Green Lanes and the North Circular, postcode N13 SUP | Mixed Use | Failed | May Pass | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | Significant flood zone 2. Following initial review, further information was provided which detailed the ground floor would be for commercial use only, as such, the new vulnerability classification would mean the development may pass the exception test. |
| SA11 | CFS242 | Southbury Leisure Park Enfield, postcode EN1 1YQ | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA89 | CFS248 | Land and buildings to the southeast of Stockingswater Lane, Brimsdown, postcode EN3 7PZ | Industrial usage | May Pass | | Predicted Fluvial flooding Predicted Surface Water Predicted Reservoir Predicted Groundwater Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| SA77 | CFS260 | Four Hills Estate, Lavender Hill, postcode EN2 ONX | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA78 | CFS261 | Cuckoo Hall Lane Estate, postcode CFS261 | Residential | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Significant flood zone 2 and 3. |
| SA79 | CFS264 | Fore Street Estate, postcode N9 0QE | Residential | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Significant flood zone 2 |
| SA80 | CFS265 | Hoe, Eastfield, Cherry and Bouvier Estates, postcode EN3 5XH | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA81 | CFS266 | Hertford Road, Archers and Roman Way, Larksfield Grove Caterhatch, Lytchet Way and Sherbourne Avenue Estate, postcode EN3 5XY | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA82 | CFS272 | Kettering Rd Estate, postcode EN3 6UU | Residential | Passed | | Predicted Fluvial flooding Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA83 | CFS274 | Peveny Avenue, EN1, postcode EN1 3H | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA84 | CFS277 | South Street. EN3 | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |

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|------|--------|--|------------------|----------|--|---|---|
| SA85 | CFS278 | Stoneleigh Avenue Estate. EN1, Off Hoe Lane, postcode EN1 4HW | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA68 | CFS281 | Heritage House, 345 Southbury Road, postcode EN1 1TW | Industrial usage | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | Please note, following initial consultation it is understood that this development may already have Consent. Information held as part of that consent is likely to supersede this document. |
| SA93 | CFS286 | 5 Picketts Lock Lane, postcode N9 0AS | Industrial usage | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA27 | CHC1 | Warmerdams Nursery, Cattlegate Road, Enfield, postcode EN2 9DX | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC2 | Wolden Garden Centre, Cattlegate Road, Crews Hill, Enfield, postcode EN2 9DX | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC3 | Burton Farm Ride, postcode EN2 9AX | Residential | May Pass | | Predicted fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Reservoir Predicted and Historic Groundwater Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| SA44 | CHC5 | Land opposite Enfield Crematorium (aka The Dell). Great Cambridge Road, postcode EN1 4DS | Residential | Passed | | Predicted Surface Water Historic Sewer Flooding | |
| SA27 | CHC10 | Site at Oak Farm and Homestead Nursery, Cattlegate Road, Enfield, postcode EN2 9DS | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC11 | Land to the rear of Jesus Christ Church, Parcel 1, postcode EN2 9EU | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC12 | Land to the south of Forty Hill C of E school, Forty Hill, Parcel 2, postcode EN2 9EY | Residential | Passed | | Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC15 | Land to the North of Crews Hill Station, postcode EN2 9EA | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC17 | Towneley Nurseries, Theobalds Park, postcode EN2 9DH | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | |
| SA27 | CHC18 | Brown's Garden Village, Theobalds Park Rd, Enfield, postcode EN2 9DG | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA27 | CHC19 | Theobalds Park Road Nursery, postcode EN2 9BH | Residential | Passed | | Predicted and Historic Groundwater Historic Sewer Flooding | |

