Strategic Flood Risk Assessment - Level 1

Prepared for Sutton Council

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EXECUTIVE SUMMARY

This Level 1 Strategic Flood Risk Assessment (SFRA) serves to fulfil the National Planning Policy Framework's (NPPF) planning and flood risk requirements. This SFRA supersedes the previous 2015 joint SFRA that was published for the London Boroughs of Croydon, Merton, Sutton, and Wandsworth. Updating this SFRA ensures the London Borough of Sutton (Sutton) is compliant with the latest policy requirements and uses the latest data to improve assessment of flood risk.

Sutton is subject to fluvial flooding from the Beverley Brook, the Pyl Brook, and the River Wandle. Areas near the River Wandle around Hackbridge (in the north-east of the borough) and some areas adjacent to the Pyl Brook in the vicinity of Worcester Park (to the north-west of the borough) are at a particularly high fluvial flood risk, while Sutton Town Centre and district centres such as Wallington and Cheam Village are generally at a low fluvial flood risk. Much of the borough is also at risk of flooding from other sources, including surface water, sewers, and groundwater.

This SFRA provides a strategic overview for all flood risk sources throughout Sutton, both at present and in the future. This document and its associated maps serve to address local requirements, manage development requirements, and manage flood risk. It provides a robust evidence base for the preparation of updated Local Plan policies on all aspects of flood risk management and forms the basis for the sequential testing of strategic site allocations for inclusion in the new Local Plan. A Local Plan prepared in the absence of a SFRA would not be deemed sound by the Planning Inspector at the Examination in Public. The local requirements that this SFRA addresses include the impacts of climate change, localised flood risk issues, and specific policies and interpretations of the Flood Zones.

This document is comprised of the eight sections listed below:

- **Section 1 (Introduction):** SFRA purpose and objectives.
- **Section 2 (Planning and Policy Framework):** Relevant national, regional, and local policies that relate to flood risk and associated requirements.
- **Section 3 (Data Sources and Mapping):** Data sources used to produce the associated maps that form part of the SFRA.
- **Section 4 (Applying Climate Change to Risk Assessment):** Detail on how the updated guidance can be applied, and the process for adapting to the impacts of climate change.
- **Section 5 (Assessment of Flood Risk):** Flood risk from all sources across Sutton, including implications of climate change where this information is available.
- **Section 6 (Flood Risk Assessment Guidance):** Guidance for applicants undertaking Flood Risk Assessments (FRAs) for proposed development sites. Explanation of the Sequential Test and Exception Test requirements.
- **Section 7 (Recommendation):** Recommended site-specific and strategic policies.
- **Section 8 (Review and Next Steps):** Summary of the proposed update schedule for the SFRA's mapping and technical content, and information on the potential need for a Level 2 SFRA.

A combination of climate change and future population growth in conjunction with development requirements may increase flood risk from various sources on a local, national, and global scale. The cumulative increased risk from various flood sources may present a greater overall flood risk to people, properties, and infrastructure across Sutton. Additionally, an increased demand for housing may result in a greater number of developments being proposed within higher risk flood zones, increasing their flood risk. Likewise, surface water flood risk is likely to increase following a reduction in permeable ground cover due to further urban development.

Local policy that targets the impact of future growth on flood risk is therefore necessary to facilitate housing development needs while meeting flood risk mitigation requirements. This SFRA will aid the London Borough of Sutton Council (Sutton Council) in improving its borough-wide strategic flood risk management approach, which will be balanced with the challenges associated with the need for increased development.

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GLOSSARY

Term	Definition
Annual Exceedance Probability	The percentage probability of a flood event of a certain magnitude to occur within any given year. *NB: Also see Return Period.*
Aquifer	Underground layers of saturated rock through which water can readily move. Natural springs and wells can transmit water from the aquifer to the surface.
Catchment	An area which drains to a specific watercourse (or a given point in a watercourse), waterbody, or other body of water.
Critical Drainage Area	As referenced in Sutton Council's previous Surface Water Management Plan (2011). Specific geographic areas that are usually hydrological catchments where multiple and cumulative flood risk sources could trigger flooding in one or more Local Flood Risk Zones. This potential flooding could impact people, property, and local infrastructure. These have since been replaced by Catchments and Sub-Catchments in Sutton Council's most recent Surface Water Management Plan (2019). Within these Sub-Catchments, Hotspots have also been mapped based on the number of properties at risk of flooding. These Hotspots are areas with a minimum of 10 residential properties that are predicted to be at risk of flooding in the 1 in 100 year surface water flood event.
Design Flood	The maximum flood flow that could be passed without an engineered structure being damaged or its stability being seriously threatened. Design floods are adopted to protect a structure against failure by overtopping during flood events.
Development	Defined within the Town and Country Planning Act 1990 as at least one of the following: • Building operations (including construction, structural alterations, rebuilding, and demolition). • Material changes of use of land and buildings. • Subdivision of a building used as a dwelling for the use as two or more separate dwellings. • Groundworks or certain other engineering options. • Mining operations. • Other operations usually undertaken by a person carrying on a business as a builder.
Dry Island	Areas situated within Flood Zone 1 that are surrounded by areas at higher risk of flooding, such as those situated within Flood Zone 2 and 3.
Exception Test	Defined within the Flood Risk and Coastal Change Planning Practice Guidance, this is a method that must be carried out for certain development sites based upon their flood zone and vulnerability classification if the Sequential Test shows that it is not possible for an alternative site to be used. This Test is designed to demonstrate and ensure satisfactory flood risk management while enabling necessary development on higher-risk sites in cases where there is no availability of suitable sites at a lower flood risk. Sutton Council's corresponding Level 2

Term	Definition
	Strategic Flood Risk Assessment, which is anticipated to be completed in 2024, will provide more information on undertaking the Exception Test.
Flood Risk	The combination of the probability and potential consequences of flooding from individual or multiple sources, including from rivers and the sea, surface water runoff, rising groundwater, overwhelmed sewers and drainage systems, and the overtopping of reservoirs, canals, and lakes.
Flood Risk Assessment	A report that analyses the risk of flooding from all sources to a proposed site and its surrounding area, both at present and in the future. It should demonstrate how flood risk will be managed both currently and in the future throughout a development's lifespan. Details of appropriate flood resilience and/or resistance measures should also be provided where appropriate, according to Government Standing Advice.
Flood Storage Compensation	Reducing nearby ground levels to provide more volume to replace floodplain storage that is lost due to development.
Flood Zone	A geographic area that has a defined flood risk and an accompanying designated annual flooding probability. This is primarily from river (fluvial) or sea (tidal) flooding. Local Planning Authorities, the National Planning Policy Framework, and Flood Risk and Coastal Change Planning Practice Guidance set the Flood Zone definitions.
Flood Zone 1	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as land with a 'Low Probability' of experiencing flooding from fluvial or tidal sources. • Annual flooding probability (fluvial or tidal sources) of less than 1 in 1,000 years (<0.1% Annual Exceedance Probability).
Flood Zone 2	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as land with a 'Medium Probability' of experiencing flooding from fluvial or tidal sources. • Annual flooding probability (fluvial sources) of between 1 in 100 years to 1 in 1,000 years (1% to 0.1% Annual Exceedance Probability). • Annual flooding probability (tidal sources) of between 1 in 200 years to 1 in 1,000 years (0.5% to 0.1% Annual Exceedance Probability).
Flood Zone 3a (fluvial)	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as land with a 'High Probability' of experiencing flooding from fluvial or tidal sources. • Annual flooding probability (fluvial sources) of greater than 1 in 100 years (>1% Annual Exceedance Probability). • Annual flooding probability (tidal sources) of greater than 1 in 200 years (>0.5% Annual Exceedance Probability).
Flood Zone 3a (surface water)	Defined within this SFRA as land within the EA-modelled surface water flood extents that are predicted for events with a return period of greater than 1 in 100 years (>1% Annual Exceedance Probability).
Flood Zone 3b (fluvial)	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as 'The Functional Floodplain' where land is deemed to be at the greatest risk of flooding from rivers or seas, and where water must flow or be stored during times of flood. It is for the Local Planning Authority to define but, typically, this includes land that has an annual probability of flooding from rivers or seas of at least 1 in

Term	Definition
	30 years (≥3.3% Annual Exceedance Probability).However, model extents to create a Flood Zone 3b layer using a 1 in 30 year scenario were not available from the EA at the time of writing this report, and therefore the 1 in 20 year layers have been used to represent Flood Zone 3b.
Flood Zone 3b (surface water)	Defined within this SFRA as land within the EA-modelled surface water flood extents that are predicted for events with a return period of at least 1 in 30 years (≥3.3% Annual Exceedance Probability).
Floodplain	An area of land which experiences flooding (with water either being stored within this area or flowing over it) when the capacity of flood management infrastructure is exceeded.
Functional Floodplain	As defined in the *'Flood Zone 3b'* definition of this table.
Greenfield Runoff Rate	The rainfall runoff rate of a site in its undeveloped, naturally permeable state.
Main River	A statutory type of watercourse designated by the Environment Agency. These watercourses are generally (but are not limited to) larger rivers and streams. The Environment Agency has powers to carry out maintenance and operational works main rivers, including flood defence works.
Major Development	Defined in the Town & Country Planning (Development Management Procedure) Order 2015 as one of the following: • Residential developments situated on a site area of at least 0.5 hectares, or developments which propose 10 or more dwellings. • Non-residential developments situated on a site area of at least 1 hectare, or developments with a new floorspace of at least 1,000m^2. • Developments that use land for the winning and working of minerals or for mineral-working deposits. • A waste development.
Minor Development	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as one of the following: • Residential developments with a site area below 0.5 hectares or those proposing between 1 and 9 dwellings. • Non-residential extensions with a site area below 1 hectare or a total building floorspace of below 1,000m^2.
Ordinary Watercourse	A watercourse which is not designated as a main river by the Environment Agency. This includes rivers, streams, culverts, ditches, drains, sluices, dikes, some sewers (aside from public sewers that fall within the meaning of the Water Industry Act 1991), and passages through which water flows.
Residual Risk	Defined in the Flood Risk and Coastal Change Planning Practice Guidance as the risks that remain after application of the sequential approach and taking flood risk mitigation actions.
Return Period	The estimated average time between events of equal magnitude i.e. a 1 in *x* year event. *NB: Also see Annual Exceedance Probability.*

Term	Definition
Risk Management Authorities	Defined within the Flood and Water Management Act (2010), including Lead Local Flood Authorities, the Environment Agency, Highway Authorities, and Water and Sewerage Companies.
Sequential Test	Defined within the Flood Risk and Coastal Change Planning Practice Guidance, this is a sequential approach that aims to steer development towards areas with the lowest risk of flooding. This test is designed to avoid development in areas which are classified as being at a medium and high risk of flooding from all sources where possible, both at present and in future. This is the most effective way of addressing flood risk, placing minimal reliance on flood defences and property-level resilience features within developments.
Standard of Protection	The return period of a flood event against which a specific defence should be effective.
Strategic Flood Risk Assessment	A study undertaken by one or more Local Planning Authorities to assess a given area's current and future flood risk from all sources. The study considers the impacts of climate change alongside the impacts of land use changes and development in the area on flood risk.
Sub-Catchment	As referenced in Sutton Council's current Surface Water Management Plan (2019) to replace the Critical Drainage Areas. A geographical area (that is a sub-division of a Catchment) where multiple and cumulative flood risk sources could trigger flooding that could impact people, property, and local infrastructure.
SuDS Strategy	The strategy should demonstrate site drainage measures aimed at minimising surface water runoff onto adjacent land uses. The strategy should analyse the behaviour of water within the site, establish runoff rates, demonstrate flow pathways, and show flood depths that may occur under various rainfall events. The strategy should investigate a proposed development's potential impacts to the site upon which it is situated, and demonstrate the inclusion of measures that ensure the site's compliance with the requirements of local and national policies. Where appropriate, it should include the results of on-site investigations to establish the suitability of the site for infiltration measures.
Sustainable Drainage Systems	Techniques and measures that are designed to manage surface water runoff by mimicking natural processes to control flow rates, improve water drainage, improve water quality, and encourage groundwater recharge.
White Paper	Government-produced policy documents that provide an in-depth analysis of a certain topic and set out proposals for future legislation.

ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
AEP	Annual Exceedance Probability
AStGWF	Areas Susceptible to Groundwater Flooding
BNG	Biodiversity Net Gain
CCRA	Climate Change Risk Assessment
CDA	Critical Drainage Area
CFMP	Catchment Flood Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EU	European Union
FCERM	Flood and Coastal Erosion Risk Management
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FRR	Flood Risk Regulations (2009)
FWMA	Flood and Water Management Act (2010)
GLA	Greater London Authority
GSF	Green Space Factor
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
LSDAP	London Sustainable Drainage Action Plan
NPPF	National Planning Policy Framework
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
RFRA	Regional Flood Risk Appraisal
RMA	Risk Management Authority
RoFSW	Risk of Flooding from Surface Water
SAB	SuDS Approving Body
SFRA	Strategic Flood Risk Assessment
SLWP	South London Waste Plan
SPD	Supplementary Planning Document
STS	Sustainable Transport Strategy
SuDS	Sustainable Drainage Systems
Sutton	The London Borough of Sutton
Sutton Council	The London Borough of Sutton Council
SWMP	Surface Water Management Plan
TfL	Transport for London
TRBD	Thames River Basin District
TWUL	Thames Water Utilities Limited
UKCP	United Kingdom Climate Projections

1 INTRODUCTION

1.1 Objectives of the SFRA

This Level 1 Strategic Flood Risk Assessment (SFRA) serves to fulfil the National Planning Policy Framework's (NPPF) planning and flood risk requirements. This document provides a strategic overview for all flood risk sources throughout the London Borough of Sutton (Sutton). It addresses local requirements, with a series of associated maps, including the below:

- Impacts of climate change, which incorporate recently published guidance and provide associated fluvial flood mapping.
- Specific policies and interpretations of the Flood Zones.

This Level 1 SFRA fundamentally provides the evidence base and planning policy guidance for Sutton's new Local Plan and forms the basis for the sequential testing of potential strategic site allocations. This will aid the London Borough of Sutton Council (Sutton Council) in improving their borough-wide strategic flood risk management approach, which will be balanced with the challenges which are posed to the borough associated with the need for increased development.

1.2 Previous joint Level 1 and Level 2 SFRAs (2015 and 2017)

Sutton Council's previous Level 1 and Level 2 SFRAs were published in 2015 and 2017 respectively. The previous Level 1 SFRA was published as part of a joint document alongside the London Boroughs of Croydon, Merton, and Wandsworth.

The previous Level 1 SFRA report (2015) showed the areas at risk of flooding from various sources, including fluvial, surface water, groundwater, and sewer flooding using the most up-to-date data at the time of its publication. It also included planning policy recommendations and a site assessment database to be used to undertake sequential testing of potential development sites.

The previous Level 2 SFRA (2017) was published as part of the evidence base for Sutton Council's Local Plan (*Section 2.4.1* discusses the Local Plan in further detail), and outlined technical information and guidance on any proposed site allocations which are located within flood risk areas. This Level 2 SFRA explains how these site allocations could be developed to align with the Exception Test, and discussed how to ensure safety throughout the development's lifetime.

As the SFRA is a 'living document' (as discussed in *Section 1.4* and *Section 8*) and Sutton Council's previous Level 1 SFRA was created as a joint document with three other London boroughs, it is necessary for updated Level 1 and Level 2 SFRA documents to be created and published.

1.3 Document Structure – User Guidance

This document is comprised of the eight sections listed below:

- **Section 1 (Introduction):** SFRA purpose and objectives.
- **Section 2 (Planning and Policy Framework):** Relevant national, regional, and local policies that relate to flood risk and associated requirements.

- **Section 3 (Data Sources and Mapping):** Data sources used to produce the associated maps that form part of the SFRA.
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- **Section 7 (Recommendation):** Recommended site-specific and strategic policies.
- **Section 8 (Review and Next Steps):** Summary of the proposed update schedule for the SFRA's mapping and technical content, and information on the Level 2 SFRA.

1.4 A Living Document

This SFRA is intended to be a 'living document', whereby it is shaped by the current policy, legislation, and flood risk information. It must therefore be regularly reviewed in accordance with any new policy directives, Acts, or information that may impact flood risk management and planning decisions. Should any updates to this SFRA report be required following its completion in 2024, these will be documented accordingly.

Section 8 provides further information on reviews and updates for this SFRA.

2 PLANNING AND POLICY FRAMEWORK

2.1 Overview

This section serves to outline the various requirements, policies, and strategic documents that are relevant to flood risk across Sutton. This SFRA is guided by policy framework at national, regional, and local levels, each of which are summarised below. Where possible, hyperlinks to the referenced source material have been provided.

2.2 National Policy

2.2.1 National Planning Policy Framework (2023)

The NPPF, most recently revised in September 2023, was published by the Ministry of Housing, Communities and Local Government. This revised Framework superseded previous versions of the NPPF from March 2012, July 2018, February 2019, June 2019, and July 2021.

The NPPF outlines the Government's planning policies across England and how these should be applied. The NPPF provides a framework within which plans for housing and other developments can be produced by Local Planning Authorities (LPAs), and also provides guidance for prospective applicants for submitting planning applications. The planning system serves to contribute towards achieving sustainable development. The NPPF replaced individual Planning Policy Statements into one main document.

Revisions to the NPPF have been undertaken to update and improve the plan-making process. There were key changes to the 2021 revision to the NPPF that are relevant to this SFRA which include:

- Ensuring that plans consider all sources of flood risk.
- Encouraging the use of improvements in green infrastructure and NFM within developments to reduce the causes and impacts of flooding.
- Incorporating appropriate flood resistant and resilient measures within developments to ensure they can quickly return to use after flood events without the need for significant refurbishment.
- Inclusion of the Flood Risk Vulnerability Classification within Annex 3.

Chapter 14 of the NPPF encompasses the requirement to meet the *"challenge of climate change, flooding and coastal change"*, with paragraphs 159-169 relating specifically to *"Planning and flood risk"*. Paragraph 160 emphasises the importance of SFRAs and their roles in planning and flood risk, stating the following:

"Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards."

Paragraphs 159 and 161-168 of the NPPF summarise the Sequential and Exception Tests as a tool to encourage new development proposals to be located within areas that are at the lowest flood risk. This SFRA provides the basis for applying the Sequential and Exception Tests, with guidance for their application provided within *Section 6.*

The White Paper titled Fixing our broken housing market was published by the UK Government in February 2017, and includes excerpts taken from the NPPF. This paper introduces reforms to planning and the housing market, with a focus on *"Planning for the right homes in the right places"*. Within the current NPPF, in addition to the cumulative requirements in paragraph 160, some key changes linked to planning and flood risk taken from this White Paper include:

- Paragraph 161: Local Plans should consider the current and future impacts of climate change. Where climate change may increase flood risk and the long-term sustainability of some existing development, opportunities should be sought to relocate the development.
- Paragraph 169: Major developments should incorporate Sustainable Drainage Systems (SuDS) as part of their drainage scheme proposals unless sufficient justification can be provided that it would be inappropriate. The proposed SuDS within these major developments should consider advice provided by Lead Local Flood Authorities (LLFAs), have appropriate minimum operational standards and maintenance arrangements, and provide multifunctional benefits where possible.

2.2.2 Flood Risk and Coastal Change Planning Practice Guidance (2022)

The 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG) is a living document that was first published in March 2014 and operates alongside the NPPF. The most recent update was published in August 2022, significantly refreshing the guidance and bringing it in line with the latest policy position on flood risk introduced in the 2021 NPPF update.

The PPG informs how to consider and address flooding and coastal change-related risks within the planning process. This includes discussing how Local Planning Authorities (LPAs) can apply the sequential approach to locating developments, understanding flood risk issues, using SuDS to manage surface water flood risk, and improving property flood resistance and resilience. The 'Flood Risk and Coastal Change' section of the PPG also provides the most recent guidance for how to prepare a SFRA.

The key updates to the 2022 PPG include:

- The explicit inclusion of a climate change allowance within 'design flood' and the consideration of surface water flood risk.
- The Functional Floodplain starting point is now the 3.3% annual exceedance probability (AEP) event (previously 5% AEP).
- The non-residential development lifetime starting point is set at 75 years.
- The encouragement of an integrated approach to flood risk management. This involves a catchment-based approach, improved connectivity with other strategies, and the inclusion of measures which deliver multiple benefits.

The 2022 PPG also provides updated information on Sequential Testing, clarifying:

- When Sequential Tests should be applied, and when it is appropriate to move on to the Exception Test
- Definitions of key terms such as 'reasonably available'.
- Roles and responsibilities, including an emphasis on LPAs to select an area of search and consider if the Sequential Test is passed.
- Approaches to improve efficiency and certainty.

Updated information on the Exception Test is also provided within the 2022 PPG, specifically including:

- Definitions of relevant key terms (such as 'wider sustainability benefits to the community').
- A new section on how developments can demonstrate an overall reduction in flood risk.
- Demonstration of flood zone incompatibility, rather than showing whether 'development is appropriate'.

Other updates to the PPG include:

- Guidance on compensatory floodplain storage (regarding the requirement for level-for-level storage) and mitigating cumulative impacts on flood risk.
- Stating that FRAs are required to detail any increase in flood risk elsewhere.
- Clarification that stilts and voids should not be relied upon to provide compensatory storage.
- Guidance on how to safeguard land required for future FCERM infrastructure.
- Clearer definitions of what SuDS are, improved recognition of their wider benefits, and the encouragement for consideration of SuDS earlier in the design process.
- Inclusion of a new section regarding reductions in the causes and impacts of flooding, including links to the EA's NFM tools and support for river restoration measures.

2.2.3 Flood and Water Management Act (2010)

The Flood and Water Management Act (FWMA) 2010 provides an effective means of managing flood risk across England and Wales. The FMWA defines the roles and responsibilities for Risk Management Authorities (RMAs), which are the bodies that manage flood risk from various flood sources. The FWMA defines the Environment Agency (EA), LLFAs, District Councils (where there is no unitary authority), Internal Drainage Boards, Water and Sewerage Companies, and Highway Authorities as RMAs. Sutton Council has the following responsibilities under the FWMA as an LLFA:

- Managing flood risk from local sources (surface water, groundwater, and ordinary watercourses).
- Regulating works on ordinary watercourses.

- Developing, maintaining, and applying a Local Flood Risk Management Strategy (LFRMS).
- Investigating and recording key local flood incidents.
- Designating structures or features that significantly impact flood risk.
- Maintaining a flood risk asset register.
- Sharing information about flood risk.

Schedule 3 of the FWMA relates to sustainable drainage in new developments and has yet to be enacted in England. It supplies a framework for approving and adopting drainage systems, a SuDS Approving Body (SAB), and national standards for designing, constructing, operating, and maintaining SuDS for the development lifetime. It also makes the right to connect to public sewers conditional upon the drainage system being approved before construction work can start. A Government Review Paper published in January 2023 recommended SuDS to become mandatory in new developments, with the implementation of Schedule 3 to the FWMA expected during 2024 in England. The review recommends that the SAB should sit within the unitary authority or the county council, and that LLFAs would be a good candidate for acting as the SAB.

Upon Schedule 3's implementation, Sutton Council and its LLFA must therefore ensure that its requirements are incorporated within new developments. A SAB may only approve a development following consultation with relevant organisations or authorities. This SFRA should be updated in the future upon the release of further information which confirms the role of the SAB.

2.2.4 Flood Risk Regulations (2009)

The Flood Risk Regulations (FRR) 2009 translate the European Union's (EU) Floods Directive into law for England and Wales. A series of requirements to facilitate consistency in flood risk management across Europe are set out within the EU Floods Directive.

The FRR outline the duties for the EA and LLFAs, requiring RMAs to produce flood risk maps showing flooding extents and hazards, Preliminary Flood Risk Assessments (PFRAs), and Flood Risk Management Plans (FRMPs). These requirements are completed on a six-year cycle of planning and enable England and Wales to meet their legal obligations under the EU Floods Directive 2007.

Sutton Council published their PFRA in May 2011. Further information on the PFRA can be found in *Section 2.4.3.* The EA published their most recent FRMP for the Thames River Basin District (TRBD) in December 2022, succeeding the previous plan that was published in March 2016. The document covers a six-year cycle period spanning from 2021 to 2027. Further information on the FRMP can be found in *Section 2.3.4.*

2.2.5 Town and Country Planning Act (1990)

The Town and Country Planning Act (1990) regulates land development in England and Wales, providing a statutory definition of 'development' and a legal framework for the town and country planning system. The Act deals with matters including:

- The roles and responsibilities of LPAs.
- Control over development, including development orders, planning permission, and appeals.

- Enforcement of planning law, including stop notices.

2.2.6 National Flood and Coastal Erosion Risk Management Strategy (2020)

The National Flood and Coastal Erosion Risk Management (FCERM) Strategy was published in July 2020, with the strategy being most recently updated in June 2022. Climate change and the associated increased risk of flooding and coastal change is identified as a significant challenge within the National FCERM Strategy. The Strategy sets out the practical measures to be implemented by RMAs, partners, and communities, which will contribute to longer-term delivery objectives and the Government's vision of "*a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100*". The Strategy has three core ambitions concerning future risk and investment needs:

- Climate resilient places: increasing nation-wide resilience to flooding and coastal change through bolstered partnership working.
- Today's growth and infrastructure resilient in tomorrow's climate: taking the correct planning decisions and investment to ensure resilient infrastructure, environmental improvements, and sustainable growth.
- A nation ready to respond and adapt to flooding and coastal change: ensuring local people understand their risk to coastal change and flooding, their responsibilities, and how to take action.

The next review for the Strategy is planned for 2026, with the EA planning to review and update the shorter-term measures to ensure everything remains on track to support the Strategy's vision and longer-term objectives.

Alongside the final Strategy, the EA has developed an FCERM Roadmap to 2026, published in 2022. This roadmap has been developed between the EA and partners including National Highways and the National Flood Forum to set out various practical actions to be undertaken up until 2026, with completion of these actions helping ensure progress towards implementing the Strategy's 2100 vision.

2.2.7 UK Climate Change Adaptation Policy (2021)

The UK Climate Change Adaptation Policy paper was published in June 2021, and was later updated in August 2022. This policy details how preparing for climate change through undertaking climate adaptation will help reduce the negative impacts and take advantage of new opportunities across the UK. The Third National Adaptation Programme (NAP3) was published in July 2023 and sets out the actions that the Government and others will take to adapt to the impacts of climate change from 2023 to 2028. This sets out a strategic five-year plan to boost resilience and protect people, homes, businesses and our cultural heritage against climate change risks such as flooding, drought, and heatwaves.

The UK Climate Change Risk Assessment (see *Section 2.2.8*) details the opportunities and risks for the UK as a result of climate change, providing the evidence base to inform National Adaptation Programmes. This Climate Adaptation Policy outlines how to understand, prepare for, and adapt

to the risks associated with climate change, and also details the collaborative working with a range of Government departments and other partners to prepare the UK for climate change.

2.2.8 UK Climate Change Risk Assessment (2022)

The 2022 UK Climate Change Risk Assessment (CCRA) is the third five-yearly review of the risks of climate change on the UK, succeeding the previous 2017-2022 version. The Climate Change Committee prepares the CCRAs, which must align with requirements of the Climate Change Act 2008.

The CCRA considers 61 nationwide climate opportunities and risks, and lists eight risk areas as priorities for action in the next two years. These include:

- risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards;
- risks to soil health from increased flooding and drought; and
- multiple risks to the UK from climate change impacts overseas.

The UK Government's approach to the eight priority risk areas is detailed further within Annex 1 of the CCRA.

2.2.9 UK Environment Act (2021)

The UK Environment Act was adopted in November 2021, and serves as the UK's new framework of environmental protection following its departure from the EU. The Act allows for the enshrinement of previous environmental protection into law, whilst offering new powers to set new binding targets for priority areas. These priority areas are water, air quality, biodiversity, waste, and resource efficiency. Through detailing the legal framework for reforming the waste and recycling services of Local Authorities, the Act establishes a new relationship between local and central Government on environmental improvement.

The Act places duties on the Government regarding environmental governance, with actions including the requirement to set at least one long-term target for each of the aforementioned priority areas, to put in place processes for setting and amending long-term targets, and to have an Environmental Improvement Plan that outlines the steps necessary to improve the natural environment over a period of at least 15 years.

The Environment Act 2021 introduced the mandatory Biodiversity Net Gain (BNG) requirement for new housing and commercial development in England. BNG is a requirement for developers to contribute to nature recovery through ensuring wildlife habitats are in a better state than prior to development. Unless exempt, BNG is expected to apply from January 2024 for most new major developments covered by the Town and Country Planning Act 1990, and will apply to small sites from April 2024, subject to further changes by DEFRA. Small sites are defined as residential sites with less than ten dwellings on a site area measuring below one hectare, and non-residential sites where the floor space to be created is less than 1000m or where the site area measures below one hectare. The inclusion of SuDS in developments as per the local and national policies and guidance outlined in this SFRA can be used towards incorporating BNG through their greening of urban infrastructure and encouragement of wildlife.

LPAs, land managers, and developers are affected by BNG. LPAs must approve a BNG plan for development ahead of commencing works. Developers must aim to avoid habitat loss to development sites, or create on or off-site habitat if this is not possible. If developers provide evidence that habitat creation is not possible at on or off-site land, statutory credits must be purchased from the Government to be used to invest in habitat creation elsewhere in England, although this must only be considered as a last-resort option.

2.3 Regional Planning Policy

2.3.1 London Plan (2021)

The London Plan is the Greater London Authority's (GLA) spatial development strategy for London, which the Mayor must publish under the legislation establishing the GLA. The Plan was prepared in accordance with the GLA Act 1999, and sets out a united environmental, economic, transport, and social framework for development in London from 2019 to 2041. After first being published in 2004, the London Plan has undergone various alterations, reviews and replacements. The current London Plan was published in March 2021, and replaces the previous plan published in March 2016.

Chapter 9 of the London Plan discusses 'Sustainable Infrastructure' and includes various policies that relate to climate change, flood risk and water management, including 'Policy SI 12 Flood risk management', 'Policy SI 13 Sustainable drainage' and 'Policy SI 17 Protecting London's waterways'. In addition, the London Plan includes chapters covering 'Planning London's Future – Good Growth', 'Spatial Development Patterns', 'Design', 'Green Infrastructure and Natural Environment', and provides flood risk and water management guidance. The key policies relevant to this SFRA are summarised below:

- **Policy SI 12 Flood risk management:** Current and expected flood risk from all sources across London should be managed in a sustainable and cost-effective manner. This should be a collaborative effort between LLFAs, the EA, developers, and infrastructure providers. This policy also sets out requirements for Developments Plans and development proposals.
- **Policy SI 13 Sustainable drainage:** This policy provides an updated drainage hierarchy (from that under the previous London Plan Policy 5.13) which development proposals must adhere to when managing surface water runoff. Proposals should aim to achieve greenfield runoff rates and manage surface water runoff as close to its source as possible, using sustainable solutions to reduce runoff rates and volumes. To achieve this, development proposals should seek to include SuDS features to provide multiple benefits through their drainage scheme. LFRMS and Surface Water Management Plan (SWMP) documents produced by LLFAs should identify areas with specific surface water management issues and aim to reduce these risks.
- **Policy SI 17 Protecting London's waterways:** New developments should support river and watercourse restoration, and developments which facilitate the protection of water spaces and their characteristics (with a particular priority for improving and restoring them) should be supported.

- **Policy GG6 Increasing efficiency and resilience:** Those involved in development and planning must guarantee that buildings and infrastructure should be designed to adapt to climate change, reduce flooding impacts, and utilise water efficiently.
- **Policy SD2 Collaboration in the Wider South East:** Informing and consulting LPAs beyond London's boundaries on related challenges and opportunities. There is a need for collaborative working with Wider South East region partners to identify solutions to strategic issues related to climate change, including flood risk and water management).
- **Policy D11 Safety, security and resilience to emergency:** Development proposals should maximise building resilience and minimise potential physical risks that may arise from various hazards, including flooding.
- **Policy G1 Green infrastructure:** LPAs should prepare green infrastructure strategies to ensure optimisation and integration of green infrastructure elements within London's built environment to achieve multiple benefits.
- **Policy G5 Urban greening:** Major development proposals should contribute to the greening of London by incorporating urban greening features such as green roofs, high-quality landscaping, and nature-based sustainable drainage. Boroughs should develop an Urban Greening Factor to ascertain the amount of greening required in new developments.

2.3.2 London Regional Flood Risk Appraisal (2018)

First published in 2009, the London Regional Flood Risk Appraisal (RFRA) was most recently published in August 2014 by the GLA, and provides a strategic overview of all flooding sources in London. The document also addresses the probability and consequences of this flooding, including the potential consequences related to London's ongoing population growth.

A draft London RFRA was made available in September 2018, but the final version has not yet been published at the time of writing (December 2023). The document updates the 2014 London RFRA, and represents important evidence to underpin the 2021 London Plan. The document provides improved information and evidence for Local Plans, Opportunity Area Planning Frameworks, and infrastructure providers through the London RFRA's increased level of detail and the resultant mapping.

The draft London RFRA provides a revised set of monitoring recommendations, which were created as a monitoring tool with progress against them to be reported in the London Plan Annual Monitoring Report. Listed below, each recommendation focuses upon a different flood risk source or potentially impacted site type:

- Recommendation 1 – Tidal Flood Risk
- Recommendation 2 – Fluvial Flood Risk
- Recommendation 3 – Surface Water Flood Risk
- Recommendation 4 – Sewer Flood Risk
- Recommendation 5 – Groundwater Flood Risk

- Recommendation 6 – Reservoir Flood Risk
- Recommendation 7 – Flood Risk to Opportunity Areas and Town Centres
- Recommendation 8 – Flood Risk to Transport Infrastructure
- Recommendation 9 – Flood Risk to Emergency Services
- Recommendation 10 – Flood Risk to Schools
- Recommendation 11 – Flood Risk to Utility Infrastructure

These revised monitoring recommendations are intended to improve local risk policies and the activities of Drain London, which is a partnership group of key organisations responsible for managing London's surface water flood risk and drainage assets. Sutton Council's future Local Plan policies and documents should incorporate these recommendations.

2.3.3 Thames Catchment Flood Management Plan (2009)

The EA published the Thames Catchment Flood Management Plan (CFMP) in December 2009. It serves to provide an overview of the present and future scale and extent of flooding within the River Thames catchment area. The Thames CFMP also outlines the preferred plan and strategic policies to manage flood risks sustainably over the next 50 to 100 years, considering climate change. Within the Thames CMFP Map (***Error! Reference source not found.***), Sutton lies within sub-area 9, which is named *"London Catchments"*. Sutton falls within the Beverley Brook and Wandle sub-areas within sub-area 9, as the Beverley Brook and River Wandle are EA-designated main rivers that flow through the borough. Policy option 4 is the preferred policy for sub-area 9, which states:

"Policy option 4: Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change."

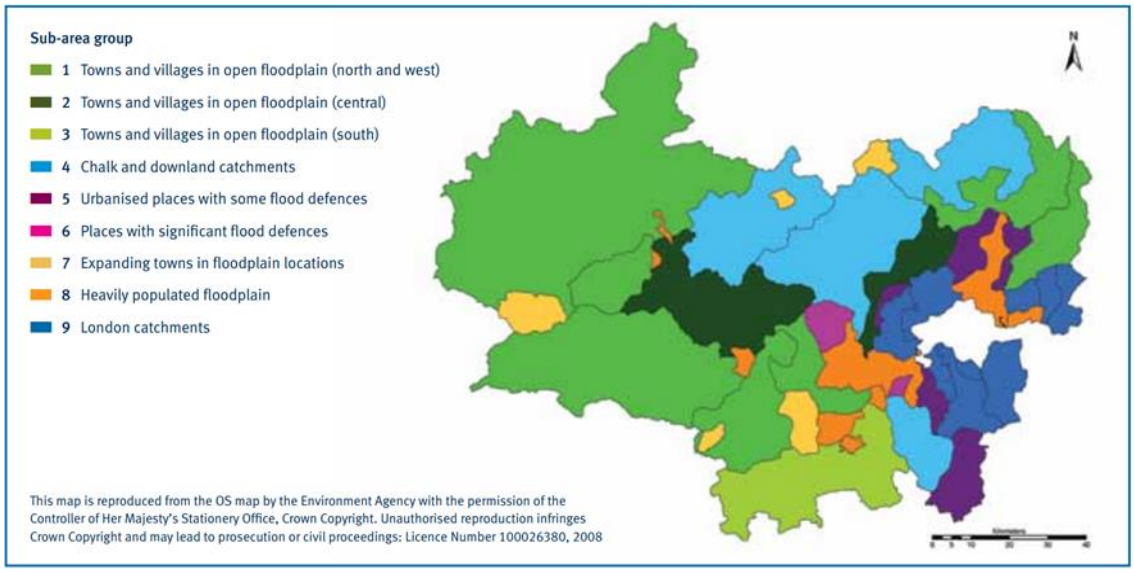


Figure 2.1. Thames CMFP Sub-Area Grouping (Thames CMFP Map)

According to the Thames CMFP, 2,000-5,000 properties in Sutton may be at risk from a 1% AEP fluvial flood. The plan identifies that the most sustainable approach to management of future flood risk in sub-area 9 is to encourage adaptation of the urban environment. There are opportunities to

reduce flood risk through the appropriate design and layout of redevelopment, which will increase the resistance and resilience of properties to flood water and thus reduce the consequences of flooding.

2.3.4 Thames River Basin District Flood Risk Management Plan (2022)

The most recent version of the Thames River Basin District Flood Risk Management Plan was published in December 2022, succeeding the previous FRMP that was published in March 2016 in line with the six-yearly basis for updating strategic documents. The production of the TRBD FRMP is in line with the EU Floods Directive's requirements for RMAs to produce FRMPs. In the UK, the Directive's requirements are legislated through the FRR 2009 (see *Section 2.2.4*). This Plan outlines how RMAs will plan for and manage the risk of flooding to all communities within the TRBD during the current cycle, which runs from 2021 to 2027.

There are 18 national objectives within the current FRMP cycle, all of which apply to the TRBD area and outline the primary areas in which RMAs should aim to make improvements. These objectives are outlined within the FRMP national overview and fall within one of one of three categories that are consistent with the National FCERM Strategy ambitions of:

- Climate resilient places
- Today's growth and infrastructure resilient in tomorrow's climate
- A nation ready to respond and adapt to flooding and coastal change

Eight measures apply to managing flood risk in the TRBD, whilst there are 504 measures that apply to managing flood risk in the nationally-identified Flood Risk Areas within the TRBD. Further details of these measures can be found within the *Second cycle objectives and measures* chapter of the TRBD FRMP.

The 2022 TRBD FRMP states that 21.6% of the measures published in the first cycle FRMP (2015-2016) have been completed, whilst 55.8% of the measures are ongoing. It also reports that 22.5% of the measures proposed in the first cycle FRMP have not been implemented due to various reasons including absence of funding or unviability. Overall, the measures included in the first cycle FRMP have improved the social, environmental, and economic well-being of the TRBD, and have thus successfully achieved the objectives outlined across most of the objective categories. Some ongoing measures created within the first cycle have been incorporated into the second cycle.

2.3.5 River Wandle Catchment Plan (2014)

The River Wandle Catchment Plan was published in September 2014, and serves as a 'living document' to provide a holistic strategy for the restoration of the River Wandle. This Catchment Plan aligns with the EA's national catchment-based approach for river management planning, and aims to help the Wandle reach 'Good Ecological Potential' status under the EU Water Framework Directive.

The Catchment Plan strives to sustainably improve the Wandle's health and community value through various objectives that are related to four main aims:

- **Water:** the Wandle's river should be clean and plentiful, and should have varied width, flow speeds, and depths

- **Habitat and wildlife:** the Wandle should support a mosaic of habitats with high biodiversity
- **Good access:** local people should be able to access pathways along the whole river
- **Engagement:** the public, businesses, councils, and Government agencies should be aware of the river, should know how their actions can affect it, and should work together to improve the Wandle

2.3.6 London Sustainable Drainage Action Plan (2016)

Published in 2016 by the GLA, the London Sustainable Drainage Action Plan (LSDAP) addresses the flood risk challenges to London's drainage and sewer system that are posed by a combination of population growth, climate change, and land use changes. As increased foul water discharges and surface water runoff have often resulted in the over-utilisation of London's existing drainage infrastructure, the LSDAP has been produced to help aid a reduction in the increasing flood risk. The LSDAP focuses on retrofitting SuDS to existing infrastructure, land, and buildings. Where possible, the LSDAP looks to identify opportunities where retrofitting can be introduced at lower costs and where local users can be provided with money-saving measures.

The LSDAP aims to set the direction for the next 20 years, but also provides 40 shorter-term actions which require the GLA to undertake collaborative work with RMAs including Thames Water Utilities Limited (TWUL), the EA, London Boroughs, and Transport for London (TfL). These actions include delivery of SuDS projects, wider policy improvements, and the identification of opportunities to improve implementation of SuDS in schools, transport schemes, and housing.

2.3.7 South London Waste Plan (2022)

The London Borough of Croydon, Kingston, Merton and Sutton Councils jointly prepared and adopted the new South London Waste Plan (SLWP) in November 2022, covering the period of 2022-2037 and superseding the previous 2012 version. The SLWP sets out the partner boroughs' long-term vision, policies, and spatial strategy for sustainable waste management. The SLWP provides updated advice regarding waste facilities and flood risk, in line with the current NPPF and the London Plan, which were published in 2023 and 2021 respectively (*see Sections 2.2.1 and 2.3.1*).

Policy WP4 relates to Sites for Compensatory Provision, and states that proposals for new waste sites or development of existing safeguarded sites should be located on sites "*not having an adverse effect on on-site or off-site flood risk. Proposals involving hazardous waste will not be permitted within Flood Zones 3a or 3b*."

Additionally, **Policy WP6** relates to the Sustainable Design and Construction of Waste Facilities, and states that waste facilities will be required to:

"Be fully adapted and resilient to the future impacts of climate change in accordance with the London Plan 2021 Policy GG6, particularly with regard to increased flood risk, urban heat island/heatwaves, air pollution, drought conditions and impacts on biodiversity" and *"incorporate green roofs, sustainable drainage systems (SuDS) including rainwater harvesting and other blue and green infrastructure measures as appropriate in accordance with London Plan 2021 Policy G5*."

The SLWP requires that waste facilities consider and mitigate against flood risk on and off-site, reflected in these policies. Waste facility development will be required to adhere to the partner boroughs' waste plans and national flood risk guidance.

2.4 Local Planning Policy

2.4.1 Sutton Local Plan (2018)

Sutton Council's Local Plan was adopted in February 2018, and sets out the planning strategy and policies for the borough over the period 2016-2031. This Local Plan replaces the 2009 Core Strategy and the 2012 Site Development Policies Development Plan document, and conforms to requirements set out in the NPPF and the most current version of the London Plan at the time of its publishing. The document deals with matters including climate change, the protection of greenspace, and development.

The document sets out five key challenges that provide the focus of and objectives for the Local Plan, which include the need to deliver new homes and economic growth while enhancing the borough's environment, how to manage change on town centre high streets, and how to meet the need for more homes which are of the right quality. The Local Plan identified 41 sites for redevelopment within Sutton Town Centre.

As per Paragraph 161 of the revised NPPF, Local Plans should consider the current and future impacts of climate change. Sutton Council's Local Plan has therefore incorporated climate change into its policies, with Policies 32 and 33 being a key example of this.

Policy 32 of the Local Plan relates to Flood Risk and Sustainable Drainage, and contains various actions to ensure that:

- Proposed developments minimise or avoid all flood risk sources to property and people while taking account of climate change and avoiding increases to flood risk elsewhere.
- Proposed developments incorporate effective SuDS measures in order to manage surface water runoff close to its source and achieve the minimum SuDS performance standards through applying the drainage hierarchy. All developments are required to achieve greenfield runoff rates and volumes up to the 1 in 100 year rainfall event, unless it can be demonstrated that all opportunities to minimise final site runoff have been taken in the line with the drainage hierarchy. *NB: Mention in Policy 32 of the acceptance that, in such circumstances, runoff rates will be permitted providing they do not exceed three times the calculated greenfield rate is now redundant following the withdrawal of the GLA's Sustainable Design and Construction guidance in 2021*.
- A SuDS Proforma (replacement of the Drainage Assessment Form named in Policy 32) and relevant surface water runoff calculations should accompany all major development proposals to demonstrate that the minimum SuDS performance standard have been met.
- All development proposals should include details of the management and maintenance for each SuDS measure and the full site SuDS Strategy.
- All proposed SuDS measures should contribute towards the aims of several policies, including Policy 33 'Climate Change Adaptation' and Policy 34 'Environmental Protection'.

Developments adjacent to the Wandle should contribute towards the aims of the Wandle Catchment Plan, and the Thames Basin Management Plan.

- The council will seek to implement the flood alleviation schemes at Beddington Gardens, Worcester Park, and Wallington Station and South Beddington in accordance with Sutton Council's LFRMS Action Plan.
- The council will retrofit SuDS measures as part of the redevelopment or refurbishment of schools, housing estates, health facilities, parks, and transport schemes.

Policy 33 of the Local Plan relates to Climate Change Adaptation. This policy states that proposed developments should minimise the vulnerability of property and people to the future impacts of climate change through various actions, including:

- Minimising or avoiding all flood risk sources to and from the development, managing residual risks, and reducing overall flood risks where possible while accounting for the future impacts associated with climate change.
- Permeating developments with blue and green spaces including planting, soft landscaping, ponds, SuDS measures, and other surface water features. All major developments should incorporate and manage green roofs where feasible, whilst previously developed sites should aim to increase overall green space coverage of >10% compared to baseline conditions. Where impermeable surfaces are given a Green Space Factor (GSF) score of 0 and surfaces with the highest GSF are scored 1, greenfield sites should aim to achieve a GSF score of at least +0.5, whilst previously developed sites should achieve a GSF score of at least +0.2 compared to baseline scores.
- Conserving water resources through maximising flood storage from rivers, natural floodplains, ponds and other surface water features, alongside promoting the benefits of SuDS for groundwater recharge.
- Maximising the role of borough-wide green and blue space networks.
- Conserving and enhancing the ecological variability and range of existing wildlife species and habitats to mitigate biodiversity loss resulting from future climate change.
- Considering the expected local climatic changes throughout the development lifetime through incorporating layout and design flexibility to enable adaptation to future climate impacts.

2.4.2 Local Flood Risk Management Strategy (2023)

Sutton Council's LFRMS and Action Plan were updated and approved in March 2023, and the LFRMS is available to be viewed online. The updated LFRMS supersedes the previous LFRMS which was published in 2015 and updated in 2019. The LFRMS was produced and updated to align with the requirements of the National FCERM Strategy and FWMA. The overarching objective of the document is to manage flood risk to maximise the benefits for Sutton's residents, businesses, and environment through partnership working. The LFRMS outlines Sutton Council's approach to limiting the impacts of localised flood risk sources across the borough through various flood risk management objectives and the associated actions required to achieve them. The Strategy is a

high-level document which sets out five strategic objectives alongside a set of associated measures to achieve successful flood risk management during the six-year period in which the strategy is active. These objectives are:

- Improve knowledge and understanding of the different risks of flooding in Sutton.
- Proactively encourage sustainable solutions for the management of local flood risk which take account of climate change.
- Use planning powers to appropriately mitigate flood risk to or caused by developments across Sutton.
- Educate, encourage, and empower local residents, businesses, and landowners to take action on reducing flood risk.
- Nurture collaborative partnerships with key organisations and RMAs, including for funding and resources.

The LFRMS and its associated Action Plan derived from the LFRMS objectives were updated from those within the previous strategy to align with the updated National FCERM Strategy (see *Section 2.2.6)*. These five objectives, alongside their accompanying flood risk management measures and Action Plan have been assessed against Sutton Council's Strategic Environmental Assessment (SEA) objectives, with the SEA demonstrating that the LFRMS should positively impact the reduction in flood risk across Sutton. As with the updated LFRMS and Action Plan, Sutton Council's updated SEA is not yet published online and available for public access at the time of writing (December 2023).

2.4.3 Preliminary Flood Risk Assessment (2011)

Published in May 2011, the original PFRA aims to increase the consistency of flood risk management across Europe and was produced in line with the EU Floods Directive 2007 and FRR 2009 requirements. To ensure consistency, all original PFRAs for London boroughs were written as part of the Drain London project. It is still to be determined how PFRAs will be implemented and updated following any changes to previous EU-derived legislation as a result of Brexit.

The PFRA involves a high-level evaluation of flood risk in Sutton to help inform strategic flood risk management in the borough. This involves analysis of historic and potential future flood incidents, alongside identification of key Flood Risk Areas. The PFRA incorporates existing information from the EA, TWUL, Network Rail, TfL, the London Fire Brigade, and information held by Sutton Council.

Following a review of updated flood risk information, a 2017 addendum was created for the PFRA. As this Addendum noted a lack of significant pluvial flood events in Sutton since the 2011 publication of the PFRA, Sutton Council's knowledge of flood risk areas in the borough has not changed. However, updates to the EA's Risk of Flooding from Surface Water (RoFSW) map alongside updated surface water modelling have increased Sutton Council's understanding of local flood risk but required no changes to the PFRA. The Addendum identified that the majority of London is situated within the Greater London Flood Risk Area. No other changes were required.

2.4.4 Surface Water Management Plan (2019)

Sutton Council's SWMP was first published in October 2011, and was subsequently updated in March 2019. The document helps LLFAs adhere to FRR 2009 requirements, as it can provide the

evidence base to inform PFRAs and help fulfil FRMP requirements. Sutton Council's 2011 SWMP was created as part of the Drain London project to outline each borough's preferred surface water runoff management strategy.

The 2011 SWMP describes the preferred strategy for managing surface water flood risk across Sutton, with consideration of flooding from various sources during heavy rainfall events including ordinary watercourses, ditches, drains, sewers, runoff from land, and groundwater. It is broken down into a four-phase approach, comprised of: Phase 1 – Preparation; Phase 2 – Risk Assessment; Phase 3 – Options Assessment; and Phase 4 – Implementation and Review.

Within the Risk Assessment phase, the 2011 SWMP defined 12 Critical Drainage Areas (CDAs) for Sutton. CDAs are usually hydrological catchments where multiple and cumulative flood risk sources could trigger flooding in one or more Local Flood Risk Zones. This flooding could impact people, property, and infrastructure. The Options Assessment phase of the 2011 SWMP recommended potential mitigation options that could be incorporated into future CDA flood alleviation schemes across Sutton. Section 4 of the 2011 SWMP provided full details of these options.

The 2019 update to the SWMP revised the approach towards managing flood risk and CDAs within Sutton, with updated information from historic flooding, resident surveys, and hydraulic modelling completed since the 2011 SWMP being used to improve understanding of flood risk across the borough. The 2019 SWMP was adopted by Sutton Council in 2021. According to the updated 2019 SWMP, a total of 5,217 properties are predicted to be at risk from a 1 in 100-year surface water flood event across Sutton.

The 2019 SWMP update also developed a new process to replace the CDAs across Sutton that were designated during the 2011 SWMP, which often did not fully account for the flow paths of surface water entering a particular area due to limited consideration of the local drainage network. Instead, the new approach to identifying flood risk was undertaken through a Catchment and Sub-Catchment approach that incorporates watercourses, sewers, and local topography to ensure that all surface water volumes entering the drainage network are captured within a defined area, reflecting natural catchments. This approach aligns with national flood risk management and planning policy, and provides opportunities for partnership work on flood risk with other local and national authorities and organisations.

The 2019 SWMP identified ten Catchments and 26 Sub-Catchments. Shown in the *Appendix A* mapping, the ten Catchment areas are:

- Beverley Brook
- Cheam
- North Sutton
- Pyl Brook East
- Pyl Brook West
- Wandle Beddington
- Wandle Carshalton
- Wandle East Sutton
- Wandle Hackbridge
- Wandle Wallington

Each of these Catchments are then broken down further into Sub-Catchments based on the surface water sewer network, with each Sub-Catchment representing a distinct contributing area within the wider hydrological catchment. For each Sub-Catchment, additional Hotspots (defined as areas

with ≥10 residential properties that fall within the 1 in 100 year [1% AEP] surface water flood event modelled extent) were identified and mapped in the report. The report highlights potential mitigation options for each Sub-Catchment that could be incorporated into future flood alleviation alongside the SFRA recommendations to improve alignment with Sutton Council's flood risk management approaches.

2.4.5 Sutton Town Centre Public Realm Design Guide (2020)

The Sutton Town Centre Public Realm Design Guide was published in January 2020. This guide outlines the projects and guidelines that are key for improving Sutton Town Centre's street scene, taking advantage of the improvement opportunities associated with the redevelopment of Sutton Town Centre. The 41 sites in Sutton Town Centre that were identified for redevelopment in the Local Plan (see *Section 2.4.1*) will impact the public realm, and will form key locations during the changes to Sutton Town Centre in the coming decade.

This guide is aimed at developers, the Mayor of London, TfL, other agencies who distribute funding, and Sutton Council officers. Beyond the general urban design principles, this Guide has identified 12 additional guiding principles that should be taken into account when undertaking projects in the public realm. These principles include ensuring climate change resilience and implementing Sutton Council's Local Plan Transport Policies. There is further guidance for incorporating retrofit SuDS measures as part of all public realm and highway improvements, and as part of landscaping schemes which have the benefits of addressing flooding risks whilst also creating more attractive streetscapes.

2.4.6 Sutton Sustainable Transport Strategy (2021)

A new Sustainable Transport Strategy Supplementary Planning Document (STS SPD) was adopted by Sutton Council in November 2021 for the 2020-2025 period, replacing the previous 2015-2020 SPD. As an SPD, this strategy is a key factor in planning decisions and must be formally addressed by developers.

This STS focuses on how Sutton Council and the community can work collaboratively to ascertain and shape the measures and priorities that are key for improving local places across Sutton. The Strategy aims to improve residents' quality of life through increased opportunities for healthier and safer travel whilst improving air quality by encouraging walking, cycling, and public transport.

2.4.7 Climate and Ecological Emergency Declaration

In July 2019, Sutton Council joined an increasing number of other Local Authorities in declaring a 'Climate and Ecological Emergency Declaration', agreeing to a target of reducing the borough's carbon emissions to zero. This declaration resulted from the growing evidence and climate change projections that triggered Parliament's May 2019 national climate change emergency declaration.

Following this declaration, Sutton Council published a revised Environment Strategy and Climate Emergency Response Plan in October 2020, setting out their goal of becoming the most sustainable of London's boroughs and committing to becoming a zero carbon Council and borough. Within this Plan, Sutton Council established several key action areas that lead their response to climate change. These include cleaner air, a greener borough, achieving net zero carbon, creating a circular economy, and tackling climate change. This Strategy and Response Plan addresses flood risk

management, and discusses the need for sustainable drainage in light of the changing risks to people and property across Sutton that result from projected changes to rainfall. At the time of writing (December 2023), Sutton Council's Environment Strategy and Climate Emergency Response Plan is under review.

3 DATA SOURCES AND MAPPING

3.1 Mapping

The maps associated with this SFRA are provided in *Appendix A* – Mapping, and provide information on the various sources of flooding which impact the borough.

The four key maps created as part of this SFRA (and the data that they contain) are as follows:

- **Fluvial Flood Risk (*Appendix A1)*:** Detailed River Network; Flood Zones 2, 3a, and 3b (fluvial); Beverley Brook 2009 model extent (including the Pyl Brook) for a 1 in 100 year event (1% AEP) with a 20% climate change allowance; River Wandle 2015 model extents for a 1 in 100 year event (1% AEP) with 25, 35, and 70% climate change considerations; Flood Defences; Reduction in Risk of Flooding from Rivers and Sea due to defences; Historic Flood Map; Flood Storage Areas; Flood Warning and Flood Alert Areas.
- **Surface Water and Ordinary Watercourse Flood Risk *(Appendix A2)*:** Detailed River Network; Risk of Flooding from Surface Water Flood Extent and Depth; Catchments and Sub-Catchments.
- **Groundwater, Sewer, and Artificial Flood Risk *(Appendix A3)*:** Areas Susceptible to Groundwater Flooding (AStGWF); Bedrock geology; Superficial geology; Sewer flooding incident records; Reservoir flood extent (dry-day scenario).
- **Policy Map *(Appendix A4)*:** Detailed River Network; Flood Zones 2, 3a, and 3b (fluvial); Surface Water flood extents; Flood Zones 3a and 3b (surface water); AStGWF; Flood Defences; Reduction in Risk of Flooding from Rivers and Sea due to defences; Flood storage areas.

The sources for these datasets are listed below:

- **EA:** Detailed River Network; Flood Zone 2; Beverley Brook 2009 model extent (including the Pyl Brook); River Wandle 2015 model extent; Flood Defences; Reduction in Risk of Flooding from Rivers and Sea due to defences; Historic Flood Map, Flood Storage Areas; Flood Warning and Flood Alert Areas; Risk of Flooding from Surface Water Flood Extent and Depth; AStGWF; Reservoir flood extent (dry day scenario).
- **Sutton:** Catchments and Sub-catchments.
- **TWUL:** Sewer flooding incident records.
- **British Geological Society:** Bedrock geology and Superficial Geology.

In addition to these, Sutton Council also provided shapefiles for Sutton Town Centre, Sutton's District Centres, and the Sutton Borough Boundary. These are provided in a separate map *(Appendix A2.7).*

Flood Zone 3b (fluvial) has been created using the Beverley Brook 2009 and the River Wandle 2015 model extents for the 1 in 20 year event. Table 1 of the 'Flood Risk and Coastal Change" PPG recommends for the model extents for the 1 in 30 year event to be used to define Flood Zone 3b (fluvial). However, these models were not available from the EA at the time of writing this report, and

therefore the 1 in 20 year layers have been used. Flood Zone 3a (surface water) has been created using the Risk of Flooding from Surface Water Flood Extent for the 1 in 100 year event, and Flood Zone 3b (surface water) has been created using the Risk of Flooding from Surface Water Flood Extent for the 1 in 30 year event.

It is important to note that the EA do not hold any data regarding Fluvial Flood Hazard Ratings or Modelled Defence Breach Locations, whilst Sutton Council do not hold any data regarding areas that may be suitable for potential NFM schemes. Additionally, the only climate change scenario data available for the Beverley Brook 2009 model (including the Pyl Brook) is for a 1 in 100 year event (1% AEP) with a 20% climate change consideration. The EA's reservoir flood data is only available for the 'dry day' scenarios, with 'wet day' scenario data unavailable for this Sutton SFRA.

4 Applying Climate Change to Risk Assessment

4.1 Overview

In May 2016, the EA published the Adapting to a Changing Climate report, which serves as the second adaptation report under the Climate Change Act 2008. This report highlights the changing weather patterns in the form of increases to temperature, rainfall, and drought risk. The UK Climate Projections 2018 (UKCP18) are referenced within this report. They demonstrate the potential future impacts posed by a changing climate and are broadly consistent with the previous UKCP09 projections but include some locational and seasonal differences for temperature and rainfall that indicate potential for an increased frequency of severe flooding compared to the UKCP09 projections.

The Parliamentary declaration of a national climate change emergency in May 2019 resulted in Sutton Council declaring a Climate and Ecological Emergency Declaration in July 2019 (see *Section 2.4.7*).

Paragraph 153 of the NPPF outlines several considerations that address planning for climate change, stating that:

"*Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.*"

The NPPF also states that policies should support measures that increase the resilience of community and infrastructure against climate change, and that it is vital for all risk assessments to address climate change impacts.

4.2 Climate Change Guidance

4.2.1 Updates

In 2016, the EA published their Flood Risk Assessments: Climate Change Allowances guidance, which informs how climate change allowances should be applied for SFRAs and site-specific FRAs.

The EA have been revising their Climate Change Allowances on an ongoing basis since 2019 to incorporate UKCP18 data, with the most recent update at the time of writing (December 2023) being made in May 2022. Recent updates have involved updates to peak rainfall allowances for the 1% and 3.3% AEP events, and to include two epochs (periods of time) rather than three. These updates to peak rainfall allowances are provided by Management Catchments (sub-catchments of River Basin Districts) rather than at a national scale, and have involved changes to the application of peak rainfall allowances, using the central allowance for developments with lifetimes up to 2100 and the upper end allowance for developments with lifetimes from 2100-2125. Sutton is situated within the London Management Catchment. It is suggested that these peak rainfall revisions should also be incorporated into future Local Plan policies and documents.

UKCP18 builds on the success of the UKCP09, delivering an upgrade to the range of climate projection tools available for use across the UK. UKCP18 includes:

- Updated assessments of how the UK's climate may change over the 21st century.
- Updates to the probabilistic projections over land.

- High-resolution spatially-coherent future climate projections at a 60km scale globally and for at a 12km scale for the UK.
- Downscaling of the 12km climate model to a 2.2km scale, enabling high-impact events such as localised heavy rainfall to be simulated realistically.
- Updated marine projections of storm surge and sea-level rise.

Applicants should check the UKCP guidance to ensure that any FRAs use the latest information. In September 2019, the UK Climate Projections: Headline Findings were published, providing details on the key UKCP18 conclusions.

4.2.2 Applying the updated climate change guidance

It is essential that applicants understand the below information to correctly apply the latest climate change guidance:

- As per the 'Flood Risk and Coastal Change' PPG, *"Residential development can be assumed to have a lifetime of at least 100 years, unless there is specific justification for considering a different period. For example, the time in which flood risk or coastal change is anticipated to affect it, where a development is controlled by a time-limited planning condition. The lifetime of a non-residential development depends on the characteristics of that development but a period of at least 75 years is likely to form a starting point for assessment."* This should be highlighted by applicants in the FRA, with justification provided as to why they have adopted a given lifetime for the proposed development.
- The proposed development's vulnerability classification as per Table 2 of the 'Flood Risk and Coastal Change' PPG.
- The relevant epoch period for **peak rainfall intensity** as per the information within 'Flood risk assessments: climate change allowances' and the peak rainfall allowances map. Sutton falls within the London Management Catchment, where the peak rainfall allowances are provided in *Table 4.1*. The 2050s epoch should be used for development with a lifetime up to 2060 and the 2070s epoch for development with a lifetime between 2061 and 2125. These allowances will differ according to which rainfall intensity scenario (either 3.3% AEP or 1% AEP) is being considered, as per *Table 4.1*.
- All FRAs requiring **peak river flow** allowances should use the percentages for their development area as per the information within 'Flood risk assessments: climate change allowances' and the peak river flow map. Sutton falls within the London Management Catchment, where the peak river flow allowances are provided in *Table 4.2*. Appropriate climate change allowances must be applied, and applicants must consider the flood risk vulnerability classification of their proposed development and the flood zone in which it falls.

Return Period	Epoch	Central allowance	Upper end allowance
3.3% annual exceedance rainfall event	2050s	20%	35%
	2070s	20%	35%
1% annual exceedance rainfall event	2050s	20%	40%
	2070s	25%	40%

Table 4.1. London Management Catchment peak rainfall allowances

Epoch	Central	Higher	Upper
2020s	10%	14%	26%
2050s	7%	14%	30%
2080s	17%	27%	54%

Table 4.2. London Management Catchment peak river flow allowances

4.3 Adapting to Climate Change

The PPG contains a section on Climate Change, which highlights the fact that addressing climate change is a key land use planning principle which the NPPF expects to underpin plan-making and decision-taking. The PPG provides guidance on determining and implementing suitable measures in the planning process to address the potential risks of climate change, and therefore has provided examples for how applicants can adapt to a changing climate:

- Consideration of future climate risks when allocating development sites to ensure that risks are understood over the development's lifetime.
- Consideration of the impact of and promoting design responses to flood risk and coastal change over the development's lifetime.
- Consideration of the availability of water and water infrastructure for the development's lifetime and design responses to protect water quality and promote water efficiency.
- Promotion of adaptation approaches in design policies for developments and the public realm.

The guidance additionally suggests that particular attention should be paid to integrating adaptation and mitigation approaches, which can be achieved for example by providing multi-functional green infrastructure. This could include the integration of SuDS and nature-based solutions, which have multiple benefits including managing flooding, helping species adapt to climate change, and reducing urban heat islands. By integrating these approaches, this will contribute towards supporting sustainable development and ensuring that every opportunity to integrate green infrastructure is maximised.

5 ASSESSMENT OF FLOOD RISK

5.1 RMA Responsibilities

As part of the FWMA responsibilities outlined in *Section 2.2.3,* RMAs must contribute towards achieving sustainable development and collaborate on matters relating to flood risk management. All RMAs are required to co-operate, share information, and act in a manner consistent with the National FCERM Strategy. This may be achieved through assisting with development planning, preparing relevant flood risk documents, or providing consent for flood risk related activities. *Table 5.1* outlines each RMA's responsibilities for flood risk management.

Table 5.1. Risk Management Authorities and Responsibilities

Risk Management Authority	Responsibility (within an SFRA context)
Department for Environment, Food and Rural Affairs (DEFRA)	Responsible for overall national FCERM policy in England, alongside providing flood risk management funding.
Environment Agency (EA)	Supervises and works collaboratively to manage flood risk and coastal erosion from main rivers, the sea and reservoirs. The EA's various responsibilities include: • Providing LPAs with flood risk advice regarding development proposals in Flood Zones 2 and 3. • Carrying out works to manage fluvial and coastal flood risk. • Issuing and operating flood warning systems. • Issuing consent to enable works on or near main rivers, and works affecting watercourses, flood and sea defences and other structures protected by its byelaw. • Providing advice on development proposals (see *Section 6*).
Lead Local Flood Authorities (LLFAs)	All London Boroughs are Unitary Authorities and deliver the LLFA role for their respective administrative areas. Sutton Council are the LLFA for the borough. LLFAs are responsible for the operational role in managing flood risk from surface water, ordinary watercourses and groundwater sources ('local flood risk sources'). LLFA responsibilities include: • Development, application, maintenance, and monitoring of LFRMSs. This includes involvement in SFRA preparation. • Preparing and maintaining a PFRA, flood risk maps, flood hazard maps, and flood risk management plans. • Designating features and structures that may affect the risk of local flooding or coastal erosion. • Investigating and reporting of flood incidents that reach a certain threshold. • Creating guidelines and policies to ensure effective flood risk management work. • Providing advice on major development proposals with surface water drainage implications (see *Section 6* for further details). • Enforcement and regulation of works on ordinary watercourses.