| | | | | | | | |
|------|-------|---|------------------|----------|--------|--|---|
| SA27 | CHC21 | Land at Crews Hill, Theobalds Park Road, Enfield, postcode EN2 9BQ | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA45 | COC8 | Land between Camlet Way and Crescent West, Hadley, postcode EN4 ONL | Residential | May Pass | | Predicted fluvial flooding Predicted Surface Water Historic Groundwater Historic Sewer Flooding | Information provided post initial review, states that the localised risks are known, and the planned development will not be within the flood risk zones. Provided this information is confirmed within a FRA, this would therefore PASS. |
| SA31 | COC9a | Cockfosters Station Car Park (Parcel a) Cockfosters Road, Barnet, postcode EN4 0DZ | Mixed Use | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA31 | COC9b | Cockfosters Station Car Park (Parcel b) Cockfosters Road, Barnet, postcode EN4 0DZ | Mixed Use | Passed | | Predicted Groundwater | |
| SA86 | COC11 | Oakwood Station Car Park, Bramley Road, London, postcode N14 4UT | Mixed Use | Passed | | Predicted Groundwater Historic Sewer Flooding | |
| SA33 | COP10 | Blackhorse Tower, Holbrook House And Churchwood House, 116 Cockfosters Road, postcode EN4 0DY | Change of use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | Change of use applications do not need to undergo sequential test |
| SA70 | COP71 | New Avenue Estate, London, postcode N14 4DG | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA71 | COP72 | Former Middlesex University Trent Park Bramley Road, postcode N14 4YZ | Mixed Use | May Pass | | Predicted fluvial flooding Predicted Surface Water Predicted Reservoir Predicted Groundwater Historic Sewer Flooding | |
| SA13 | EDC2 | Edmonton Green Shopping Centre, postcode N9 0TZ | Mixed Use | Passed | | Predicted fluvial flooding Predicted Surface Water Predicted Reservoir Predicted Groundwater Historic Sewer Flooding | |
| SA34 | EHP34 | 241 Green Street, postcode EN3 7SJ | Mixed Use | Failed | Failed | Predicted fluvial flooding Predicted Surface Water Predicted Reservoir Predicted and Historic Groundwater Historic Sewer Flooding | Significant flood zone 2 Please note, following initial consultation it is understood that this development may already have Consent. Information held as part of that consent is likely to supersede this document. |
| SA52 | ELC3 | Ramney Marsh Mollison Avenue, postcode EN3 7XQ | Industrial usage | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Significant Flood zone 3b |
| SA1 | GRC1 | St Annes Catholic High School for Girls, Enfield, postcode EN2 6EL | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA3 | GRC3 | 100 Church Street, Enfield, postcode EN2 6BQ | Residential | Passed | | Predicted Groundwater Historic Sewer Flooding | |

| | | | | | | | |
|---------|--------|--|-----------------------|----------|----------|---|---|
| SA2 | GRC12 | Palace Gardens Shopping Centre Enfield, postcode EN2 6SN | Mixed Use | Passed | | Predicted Fluvial flooding Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA4 | GRC13 | Town Station, Southbury Road, Enfield, postcode EN1 1YX | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA28 | HIC6 | Bramley Road, London, postcode N14 4UW | Residential/Care home | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA28 | HIC9 | Land south of Enfield Road, postcode EN2 7RE | Residential | Passed | | Predicted Surface Water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA28 | HIC10 | Land opposite Jolly Farmers, postcode EN2 7QL | Residential | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | Significant Flood zone 2 and 3 |
| SA28 | HIC11 | Vicarage Farm, Land between Hadley Road & Enfield Rd, postcode EN2 8JZ | Residential | May Pass | | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | Information provided post initial review, states that the localised risks are known, and the planned development will not be within the flood risk zones. Provided this information is confirmed within a FRA, this would therefore PASS. |
| SA14 | LOC1 | Chiswick Road Estate (Oswald and Newdales), postcode N9 7AL | Residential | May Pass | Failed | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir | Significant Flood zone 2 and 3 The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| SA56 | LOC2 | Land to the south of Millmarsh Lane, postcode N9 0AS | Sporting/Leisure | May Pass | | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Information provided post initial review, states that the land within flood risk is for sporting purposes only. As sporting is water compatible, provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the sequential test. |
| REMOVED | LP1152 | Park Avenue Day Centre, 65c Park Avenue, Bush Hill Park, Enfield, postcode EN1 2HL | Residential | Passed | | Predicted Surface Water Historic Groundwater | |
| SA92 | CFS152 | Claverings, Centre Way, London, postcode N9 0AH | Employment | Failed | May Pass | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer Flooding | Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test |
| SA92 | | Land and buildings north of Lincoln Road, postcode EN1 1SP | Assumed Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |

| | | | | | | | |
|------|---------------------|---|------------------|--------|----------|--|--|
| SA19 | PAC8 | Travis Perkins Palmers Green, Bridge Drive, Broomfield Lane, postcode N13 4EU | Employment | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA32 | PAC39 | Sainsburys Green Lanes, postcode N21 3R | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA53 | POC5 | Car Park Site, Wharf Road, postcode EN3 4TA | Industrial usage | Failed | May Pass | Predicted Fluvial flooding Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test if no development takes place in locations of high risk. |
| SA35 | POC6 | Exeter Road Estate (Land at former Wessex Hall Building), postcode EN3 7TU | Residential | Passed | | Predicted surface water Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | |
| SA74 | POP39 | Alma Estate, postcode EN3 4LB | Residential | Passed | | Predicted surface water Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding | |
| SA73 | PP-08715061 | Former Chase Farm Hospital, The Ridgeway, postcode EN2 8JL | Residential | Passed | | Predicted surface water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA37 | SBC2 | Main Avenue Site, postcode EN1 1EH | Residential | Passed | | Predicted surface water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA6 | SBC4_Southbury Road | Southbury Road Superstore Area, postcode EN1 1NW | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA72 | SBC5 | Moorfield Health Centre, 2 Moorfield Road, postcode EN3 5TU | Mixed Use | Passed | | Predicted surface water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA9 | SBC7 | Colosseum Retail Park, Dearsley Road Enfield, postcode EN1 3FD | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA8 | SBC35 | Sainsburys Crown Road, postcode EN1 1TH | Residential | Passed | | Predicted surface water Predicted and Historic Groundwater Historic Sewer Flooding | |
| SA10 | SBC36 | Morrisons, Southbury Road, postcode EN1 1TW | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |

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|---------|-------|--|-------------|----------|--|---|---|
| SA25 | SGC1 | Gas Holder, Pinkham Way, London postcode N11 1QJ | Residential | May Pass | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. Please note, following initial consultation it is understood that this development may already have Consent. Information held as part of that consent is likely to supersede this document. |
| SA38 | SGC2 | Land at Ritz Parade postcode N11 2JG | Mixed Use | May Pass | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. Please note, following initial consultation it is understood that this development may already have Consent. Information held as part of that consent is likely to supersede this document. |
| SA24 | SGC4 | Arnos Grove Station Car Park, postcode N11 1AN | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA36 | SGP13 | 188-200 Bowes Road, London, postcode N11 2JH | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA67 | SGP33 | n Coppice Wood Lodge, 10 Grove Road, Southgate, postcode N11 1LX | Mixed Use | Passed | | Predicted and Historic Groundwater | |
| SA66 | SGP35 | Ladderswood Estate, postcode N11 | Residential | Passed | | Predicted Surface Water Predicted Groundwater | |
| SA26 | SGS14 | Station Road, New Southgate, postcode N11 1QJ | Unknown | May Pass | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. This development is unknown, as such it is assumed it would not be considered water compatible, as such based on the available information this development would Fail the exception test. |
| SA65 | SOC8a | Barnet and Southgate College (Parcel a), postcode N14 6BS | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA65 | SOC8b | Barnet and Southgate College (Parcel b), postcode N14 6BS | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| REMOVED | SOE9 | Asda site 130 Chase Side, postcode N14 5PW | Residential | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| SA21 | SOP35 | Southgate Office Village 286 Chase Road London, postcode N14 6HF | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |
| REMOVED | SOS11 | M&S Food, Southgate, postcode N14 6AD | Mixed Use | Passed | | Predicted Surface Water Predicted Groundwater Historic Sewer Flooding | |

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| CFS134 | TBC | Land to the south of Millmarsh Lane postcode EN3 7QJ | Industrial usage | Failed | May Pass | <p>Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding</p> | <p>This development is industrial it would not be considered water compatible, however, given the nature of the vulnerability classification and the low risk of flooding this development, provided the development does not build in the small locations of high risk, may not be required to pass the exception test, depending upon the exact nature of development.</p> <p>Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test.</p> |
| CFS136 | TBC | 6 Morson Road, postcode EN3 4NQ | Industrial usage | Failed | May Pass | <p>Predicted Fluvial flooding Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding</p> | <p>This development is industrial it would not be considered water compatible, however, given the nature of the vulnerability classification and the low risk of flooding, provided no development takes place in locations of high risk, this development may not be required to pass the exception test, depending upon the exact nature of development.</p> <p>Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test</p> |
| CFS148 | TBC | Land at Innova Park, postcode EN3 7XY | Industrial usage | Failed | May Pass | <p>Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Predicted Reservoir Historic Sewer Flooding</p> | <p>This development is industrial it would not be considered water compatible, however, given the nature of the vulnerability classification and the low risk of flooding this development may not be required to pass the exception test, depending upon the exact nature of development.</p> <p>Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test.</p> |
| CFS151 | TBC | Crown Road Lorry Park, postcode EN1 1TH | Industrial usage | Passed | | <p>Predicted Groundwater Historic Sewer Flooding</p> | |

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|--------|------|--|------------------|----------|----------|--|--|
| CFS153 | TBC | Montagu Ind Estate, postcode N18 3PR | Industrial usage | Failed | May Pass | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test. Though this is subject to the details of the development. |
| CFS155 | TBC | Junction 24 - Part New Cottage and Holly Hill Farm, postcode EN6 5QT | Industrial usage | Passed | | Predicted Surface Water Predicted and Historic Groundwater | |
| CFS161 | TBC | Whitewebbs Golf Course, postcode EN2 9JN | Nature Recovery | Failed | Passed | | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| CFS218 | TBC | Land to the south of Millmarsh Lane, postcode EN2 9AP | Sporting/Leisure | Failed | Passed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted and Historic Groundwater Historic Sewer Flooding | |
| CFS230 | TBC | Church Street Recreation Ground, postcode N9 9HH | Burial Ground | Passed | | Predicted Surface Water Historic Sewer Flooding | Considering the nature of the site it is advised that the gov.uk site is consulted |
| NA001 | TBC | Ravenside Retail Park, postcode N18 3HA | Industrial usage | Failed | May Pass | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | This development is industrial it would not be considered water compatible, however, given the nature of the vulnerability classification and the low risk of flooding, provided no development takes place in locations of high risk, this development may not be required to pass the exception test, depending upon the exact nature of development. Information provided post initial review, states that this land is already in use. The information also states it would provide a public benefit via created new employment. Provided the developer puts into place safety measures to ensure risk is mitigated, this development MAY PASS the exception test |
| SA19 | UPC1 | IKEA Meridian Water postcode N18 3HF | Mixed Use | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | Significant flood zone 2 |
| SA19 | UPC2 | Tesco Extra, 1 Glover Drive, postcode N11 2LU | Residential | May Pass | | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer | The fluvial flood risks are localised, if the planned development is not within the flood risk zone, provided this information is confirmed within a FRA, this may PASS. |
| SA15 | UPM1 | Joyce Avenue & Snells Park Estate, postcode N18 2SY | Residential | Passed | | Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer | |

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|------|--------|--|-------------|--------|--------|---|---|
| SA16 | UPP9 | Public House 50-56 Fore Street London, postcode N18 2SS | Mixed Use | Passed | | Predicted Groundwater Predicted Reservoir Historic Sewer | |
| SA19 | UPP24 | Meridian Water Orbital Business Park N18 3BZ | Mixed Use | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Historic surface water and fluvial Predicted Groundwater Predicted Reservoir | Significant flood zone 2 and 3 |
| SA19 | UPP32 | n Meridian Water Willoughby Lane and Meridian Way London, postcode N18 3QX | Residential | Failed | Passed | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir | Significant flood zone 2 Information provided post initial review, states that this development has already passed the exception test, It is therefore assumed that more additional information was made available to LBE, and as such supersedes this document. As such, it is acknowledged that this site has already passed the exception test. |
| SA17 | UPS21b | Upton Road and Raynham Road (b), postcode N18 2JJ | Residential | Failed | Failed | Predicted Fluvial flooding Predicted Surface Water Predicted Groundwater Predicted Reservoir Historic Sewer | Please note, following initial consultation it is understood that this development may already have Consent. Information held as part of that consent is likely to supersede this document. |

5 Mitigation

5.1 Requirements

Regardless of the sequential and exception tests, the LBE draft local plan SE8 states that “Developments must prepare a site-specific FRA”, this includes developments in Flood Zone 1, as the risk should include the 1% AEP + climate change and the risk of asset blockage/failure.