Highway Authorities	Within London, this includes all London Boroughs, National Highways, and TfL who hold responsibility for providing and managing highway drainage. TfL are responsible for managing their network of Red Routes (in Sutton, these are the A24, A217, and A232). There is no National Highways network within Sutton. Highway Authorities must work with LLFAs and the EA when: • Managing highway flooding. • Working on highway drainage. • Working in roadside ditches. • Carrying out works on part of a watercourse. Drainage responsibilities on private roads sit with the private owner for the highway. NB: TfL and Network Rail also have responsibilities for managing surface water drainage and flooding from their railway infrastructure.
Water and Sewerage Companies	The primary responsibility of Water and Sewerage Companies is for the provision of clean water and/or sewerage facilities. Their secondary responsibility is to manage flooding from their clean water and sewerage systems (including sewer flooding, burst pipes or water mains, and floods caused by system failures). TWUL is the relevant Water and Sewerage Company in Sutton, and have powers under the Water Industry Act 1991 regarding the connection of proposed developments to their networks. Sutton & East Surrey Water are also a clean water provider for the majority of Sutton.

5.2 Types of Flood Risk

There are various sources of flood risk that can affect an area and must therefore be assessed and managed appropriately. This section defines these types of flood risk, provides an assessment of flood risk within Sutton for each of these sources, and highlights the ways in which climate change could impact each source.

5.2.1 Fluvial Flood Risk

Definition

Fluvial flooding, also known as river flooding, occurs when a main river exceeds its capacity following prolonged or heavy periods of precipitation. Fluvial flooding can have severe environmental, economic, and social impacts on the affected areas. Floodplains and open spaces adjacent to rivers can mitigate the impacts of fluvial flooding, helping to convey and manage the increased flows.

Flood Zones (fluvial)

The mapping in *Appendix A1* shows the risk of flooding from fluvial sources, and should be referred to for additional information to accompany the below text and assessment of flood risk. This flood risk is broken down in accordance with the EA's Flood Zone categories that describe the probability of fluvial flooding. The PPG defines Flood Zones 1, 2, 3a and 3b (however the extent of Flood Zone 3b can be amended by the LPA). These Flood Zones are defined as follows:

- **Flood Zone 1:** Land that has an annual probability of flooding from rivers or seas of below 1 in 1,000 years (<0.1% AEP).
- **Flood Zone 2:** Land that has an annual probability of flooding from rivers of between 1 in 100 and 1 in 1,000 years (0.1-1.0% AEP), or land that has an annual probability of flooding from seas of between 1 in 200 and 1 in 1,000 years (0.1-0.5% AEP).
- **Flood Zone 3a (High Probability):** Land that has an annual probability of river flooding of 1 in 100 years or greater (≥1% AEP), or land that has an annual probability of sea flooding of 1 in 200 years or greater (≥0.5% AEP).
- **Flood Zone 3b (The Functional Floodplain):** Land that is deemed to be at the greatest risk of flooding from rivers or seas, and where water must flow or be stored during times of flood. Typically, this includes land that has an annual probability of flooding from rivers or seas of 1 in 30 years or greater (≥3.3% AEP), and land that is designed to flood (such as a flood attenuation scheme). In agreement with the EA, LPAs should identify areas of functional floodplain and their boundaries in their SFRAs. EA model extents to create a Flood Zone 3b layer using a 1 in 30 year event (3.3% AEP) fluvial flood risk data were not available at the time of writing this report, and so the 1 in 20 year (5% AEP) fluvial flood risk layers have been used to represent Flood Zone 3b in this SFRA.

The Flood Zone 3b (functional floodplain) definition is adopted to ensure that future development is steered away from areas which are the most 'at risk' from fluvial flooding.

The dataset used as the basis of the fluvial flood risk extents is the EA's XXXX modelled mapping, itself based upon local fluvial flood risk modelling for certain main rivers and their tributaries (see

Section 3.1). The defined Flood Zones are based on an undefended flood scenario, and do therefore not consider the reduction in flood risk in certain areas that benefit from formalised flood defence assets such as flood gates, walls, and embankments. *Section 7.5* provides details on managing the residual risk of these flood defences.

Please note that the above definitions of Flood Zones 3a and 3b apply only to land at risk of flooding from fluvial sources. Flood Zones 3a and 3b (surface water) are defined in *Section 5.2.3*.

Assessment

The **Beverley Brook** and the **Pyl Brook** are EA-designated main rivers that flow through north-west Sutton, with the Beverley Brook forming part of Sutton's borough boundary with the Royal Borough of Kingston upon Thames. The Pyl Brook, which has two branches (east and west), is a tributary of the Beverley Brook, and the Beverley Brook is a tributary of the River Thames. Both the Beverley Brook and the Pyl Brook pose a fluvial flood risk to the properties and infrastructure situated within their hydrological catchments, particularly those situated within Flood Zones 3a and 3b (fluvial). Parts of Sutton Town Centre located immediately upstream of the Pyl Brook are also situated within Flood Zone 3a (fluvial).

The **River Wandle** is an EA-designated main river that flows through north-east Sutton, with one of its two sources being located within the borough at Carshalton Ponds. The River Wandle is a tributary of the River Thames, and poses a fluvial flood risk to the properties and infrastructure within its hydrological catchment, particularly those situated within Flood Zones 3a and 3b (fluvial). In comparison to the Beverley Brook and the Pyl Brook, the River Wandle poses a fluvial flood risk to a larger area and thus a greater number of properties and infrastructure situated within its vicinity.

The *Flood Defences, Flood Storage Area and Reduction in Risk from Rivers and Sea* mapping, presented in *Appendix A1.3* and *Appendix A1.4*, highlight the flood defences located within the borough (including flood gates, walls, and embankments) and the areas that benefit from a reduction in fluvial flood risk due to these defences. Within the borough, there are several areas within the vicinity of the Beverley Brook, the Pyl Brook, and the River Wandle which benefit from a reduction in flood risk.

If a proposed site is protected by flood defences, the 'actual' and 'residual' flood risks should be considered within FRAs for development proposals. The residual risk includes residual risk from flood risk management infrastructure (i.e. a breach of a raised flood defence), and residual risk to a development once any site-specific flood mitigation measures are taken into account (i.e. the depth of internal flooding predicted after any raising of land or floor levels). FRAs must define the standard of protection of the local defences and address the residual risk that is associated with the specific defence asset. Development proposal requirements are defined within *Section 0.*

FRAs for development in close proximity to main rivers should include consideration that the proposed development will:

- Retain the effectiveness, stability and integrity of flood defences, riverbanks, and other formal and informal flood defence infrastructure.

- Ensure the proposal does not prevent essential maintenance and upgrading from being carried out in the future.

Impacts of climate change

The EA's current UK climate change projections for peak rainfall intensity and peak river flow indicate that an increased number of people, properties, and infrastructure will be at risk of fluvial flooding as a result of climate change impacts. Based on these projections, an increase in the severity and frequency of fluvial flooding is also expected, increasing the requirement for appropriate flood defence and mitigation measures for the Beverley Brook, the Pyl Brook, and the River Wandle. The *River Wandle Flood Extents* and *Beverley Brook Flood Extents* mapping (*Appendix A1.5* and *Appendix A1.6*) show the fluvial flood extents for various climate change scenarios under a 1 in 100 year (1% AEP) flood event for Sutton's main rivers.

The fluvial flood extent for a 1 in 100 year (1% AEP) event with a 25% climate change allowance extends notably beyond areas classified as Flood Zone 3b (fluvial) for the River Wandle, particularly within Hackbridge. This extent increases further with the 35% and 70% climate change scenarios, with substantially more properties included within the fluvial flood extent for the 1 in 100 year (1% AEP) event with a 70% climate change allowance in comparison to those situated within the current Flood Zone 3b (fluvial). Further detail can be viewed in the *Appendix A1.5* map.

The only currently available dataset for the Beverley Brook and the Pyl Brook is a 20% climate change scenario under a 1 in 100 year (1% AEP) flood event, with several properties and community infrastructure being situated within this model extent.

5.2.2 Tidal Flood Risk

Definition

Tidal flooding involves the inundation of low-lying areas when water flows from the sea towards land during storm surge events and/or extreme high tides. This also includes flooding from tidal rivers, which have flows and levels that are influenced by tides.

Assessment

There is no tidal flood risk within Sutton.

5.2.3 Surface Water and Ordinary Watercourse Flood Risk

Definition

Surface water flooding, also known as pluvial flooding, occurs following high-intensity rainfall that triggers ponding or overland flow before water enters a watercourse or underground drainage network. Ordinary watercourse flooding occurs under similar circumstances, although this is associated with non-main river watercourses or ditches. A rainfall event's duration and intensity often exacerbates the impacts of surface water flooding due to the resultant impacts on soil, drainage systems, and drainage channels that limit their ability to drain water at a sufficient rate. Ordinary watercourses can exceed their capacity during extreme weather conditions, resulting in water flowing onto land.

This SFRA covers the risk of ordinary watercourse flooding within the 'surface water' terminology, aligning with the EA's inclusion of ordinary watercourse flood risks within their RoFSW mapping.

Flood Zones (surface water)

A surface water designation for Flood Zones 3a and 3b has been included as a policy recommendation in *Section 7.6.1*. The mapping in *Appendix A2* and *Appendix A4* shows the risk of flooding from surface water sources, including the defined Flood Zones 3a and 3b (surface water) extents, and should be referred to for additional information to accompany the below text and assessment of flood risk. This flood risk is broken down in accordance with the EA's modelled RoFSW map, which is the most representative and consistent surface water dataset currently available. Flood Zones 3a and 3b (surface water) are defined in this SFRA as follows:

- **Flood Zone 3a (surface water):** Defined within this SFRA as land within the EA-modelled surface water flood extents that are predicted for events with a return period of greater than 1 in 100 years (>1% AEP).
- **Flood Zone 3b (surface water):** Defined within this SFRA as land within the EA-modelled surface water flood extents that are predicted for events with a return period of at least 1 in 30 years (≥3.3% AEP).

Adopting the policy recommendation of the inclusion of a surface water designation for Flood Zones 3a and 3b would help to ensure that there are certain requirements for development within areas which are the most 'at risk' from surface water flooding in order to minimise this risk. In line with the nationally-defined responsibilities for flood risk management, applications falling within Flood Zones 3a and 3b (surface water) will be assessed (through the Sequential and/or Exception Tests) only by the LPA and not the EA. Further information regarding this policy recommendation can be found in *Section 7.6.1*.

Please note that the above definitions of Flood Zones 3a and 3b (surface water) apply only to land at risk of surface water. For fluvial flood risk, Flood Zones 3a and 3b (fluvial) are defined in *Section 5.2.1*.

Assessment

The extent of surface water flood risk varies across Sutton. There are several large areas of green space across the borough (particularly in its southern areas) which aid in mitigation of surface water runoff due to the impacts of soil percolation and vegetation reducing peak runoff rates. Nevertheless, the majority of the borough is heavily urbanised and densely populated, with a high coverage of impermeable surfaces in these areas resulting in poor infiltration rates and thus increased overland flow. This overland flow will be directed towards topographical low points and increase peak runoff rates during a rainfall event, meaning that there will be a risk of surface water flooding to the people and infrastructure situated along these overland flow pathways.

The *Appendix A2* mapping depicts the areas across Sutton that are identified as being at risk of experiencing surface water flooding as per the EA's RoFSW dataset. This dataset does now include some areas of the borough (Carshalton, Hackbridge, and West Sutton) which have benefitted from local surface water modelling undertaken by Sutton since their previous SFRA. The *Surface Water Flood Extent* map (*Appendix A2.1*) shows the flood extent of rainfall scenarios with a 3.3% AEP (1

in 30 year), 1% AEP (1 in 100 year), and 0.1% AEP (1 in 1,000 year) chance of occurring in any given year. The depth of these same rainfall scenarios is shown in the *Surface Water Flood Depth* maps (*Appendix A2.2-A2.4*). A separate *Appendix A4.2* map shows the surface water flood extent for only the 3.3% AEP (1 in 30 year) and 1% AEP (1 in 100 year) rainfall scenarios, as these scenarios are relevant to policy. These 3.3% AEP (1 in 30 year) and 1% AEP (1 in 100 year) rainfall scenarios correspond to Flood Zones 3a and 3b (surface water) as defined above, which are shown in the *Appendix A4.1b* and *A4.1d* maps. Areas which are at a notably higher risk of surface water flooding include parts of Sutton Town Centre, Hackbridge, North Cheam, and Worcester Park. Sutton's ten SWMP Catchments are shown in the *Catchment* map (*Appendix A2.5*).

Section 6.5.2 includes information related to surface water flood risk requirements and FRA guidance.

Impacts of climate change

The EA's UK climate change projections indicate that wetter winters and more intense rainfall are expected. These impacts are likely to increase surface water runoff and result in more localised flooding, thus placing an increased number of people, properties, and infrastructure at risk of experiencing surface water flooding. These predicted increases in surface water runoff due to climate change will also increase the pressure on sewers and the drainage network, thus increasing the probability of sewer-related flooding, as discussed in *Section 5.2.5*.

There are currently no EA models specific to surface water incorporate climate change scenarios, but this is expected to be addressed from 2024 as part of the EA's updated National Flood Risk Assessment work. However, the 1 in 1,000 year (1% AEP) return period event RoFSW depth and extent data could be used as a proxy for estimations of flood extent and depth for a 1 in 100 year (1% AEP) return period event with a climate change scenario incorporated. The *Appendix A2.3* and *A2.4* mapping shows the extent and depth mapping for the 1 in 100 year (1% AEP) and 1 in 1,000 year (0.1% AEP) return period events.

5.2.4 Groundwater Flood Risk

Definition

Groundwater flooding occurs when a rising water table triggers emergence of water through the ground. This can occur for prolonged periods of weeks or months, and often occurs after extensive and protracted heavy rainfall. A greater volume of water infiltrates through the ground during these periods of extensive heavy rainfall, resulting in an underlying aquifer rising above its regular depth. Aquifer vulnerability and ground composition significantly influence the potential groundwater flooding rate. Groundwater flood risk is increased at springs and low-lying areas where the water table is likely to be situated closer to the surface, and in areas where the underlying soil and bedrock are vulnerable to saturation.

Assessment

The *Bedrock Geology* and *Superficial Geology* maps (*Appendix A3.2* and *A3.3*) show Sutton's geology. Sutton's bedrock geology is comprised mostly of chalk and Thames Group (London Clay Formation, silt, sand, and gravel) geology, with the borough being split approximately in half by these bedrock types. The borough's southern half is comprised of a chalk bedrock, whilst Thames

Group geology (clay, silt, sand, and gravel) is pervasive across the borough's north. A layer of sand, silt, and clay bedrock is present across the intersection of these two bedrock types.

Chalk has high permeability and facilitates the flow of groundwater within the bedrock layer. Conversely, Thames Group geology has low permeability and is not conducive to groundwater flow.

The superficial geology for north-east Sutton is comprised of sand and gravel from River Terrace Deposits (Undifferentiated) of uncertain age and origin. Superficial geology data are unavailable for the remainder of the borough.

The EA's AStGWF mapping uses a series of 1km^2 grid squares across Sutton to classify the percentage of the grid square area that is susceptible to groundwater flooding. As shown in the *Area Susceptible to Groundwater Flooding* map (*Appendix A3.1*), much of north-east Sutton is classified as being situated within an area where >=75% of the land is susceptible to groundwater flooding. Conversely, this figure is <25% across much of western Sutton. There are also a few grid squares where >=25% <50% and >=50% <75% of the land is susceptible to groundwater flooding. Parts of Sutton's southern areas have not been classified within this Area Susceptible to Groundwater Flooding dataset.

Impacts of climate change

No investigations into the impacts of climate change on groundwater flood risk in Sutton have been undertaken. There are several potential ways in which groundwater flood risk could be impacted by climate change. However, the frequency and severity of groundwater-related flood events could increase in line with the EA's UKCP18 projections that suggest increases in rainfall intensity and frequency of extreme rainfall events. Conversely, variability in rainfall intensity and duration could decrease groundwater storage and increase the severity and frequency of groundwater drought periods.

5.2.5 Sewer Flood Risk

Definition

Sewer flooding can occur as a result of:

- Drainage system failure (such as a collapse or blockage).
- High water levels blocking or submerging sewer outfall points, resulting in the system backing up and triggering flooding.
- Increases in water volume and flow entering a sewer system, resulting in an exceedance of the system's hydraulic capacity and subsequently surcharging.

These issues can result in flooding due to the overflowing of water from gullies and manholes.

Assessment

TWUL own and operate the sewer system in Sutton, which is primarily comprised of separate surface water and foul sewer systems. These separate systems are typical for modern sewer systems, with surface water sewers in modern systems generally being designed to accommodate up to 1 in 30 year (3.3% AEP) rainfall events. However, variations in the age of sewer system segments across the borough impact their capacity to manage rainfall events, with the lower

capacity of older segments meaning that they may not be designed to accommodate rainfall events that occur as frequently as 1 in 30 years (3.3% AEP).

Under the Water Industry Act 1991, TWUL are responsible for managing all public sewers, which are defined as the drainage network (including associated manholes) that serves more than one property. The Highway Authority are typically responsible for gullies or drains and the interconnecting pipe network which drain the public highway, whilst private landowners are generally responsible for those which drain from their private land into sewers. The interconnection between these different assets means that several factors may cause flooding. All relevant parties should therefore be involved in subsequent investigations and undertaking work to resolve the root cause where this is necessary, alongside ongoing maintenance to reduce the likelihood of sewer flooding occurring in the first place.

The *Sewer Flooding Incidents per Postcode Sector* map (*Appendix A3.4*) contains information regarding recorded sewer flood incidents, which are discussed in further detail in *Section 5.2.8*.

All new development proposals must consider the existing sewer network, as new developments that are added into the catchment area apply additional capacity stress to sewers and increase the risk of them becoming overloaded. Development-related increases in sewer flood risk are therefore a risk throughout the borough.

Impacts of climate change

Sewer flood risk is linked closely to the projected changes to rainfall patterns and increase in rainfall intensity as per the EA's UK climate change projections, alongside subsequent potential changes to surface water flood risk. This is due to the increases in water volume and flow attempting entry into the drainage system related to the projected increases in rainfall intensity, resulting in an increased probability of the drainage system being overloaded. This overload can result in surcharging of surface water, triggering localised above-ground flooding and increasing the frequency of combined sewer overflow discharges of untreated wastewater into the riverine environment, resulting in widespread damage.

5.2.6 Artificial Sources of Flood Risk

Definition

Artificial flooding can occur when human intervention or infrastructure failure impacts artificial sources including reservoirs, ponds, canals, and other artificial structures. Despite the low probability of a structural breach, the failure of an artificial structure can result in many properties being put at risk of flooding and a consequent high potential extent of damage.

Assessment

The *Risk of Flooding from Reservoirs* map (*Appendix A3.5*) shows reservoir flood risk using the EA's reservoir flood maps. Although no reservoirs are themselves situated within Sutton, the data show that parts of Beddington and Wallington in north-east Sutton could be impacted by reservoir flooding should the Russell Hill Reservoir (situated within the London Borough of Croydon) fail and release the water that it holds. In this scenario, reservoir floodwaters would flow northwards from the reservoir towards the affected areas and along the course of the River Wandle.

For Sutton, reservoir flood data is only available for the 'dry day' scenarios which predict the flooding that would occur if the reservoir failed during normal river levels. Conversely, the 'wet day' scenario dataset shows the extent of flooding from reservoirs if reservoir failure occurred while river levels were already high, although this dataset is not available for Sutton.

The reservoir flood risk mapping could be used for emergency planning purposes. *Section 6* details further information on emergency planning and other FRA requirements.

Impacts of climate change

The complex nature of reservoirs and other large artificial infrastructure mean that there could be complex and varied impacts of climate change on these structures. The predicted changes in rainfall intensity and frequency as per the UK's climate change projections could cause extreme fluctuations in water levels, which could impact reservoir yields.

5.2.7 Residual Flood Risk

Fluvial Defence Breach / Failure

The flood defences for the Beverley Brook, the Pyl Brook, and the River Wandle shown in the *Appendix A1.3* and *Appendix A1.4* mapping provide a level of protection against flooding from fluvial sources. However, the risk of structural failure of these flood defence assets that could result in these features being breached and overtopped due to wind and wave actions are residual flood risks. Although there is only a small probability of these residual flood risks, there is a significant potential damage extent and potential risk to life if they were to occur.

As part of an FRA, an assessment analysing residual flood risk should be considered for proposed developments that are situated within all fluvial flood zones of the Beverley Brook, the Pyl Brook, and the River Wandle. *Section 6* presents further information on development requirements.

Flood Warnings and Alerts

When flooding is possible, the EA issues Flood Alerts to specific areas. When flooding is expected, Flood Warnings are issued by the EA to specific areas. These Flood Alerts and Flood Warnings allow the EA, residents, and business to take preparatory measures to mitigate against potential impacts of fluvial flooding. When there is a potential for risk to life, the EA issue Severe Flood Warnings. Residents can sign up for Flood Warnings through this link.

The EA-designated *Flood Alert and Flood Warning Areas* map (*Appendix A1.2)* shows higher-risk land situated adjacent to or near the Beverley Brook, the Pyl Brook, and the River Wandle being situated within these Flood Warning Areas. The EA Flood Alert area covers almost the entire borough. Flood Warning Areas are the geographical areas that represent distinct communities in which flooding to properties from rivers or the sea is expected to occur. Flood Alert Areas are geographical areas where flooding of low-lying roads and land from rivers or the sea is possible.

The Beverley Brook and Pyl Brook's combined hydrological catchment area of ~63km^2 is notably smaller than the River Wandle's hydrological catchment area of ~200km^2. This means that the Beverley Brook and Pyl Brook are 'flashier systems' that respond faster to hydrological changes than the River Wandle, and may therefore have shorter lead times for flood warnings and alerts.

5.2.8 Historic Flooding

Historic flooding information exists for several flood sources across Sutton. Although Sutton Council hold records of flood incidents, these have not yet been consolidated into a singular dataset and thus have not been included in the analysis of this SFRA. The EA's 'Historic Flood Map' dataset shows the maximum extent of all individual recorded flood outlines in Sutton. TWUL have also provided historic information on the number of reported property and non-property flood incidents. This TWUL dataset is provided on a four-digit postcode sector level, demonstrating the areas within the borough that historic data shows are particularly vulnerable to sewer flooding. This dataset indicates that the most vulnerable areas with over 100 total records (internal and external flooding) of sewer flood incidents are:

- Worcester Park SM3 9 (258)
- Wallington SM5 1 (220)
- Worcester Park KT4 8 (200)
- Wallington SM5 2 (156)
- Sutton SM1 2 (154)
- Sutton SM1 3 (138)
- Sutton SM3 8 (136)
- Carshalton SM5 3 (114)

This dataset also shows that the most vulnerable areas with over 100 records of internal-only sewer flood incidents are:

- Worcester Park SM3 9 (224)
- Wallington SM5 1 (198)
- Worcester Park KT4 8 (173)
- Sutton SM1 2 (144)
- Wallington SM5 2 (129)
- Sutton SM3 8 (119)
- Sutton SM1 3 (109)
- Carshalton SM5 3 (102)

The TWUL sewer flood incident dataset presented in *Appendix A3.4* shows that north and north-west Sutton experiences the highest risk of sewer flooding. Conversely, areas in south-east and south-west Sutton near the boundaries with the London Borough of Croydon and the County of Surrey respectively having the lowest number of sewer flood incident records.

The EA's Historic Flood Map dataset is presented in the *Appendix A1.3* mapping, with records of historic fluvial flooding incidents to property and infrastructure having been recorded along areas adjacent to the Beverley Brook and the Pyl Brook. This dataset does not cover the River Wandle.

As part of the planning application progress, applicants are advised to review these historic flooding datasets alongside the LFRMS, PFRA, and SWMP for additional information. Applicants should contact Sutton Council LLFA or TWUL if they hold any outstanding queries regarding these flood records. *Section 6* of this SFRA should be referred to for additional FRA guidance.

6 Flood Risk Assessment Guidance

6.1 Overview

Applicants and LPAs must consider flood risk to and from proposed developments within all planning proposals. To assess this, applicants should undertake a site-specific FRA (required for developments in Flood Zones 2, 3a, and 3b, and some developments within Flood Zone 1) and/or SuDS Strategy which should demonstrate that the proposed development will suitably manage different flood risk sources throughout the entirety of the development's lifetime. *Table 6.1* provides further guidance on the circumstances where a site-specific FRA is required. The timescale for the lifetime of the proposed development should be identified and justified by applicants in consultation with Sutton Council. The assumed starting points for assessing development lifetime are outlined in the 'Flood Risk and Coastal Change' section of the PPG (Paragraph 6).

Applicants must demonstrate that the development will not increase flood risk elsewhere or be at risk of flooding itself, and that developments are appropriately resilient to potential climate change impacts. The site-specific information supplied for any development application should be proportionate to the identified flood risks and appropriate to the development's nature, scale, and location. Complying with the NPPF and policies from the London Plan (Policy SI 13) and Sutton Council's Local Plan (Policies 32 and 33) is mandatory.

Applicants must prioritise SuDS when proposing measures to reduce local flood risk, and should propose measures that manage runoff as close to the source as possible and contribute to the four pillars of SuDS (amenity, biodiversity, water quality and water quantity). These key principles must be applied at the site level for development proposals and site allocations, and at the strategic level for borough-wide planning.

The designation of land that is likely to be needed for flood risk management and structures will reduce downstream flood risk should they be implemented, which would unlock land downstream for development and maximise the potential for flood storage and conveyance within these developments. Using the planning process to increase flood water storage potential and ensure that SuDS are incorporated within developments feeds into the National FCERM Strategy's discussion of opportunities to boost resilience (see *Section 2.2.6)*.

This section provides guidance on site-specific FRAs for applicants (*Section 6.5*), and guidance for the LPA on both Development Management (*Section 6.6*) and Planning Policy (*Section* ***Error! Reference source not found.***).

6.2 Sequential and Exception Tests

The NPPF requires that a sequential, risk-based approach to the location of development is applied to avoid the risk of flooding to people and property where possible. The approach must consider all flood risk sources and the current and future impacts of climate change. Applicants may be required to undertake the Sequential and Exception Tests as part of their site-specific FRA to demonstrate that they have made suitable efforts to steer development towards areas on their site with the lowest flood risk.

The Sequential Test requires that proposed development sites are situated within areas of the lowest flood risk. Alternative sites situated within areas that may potentially be at risk of flooding can only be considered for development if applicants can demonstrate that the wider search area does not contain any other suitable sites at a lower risk level. The 'wider search area' is defined as the entire borough extent for this SFRA, although locally-defined search area exceptions managed and governed by the LPA exist depending on the type and location of the proposed development. *Section 6.5* discusses information on search area exceptions in further detail.

The NPPF recognises that it may not always be possible for developments to be situated within areas that have a lower flood risk, such as in cases where developments may be proposed within established communities that require continued development to grow. The NPPF provides the Exception Test for these types of proposals, which is a means of demonstrating and ensuring that there will be satisfactory management of flood risk to people and property whilst permitting necessary development in situations where there are no suitable sites at a lower flood risk available. For the Exception Test to be passed, applicants must demonstrate that the development passes the two below conditions, in line with paragraph 164 of the NPPF:

- The development would provide wider sustainability benefits to the community that outweigh the flood risk; and
- The development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

LPA Development Management officers should note that wider sustainability benefits that could be considered to outweigh flood risk include, but are not limited to:

- An overall flood risk reduction to the wider community through the financial contribution to or provision of flood risk management infrastructure.
- The re-use of suitable brownfield land as part of a local regeneration scheme.
- The provision of multifunctional SuDS that integrate with other green infrastructure.

If a site passes the Exception Test, the applicant should prioritise development in areas of the site which are at a lower flood risk. If a site lacks suitable space for development within a low flood risk zone, less vulnerable use classes should be situated in zones of higher flood risk whilst more vulnerable use classes should be situated in zones of lower flood risk. Additionally, sites with higher flood risk could take measures such as prioritising low vulnerability uses within ground floor development, with higher vulnerability uses on the first floor and above.

Table 6.1 and *Section 6.5* provide further guidance on applying the Sequential and Exception Test for developers and applicants. LPA Development Management and Planning Policy guidance on the Sequential and Exception Tests can be found in *Sections 6.6 and* ***Error! Reference source not found.***.

Error! Reference source not found. and ***Error! Reference source not found.*** show the approaches that should be taken to Sequential and Exception Tests as discussed within this report, as per the guidance in Diagram 2 and Diagram 3 of the PPG.

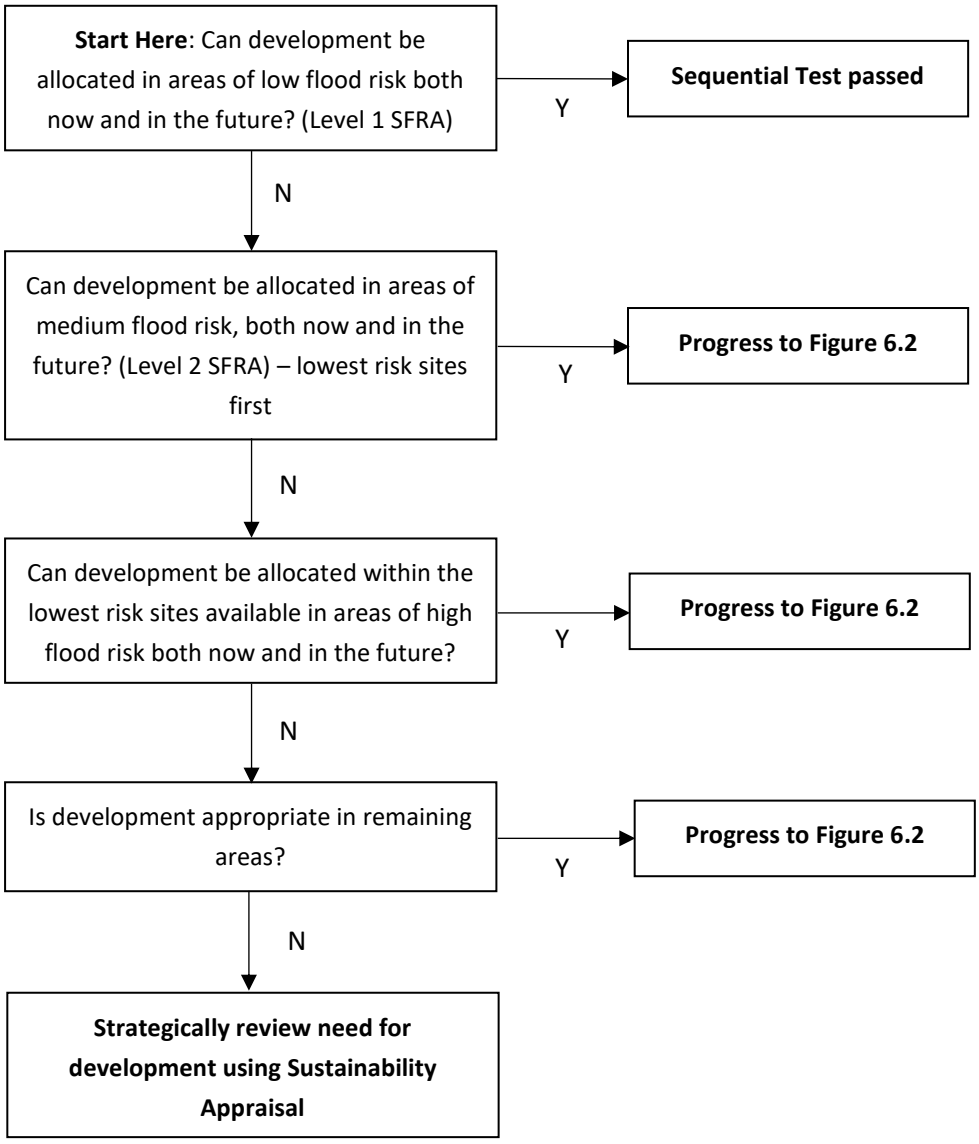


Figure 6.1. Sequential Test Methodology

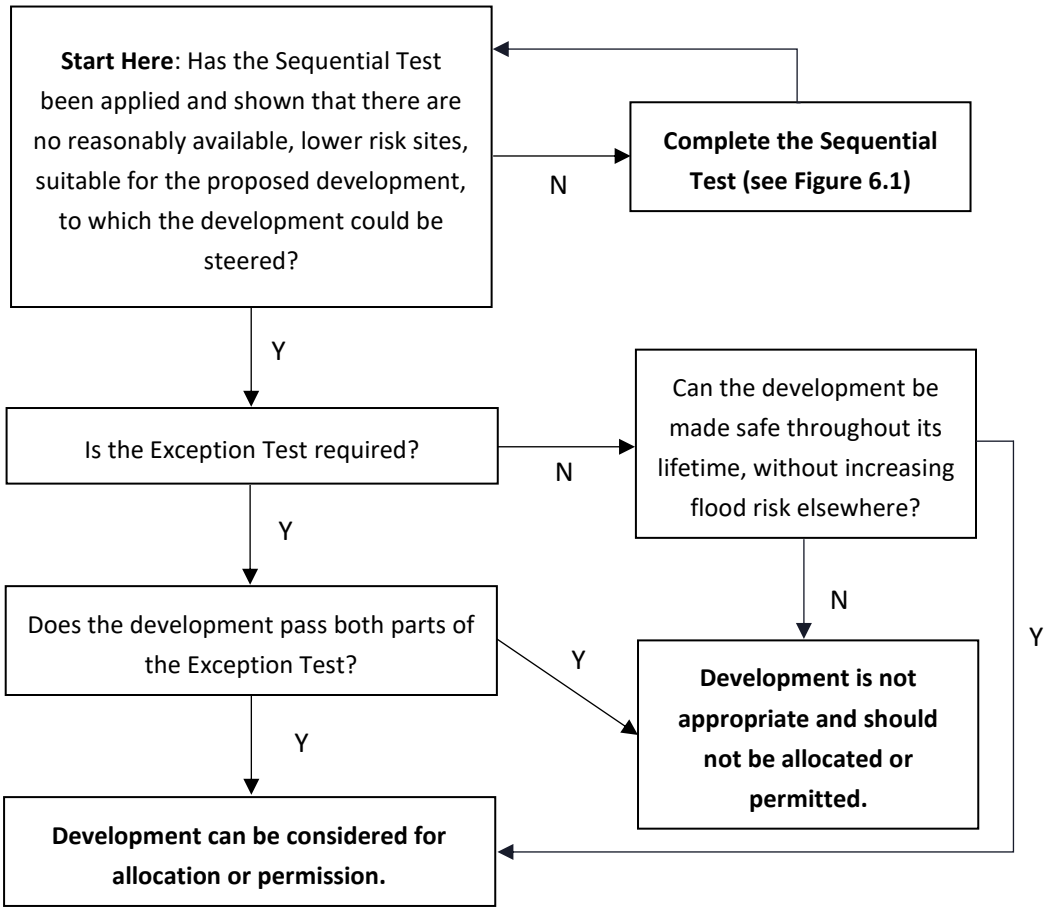


Figure 6.8. Exception Test Methodology

6.3 Planning Application and Development Requirements

According to Section 57 of the Town and Country Planning Act 1990, planning permission is required for all work falling under the statutory definition of 'development' defined in Section 55 of the Town and Country Planning Act 1990, unless it meets permitted development criteria. Planning application definitions (PPG paragraph 51) for development types are as below:

Major Developments:

- For residential developments, a site area over 0.5 hectares or 10+ dwellings.
- For non-residential developments, a site area over 1 hectare or a total building floorspace of at least 1,000m^2.

Non-major Developments: any development falling below the above thresholds but excluding minor development. For example, a planning application for 8 dwellings, an office building creating 750m^2 of floor space, or a development with a site area of 0.4 hectares.

Minor Developments (in relation to flood risk):

- Minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not in excess of 250m^2.

- Alterations: development that does not increase the size of buildings, e.g. alterations to external appearance.
- Householder development: for example, sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling (e.g. subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling.

The EA's Standing Advice and the PPG Site-specific FRA Checklist provide general planning application guidance. *Table 6.1* outlines the local requirements that must be addressed as part of the SuDS Strategy and flood risk submission documents. The guidance is applicable for Major, Minor, and Changes Under Prior Approval Notifications developments. Where applicable, development type-specific guidance are highlighted. *Table 6.2* provides the requirements for the assessment and management of flood risk from other sources where applicable. It is important to note that the requirements for Flood Zone 3a and Flood Zone 3b in in *Table 6.1* and *Table 6.2* are only applicable to Flood Zone 3a and Flood Zone 3b (fluvial), as the inclusion of Flood Zone 3a and Flood Zone 3b (surface water) layers serve only as a recommendation at this stage.

The information presented in *Table 6.1* and *Table 6.2* are a combination of best-practice and legislative and requirements from various sources including the PPG, the NPPF, the London Plan, and the Local Plan.

Table 6.1. Planning Application and Development Requirements for **All Developments** (Flood Zones 1, 2, 3a, and 3b).

Requirement Area	Flood Zone 3b (Fluvial)	Flood Zone 3a (Fluvial)	Flood Zone 2	Flood Zone 1
Land Uses and Development Restrictions (Information is sourced from the Flood Risk and Coastal Change PPG)	PPG Table 2 (Flood Risk Vulnerability and Flood Zone 'Incompatibility')' highlights that planning permission may only be granted to 'Essential Infrastructure' and 'Water Compatible' developments. As the functional floodplain, land in Flood Zone 3b will be protected by not permitting any development on undeveloped sites unless it is for 'Essential Infrastructure' or 'Water Compatible' development. 'Essential Infrastructure' that has passed the Exception Test, and 'Water Compatible' uses, should be designed and constructed to ensure that: • The proposed infrastructure will remain operational and safe in times of flood. • There will not be a net loss of floodplain storage. • Water flows are not impeded. • Flood risk elsewhere is not increased.	Table 2 (Flood Risk Vulnerability and Flood Zone 'Incompatibility')' in the PPG highlights that land use is restricted to 'Less Vulnerable', and 'Water Compatible' development. 'Essential Infrastructure' and 'More Vulnerable' development is permitted where the development has passed the Exception Test. 'Highly Vulnerable' developments are not a permitted development type in Flood Zone 3a. Proposals should also demonstrate that essential infrastructure in Flood Zone 3a should be designed and constructed to remain operational and safe during flood events.	The Exception Test is required for 'Highly Vulnerable' development. There are no land use restrictions for all other development types.	There are no land use restrictions in this Flood Zone.
Sequential and Exception Tests (Information is sourced from the Flood Risk and Coastal Change PPG and the NPPF – *Refer to Section 6.2 and Section 6.5.1 for specific guidance on the application of these at the site-specific scale*)	The Sequential and Exception Tests do not need to be applied to developments in the following cases: • Is a '**minor development** in relation to **flood risk**', including: ○ non-residential (industrial, commercial, leisure etc.) extensions with a footprint measuring below 250 m^2. ○ development that does not increase the building size (e.g. external appearance alterations). ○ householder development within the existing dwelling's curtilage (e.g. sheds, garages, games rooms), and physical extensions to the existing dwelling itself. • Is a **change of use development** – excluding caravans, camping, chalet sites, mobile homes, and park home sites. The Sequential and Exception Tests must be applied for all **major developments, non-major developments,** and **minor developments**, as detailed below. These developments are defined in *Section 0*.			
	Developments categorised as 'Essential Infrastructure' can only be considered after the Sequential and Exception Tests have been applied and passed. Application of the Sequential and Exception Tests do not apply to developments categorised as 'Highly Vulnerable', 'More Vulnerable', and 'Less Vulnerable', as these are not permitted within Flood Zone 3b (see 'Land Uses and Development Restrictions' section of this table).	The Sequential Test is required for all developments except for those categorised as 'Highly Vulnerable', which are not a permitted development type (see 'Land Uses and Development Restrictions' section of this table). 'Essential Infrastructure' and 'More Vulnerable' developments are required to apply and pass the Exception Test in order to be considered, once they have passed the Sequential Test.	The Sequential Test is required for all development types. Developments categorised as 'Highly Vulnerable' are required to apply and pass the Exception Test to be considered, once they have passed the Sequential Test.	The Sequential Test does not need to be applied for development proposals in Flood Zone 1, unless the SFRA or other information indicates there may be either current or future flood issues (see *Table 6.2*).
Site-specific FRA (Information is sourced from the Flood and Coastal Change PPG, the NPPF and Policy 32 of Sutton Council's Local Plan)	A site-specific FRA is required for all development proposals situated in Flood Zone 3b, which must demonstrate compliance with standing advice for all relevant vulnerable development, and Government guidance on flood resilient construction.	All developments in Flood Zone 3a require a site-specific FRA, which must demonstrate compliance with standing advice for all relevant vulnerable development, and Government guidance on flood resilient construction.	All development proposals in Flood Zone 2 require a site-specific FRA, which must demonstrate compliance with standing advice for all relevant vulnerable development, and Government guidance on flood resilient construction.	A site-specific FRA is not required for development proposals located within Flood Zone 1, unless: • There is a total site area measuring above 1 hectare. • The site is situated within an area with critical drainage problems as notified by the EA. • There is evidence of non-fluvial flood risk sources (e.g. surface water, groundwater, and sewers). • There is a change of use to a more vulnerable class.

Requirement Area	Flood Zone 3b (Fluvial)	Flood Zone 3a (Fluvial)	Flood Zone 2	Flood Zone 1
	An assessment of flood risk from all sources should be undertaken, including the potential climate change impacts that may occur over the development's lifetime. The EA's climate change allowances (created in 2016 and subsequently updated) that were most recently updated in May 2022 (at the time of writing this report in December 2023) must be used when assessing peak river flows, sea level rises and peak rainfall intensities.			
SuDS Strategy *(Refer to Section 6.5.3 for further guidance)*	A SuDS Strategy is required for all **major developments**. **Minor developments** and **change of use developments** that impact a site's existing drainage regime also are required to provide a SuDS Strategy as part of the proposal. **All developments** should aim to achieve betterment on the existing drainage situation in accordance with the drainage hierarchy to minimise surface water runoff.			
	To align with the London Plan, the SuDS Strategy must provide details of the proposed SuDS features and destination of surface water runoff. • To demonstrate that the proposed measures are to be implemented as high up the drainage hierarchy as possible, each stage of the drainage hierarchy should be appropriately assessed with supporting information. Infiltration testing to BRE 365 standards should be conducted, and the outcome of this infiltration testing should be provided where applicable at condition stage. As a minimum, at the discretion of the LPA, a desktop study to assess the feasibility of infiltration should be conducted, alongside a suitable alternative non-infiltration drainage solution also proposed, with on-site testing required through conditioning. • Supporting calculations on the greenfield and proposed peak discharge rates are also required within the SuDS Strategy. These must align with Sutton's Local Plan which stipulates that for greenfield sites, the peak runoff rates and volumes for the 1 in 100 year (1% AEP) rainfall event never exceed greenfield runoff rates for the same event. For previously developed sites, the same applies for peak runoff rates unless it can be demonstrated that all opportunities to minimise final site runoff as close as reasonably practical to greenfield runoff rates have been taken in line with the drainage hierarchy. • The water storage attenuation volumes that are required to manage runoff for different rainfall events with climate change allowances must also be provided. These calculations must ensure that proposed developments are designed to meet the Non-Statutory Technical Standards for Sustainable Drainage Systems. • The proposals must also include the maintenance and operation requirements of the proposed SuDS features to ensure their lifetime management, in accordance with Written Ministerial Statement HCWS161. For all planning applications that require a SuDS Strategy, a Sutton SuDS Proforma should also be provided. Applicants should contact TWUL to seek permission to connect to the local sewer network and pipes, including written confirmation that the network has sufficient capacity for their proposal.			
Basements (National Flood Risk Policy Requirement)	Basements should not be permitted in Flood Zone 3b.	The NPPF categorises basement dwellings as 'Highly Vulnerable' infrastructure, and should not be permitted within Flood Zone 3a as per the *'Land Uses and Developments'* section of the Flood Risk and Coastal Change PPG. Other new basement developments are therefore restricted to 'Less Vulnerable' / 'Water Compatible' uses only. These include restricting basements solely to non-residential uses. All basement rooms must have internal access and egress to a higher floor that is situated above the design flood level (1 in 100 year [1% AEP] plus an appropriate climate change allowance) which can be utilised as part of emergency evacuation procedures. All basements, including vents and lightwells that could allow water inundation, must have access thresholds raised 300mm above the design flood level (1 in 100 year [1% AEP] plus an appropriate climate change allowance). Evidence needs to be submitted to confirm the local water table level as part of any assessment.	As 'Highly Vulnerable' infrastructure, residential basement dwellings proposed in Flood Zone 2 must apply and pass the Exception Test in order to be permitted. Non-residential basements do not fall under the 'Highly Vulnerable' infrastructure classification, and are therefore permitted within Flood Zone 2 without a requirement for the Exception Test to be passed. All basement rooms must have internal access and egress to a higher floor that is situated above the design flood level (1 in 100 year [1% AEP] plus an appropriate climate change allowance) which can be utilised as part of emergency evacuation procedures. All basements, including vents and lightwells that could allow water inundation, must have access thresholds raised 300mm above the design flood level (1 in 100 year [1% AEP] plus an appropriate climate change allowance). Evidence needs to be submitted to confirm the local water table level as part of any assessment.	A site-specific FRA is required for new and existing basement dwelling proposals where there is evidence of flood risk from surface water, groundwater and/or sewer flooding sources in the area (See *Table 6.2)*. Flood mitigation measures for these sites must demonstrate that the development will not be impacted by flooding (from all sources) and that the development will not have any adverse impacts on local hydrogeology. Evidence needs to be submitted to confirm the local water table level as part of any assessment.
	A Basement Impact Assessment is required for all basement developments where stipulated by the LPA. It should provide, but is not limited to, the following information: • A detailed geotechnical site investigation. • Site plans outlining the subsurface structure. • Engineering information detailing the potential impacts of the proposed development. • Demonstration that the level of risk posed to neighbouring properties and the wider environment is low. • Detailed borehole information on-site or from nearby to the development site. At least two data recordings should take place within at least a 12-month period to demonstrate any potential seasonal variations. The subterranean measurements should identify the geological conditions on or close to the development site, the infiltration potential, and the height of any local groundwater. • Mitigation if the identified potential impacts of the proposed subsurface development are not acceptable. Flood risk must not be worsened as a result of the proposed development. Examples of flood risk mitigation include, but are not limited to, underground corridors with a high permeability or controlled subsurface structure drainage systems. The Basement Impact Assessment must be carried out by a relevant chartered professional who can carry out the required assessment(s).			

Requirement Area	Flood Zone 3b (Fluvial)	Flood Zone 3a (Fluvial)	Flood Zone 2	Flood Zone 1
Finished Floor Level (National Flood Risk Policy Requirement)	The required finished floor levels for developments are based upon their Flood Risk Vulnerability Classification. Finished ground floor levels must be set at 300mm above the 1 in 100 year (1% AEP) event (with a suitable climate change allowance) for any new 'Essential Infrastructure', 'Highly Vulnerable', 'More Vulnerable' and 'Less Vulnerable' development, and for any change of use developments that increase the vulnerability classification. The EA's 2022 climate change allowances (and subsequent updates) must be used to incorporate the appropriate climate change allowances.			
Flood Compensation Storage (National Flood Risk Policy Requirement)	Permissible developments that decrease fluvial or surface water floodplain volume should address flood storage compensation though the following step-approach. This is required within Flood Zone 3a and 3b, and the fluvial flood risk extent for the 1 in 100 year (1% AEP) plus climate change allowance (which covers parts of Flood Zone 2). Step 1 must be followed unless it can be sufficiently evidenced that this is not reasonably practical. Step 2 must be followed if Step 1 is not reasonably practical. This process repeats until Step 4, which is the minimum requirement and is only appropriate if sufficient justification and evidence has been provided. 1. The development must be situated within the areas of lowest risk on the site, mitigating the need for flood storage compensation. 2. A sequential approach should be applied, with as much of the development as possible being situated within the areas of lowest risk on site. For parts of the development that are not in an area of low risk, supplementary direct volume-for-volume and level-for-level flood storage compensation must be provided. 3. The development must provide direct volume-for-volume and level-for-level flood storage compensation for the entire proposed development. 4. As much of the development as possible must provide direct volume-for-volume and level-for-level flood storage compensation. The development can supplement floodplain compensation with voids as a last resort measure, discussed in the subsequent row of this table. The EA's 2016 climate change allowances (including subsequent updates) must also be incorporated to assess and calculate floodplain storage compensation. *Section 6.5.5* outlines flood storage compensation in further detail.			N/A
Voids (National Flood Risk Policy Requirement)	Voids will only be considered if an applicant has followed the flood storage compensation stepped approach outlined in the above row of this table and provided sufficient justification within an FRA. Introducing voids may be a suitable alternative only if permissible development decreases a fluvial floodplain's volume and flood compensation storage cannot be provided. Voids should not usually be relied upon for floodplain compensation, and are to be used as a last resort for flood storage mitigation. Voids may be suitable where achieving all the direct compensation required is not possible, or where small-scale developments can find difficulty in achieving full compensation. There is usually enough space for the below provision of voids when setting finished floor levels at 300mm above the design flood level (1 in 100 year [1% AEP] plus a suitable climate change allowance). If considering voids, the below mitigation specification must be followed: 1. The void openings should open from existing ground levels, and the proposed void's underside should be set to a minimum of the 1 in 100 year (1% AEP) event (plus a suitable climate change allowance) flood level. 2. Void openings should be provided along all external walls, and a minimum of 1m of open void length per 5m length of wall should be provided. 3. 10mm diameter vertical bars set at 100mm centres can be incorporated into the void openings where security issues arise. Voids should only be used if the LPA are satisfied that they can be maintained for the lifetime of the development. To ensure they remain open for the development's lifetime a legal agreement or planning condition and maintenance plan will typically be required for the use of under-floor voids. Different design criteria may be acceptable for small-scale development. On undeveloped sites, it is not acceptable for the use of under-floor voids to be relied on solely to address the loss of floodplain storage capacity.		N/A	N/A
Impedance of Flood Flows (National Flood Risk Policy Requirement)	Features that may obstruct flows from all sources of flood risk including embankments, raised land, walls, and fencing, should be minimised or removed to ensure that flood risk is not increased on-site or off-site. This could be achieved by providing openings to allow water to flow through structures (such as through permeable fencing), or through relocating these obstructions.			

Requirement Area	Flood Zone 3b (Fluvial)	Flood Zone 3a (Fluvial)	Flood Zone 2	Flood Zone 1
Emergency Planning (Information is sourced from the Flood Risk and Coastal Change PPG)	All **Major Developments** must incorporate measures that effectively manage residual and actual flood risk.			
	'Essential Infrastructure' and 'Water Compatible' use development as defined in the Flood Risk and Coastal Change PPG must remain operational and safe in times of flood. As these structures may assist in flooding evacuations, Emergency Plans must reflect this.	'Essential Infrastructure' use development as defined in the Flood Risk and Coastal Change PPG must remain operational and safe in times of flood. As these structures may assist in flooding evacuations, Emergency Plans must reflect this.	N/A	N/A
Residual Risk (Information is sourced from the Flood Risk and Coastal Change PPG)	The Exception Test requires demonstration that proposed developments will be safe for their lifetime, are that they can satisfactorily overcome any residual risks. Residual risk should be mitigated through flood resilient and flood resistant designs, alongside emergency planning measures (including the provision of safe access and escape routes and flood warnings) to ensure that suitable measures are in place to offer protection.			
Main River Buffer Zone (National Flood Risk Policy Requirement)	Developments should be set back from main rivers (including their associated riverbanks, culverts, and existing flood defence infrastructure) by eight metres. Building on top of existing main river culverts will not be permitted. Where culverts are present on site, the restoration of culverted watercourses to open channels should be actively pursued. A Flood Risk Activity Permit may be required in addition to planning permissions for developments sites situated within specified distances of main rivers. Flood risk activity permits may be required for non-tidal main rivers if development sites are situated within eight metres of a main river, riverbank, flood defence structure or culvert. The EA holds additional details on obtaining Flood Risk Activity Permits.			
Ordinary Watercourse	In addition to planning permissions, an approved ordinary watercourse consent is required for development sites that are situated within 5m of ordinary watercourses due to their potential to obstruct flow.			

Table 6.2. Planning Application and Development Requirements for **Individual Sites** (Other Flood Risk Sources)

Flood Risk Source	Planning Application and Development Requirements
Groundwater Flooding	For all **major** and **minor** development proposals where there is a risk of groundwater flooding (where the development site intersects with an area with >= 25% susceptibility to groundwater flooding), the applicant is required to address this issue by carrying out a screening study (as a minimum) to establish whether any subterranean flood risk issues exist that may necessitate further investigation. The screening study should either advise of the potential impact level and the associated mitigation actions proposed if the risk level is high, or confirm that no further work is needed if the potential impacts risk level posed by the proposed development is low. The study and any other associated assessments should be prepared by a chartered professional or specialist. These include geologists, hydrogeologists, and geotechnical specialists. Screening Assessments for developments that include a basement are required to include the following as a minimum: • Description of the proposed basement development. • The proposed construction methods. • Site characteristics, including topography and geology (superficial deposits, bedrock, and aquifer confirmation). • Site borehole information with water levels. If historical borehole data is used, the borehole location must have been conducted within the last 20 years and be situated within 100m of the site to capture the current local conditions most accurately. As throughflow and groundwater flow may be subjected to seasonal influences, singular borehole measurements may not provide accurate information on how subterranean conditions may vary throughout the year. It is therefore necessary to monitor subterranean water levels over a period of time in areas that may be more susceptible to groundwater and throughflow. • Details of potential impacts (including on water quality, hydrology, soils, and land use), with descriptions of the scale and nature of impacts, and the impacted area's extent. • Details of mitigation measures (where appropriate). The *Groundwater Flood Risk Map (Appendix A3.1)* provides further information on the >= 25% groundwater susceptibility.
Sewer Flooding	For all **major** and **minor** development proposals, the applicant must consult with TWUL to confirm whether flooding has occurred on the site historically where the development site intersects with an area that has one or more records of sewer flooding. Where historic flooding has occurred, the applicant must demonstrate how they will effectively manage this risk for the lifetime of the development. Where the site is not at risk of sewer flooding, the applicant must provide proof that TWUL has agreed in principle to any proposed new sewer connections.
Artificial Sources Flooding – Reservoirs	For all **major** and **minor** development proposals where the application site intersects the area defined to be at risk of flooding from reservoirs, the applicant must: • Identify the reservoirs that are the risk sources using the *Risk of Flooding from Reservoirs Map (Appendix A3.5)*. • Include information describing how the proposed risk management measures address the implications of sites which are encircled by flood water, but are not necessarily at direct risk. • Propose risk measurement measures that are proportionate and appropriate.
Artificial Sources Flooding – Other	For all **major** and **minor** development proposals, the applicant must identify where other sources of artificial flood risk (including ponds or small lakes) exist within or immediately adjacent to the development site. The applicant must also propose appropriate risk management measures.

6.4 Town Centres

There are eight designated Town Centres in Sutton as per the London Plan and the Sutton Local Plan. These are:

- Carshalton Village
- Cheam Village
- Hackbridge
- North Cheam
- Rosehill
- Sutton
- Wallington
- Worcester Park

All of these town centres aside from Hackbridge form part of the London Plan's Town Centre Network due to the functions that they serve and their role in sustaining communities. Sutton Town Centre is categorised as a 'Metropolitan Centre'. The London Plan defines 'Metropolitan Centres' as serving wide catchments, and providing significant leisure, employment, and service functions through generally containing more than 100,000m^2 of leisure, retail, and service floorspace. All of Sutton's other town centres are categorised as a 'District Centre', which the London Plan defines as providing convenience goods and services for local communities through 10,000-50,000m^2 of floorspace for leisure, retail, and service purposes. Each of these town centres hold an important role within the borough, providing a combination of housing, shops, transport links, services, and employment opportunities. Sutton Town Centre, Hackbridge and Wallington are also identified as key locations for housing growth, to aim to deliver new homes to meet London's housing needs and local housing needs.

Whilst Sutton Town Centre is not situated within an area of high flood risk (refer to the *Fluvial Flood Risk* map in *Appendix A1.1* for details), parts of other District Centres including Worcester Park and Hackbridge are within high flood risk areas. Therefore, planning applications in these higher flood risk areas must include an FRA based on the requirements set out in this SFRA. Further requirements relating to finished floor levels are set out in *Table 6.1*.

6.5 Planning Applicants

This section sets out specific guidance on the key flood risk management requirements for planning applications, providing information to ensure that development proposals are compliant.

6.5.1 Application of the Sequential and Exception Tests

It is essential to implement a sequential, risk-based approach in determining site suitability for development in relation to flood risk. This SFRA document provides the basis for applying the Sequential Test (and in some instances, the Exception Test) at a site-specific level for proposed development sites that require the application of these tests.

Proposed development sites that are situated within multiple flood risk zones are classed under the highest risk Flood Zone that is present on site. For example, a site that falls partially within Flood Zone 1 and partially within Flood Zone 2 is formally classified as a site in Flood Zone 2. The Flood Zone in which each proposed site falls under helps to inform the approach required for the site and the information needed for the planning application. The Sequential Test must be applied to steer development on the entire proposed site to the areas with the lowest risk of flooding.

Where the Exception Test is required, the application is based on the highest Flood Zone in which the site is situated and will need to be passed for the planning application.

Sequential Test

The Sequential Test ensures that new development is steered towards areas with the lowest probability of flooding through following a sequential approach. A site-specific Sequential Test is necessary for sites that require this test but have not undergone Sequential Testing as part of the site allocations identified in Sutton Council's Local Plan. The search area and definition of reasonably available alternative sites must be established in line with the below guidance, in consultation with the LPA. Any scope should be shared with the LPA for review and agreement ahead of undertaking the Test. The scope is not limited to, but should include the below points.

- **Search area:** The default area should be the entire borough, but can be reduced where agreed with the LPA and justified by the relevant objectives of the Local Plan or the development's functional requirements. Examples of these include:
    - Local Plan objectives: The regeneration of a specific area may be targeted based on the objectives detailed in the Local Plan.
    - Functional requirements: Infrastructure or industrial developments that may service an area beyond Sutton's borders. Developments which only service part of the borough, for example a school or GP practice which service a specific catchment area.
- **Reasonably available sites:** These typically include sites that are suitable (in which applicants can accommodate a proposed development's requirements), developable, and deliverable. As per Paragraph 28 of the Flood Risk and Coastal Change PPG, sites do not need to be owned by the applicant to be considered 'reasonably available'. These sites could be selected from various sources, including the following:
    - A list of sites that has been prepared as part of the evidence base or background documents produced to inform the Local Plan.
    - Sites that are listed under a Local Authority's brownfield land register, which provides information on the previously developed sites that are appropriate for residential development and includes sites with and without planning permission.

Exception Test

Application of the Exception Test should be taken if it is concluded following the application of the Sequential Test that it is not possible for the proposed development to be situated within an area of lower flood probability. The Exception Test is designed to help ensure that flood risk to people and property will be managed across the proposed development's lifetime. The PPG outlines two considerations that must be achieved in order to pass the Exception Test, with satisfactory demonstration of both considerations to the LPA being necessary for the development to be allocated or permitted. The considerations are:

- The development provides wider sustainability benefits to the community that outweigh flood risk (informed by a SFRA where one has been prepared); and

- The development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Evidence demonstrating the wider sustainability benefits that the development would bring at the specific site must be provided for the development proposal to satisfy the Exception Test. This may include demonstrating the re-use of sustainable brownfield land as part of a local regeneration scheme, or the provision of multifunctional SuDS which integrate with other green infrastructure. This would enable NPPF policy requirements for SuDS, such as seeking to achieve greenfield runoff rates and volumes, to be significantly exceeded. The planning and design of the development must demonstrate that flood risk elsewhere will not be increased due to the development, and that the site will remain operational and safe during a flood event. This may involve:

- Designing buildings to avoid flooding, including through raising floor levels.
- Implementing resilient and/or resistant features to reduce a flood's impact. Resilient features are designed to ensure that a property's internal elements can be recovered quickly and at a low cost, and include the installation of electrical equipment above flood levels. Flood resistant features are designed to ensure that water up to a given height does not enter a property, and include the installation of flood doors and barriers.
- Utilising SuDS as a priority, especially where they can manage flood risk above the usual standard and beyond the proposed site through removing surface water from existing combined sewers.
- Mitigating the potential impacts of flooding through design and application of a sequential approach within the development site, including ensuring that more vulnerable development is situated within the parts of a site that are at a lower flood risk, and incorporating flood resilient and resistant construction.
- Increasing space for the flow and storage of flood water, through incorporating green infrastructure within the development's layout and form. This should achieve other benefits such as urban cooling, minimising water pollution, and improving biodiversity.
- Developing emergency evacuation procedures, which should be considered within the proposed development's design and layout alongside the flood warnings and/or flood alerts shown in the *Appendix A1.2* mapping.
- Providing or making contributions to flood risk management infrastructure that will increase benefits to existing communities and/or by safeguarding the land required to deliver it.
- Leaving space within developments for flood risk management infrastructure to be maintained and enhanced.
- Providing adequate flood risk management infrastructure that will be maintained during the development's lifetime.
- Not increasing the built footprint size, or only doing so through undertaking the appropriate flood compensation methods as detailed in *Table 6.1*.

For a proposal to develop a Local Plan site allocation within a flood risk area, the specific Exception Test guidance should be used which is set out in the SFRA Level 2 Report (expected in 2024) and ***Error! Reference source not found.***.

The PPG Flood Risk Vulnerability and Flood Zone Incompatibility table sets out some circumstances in which the Exception Test must be applied following the Sequential Test.

Application Exceptions

Paragraph 168 of the 2023 NPPF highlights the planning application exceptions to Sequential and Exception Tests. Minor developments and change of use development proposals that fall under one of the following criteria should not be subject to the Sequential and Exception Tests:

- Householder developments within the existing dwelling's curtilage.
- Small non-residential extensions (with a footprint below 250m²).
- Change of use developments (except for changes of use to a caravan, camping or chalet site, or to a mobile home or park home site).

Development proposals that fall under one of these criteria should still meet the requirements for site-specific FRAs as set out in this SFRA, the NPPF and the accompanying PPG.

6.5.2 Site-specific Flood Risk Assessment (FRA)

Site-specific FRAs should be appropriate to the development's scale, nature, and location, and should also be proportionate to the degree of flood risk, making the best use of available information. The EA's guidance on FRAs for Planning Applications and the 'Site-specific FRA' section in *Table 6.1* outlines additional information regarding site-specific FRAs.

As part of flood risk management and emergency planning measures where a probability of flooding from any flood risk source is present, the site-specific FRA requires potential flood depths to be addressed. Certain mitigation measures must then be incorporated depending on the circumstances to demonstrate that the potential impacts of flood depth will be adequately addressed. The most appropriate mitigation measure depends on various factors including the source of flood risk, the potential impacts of the flood risk, and the development's flood risk vulnerability classification.

Applicants are required to submit a FRA for major, minor, and change of use developments that are proposed within the Flood Zone 2 and 3 extents. An FRA is also required where developments are proposed within the Flood Zone 1 extent and have a site area of >1ha, have a site area of <1ha where the change of use is towards a more vulnerable class, or have critical drainage problems.

The PPG checklist for site-specific FRAs provides additional guidance on the preparation and development of a site-specific FRA, whilst *Table 6.1* details the emergency planning requirements.

6.5.3 SuDS Strategy

It may be necessary to present information demonstrating the means by which surface water runoff generated by the development site will be managed as part of (or separate to) site-specific FRAs. Since not all developments require an FRA, it may be advisable to produce a separate SuDS Strategy that can demonstrate how surface water could affect a site of interest and the surrounding

areas post-development. The SuDS Strategy should include details of the SuDS features (including dimensions, cover and invert levels) which are proposed to be incorporated within the development to improve the existing runoff conditions, along with their long-term management and maintenance details.

All major developments require a SuDS Strategy, including those situated on sites that have a history of surface water flooding and those at risk of surface water flooding. A SuDS Strategy is also required for minor developments, and developments that are categorised as 'change of use' which modify the existing surface water drainage regime. The SuDS Strategy must:

- Demonstrate how water is expected to behave on a site based on various factors including topography, underlying geology, and the drainage system.
- Determine the site's infiltration potential, runoff rates, and flow pathways, both prior to and post-development.
- Consider an appropriate climate change allowance.
- Demonstrate that the proposed development will not increase flood risk to the surrounding sites.
- Include a SuDS Proforma.

It is key that the SuDS Strategy firstly should aim to meet greenfield runoff rates and volumes. Where this is demonstrated as not possible, the proposed development should still provide significant betterment of surface water runoff rates, with evidenced justification as to why greenfield rates and volumes cannot be achieved. This is in order to manage the cumulative impacts of development that can increase flood risk from various sources due to an increased pressure on drainage infrastructure and a reduction in surface permeability.

Further details on the SuDS requirements and SuDS implementation to address the impact of future growth are contained in *Table 6.1* and *Section 6.5.4*, respectively.

6.5.4 Sustainable Drainage Systems (SuDS)

To align with Policy 32 of Sutton Council's Local Plan and the Non-Statutory Technical Standards for Sustainable Drainage Systems, all proposed developments should incorporate a range of effective SuDS measures as part of the development layout and design.

Various management and attenuation SuDS features should be employed to manage surface water run-off as close to the source as possible. The implementation of SuDS in proposed developments is key due to their provision for the conveyance of flood water, with certain SuDS features such as swales serving to control and manage overland flow paths across a site during rainfall events. The inclusion of SuDS within developments also means that developers can contribute to BNG through the greening of urban infrastructure and encouragement of wildlife that are associated with SuDS.

SuDS should ensure that proposed surface water runoff rates are within the greenfield runoff rates for development on greenfield sites, while proposed surface water runoff rates for brownfield sites are as close as reasonably practicable to greenfield rates. The London Plan, the LSDAP, and CIRIA guidance documents such as The SuDS Manual and Guidance on the Construction of SuDS provide important information to assist with SuDS implementation.

Applications must outline the SuDS measures that the proposed development will include, and provide details regarding their connections with any piped drainage system if infiltration is not feasible. In line with Policy SI 13 Sustainable drainage of the London Plan, the details submitted must demonstrate that the drainage hierarchy has been followed. Surface water management methods higher up the drainage hierarchy should be incorporated as a first priority:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) rainwater infiltration to ground at or close to source
3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer

Where information is available regarding a site's underlying geology, it may be possible to indicate where infiltration-based SuDS may or may not be potentially suitable for use, and where uncertainties exist. The applicant must provide site-specific borehole data or infiltration testing to justify use of non-infiltration-based surface water management techniques within their SuDS Strategy in development locations where the inclusion of infiltration SuDS is deemed to be potentially suitable or uncertain.