If the groundwater is identified as a risk, a specific groundwater FRA is also required.

The policy stipulates that all developments **MUST** be safe, to be classified as safe, the development must:

- Provide a dry access route in the 1% AEP + CC, or where can be demonstrated as a “very low hazard”.
- Finished Floor Levels at least 300mm (fluvial) or 150mm (surface water) above the 1% AEP +CC flood level, with no loss of flood storage.
- Basements will not be allowed in areas of fluvial or surface water flood risk,

5.2 Actively managing the risk

In addition to a FRA, SE10 states a Sustainable Drainage Strategy will be required for all developments, this must follow the drainage hierarchy in the [London Plan](#).

This hierarchy provides developers a simple to follow hierarchy to achieve their drainage obligations.

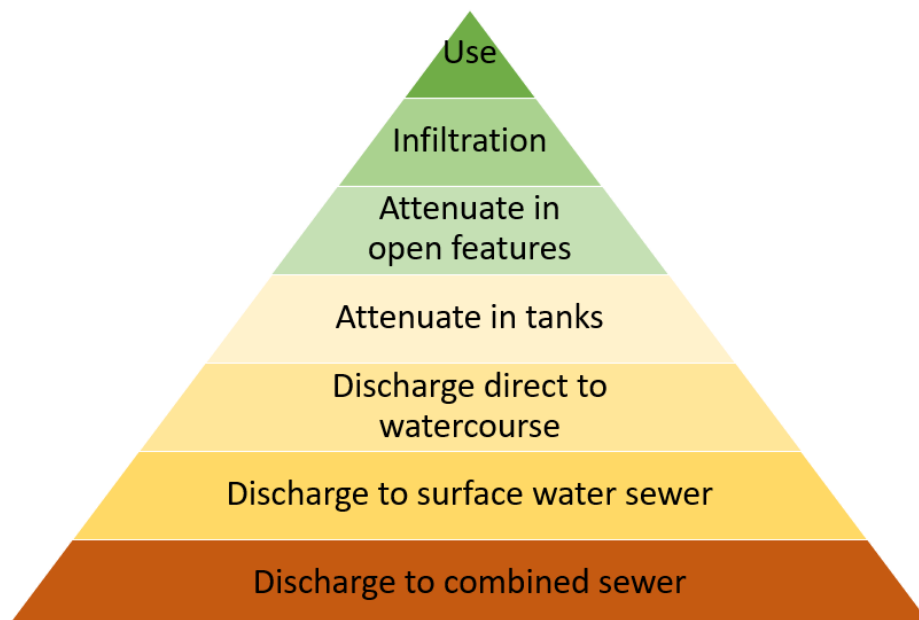
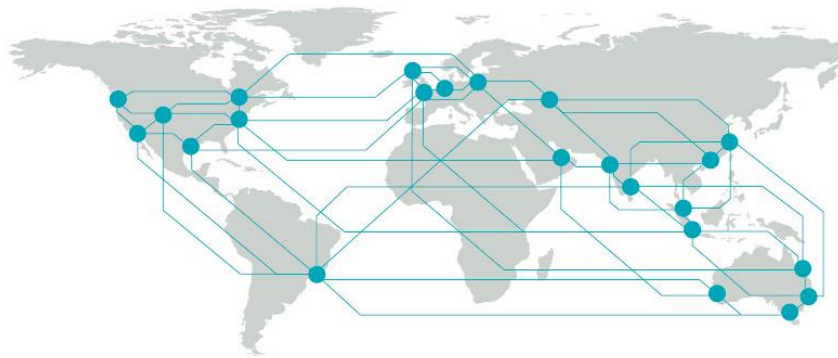


Figure 5.1 London Plan Hierarchy



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