Following the expected implementation of Schedule 3 of the FWMA in 2024, the anticipated forthcoming SAB will be responsible for granting approval for new developments. These developments will only be approved by the SAB if they adhere to the mandatory requirement for implementing SuDS features, which should be designed and constructed in accordance with national standards. Further information on the SAB and Schedule 3 of the FWMA is discussed in *Section 2.2.3*.

Not all developments that require a planning application have the potential to impact flood risk locally or affect a site's existing drainage regime. This may include developments that do not introduce new building structures, do not increase the built footprint of a site, and/or do not alter associated landscaping. Where this is applicable, developments must still align with Policy SI 13 of the London Plan and Policy 32 of Sutton Council's Local Plan, which require developments to demonstrate that the site's proposed surface water discharge rate is equal to greenfield rates (or a significant betterment of the existing rate where this is not feasible).

Although it may not be possible to improve on-site water management in some cases, efforts should be made to improve the site's drainage systems as the current regime may have wider flood risk implications for the area. *Table 6.1* provides additional details on SuDS; Sutton Council's LLFA team should be contacted in the case that further information is required.

6.5.5 Flood storage compensation and mitigation

The presence of buildings and structures, or the raising of ground levels can reduce the ability of a floodplain to store floodwater during flood events. As floodwater is consequently forced elsewhere, local flood risk can increase. Therefore, any part of a development that could reduce

floodplain storage should provide a direct replacement of volume. Flood storage compensation should be provided on a 'level-for-level' and 'volume-for-volume' basis whereby an equal volume of floodplain must be created to that taken up by the development, and this volume must apply at all levels between the lowest point and the design flood level (1 in 100 year [1% AEP] plus a suitable climate change allowance).

The preferred mitigation method is level-for-level flood plain compensation as voids or stilts situated below buildings tend to become blocked over time by silt and debris or domestic effects, resulting in a gradual loss of the proposed mitigation. If agreed with the LPA, other mitigation measures may be considered if level-for-level floodplain compensation is unfeasible. In these cases, a FRA must demonstrate consideration of level-for-level compensation, justify why it was unfeasible, and explain how any associated risks from the chosen mitigation method can be minimised (See *Table 6.1*).

Voids must be floodable if proposed as an alternative form of mitigation in worst-case scenarios, with the level of the void's underside being above the 1 in 100 year (1% AEP) flood level (with a suitable climate change allowance). The LPA must also be satisfied that that an adequate maintenance plan is in place to ensure the voids remain open for the development's lifetime and that they can enforce a condition to maintain the voids as designed.

Applicants should alter their development proposals to ensure that the built footprint does not increase in size if the LPA are unsatisfied that alternative mitigation measures are appropriate.

6.6 Local Planning Authority – Development Management

This sub-section provides Development Management-specific guidance to ensure effective evaluation and assessment of the key requirements for individual planning applications. As development should be considered at a strategic level, it is important to identify how individual development proposals fit within a given area's wider flood risk management strategy. The below guidance accompanies the information presented in *Table 6.1* and *Table 6.2.*

Sutton Council's original SWMP (2011) and its subsequent 2019 update should be used to inform decision making on development within the borough. CDAs and the defined Catchments and Sub-Catchments as outlined in *Section 2.4.4* exemplify specific areas within Sutton that may be particularly appropriate for SuDS, and can be used to determine proposed schemes' feasibility.

6.6.1 Application of the Sequential and Exception Tests

In order to ascertain a site's suitability for development with regards to flood risk, it is essential for a sequential, risk-based approach to be taken. *Section 6.5.1* sets out the information for applicants on the application of the sequential and exception tests. LPAs must provide evidence to demonstrate application of the Sequential Test (and the Exception Test in some cases) has been applied for any proposed development site that requires them. The LPA must then consider the extent to which the considerations of the Sequential and Exception Tests have been satisfied. This SFRA document, and the accompanying maps produced provide the basis for a site-specific level application of these tests.

Guidance on development and the types of locations and sites to be considered in London has resulted in certain considerations being pushed to the forefront of development considerations.

The current London Plan (2021) identifies that small site developments contribute notably towards meeting housing objectives (see Policy H2 'Small sites'). In addition, it is also key to adopt a sequential approach to guide development for main town centres to align with Policy SD7 'Town centres: development principles and Development Plan Documents'. When considering new development proposals, these are important factors that boroughs should account for.

6.6.2 Site-specific Flood Risk Assessment (FRA)

Site-specific FRAs should demonstrate how flood risk will be managed at present and in the future over the lifetime of the proposed development. The FRA must consider the development's flood risk vulnerability classification and the impacts of climate change. Planning applications should include an FRA in the following circumstances:

- All development proposals that are situated within Flood Zones 2 and 3, including change of use and minor developments *[Minor developments include extensions that exceed the Permitted Development parameters as defined by Planning Portal Guidance], and property sub-division as this is 'development' defined by Section 55 of the Town and Country Planning Act 1990.]*
- Proposals for development areas in Flood Zone 1 that measure at least 1 hectare.
- New proposals, or a change of use in development type to a more vulnerable class, where the proposed development could be affected by sources of flooding other than rivers and the sea.
- New proposals, or a change of use development type to a more vulnerable class where the proposed development could impact the site's existing drainage regime and/or be affected by sources of flooding other than rivers and the sea.

Development Management should refer applicants to this SFRA and the accompanying mapping presented in *Appendix A*, highlighting the key areas which could impact their proposals. Under the Town and Country Planning (Development Management Procedure) (England) Order 2015, LPAs have a statutory duty to consult with the EA for development proposals situated in areas at risk of fluvial flooding before planning permission is granted. The PPG's site-specific FRA checklist can aid in the site-specific FRA review process. Additionally, the EA's Standing Advice provides additional guidance for fluvial flood risk and when the EA should be consulted.

6.6.3 SuDS Strategy

Applicants may need to produce a SuDS Strategy to demonstrate the means by which surface water runoff generated by the development site will be managed, and to describe how surface water could impact a site of interest and its surrounding areas. A SuDS Strategy is required for all major developments that are not categorised as 'change of use', alongside all minor and 'change of use' developments which modify existing surface water drainage.

All major development proposals that have been identified as requiring a SuDS Strategy need to provide a completed Sutton SuDS Proforma, which requires applicants to demonstrate:

- **Project & Site Details** – Details of the existing site, the existing drainage system, and the proposed development.

- **Proposed Discharge Arrangements** – Details regarding the site's infiltration feasibility, the Drainage Hierarchy (based on Policy SI 13 of the current London Plan), and the proposed surface water discharge method.
- **SuDS Strategy** – Details of the greenfield, existing brownfield (where relevant), and proposed discharge rates for 1 in 1 (100% AEP), 1 in 30 (3.3% AEP), and 1 in 100 year (1% AEP) (plus a 40% climate change allowance) return periods. This section also requires information regarding the proposed SuDS measures, their proposed Catchment areas, and their proposed storage capacities.
- **Supporting Information** – Details regarding the evidence and supporting information for the information provided in the Proforma's previous sections, including the proposed maintenance approaches.

The SuDS Strategy and SuDS Proforma must demonstrate significant betterment of surface water runoff rates in order to manage the cumulative impacts of development that can increase flood risk from various sources.

DEFRA published the Non-Statutory Technical Standards for Sustainable Drainage Systems in March 2015. The document's Standards, which an application should refer to, include:

- Flood risk outside the development
- Peak flow control
- Volume control
- Flood risk within the development
- Structural integrity
- Designing for maintenance considerations
- Construction

These standards should be used when assessing the SuDS Strategy and its accompanying SuDS Proforma submitted with planning applications. Alongside the expected future implementation of the SAB (as discussed in *Section 2.2.3*), it is anticipated that new national standards will be released to build upon these Non-Statutory Technical Standards.

6.6.4 Sustainable Drainage Systems (SuDS)

All developments should incorporate a range of SuDS measures as part of their development, in line with Policy 32 of Sutton Council's Local Plan and the Non-Statutory Technical Standards for Sustainable Drainage Systems. Further detailed information on SuDS is provided in *Section 6.5.4*.

Following the expected implementation of Schedule 3 of the FWMA in England in 2024, the anticipated forthcoming SAB will be responsible for granting approval for new developments. These developments will only be approved by the SAB if they adhere to the mandatory requirement for implementing SuDS features, which should be designed and constructed in accordance with national standards. Further information on the SAB and Schedule 3 of the FWMA is discussed in *Section 2.2.3*.

As of April 2015, LLFAs have been statutory consultees on major planning applications. The associated Written Ministerial Statement HCWS161 together with the London Plan highlights the importance of incorporating SuDS into development proposals. LPAs are therefore required to consult LLFAs for technical advice and expertise regarding surface water management before a decision on major planning applications can be reached, under the Town and Country Planning (Development Management Procedure) (England) Order 2015.

Issues relevant to the decision-making progress that are analysed by LLFAs and LPAs for planning applications are referred to as 'material planning considerations'. SuDS are a material planning consideration for all major applications as stated in the aforementioned Written Ministerial Statement HCWS161, and evidence of SuDS implementation to ensure safe and sustainable on-site management of surface is required for decisions on all planning applications. The Determining a Planning Application page provides further guidance on material planning considerations, planning applications, and the associated decision-making process.

6.6.5 National Flood Risk Standing Advice

The National Flood Risk Standing Advice outlines details of when LPAs should apply standing advice on planning applications and site-specific FRAs, and when the EA and LLFAs must be consulted. This guidance applies to planning applications which are categorised as full, outline, reserved matters, change of use, prior approval for flood risk under certain permitted development rights, permission in principle, and technical details consent.

LPAs should ensure that applicants have followed the standing advice for vulnerable developments for developments (including change of use) that have a vulnerability classification of:

- 'Water Compatible' (including essential accommodation situated within a development defined as water compatible).
- 'More Vulnerable' (if the development is not a caravan site, a camping site, a waste facility site, or a landfill).
- 'Less Vulnerable' (if the development is not a water or sewage treatment plant, a waste treatment site, or a mineral processing site).

This guidance states that the relevant vulnerable developments should follow the standing advice for floor levels, extra flood resistance and resilience measures, access and escape, and surface water management. Finished floor levels should be 300mm above whichever is higher in relation to the site's average ground level: the adjacent road level to the building or the estimated river (or sea) flood level. Floor levels that cannot meet the minimum requirement must be raised as much as possible, should incorporate additional flood resilience and resistance measures, and should move vulnerable uses to upper floors.

Flood resilience plans should follow the CIRIA Property Flood Resilience Code of Practice, and the standards for the installation and retrofit of resistance measures should be followed. Emergency escape plans must follow the Flood Risk Emergency Plans for New Development guidance, and should demonstrate that single storey buildings, ground floors, and basement rooms have sufficient access to safe refuges that are connected to an area away from flood risk and are situated above the estimated flood levels. The standing advice for vulnerable developments also highlights

the requirements to incorporate SuDS for all developments involving surface water drainage in flood risk areas and major developments involving surface water drainage.

For developments that are classified as 'minor extensions', LPAs should ensure that applicants have followed the standing advice for minor extensions.

LPAs should ensure that the standing advice has been followed and should consult the LLFA for major developments on surface water drainage matters. LPAs should consult the EA if a proposed development is not categorised as minor and is situated within Flood Zone 1 but within 20 metres of a main river, or are identified by the EA as having critical drainage problems. LPAs should also contact applicants to confirm whether they require a separate permit or consent, which may be needed if the development is situated within 20 metres of a main river (or flood defence or flow control structure) and/or if it directly affects a watercourse that is not a main river. The LPA should direct the applicant to the appropriate guidance regarding this additional permit or consent.

Further details of standing advice for LPAs can be accessed on the associated guidance webpage.

6.7 Emergency Planning

Sutton Council is designated as a Category 1 Responder under the Civil Contingencies Act 2004 and are therefore required to assess risks and provide an appropriate emergency response, including responding to major flooding events. Under the Act, Sutton Council's statutory duties are:

- Assessing the local risks in Sutton that require planning.
- Developing and maintaining emergency plans and business continuity plans to ensure that a person or body is able to continue to function so far as necessary or desirable should an emergency occur or be likely to occur, for the purpose of:
    - Preventing the emergency
    - Controlling, reducing, or mitigating its effects
    - Taking other associated actions.
- Responding to emergency incidents within Sutton.
- Advising the public prior to, during, and after the occurrence of emergencies.
- Sharing information and working collaboratively with other agencies to ensure effective planning coordination and emergency management.
- Providing business continuity advice, and support to voluntary organisations and local businesses.

Section 5 of this SFRA and the accompanying mapping in *Appendix A* should be used to aid Sutton Council's Emergency Planning Unit in informing response requirements to align with the Civil Contingencies Act 2004. Emergency Planning can use this information to tailor needs to be area-specific and risk-specific.

6.8 Plan making

As outlined in *Section 6.7*, the Level 1 and Level 2 SFRA reports inform the plan-making process of the Local Plan. Aside from primarily serving to inform the choice of allocations following the sequential

approach, the SFRA is also important for key stages of the Local Plan development including Regulation 18 and Regulation 19 through informing strategic policy for land allocation. Mapping generated by SFRAs is a key component required for the creation and submission of Local Plans, identifying locations which are at flood risk from various sources and informing associated policy. The SFRA Level 1 and Level 2 reports are also intended to be used as 'living documents' following implementation of the Local Plan to guide any changes in policy or flood risk that may impact the Local Plan.

SFRAs can also be used to inform the scope of the Sustainability Appraisal for consultation, which in turn can be used to inform land allocation in accordance with the Sequential Test. The guidance on the Sustainability Appraisal for local plans provides further information.

6.9 Assessment of Local Plan policies

Sutton Council's current Local Plan (2018) was created with a view of incorporating the requirements set out in national and sub-regional policy. However, the Local Plan falls short of these requirements in some aspects due to updates to the NPPF (in July 2018, February 2019, July 2021 and September 2023) and the London Plan (in 2021) that have occurred since publication.

Sutton Council's Local Plan Policy 32 '*Flood Risk and Sustainable Drainage*' gives limited to no consideration of the following aspects of London Plan Policies SI 12 and SI 13, and NPPF guidance:

- London Plan Policy SI 12: London Boroughs should work collaboratively to jointly address cross-boundary flood risk issues that affect both neighbouring boroughs and authorities situated outside London, where relevant.
- London Plan Policy SI 12 and NPPF paragraph 167: development design should ensure that utility services remain operational during a flood event, and buildings should be brought back into use quickly following a flood without the need for significant refurbishment.
- London Plan Policy SI 12: development proposals situated adjacent to flood defences are required to protect the structural integrity of these flood defences and ensure sufficient access routes should maintenance and/or upgrades be required.
- London Plan Policy SI 13: development proposals that include impermeable surfacing (including within small areas such as driveways and front gardens) should usually be resisted unless sufficient justification can be provided to show that this is avoidable.
- London Plan Policy SI 12 and NPPF paragraph 161: developments should incorporate natural flood management techniques as part of an integrated flood risk management approach.
- NPPF paragraph 161: development plans should safeguard land from development that is required (or likely to be required) for flood management both at present and in the future.
- NPPF footnote 55: a site-specific FRA should be provided for proposals situated within Flood Zone 1 which involve land that will be at an increased flood risk in future or land that may be subject to other flood sources where its development would introduce a more vulnerable use.

7 RECOMMENDATIONS

7.1 Overview

Climate change is the primary factor that may increase the risk of flooding across the UK due to its impact on various flood risk sources. Other key drivers of increased flood risk include increased development requirements, infrastructure maintenance, and future population growth. Existing policy and the below recommendations mitigate these key drivers of potentially increased flood risk.

For example, an increased demand for housing may result in a greater number of developments being proposed within higher risk Flood Zones, increasing their flood risk and having potential knock-on impacts to surrounding areas. Likewise, a reduction in surface permeability due to urban development could also increase the flood risk to Sutton from surface water, sewer, and fluvial sources. This is because increased surface impermeability raises the volume of surface water runoff and the speed at which this runoff is delivered into surface water sewers, combined sewers, and water bodies. An increased population will also place greater pressure upon the existing drainage infrastructure, thus raising the risk of sewer flooding. The accumulative increased risk from various flood sources may therefore present a greater overall flood risk to people, properties, and infrastructure across Sutton.

Local policies within Sutton's Local Plan that target the impact of future growth on flood risk are therefore necessary to facilitate housing development needs while meeting flood risk mitigation requirements. A sequential, risk-based approach to the location of development should be applied as per the NPPF and the accompanying PPG in order to avoid potentially subjecting people and property to flood risk whilst considering the impacts of climate change. Furthermore, Policy 33 (Climate Change Adaptation) of Sutton Council's Local Plan (2018) identifies the increasing need to ensure that new developments incorporate climate change impacts into their location, design, and layout to ensure that they are fully adapted and resilient. Sutton Council's site-specific policy recommendations detailed in *Section 7.6* are underpinned by Local Plan policy in conjunction with the evidence base presented in this SFRA.

7.2 The Impact of Future Growth on Flood Risk

Each LPA's ten-year housing targets are set out within the current London Plan (2021) for the period from 2019/20 to 2028/29 to help meet future growth demands. These housing targets are set in line with the London Plan Policy H1 '*Increasing housing supply*', which outlines the actions and requirements to help ensure that these ten-year housing targets are met by LPAs. The London Strategic Housing Land Availability Assessment (2017) is part of the London Plan evidence base and forms the basis for these housing targets.

Sutton Council's ten-year target for net housing completion as per the current London Plan is to deliver 4,690 new homes. The London Plan Policy H2 '*Small sites*' states that a number of these new homes should be delivered on small sites measuring below 0.25 hectares in size as a strategic priority. The policy guides LPAs on how to support small housing developments, with Sutton Council's ten-year target being to ensure that 2,680 of the 4,690 new homes delivered in this period are to be situated on small sites. Sutton Council's housing targets over the period of the new Local Plan (2025-2040) will be determined as part of the Local Plan review process. The London Plan targets are the minimum that

Sutton Council should provide. There are strategic alternatives for where the growth should be steered towards, which is informed by this SFRA and other strategic documents.

The London Plan recognises the particularly high risk of surface water flooding that London faces, primarily due to the extensive coverage of impermeable surfaces throughout the city. This high surface water flood risk could be exacerbated further through the delivery of the projected housing targets for the ten-year period, due to associated increases in impermeable surface area. To address this, London Plan Policies SI 5 '*Water infrastructure*', SI 12 '*Flood risk management*', and SI 13 '*Sustainable drainage*' outline the requirements to manage and mitigate flood risk whilst considering the requirement for delivering additional housing. The policy requirements match those for Flood Zone 3a (fluvial), helping to manage surface water flood risk across Sutton whilst addressing the borough's need for additional housing. The potential future inclusion of a surface water designation within Flood Zones 3a and 3b that is recommended in *Section 637.6.1* would help to further manage the higher surface water flood risk across Sutton. *Section 5.11* and *Section 6.3* provide further information on Flood Zone 3a (fluvial) and relevant guidance respectively.

The impacts of increasing development throughout the country on flood risk are recognised by the PPG and the NPPF, which require all developments to demonstrate that they will remain safe throughout their lifetime without increasing flood risk elsewhere. As per the PPG, residential developments have a minimum lifetime of 100 years unless specific justification is provided otherwise. Conversely, the PPG states that non-residential developments are likely to have a lifetime of at least 75 years, but this can be influenced by the development characteristics. The impacts of an increasing number of properties on flood risk means that developments are also required to demonstrate that they can also reduce overall flood risk wherever possible. It is therefore essential to ensure that the impacts of future growth on flood risk is mitigated as much as possible to achieve these objectives and those stated within the policies and guidance outlined in *Section 2.*

Funding contributions should be used to ensure that sufficient opportunities for the development and progression of strategic flood risk infrastructure schemes can be realised in order to address the cumulative impacts on flood risk due to future growth. These funding contributions can include planning obligation funding under Section 106 of the Town and Country Planning Act 1990, which enables developers and LPAs to enter into an agreement to make proposed development sites acceptable in planning terms. Additionally, funding agreements for the Community Infrastructure Levy under Part 11 of the Planning Act 2008 facilitate LPAs to provide contributions towards the costs of implementing infrastructure improvements that may be required for the area's development.

This SFRA should be used to help determine appropriate development across the borough through implementation of the processes, recommendations and use of the associated mapping.

7.3 Property Resilience Measures

The NPPF requires policies to support appropriate measures that ensure the future resilience of communities and infrastructure against the impacts of climate change to guarantee effective planning for climate change. This includes guaranteeing that developments are to be flood resilient and resistant. The PPG defines property flood resilience as "*an approach to building design which aims to reduce flood damage and speed recovery and reoccupation following a flood*", while flood resistance measures aim to stop water entering a building up to a safe structural limit.

To assist applicants, CIRIA have developed and published the Code of Practice for Property Flood Resilience (2021). This Code of Practice outlines the six standards that specify what should be achieved for property flood resilience. It provides advice for how property flood resilience measures can be incorporated into new-build and retrofit developments to improve their resilience against various flood risk sources, and includes specific guidance for Local Authority planners. Where required, details of flood resistance and resilience plans must be included within the FRA and/or SuDS Strategy submitted as part of planning applications. *Section 6.3* of this SFRA outlines the EA-approved guidance on flood resistant and resilient measures for Sutton, including information on finished floor levels.

Policy D11 '*Safety, security and resilience to emergency*' of the current London Plan (2021) outlines property flood resilience measure requirements, and states that "*Development proposals should maximise building resilience and minimise potential physical risks, including those arising as a result of extreme weather, fire, flood and related hazards*". In addition, London Plan Policy GG6 '*Increasing efficiency and resilience*' states that those involved in development and planning must "*ensure buildings and infrastructure are designed to adapt to a changing climate, making efficient use of water, reducing impacts from natural hazards like flooding and heatwaves, while mitigating and avoiding contributing to the urban heat island effect.*"

Sutton Council's current Local Plan (2018) emphasises the importance of ensuring a sufficient flood resilient design of buildings, with Local Plan Policy 32 *'Flood Risk and Sustainable Drainage'* requiring all proposed developments to ensure that flood resistance or resilience measures are used to safely mitigate residual flood risks.

The EA's Flood Risk Standing Advice information for minor extensions and vulnerable developments should be taken into account if a proposed development is categorised as such, as they provide additional guidance on appropriate property resilience and resistance measures. This advice is discussed in greater detail in *Section 6.6.5* of this SFRA.

7.4 Emergency Plans

Cohesive emergency planning at site-specific and strategic level is essential to minimise the potential impact of an increased flood risk resulting from climate change and urban development.

Development must not impede on the emergency services or the response of Sutton Council's Emergency Planning Unit to any flood events. A borough-wide emergency plan can provide policy context on the management of emergencies, including flood risk. This plan can help define the emergency response structure, provide guidance on deployment and co-ordination within the borough, and can also provide further policy context for local Flood Warning and Evacuation Plans. Applicants must ensure that appropriate flood evacuation and response procedures that align to the wider strategic plan are set out and actioned where required in order to aid Sutton Council's management of the 'actual' and 'residual' risks associated with extreme flood events on strategic and site-specific levels.

Sutton Council's Emergency Planning webpages and the Borough Risk Register (2018) detail the emergency situations that Sutton Council are prepared to deal with and their statutory duties during emergencies. Flooding is one of the listed risks to Sutton that is included in the Borough Risk Register and in Sutton Council's Environment Strategy & Climate Emergency Response Plan. Sutton Council's Flood Risk Management webpage details how flood risk in the borough is being reduced, describes the

process of reporting flooding, and outlines Sutton Council's responsibilities for coordinating flood risk management. Sutton Council are designated as a Category 1 responder and are subsequently responsible for taking various actions during a flood risk emergency. These include, but are not exclusive to:

- Providing emergency assistance through liaising with essential service providers and opening evacuation and rest centres.
- Managing the local transport and traffic networks, including organising road closures and diversions.
- Coordinating the recovery process and restoration to normality through collaborative work with community groups and businesses.

7.5 Managing Residual Risk

Residual risks are those which remain after the effects of the mitigating actions have been considered and must be quantified to ensure the continuous safe management of these remaining risks. However, the residual risks from a mitigation measure implemented today may change significantly over time as a result of climate change-induced alterations to rainfall intensity, duration, and frequency.

The London Plan (2021) Policy SI12 *'Flood risk management'* identifies the importance of strategies managing and mitigating residual risk through resistance and resilience, ensuring that safe evacuation and rapid recovery measures are in place to deal with such risks. Sutton Council's Local Plan Policy 32 *'Flood Risk and Sustainable Drainage'* and Policy 33 *'Climate Change Adaptation'* also address the importance of developments managing residual risks through the aforementioned resistance and resilience measures, particularly in the face of climate change. Climate change projections indicate an increased severity and impact of flooding, which may raise access issues for emergency services during a flood event. Developments should therefore ensure that their designs consider the impacts of climate change to guarantee safe and full access and egress to emergency services during extreme events.

As a residual risk measure, considerations must also be made to ensure that people can remain within affected areas whilst being safe and comfortable should an extreme flood occur. General and residual risks may need to be re-evaluated as the collective understanding of climate change increases to enable the LLFA and management companies to implement further control measures in the future, should this be necessary.

7.6 Recommended Policies

A set of policy recommendations for planning development and flood risk management in Sutton are presented below, having used the findings presented throughout this SFRA as an evidence base to form these recommendations. The recommendations outline the strategic and site-specific principles that should guide flood risk management for prospective development within Sutton. The policies seek to address the cumulative impacts of increased urbanisation on strategic flood risk management issues, whilst considering the potential future impacts of climate change alongside the necessity of development that is needed to help Sutton Council meet their housing requirements.

7.6.1 Strategic Policies

1) Sutton Council should use their Local Plan to ensure that developments that are situated within a defined Sub-Catchment, as per Sutton Council's updated SWMP (2019) provide increased surface water drainage requirements. This could include providing greater storage for attenuation through using SuDS (either as a retrofit measure or for new developments situated within these Sub-Catchments) to restrict off-site runoff rates to greenfield conditions as a maximum.

2) Once finalised, Sutton Council should incorporate the 11 draft London RFRA 2018 recommendations into future Local Plan policies and documents. As of the time of writing (December 2023), the draft London RFRA recommendations have not been finalised. These recommendations include Recommendation 2 (Fluvial Flood Risk) and Recommendation 3 (Surface Water Flood Risk), which align with the current London Plan Policies SI 12 and SI 13 respectively and are summarised below:

    - Recommendation 2: Planning policies should enhance their focus on maximising the opportunities to reduce fluvial flood risk that are presented by the redevelopment and regeneration of London's river corridors. Opportunities should align with London Plan Policy SI 12 through maximising the use of open space for flood water, and ensuring the flood compatibility and flood resilience of developments that have a residual flood risk. Opportunities for benefits obtained through river restoration measures should be maximised.
    - Recommendation 3: Developments across London should reduce surface water discharge as per the Sustainable Drainage Hierarchy outlined in London Plan Policy SI 13, which supersedes London Plan Policy 5.13. Developments should also take the actions detailed in the LSDAP.

3) Sutton Council should identify strategic locations that could serve as water storage areas to aid flood risk management, both at present and in the future. Sutton Council's LLFA should work collaboratively with the EA to identify potential locations through flood alleviation schemes. Future Local Plans should incorporate safeguarding of these locations to facilitate links between flood risk management and other environmental priorities.

4) Sutton Council should implement measures that deal with the acceptability of windfall site development proposals (sites which unexpectedly become available for development) at the strategic level within the Sequential Test. These measures could outline the quantities and locations of windfall sites that would or would not be determined to be acceptable as per the Sequential Test terms. This would provide input to the process defined in *Section 6.5.1* and would help create efficiencies in the process.

5) Sutton Council should consider adopting a surface water designation for Flood Zones 3a and 3b into planning policy, as shown in the *Appendix A4.1b* and *A4.1d* maps. In line with this, Sutton Council should consider implementing additional requirements for surface water flood risk mitigation for proposed developments that are situated within Flood Zones 3a and 3b (fluvial) and the mapped 1 in 30 year (3.3% AEP) and 1 in 100 year (1% AEP) RoFSW extents, which correspond to Flood Zones 3a and 3b (surface water) respectively. These requirements could be

similar to those adopted for Flood Zones 3a and 3b (fluvial) as per Table 2 (Flood risk vulnerability and flood zone incompatibility) of the PPG with the below suggested modifications:

- Development situated within the Flood Zones 3a and 3b (surface water) extents (corresponding to the mapped 1 in 30 year [3.3% AEP] and 1 in 100 year [1% AEP] RoFSW extent) will be treated as if it were fluvial Flood Zone 3a (High Probability) or 3b (Functional Floodplain) as defined in PPG Table 1 (Flood Zones). If this were taken forward, it is recommended that Sutton's Flood Zones 3a and 3b are clearly mapped as Flood Zones 3a and 3b (fluvial) and Flood Zones 3a and 3b (surface water).
- Development may be possible within Flood Zones 3a and 3b (surface water) if situated outside of existing infrastructure or solid building footprints.
- Development within the functional floodplain may be possible through the relocation of an existing building's footprint within a site where this is beneficial to flood risk and/or other planning requirements and the footprint size does not increase.

6) Sutton Council should ensure that all permissible basement developments that are situated within an area of fluvial, surface water, and groundwater flood risk are fitted with resilience measures in line with the thresholds detailed in *Table 6.1*.

7) Sutton Council should set up a process which enables the use of Community Infrastructure Levy charges for flood alleviation schemes across the borough to address the cumulative impact of development on flood risk.

8) Sutton Council should integrate emerging policy priorities on green infrastructure (such as London Plan Policy G1 '*Green Infrastructure*') as part of the borough's wider green space networks into future Local Plans with a strategic approach to flood risk management.

9) Sutton Council should include the aspects of national and regional policy (as discussed in *Section 6.9*) that are not presently incorporated into its current Local Plan into future revisions.

10) Sutton Council should adopt this SFRA's policies into future Local Plans.

7.6.2 Site-specific Policies

1) Where possible, Sutton Council should ensure that predicted flood mapping from all sources is actively considered in order to safeguard land within development sites for potential flood mitigation use. This can be undertaken during the planning process or as part of wider FRAs, such as a Level 2 SFRA.

2) Developments that are proposed within 'dry islands' (areas within Flood Zone 1 that are surrounded by areas at higher risk of flooding such as those situated within Flood Zones 2, 3a (fluvial) or 3b (fluvial)) such as those in Hackbridge near the River Wandle should be designed for safe access and egress should a flood event occur. These measures should be designed for the lifetime of the development, with climate change impacts factored in. As flood events present the potential for a loss of key local services and lack of safe access routes, these 'dry islands' are considered as flood risk areas.

3) Sutton Council should ensure that developments maximise the use of existing green and open spaces (including those around main rivers and ordinary watercourses) as flood storage areas for water to flow over and be stored within during a flood event.

8 Review and Next Steps

8.1 Review and updates

8.1.1 Technical Content

The SFRA has been developed using the legislation, policy, and information that is available at the time of writing (December 2023). The SFRA is intended to be used to assist various parties in considering flood risk when making planning decisions regarding the design and location of proposed developments and flood risk management. It is key that the SFRA data is up to date to ensure that decisions are taken using the best and most current information that is available. Events that may trigger a review and update include, but are not limited to:

- Changes to the NPPF and the associated Flood Risk and Coastal Change PPG, upon which the basis of the SFRA is formed.
- Updates to any overarching legislation which may alter Sutton Council's responsibilities, including the implementation of Sutton's expected SAB role under FWMA Schedule 3.
- Significant updates to the available flood risk information that is used to develop the SFRA, as applicants and the LPA must be provided with the most accurate, up-to-date information that is available.
- Improved understanding of local flood risk knowledge (which may occur following the reporting of flood incidents in previously unaffected locations), as site-specific FRAs must be informed by the most up-to-date information and planning decisions must be made on the best data that is available.
- Following Sutton conducting any significant flood risk investigation work.
- After a major flooding event within Sutton.

8.1.2 Mapping

The SFRA should reflect an ever-changing and improving flood risk knowledge. Consequently, the SFRA could enhance knowledge by highlighting risk areas which were not previously known, or by enabling areas that were previously considered to be at risk for potential future development.

The mapping *(Appendix A* – Mapping*)* that has been created to support this SFRA provides a means of ensuring the most up-to-date information is available. These maps are current at the time of writing this SFRA (December 2023) and must be updated in the future when revised data is published by the various data sources including TWUL, the EA, and Sutton Council. This includes following the future update of EA mapping through the National Flood Risk Assessment 2, which is expected to be completed in 2024. The Flood Zone 3a and 3b layers (fluvial and surface water) must also be updated under the following circumstances:

- The EA publish updated main river flood extents following their periodic review and updates of main river flood models and their associated predicted flood extents.

- Updates to the RoFSW map are published. If future Flood Zone 3a and 3b extents incorporate RoFSW data as per recommendation 5 in *Section 7.6.1*, updates should also be undertaken following local surface water flood risk modelling studies that provide surface water flood risk extents to the EA to update their national RoFSW mapping.

8.2 Level 2 SFRA

A high-level screening assessment of currently allocated sites within Sutton has been undertaken by Sutton Council, and is included in *Appendix B* – Level 2 SFRA. This was a general screening assessment that included, but was not specific to, flood risk and assessed several other parameters.

In terms of flood risk, this assessment identified for each site: the fluvial Flood Zone the site is located in (Flood Zones 1 to 3), the surface water flood risk category (between very low – high risk), and the surface water flood risk percentage (from less than 0.1% chance of occurrence each year to greater than 3.3% each year). A bespoke flood risk screening assessment will be completed which will include a spatial analysis to calculate the percentage of site area that is situated within each defined Flood Zone, potential climate change impacts, potential interactions with other flood risk sources, an initial appraisal on whether the Sequential Test and Exception Test are required, and a recommendation whether an assessment through a Level 2 SFRA would be appropriate. Allocated site-specific recommendations will be included in an appendix within a spreadsheet format that can be filtered on assessment parameters as required.

The Level 2 SFRA will apply various assumptions, which will be detailed below upon its completion.

A Level 2 SFRA provides a detailed assessment of all potential flood risk sources that require a site-specific assessment. These allocation sites and/or windfall sites are identified as either part of the Local Plan or through the Level 1 SFRA.

The Level 2 SFRA will add to the strategic flood risk information presented in the Level 1 SFRA. A Level 2 SFRA may be required if it is not possible to allocate all development outside of flood risk areas according to a Level 1 SFRA, and it may also be required if applicants are expected to submit a high number of applications on sites that are not identified in the Local Plan.

As discussed in this Level 1 SFRA, not all developments can be situated outside of flood risk areas. It is therefore recommended that a Level 2 SFRA is produced to achieve the following outcomes:

- Identification of the potential development sites that require a site-specific assessment.
- Completion of a detailed site-specific assessment that considers all potential flood risk sources.
- Providing the information that is required to apply the Exception Test if needed.
- Identifying site-specific requirements including policy, FRA requirements, and mitigation measures.
- Providing a set of recommendations for each site that is assessed.

As per NPPF requirements, the Level 2 SFRA will consider all flood risk sources, both at present and in the future with climate change considerations. The NPPF describes how the planning system should be used to minimise vulnerability to flooding and provide climate change resilience. The PPG and NPPF

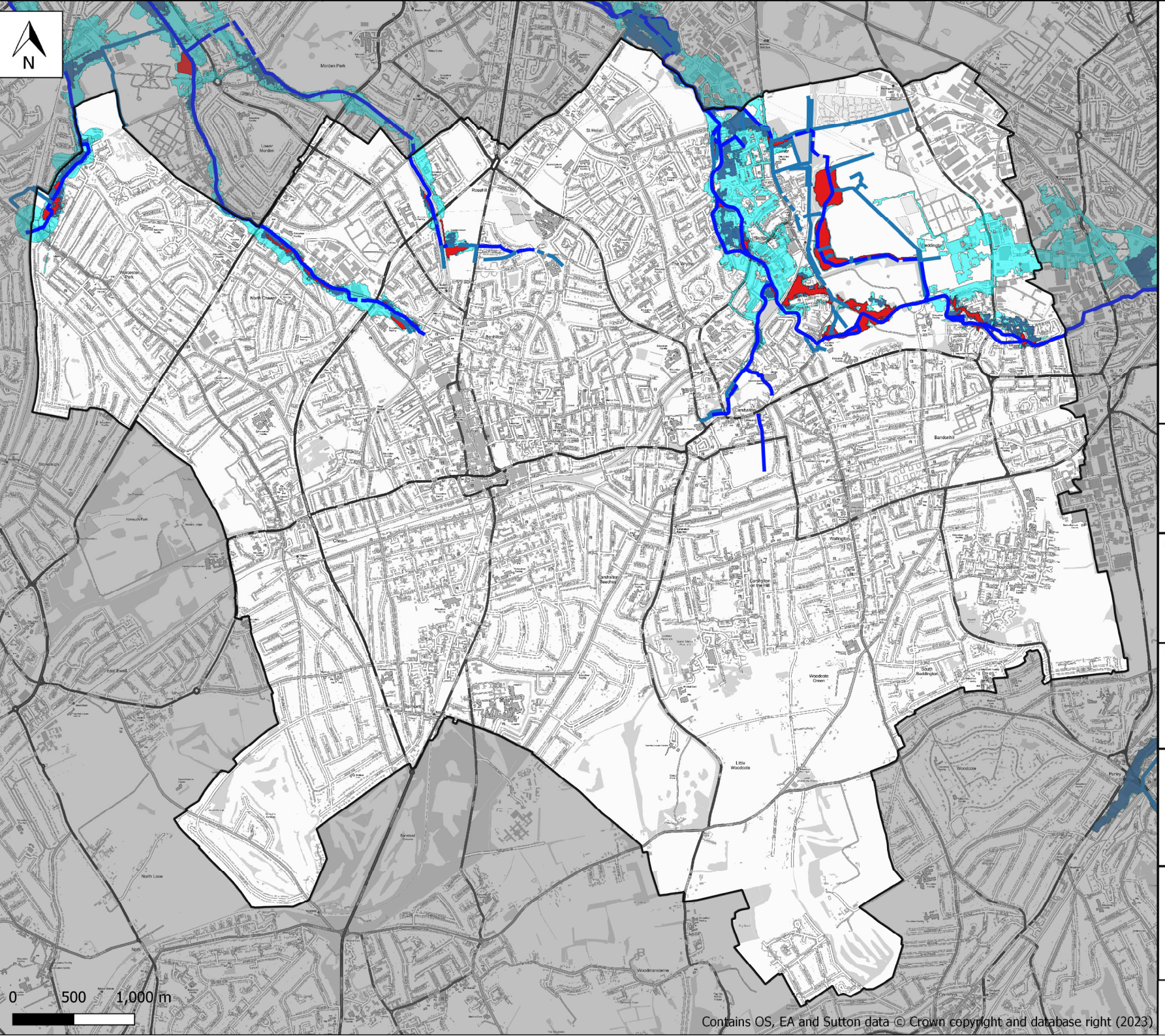
describe the process by which FRAs should demonstrate intended flood risk management over a development's lifetime, whilst considering climate change impacts. Site-specific FRAs should use the latest guidance to confirm climate change impacts. The Level 2 SFRA will provide details on aspects such as flood extent, depth, velocity, and hazard ratings. Once complete, the Level 2 SFRA information will support proposals in submitting the information that is necessary to meet the requirements.

APPENDICES

Appendix A – Mapping

Appendix B – Level 2 SFRA Assessment

Appendix A – Mapping



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Flood Zone 2
- Fluvial Flood Zone 3a
- Fluvial Flood Zone 3b

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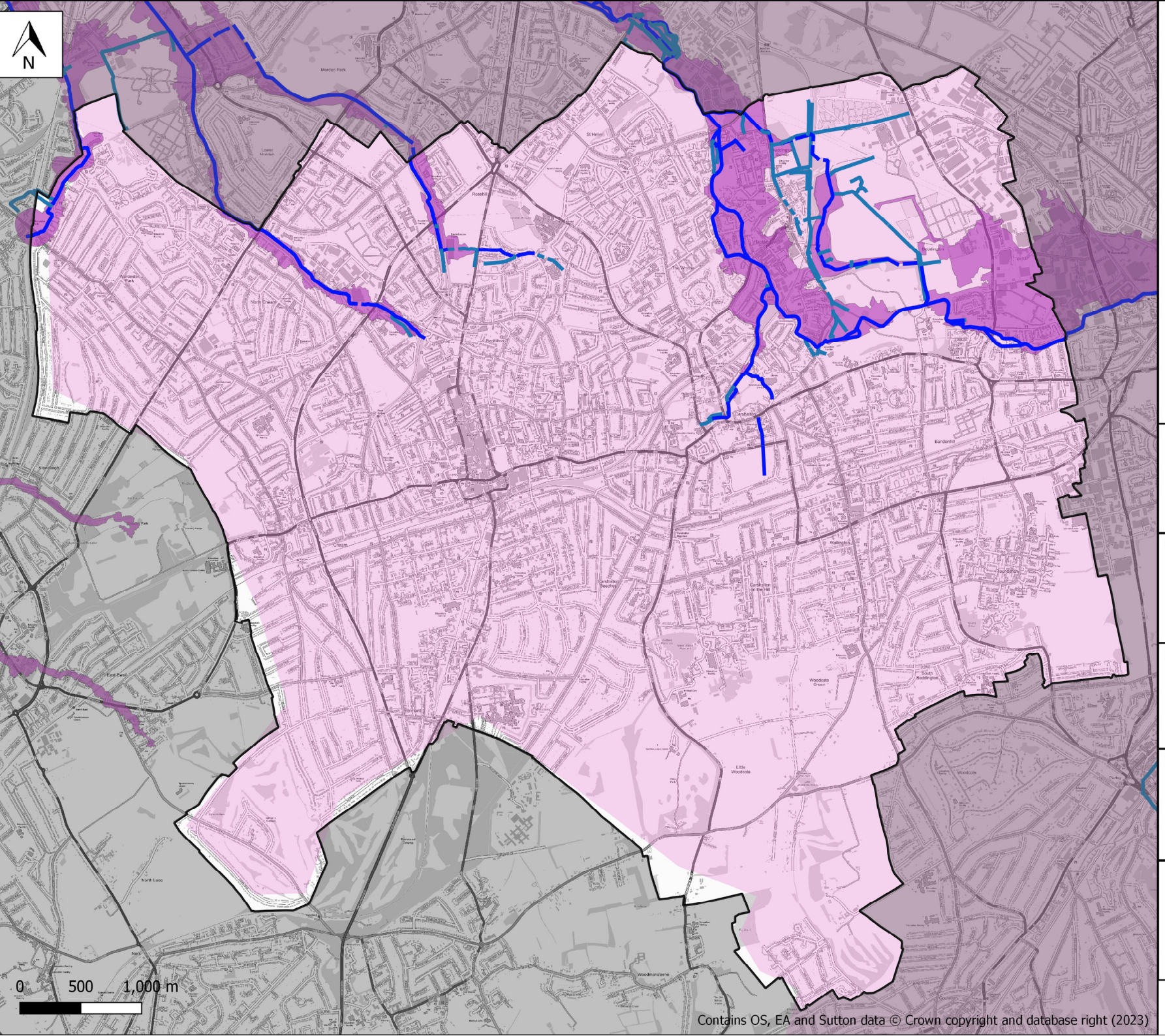
Level 1 Strategic Flood Risk Assessment

Drawing Title

Fluvial Flood Risk: Flood Zone 2, and Fluvial Flood Zones 3a and 3b

1:30,000	Drawing Size A3	Drawing Number A1.1



Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Flood Alert Areas
- Flood Warning Areas

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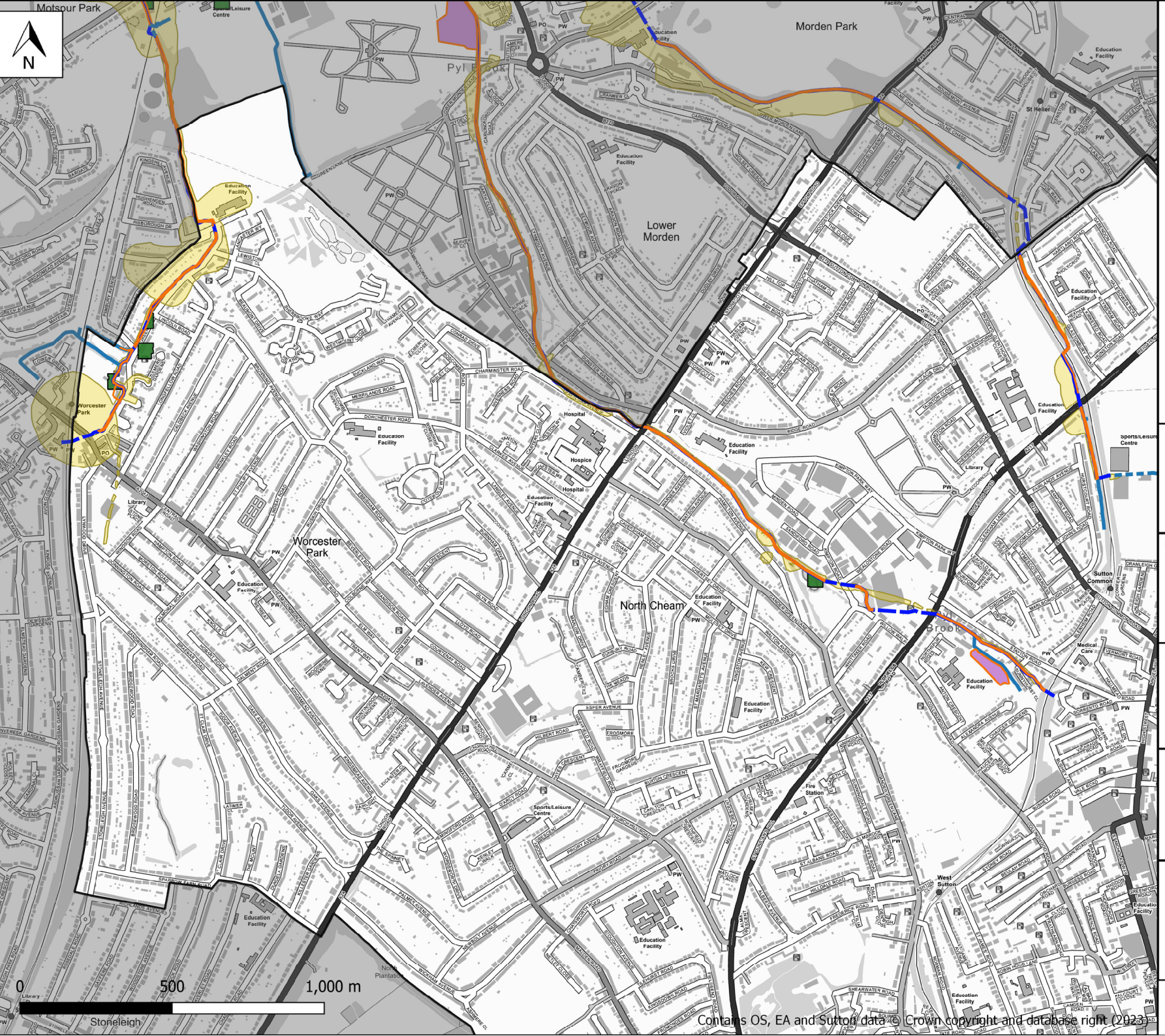
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Fluvial Flood Risk: Flood Alert and Flood Warning Areas

1:30,000	Drawing Size A3	Drawing Number A1.2



Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Historic Flood Map (Fluvial)
- Flood Defences
- Flood Storage Area
- Reduction In Risk Of Flooding From Rivers And Sea

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Level 1 Strategic Flood Risk Assessment

Drawing Title
Fluvial Flood Risk: Historic Flood Map, Flood Defences, Flood Storage Areas and Reduction In Risk From Rivers And Sea (Sutton North-West)

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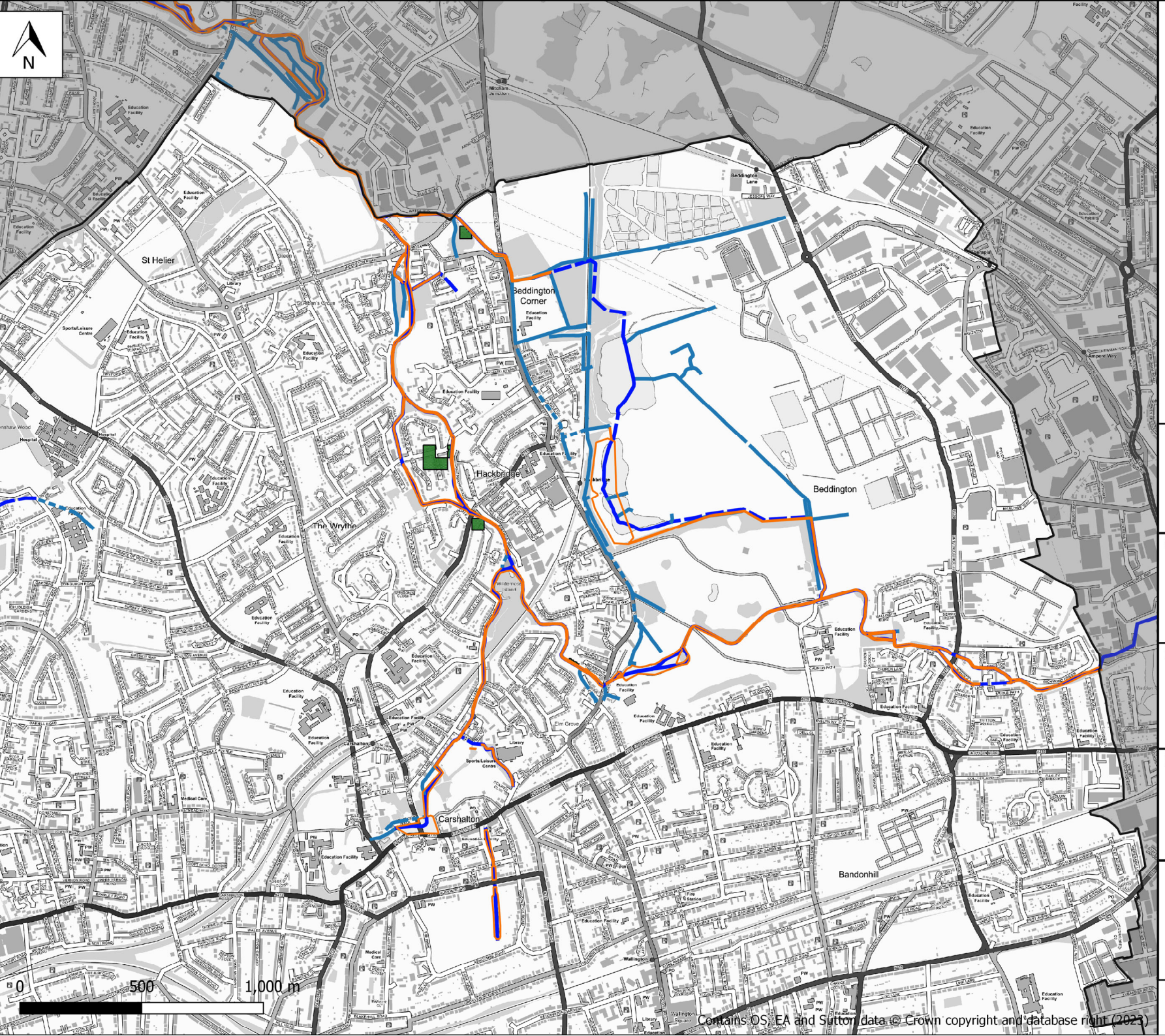

Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Historic Flood Map (Fluvial)
- Flood Defences
- Flood Storage Area
- Reduction In Risk Of Flooding From Rivers And Sea

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Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Fluvial Flood Risk: Historic Flood Map, Flood Defences, Flood Storage Areas and Reduction In Risk From Rivers And Sea (Sutton North-East)

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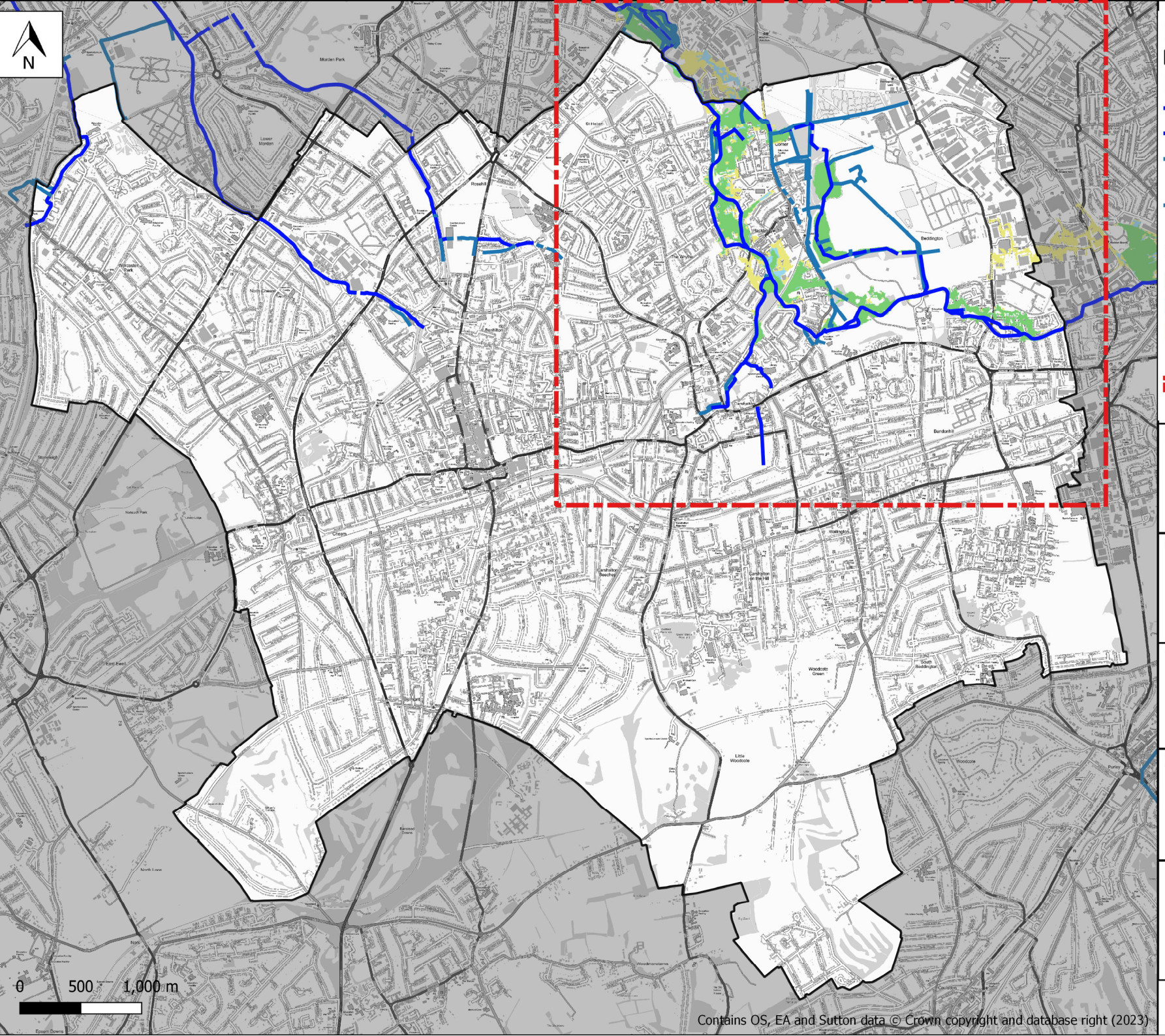

Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

River Wandle Flood Extents

- 1 in 100 year_25CC
- 1 in 100 year_35CC
- 1 in 100 year_70CC

- Outline of area included in inset map

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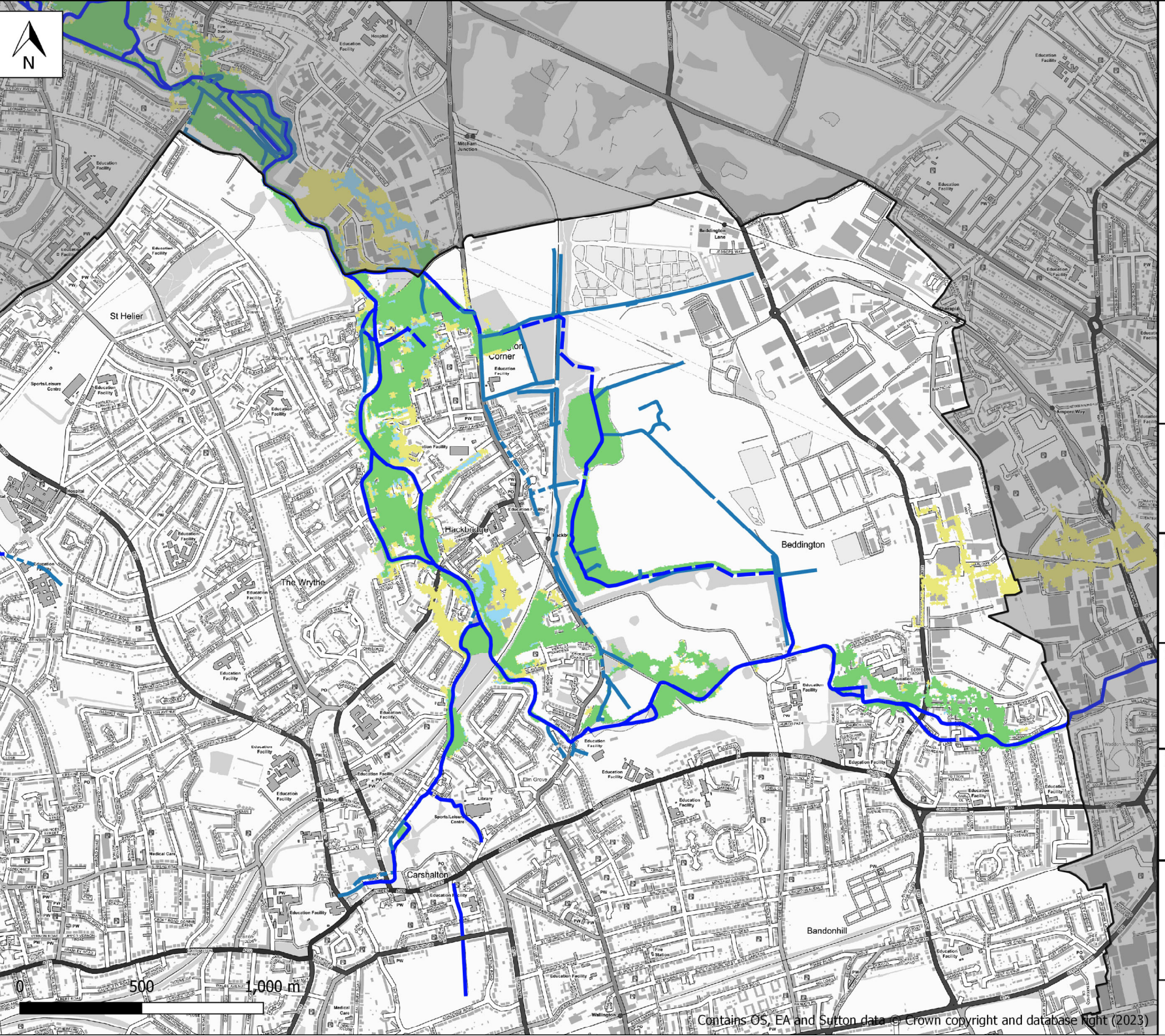
Level 1 Strategic Flood Risk Assessment

Drawing Title

Fluvial Flood Risk: River Wandle Flood Extents (1 in 100 year with climate change considerations)

1:30,000	Drawing Size A3	Drawing Number A1.5



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

River Wandle Flood Extents

- 1 in 100 year_25CC
- 1 in 100 year_35CC
- 1 in 100 year_70CC

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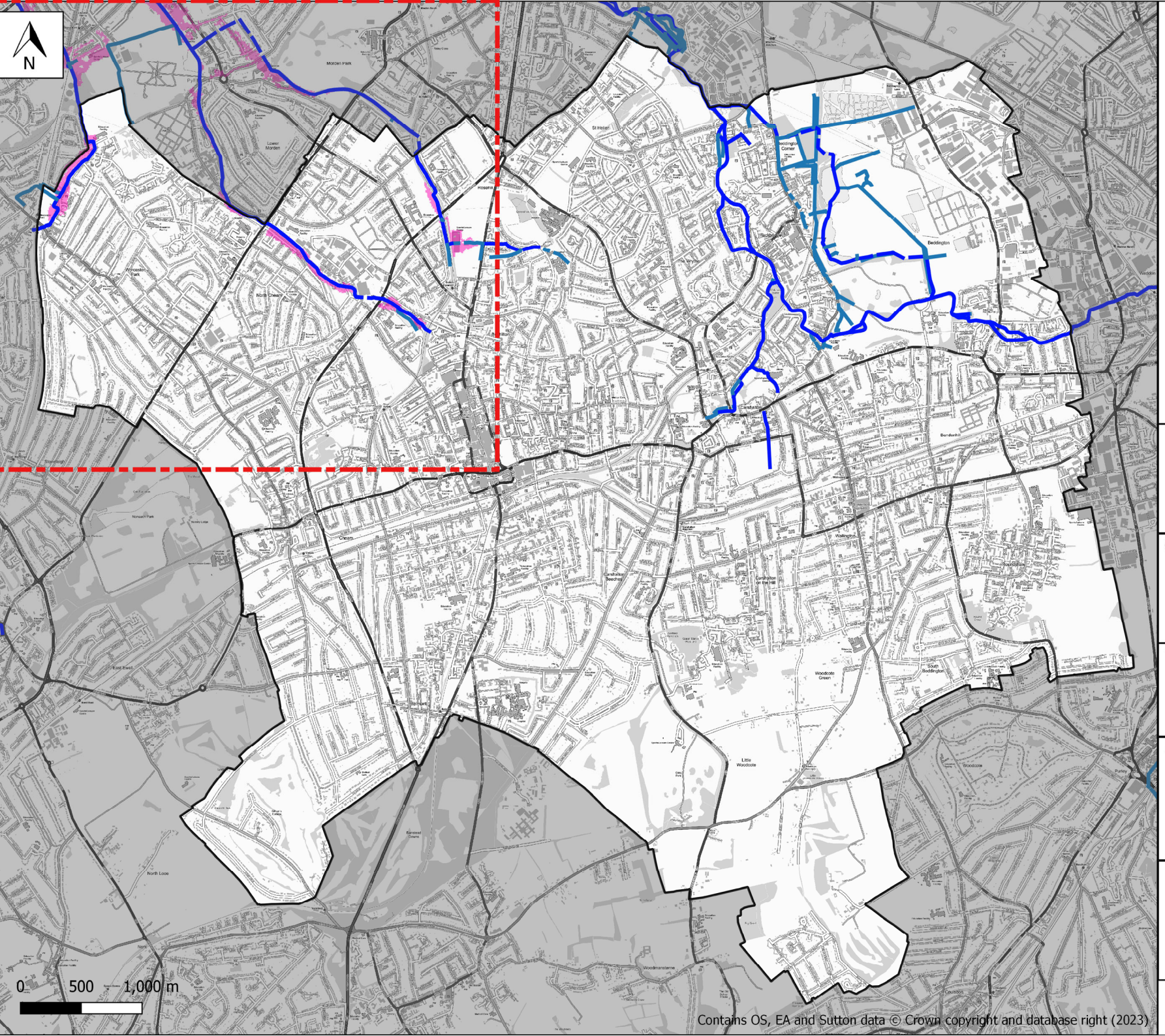
Level 1 Strategic Flood Risk Assessment

Drawing Title

Fluvial Flood Risk: River Wandle Flood Extents (1 in 100 year with climate change considerations)

1:15,000	Drawing Size A3	Drawing Number A1.5a



Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Beverley Brook and Pyl Brook Flood Extent 1 in 100 year_20CC
- Outline of area included in inset map

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Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Fluvial Flood Risk: Beverley Brook and Pyl Brook Flood Extent (1 in 100 year with 20% climate change consideration)

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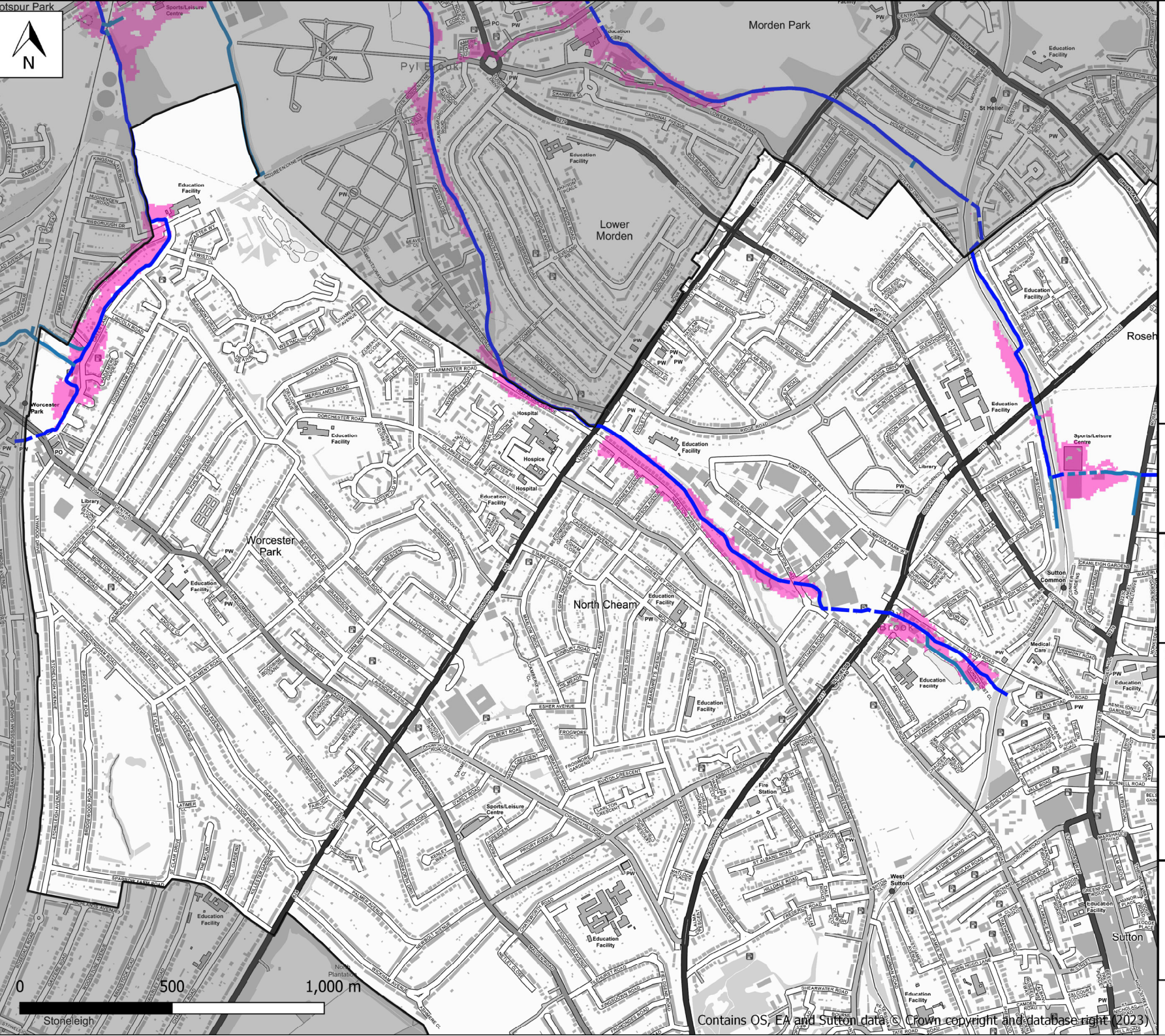

Legend

- Borough Boundary
- Detailed River Network
  - Main River - Open Channel
  - Main River - Culverted
  - Ordinary Watercourse - Open Channel
  - Ordinary Watercourse - Culverted
- Beverley Brook and Pyl Brook Flood Extent 1 in 100 year_20CC

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Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Fluvial Flood Risk: Beverley Brook and Pyl Brook Flood Extent (1 in 100 year with 20% climate change consideration)

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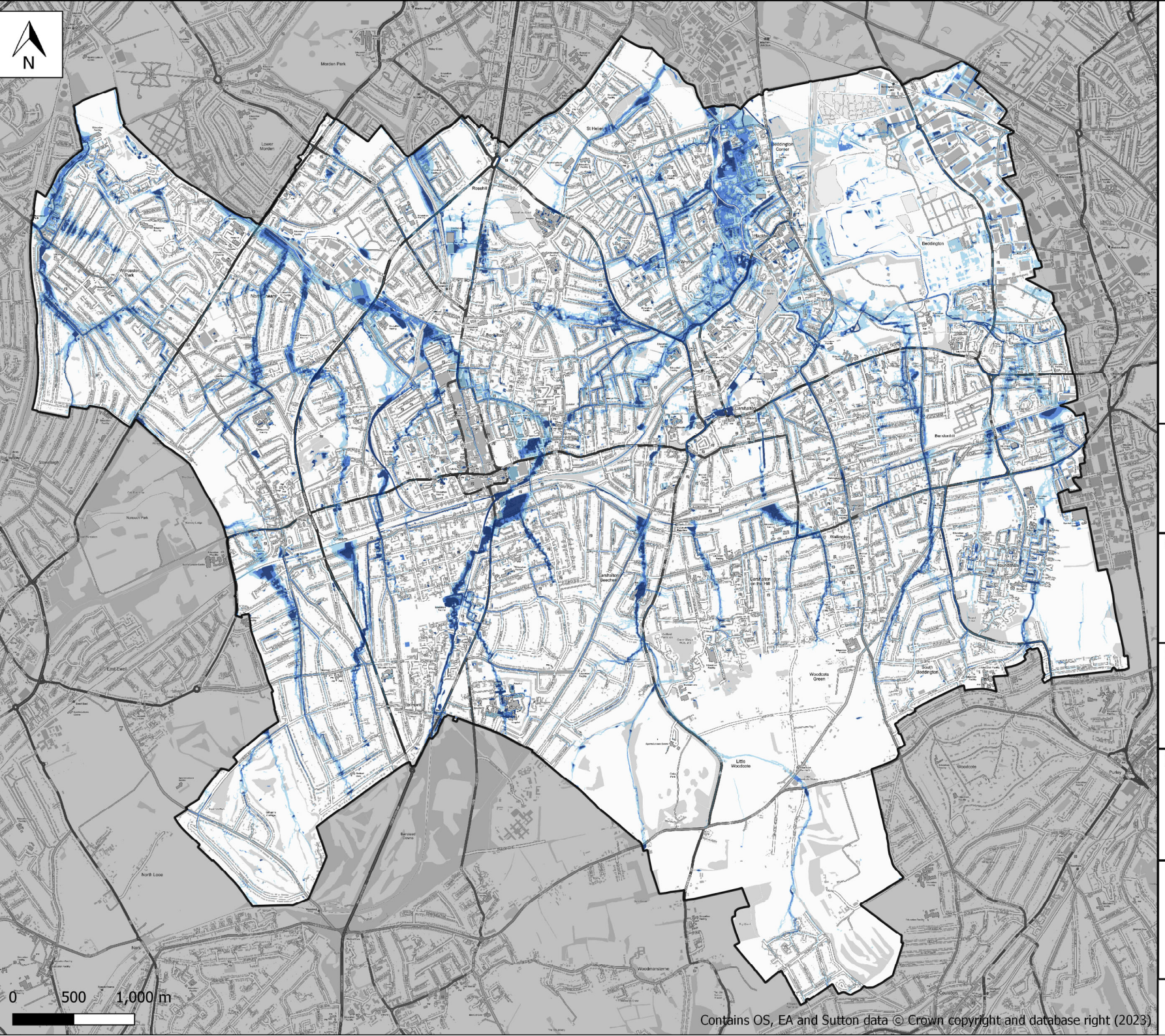

Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Surface Water Flood Extent

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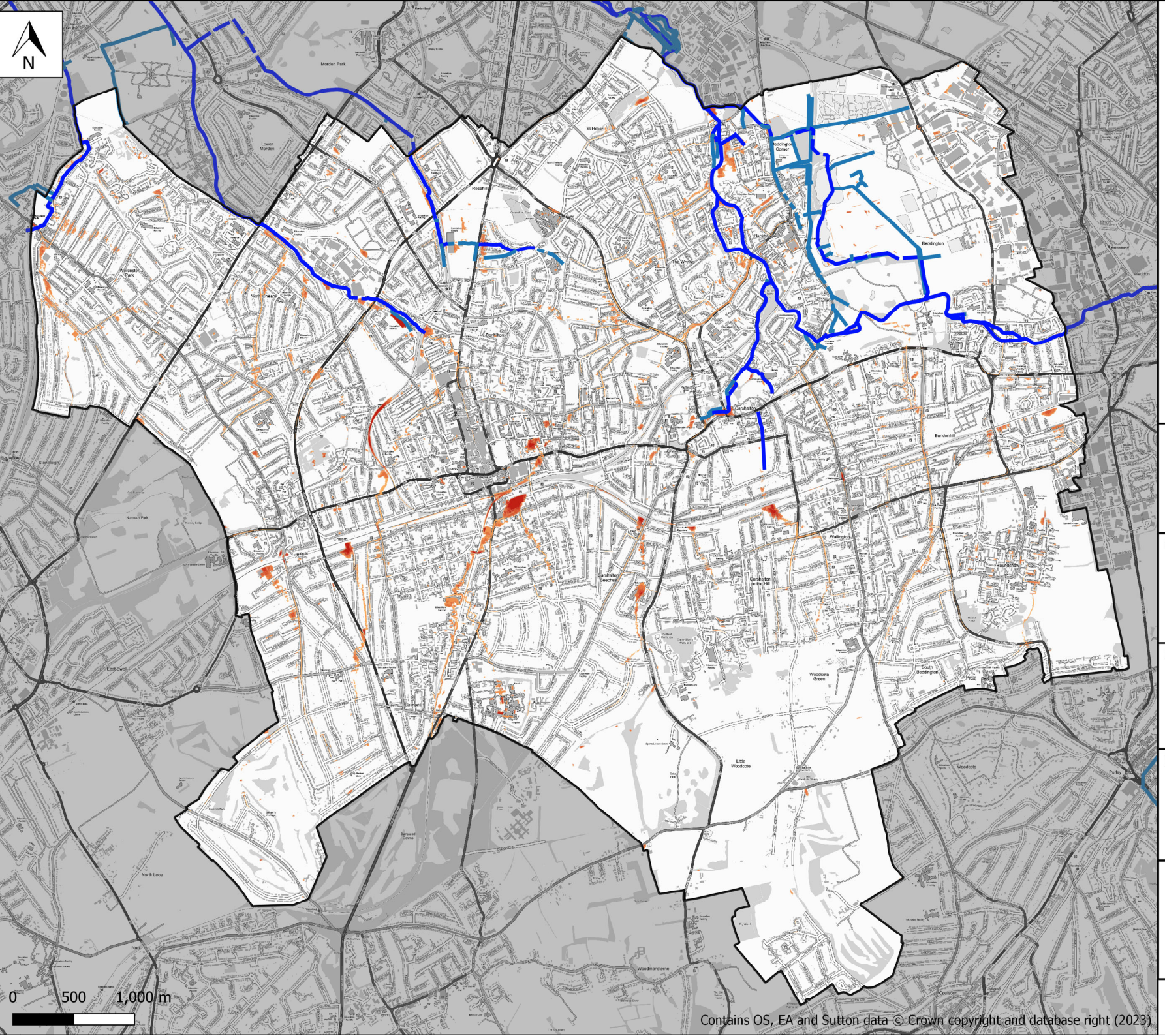

Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Depth (1 in 30 year)

- 0.00 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

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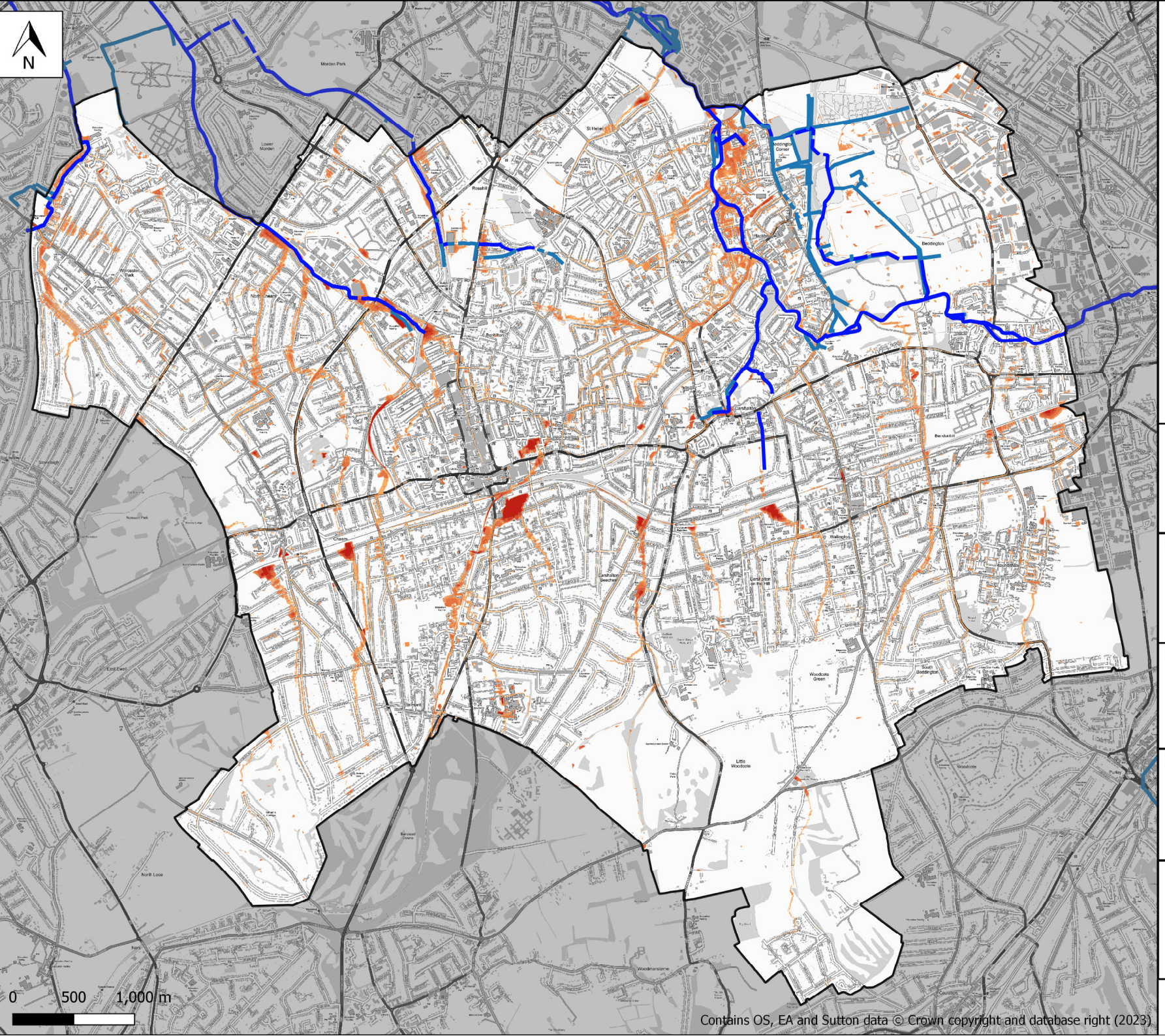
Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Surface Water Flood Depth (1 in 30 year)

1:30,000	Drawing Size A3	Drawing Number A2.2



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Depth (1 in 100 year)

- 0.00 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

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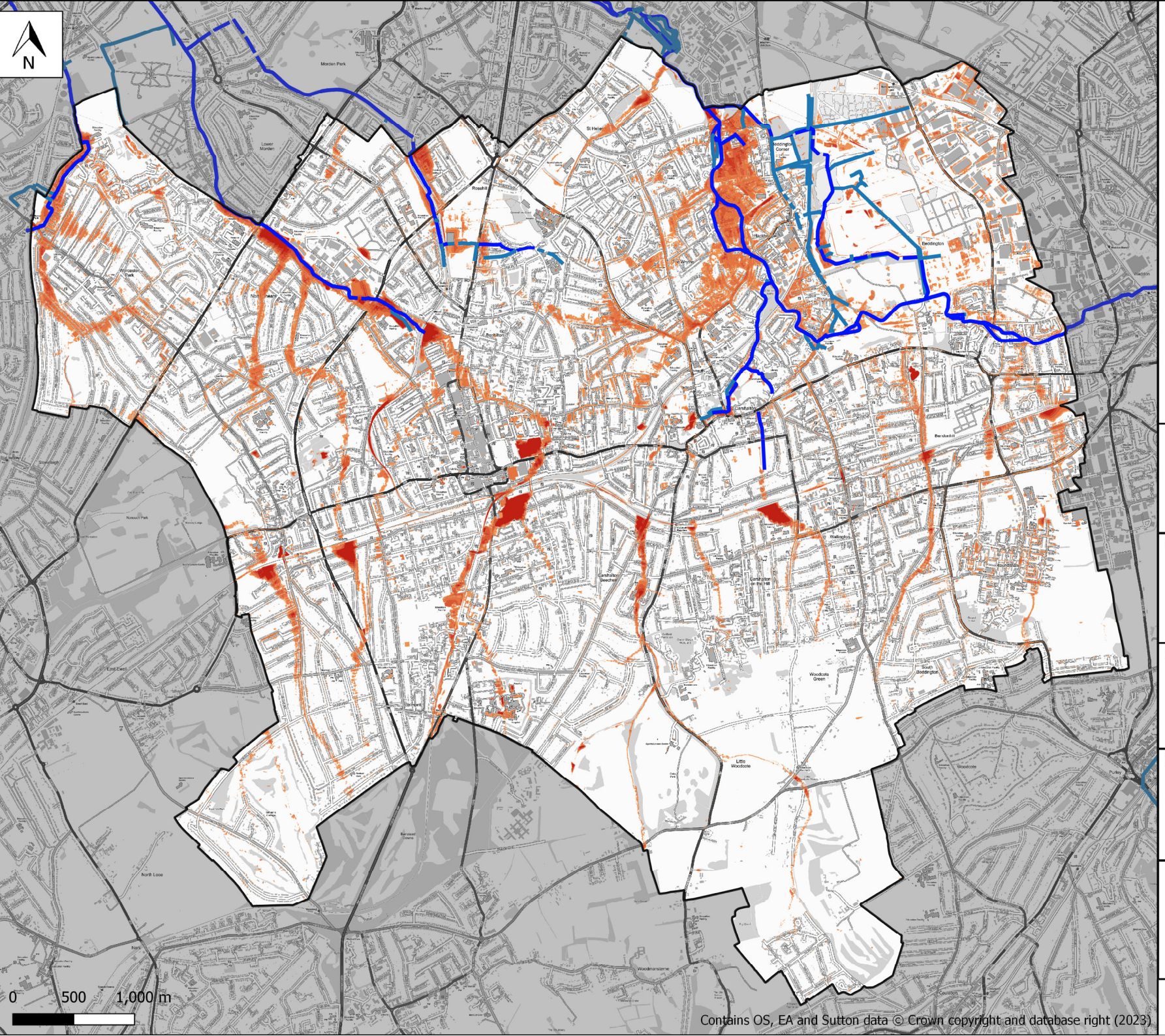
Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Surface Water Flood Depth (1 in 100 year)

1:30,000	Drawing Size A3	Drawing Number A2.3



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Depth (1 in 1000 year)

- 0.00 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

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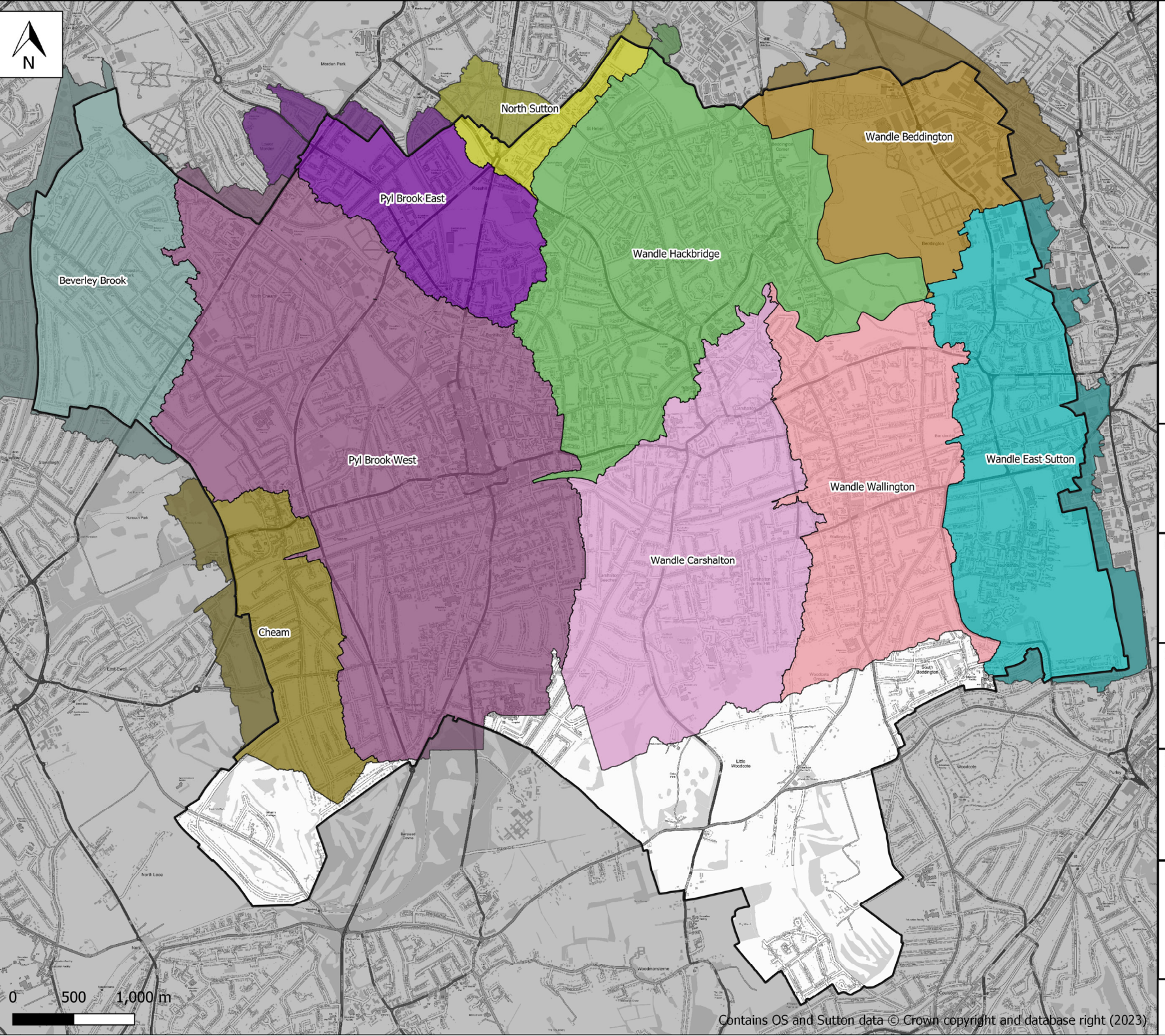
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Surface Water Flood Depth (1 in 1000 year)

1:30,000	Drawing Size A3	Drawing Number A2.4



Legend

Borough Boundary

Catchments

- Beverley Brook
- Cheam
- North Sutton
- Pyl Brook East
- Pyl Brook West
- Wandle Beddington
- Wandle Carshalton
- Wandle East Sutton
- Wandle Hackbridge
- Wandle Wallington

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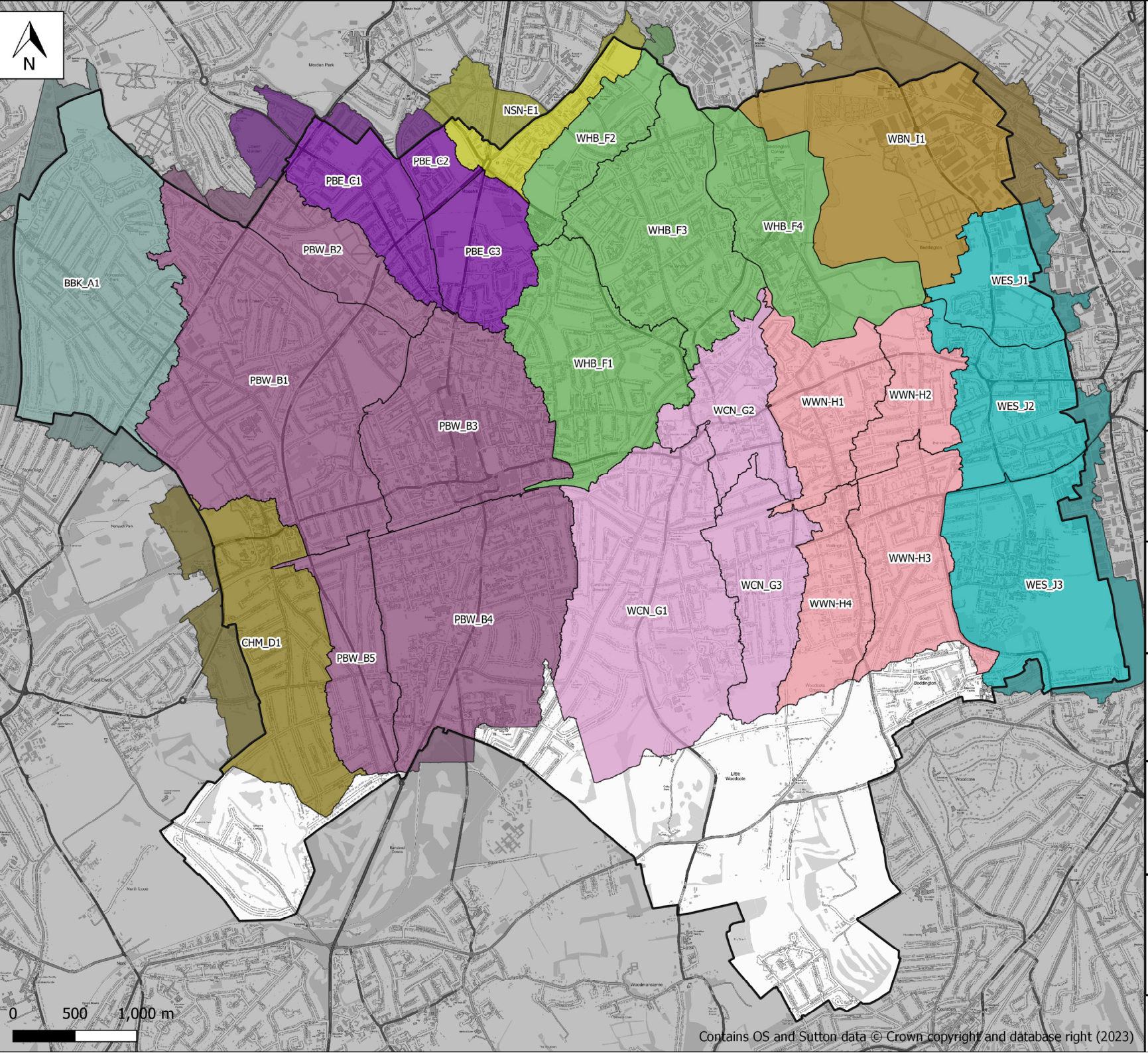
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Catchments

1:30,000	Drawing Size A3	Drawing Number A2.5



Legend

- Borough Boundary

Sub-catchments

- Beverley Brook (BBK)_A1
- Cheam (CHM)_D1
- North Sutton (NSN)_E1
- Pyl Brook East (PBE)_C1
- Pyl Brook East (PBE)_C2
- Pyl Brook East (PBE)_C3
- Pyl Brook West (PBW)_B1
- Pyl Brook West (PBW)_B2
- Pyl Brook West (PBW)_B3
- Pyl Brook West (PBW)_B4
- Pyl Brook West (PBW)_B5
- Wandle Beddington (WBN)_I1
- Wandle Carshalton (WCN)_G1
- Wandle Carshalton (WCN)_G2
- Wandle Carshalton (WCN)_G3
- Wandle East Sutton (WES)_J1
- Wandle East Sutton (WES)_J2
- Wandle East Sutton (WES)_J3
- Wandle Hackbridge (WHB)_F1
- Wandle Hackbridge (WHB)_F2
- Wandle Hackbridge (WHB)_F3
- Wandle Hackbridge (WHB)_F4
- Wandle Wallington (WWN)_H1
- Wandle Wallington (WWN)_H2
- Wandle Wallington (WWN)_H3
- Wandle Wallington (WWN)_H4

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Sutton

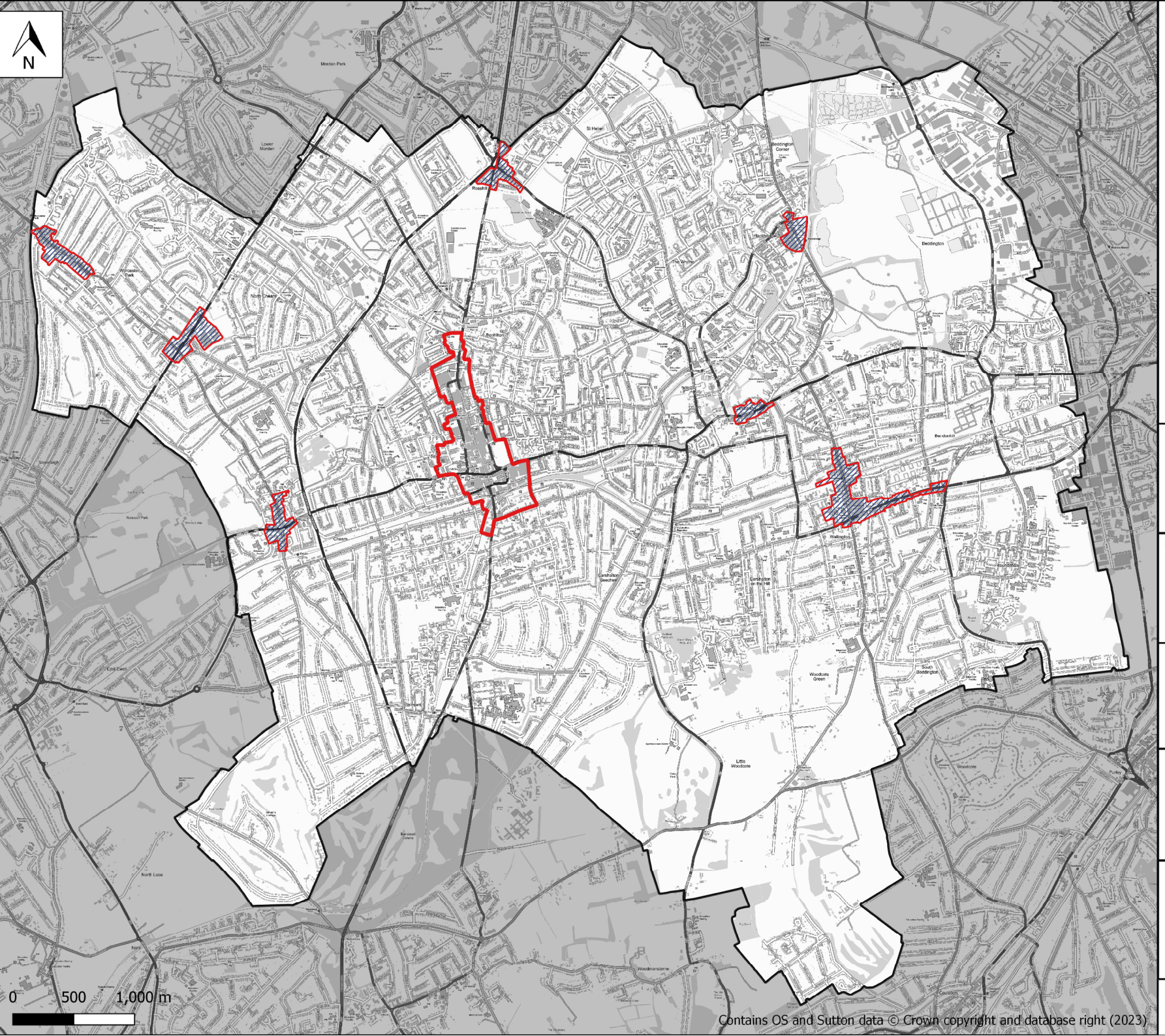
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Sub-catchments

1:29,999.970669	Drawing Size A3	Drawing Number A2.6



Legend

- Borough Boundary
- Sutton Town Centre
- District Centres

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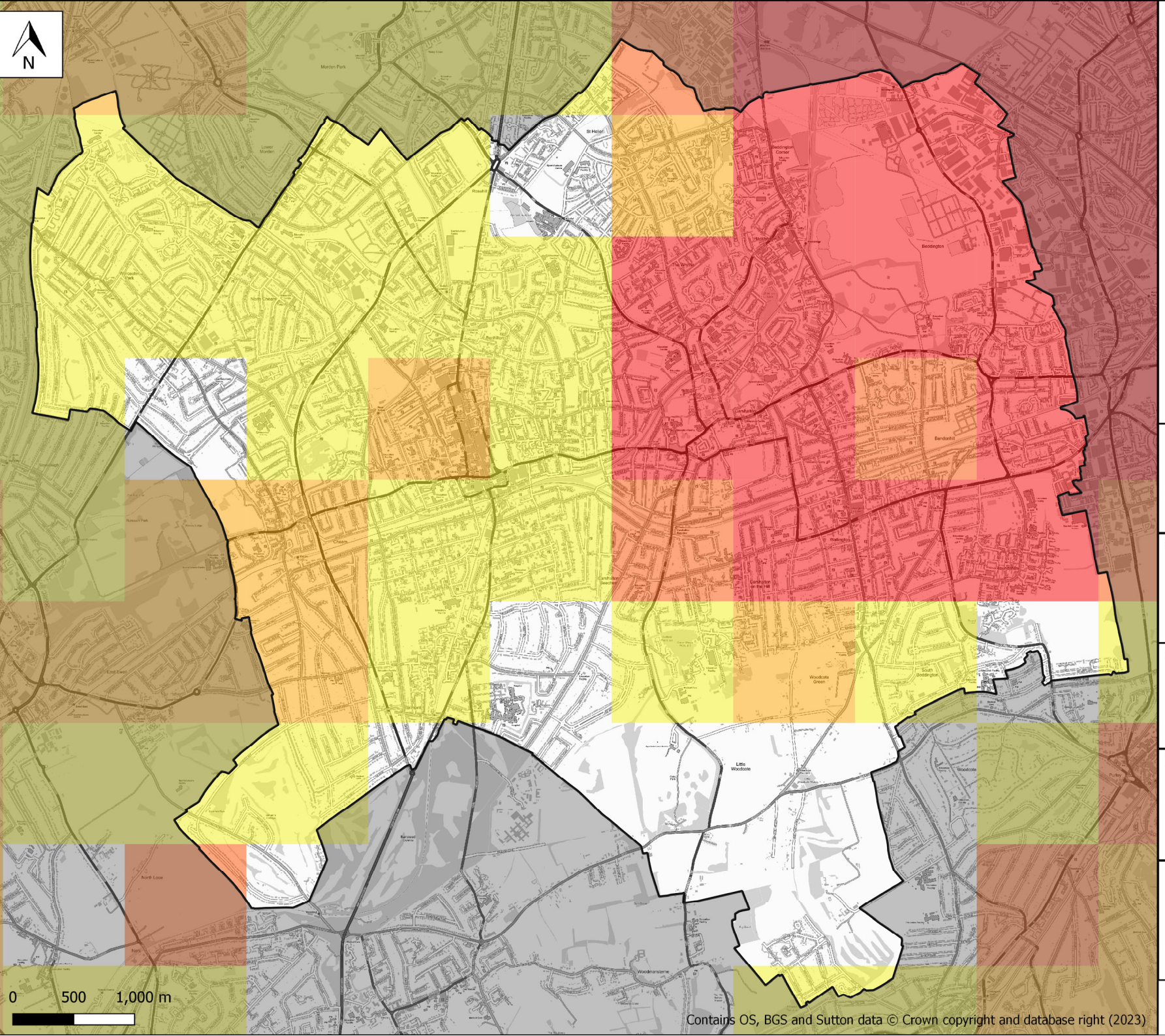
Level 1 Strategic Flood Risk Assessment

Drawing Title

Surface Water and Ordinary Watercourse Flood Risk: Sutton Town Centre and District Centres

1:30,000	Drawing Size A3	Drawing Number A2.7



Legend

- Borough Boundary

Area Susceptibility to Groundwater Flooding

- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

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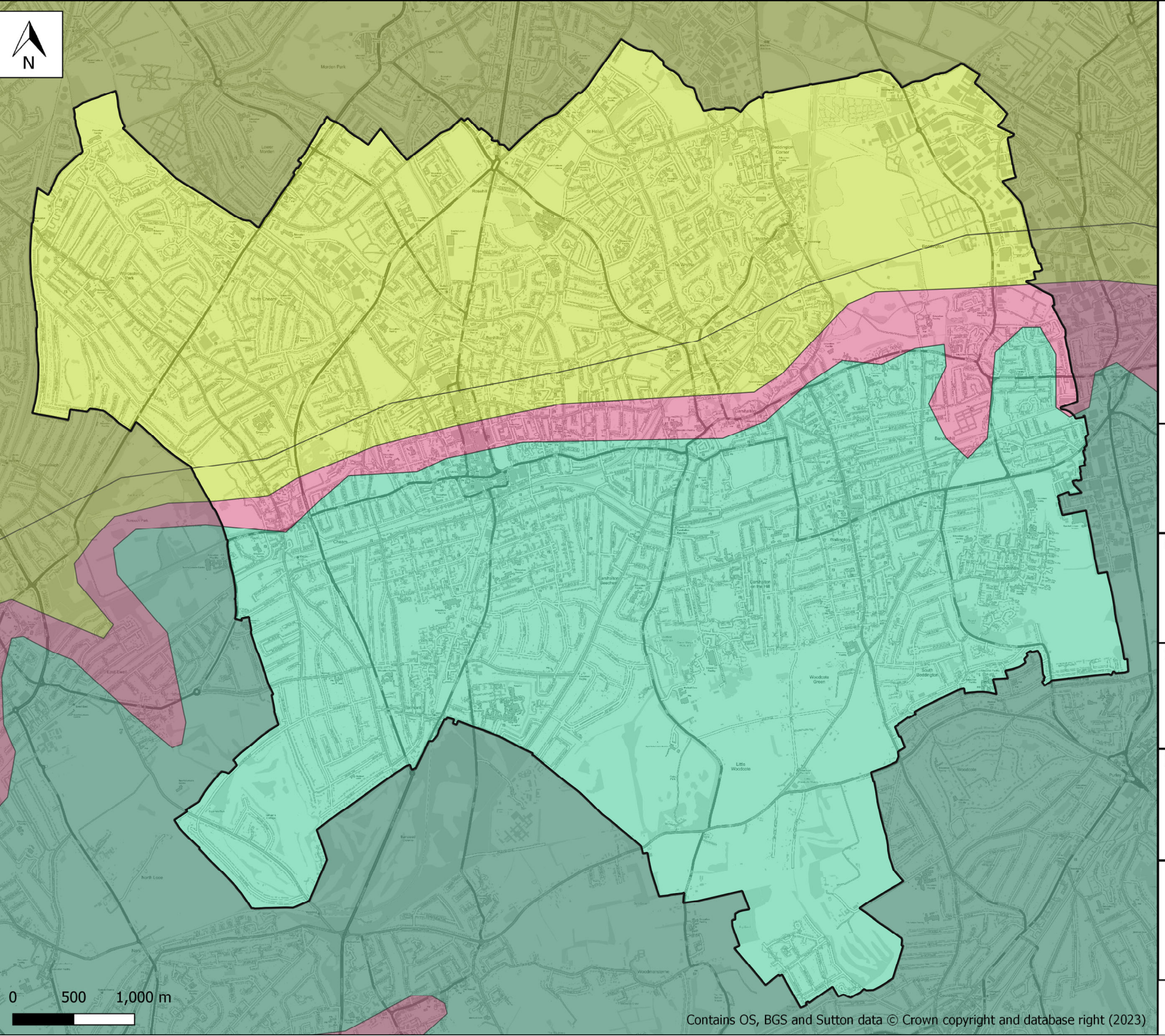
Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Area Susceptibility to Groundwater Flooding

1:30,000	Drawing Size A3	Drawing Number A3.1



Legend

Borough Boundary

Bedrock Geology

Chalk

Clay, Silt, Sand and Gravel

Sand, Silt and Clay

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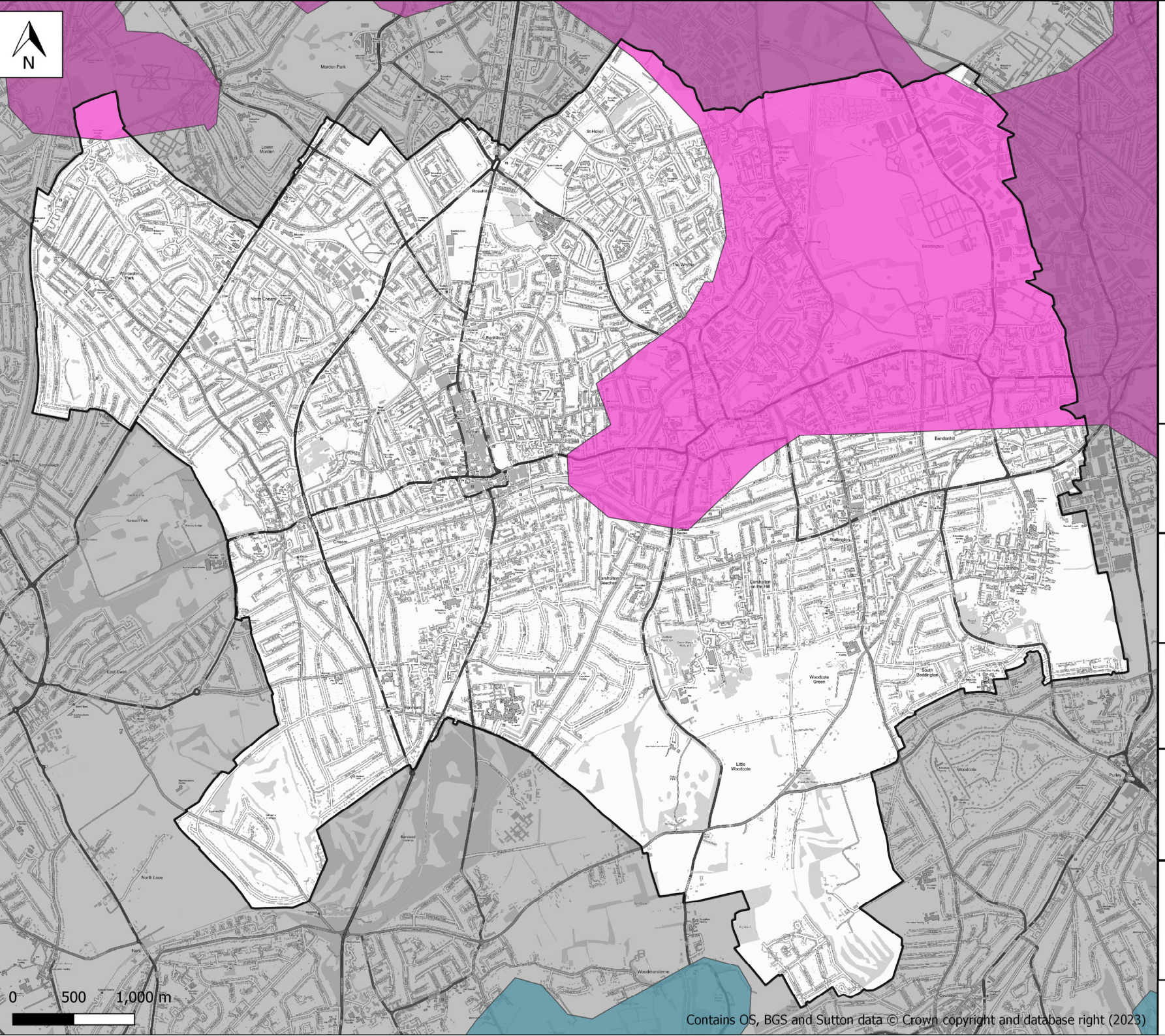
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Bedrock Geology

1:30,000	Drawing Size A3	Drawing Number A3.2



Legend

- Borough Boundary

Superficial Geology

- Diamicton
- Sand and Gravel

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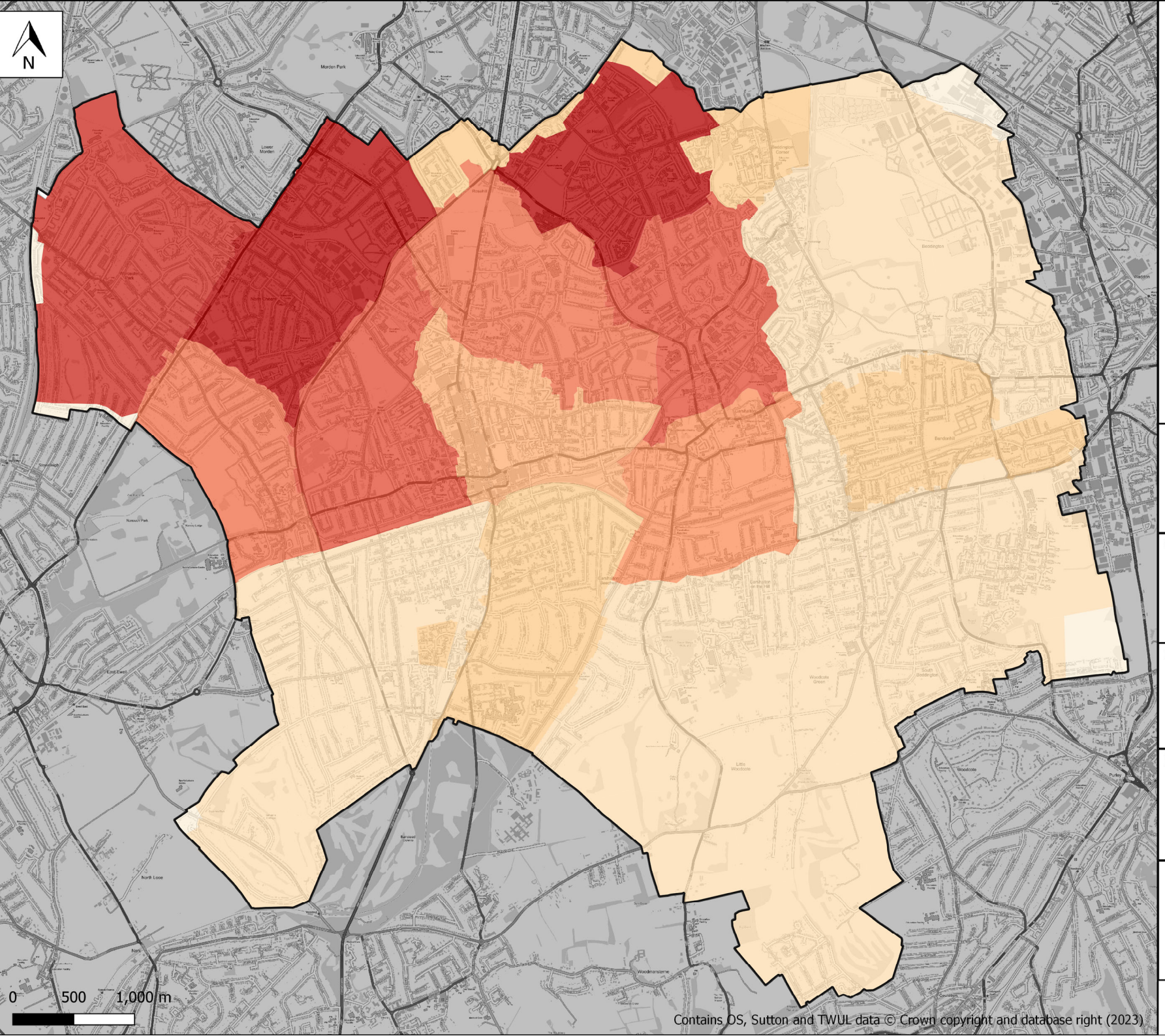
Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Superficial Geology

1:30,000	Drawing Size A3	Drawing Number A3.3



Legend

Borough Boundary

Total number of sewer flood incidents reported per postcode sector

- N/A
- 1 to 49
- 50 to 74
- 75 to 99
- 100 to 124
- 125 to 149
- 150 to 174
- 175 to 199
- > 200

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Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Sewer flood incidents per postcode sector

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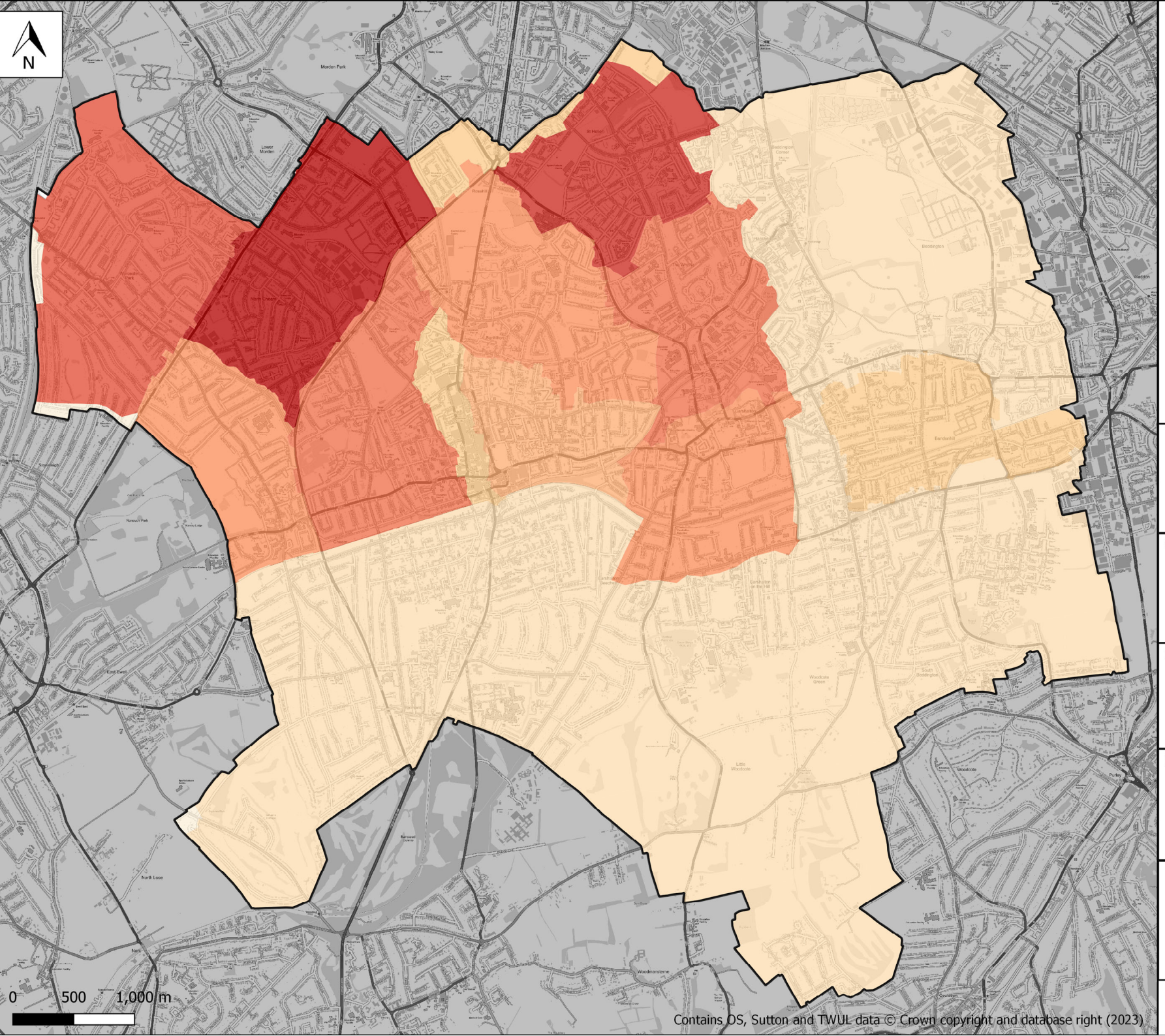

Legend

Borough Boundary

Total number of internal sewer flood incidents reported per postcode sector

- N/A
- 1 to 49
- 50 to 74
- 75 to 99
- 100 to 124
- 125 to 149
- 150 to 174
- 175 to 199
- > 200

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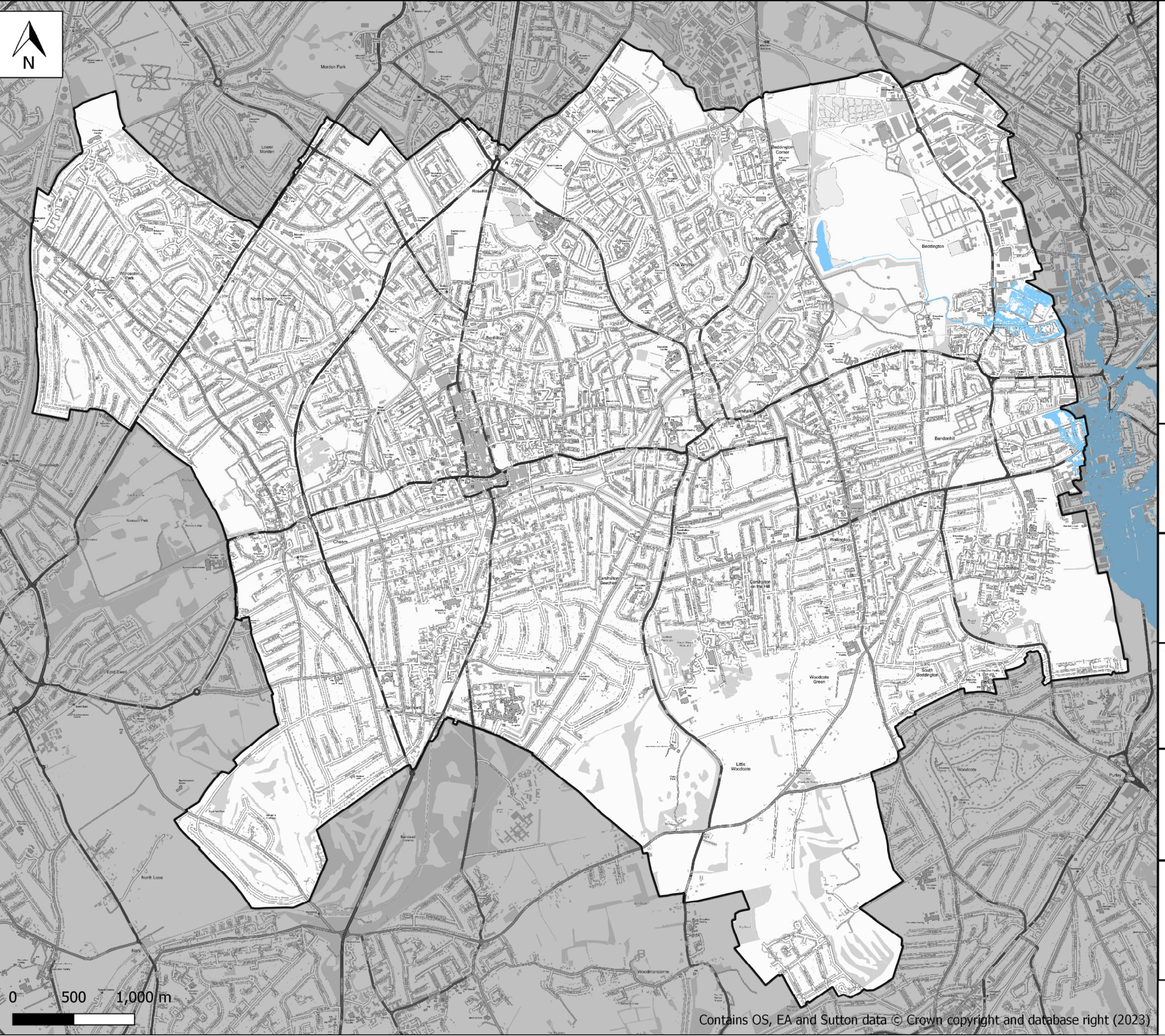
Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Internal sewer flood incidents per postcode sector

1:30,000	Drawing Size A3	Drawing Number A3.4b



Legend

Borough Boundary

Risk of Flooding from Reservoirs - Extent

Dry Day

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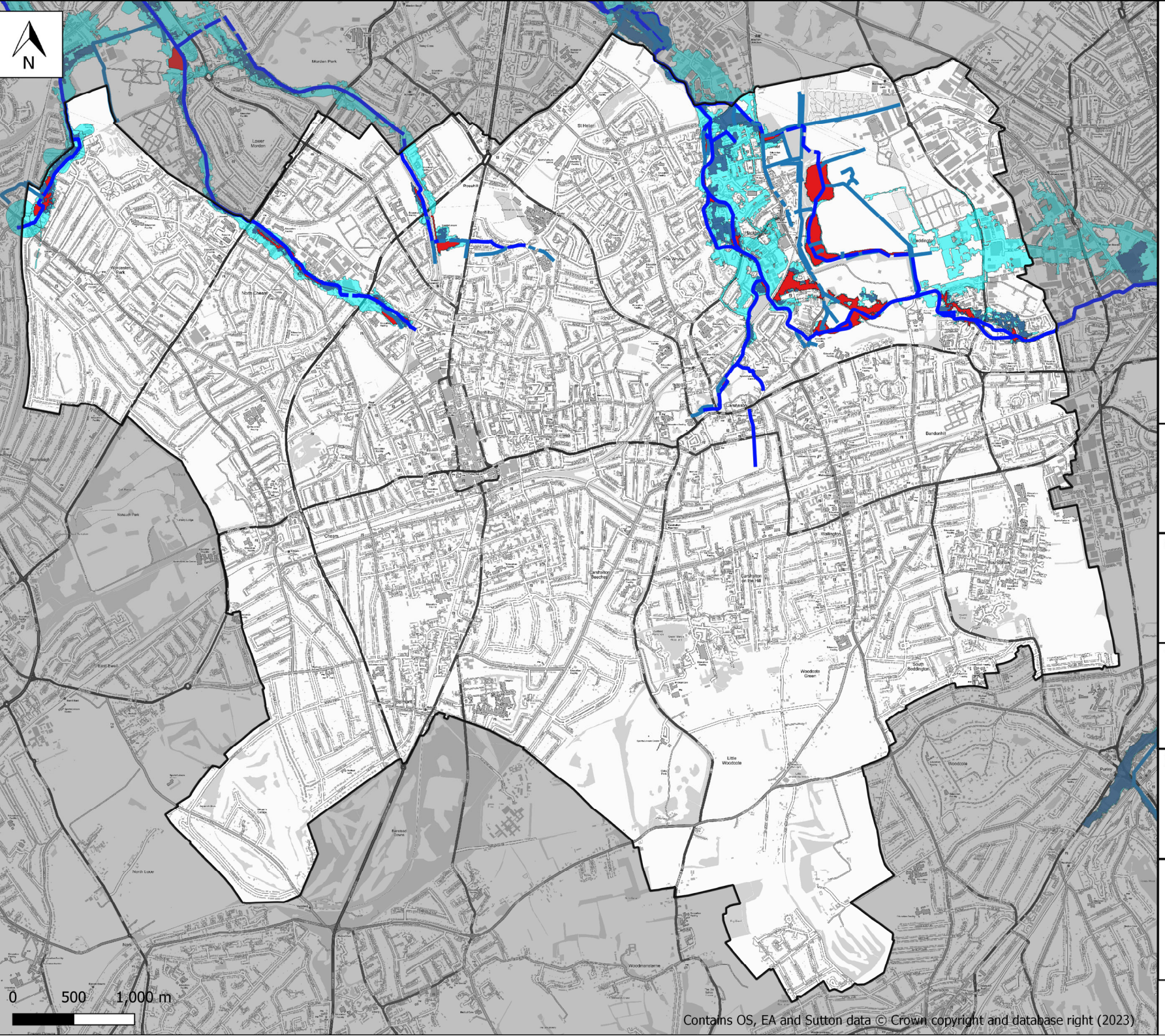
Level 1 Strategic Flood Risk Assessment

Drawing Title

Groundwater, Sewer and Artificial Flood Risk: Reservoir Flood Extent (dry-day and wet-day scenarios)

1:30,000	Drawing Size A3	Drawing Number A3.5



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Flood Zone 2
- Fluvial Flood Zone 3a
- Fluvial Flood Zone 3b

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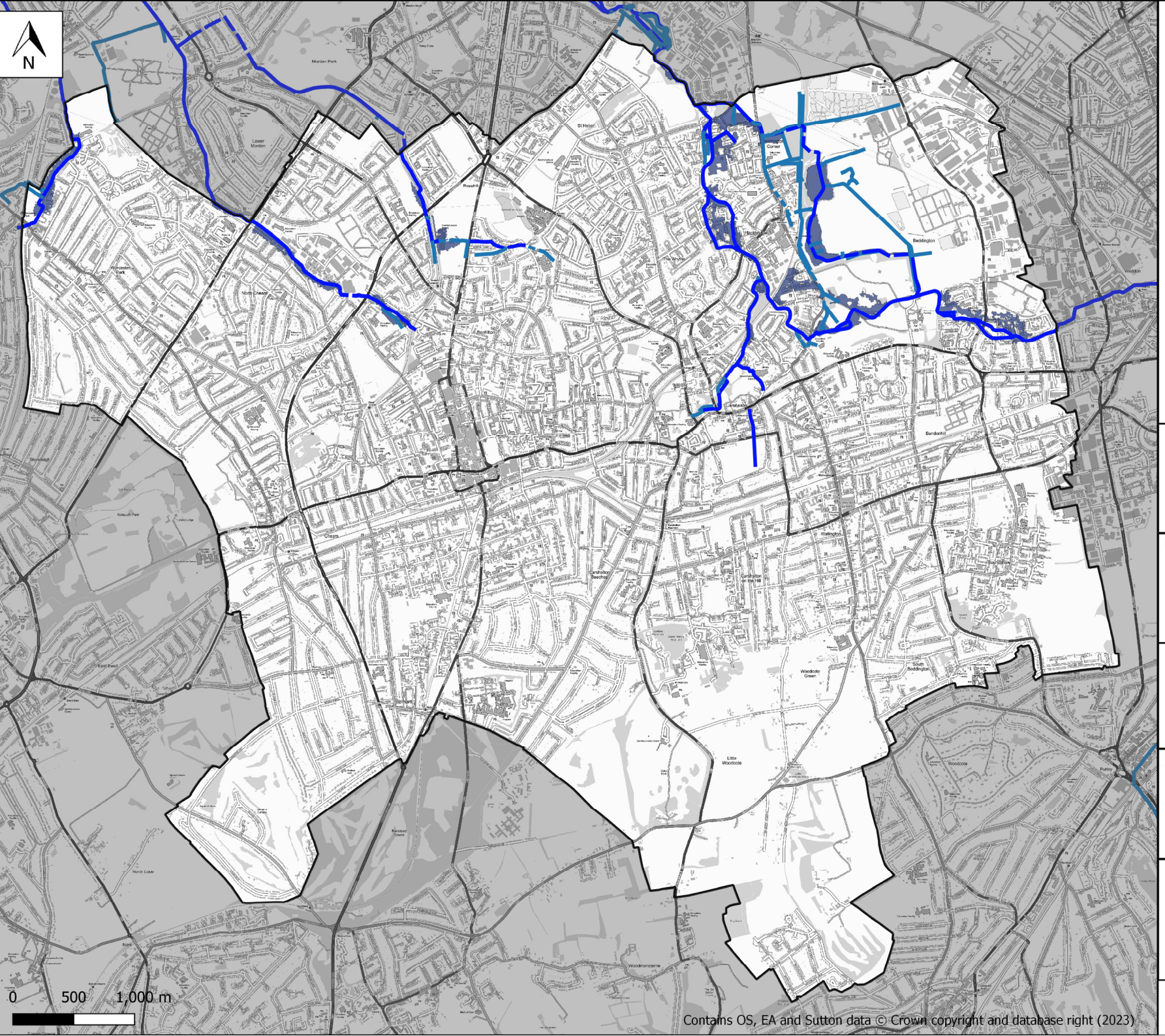
Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Flood Zone 2, and Fluvial Flood Zones 3a and 3b

1:30,000	Drawing Size A3	Drawing Number A4.1



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Fluvial Flood Zone 3a

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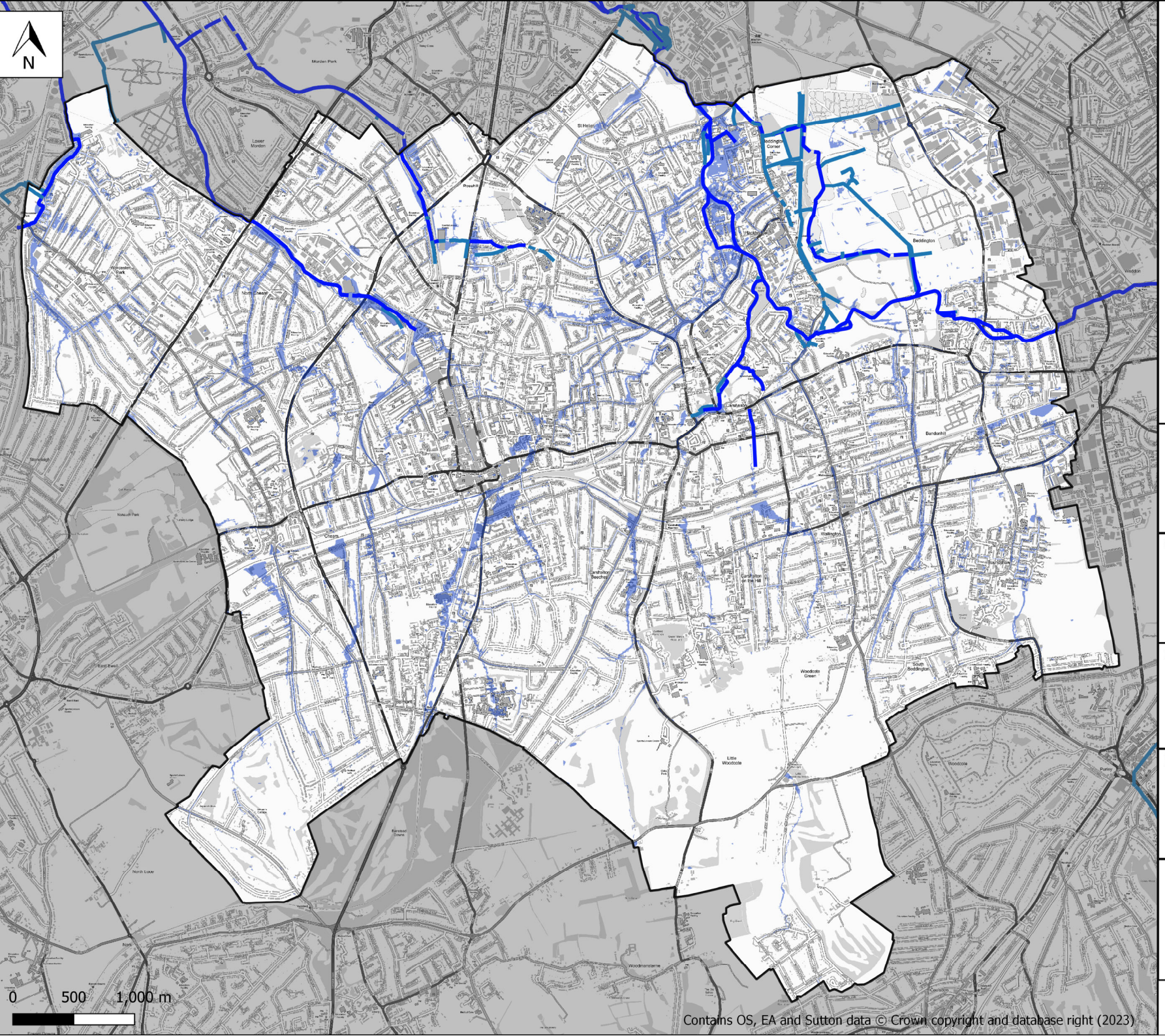
Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Fluvial Flood Zone 3a

1:30,000	Drawing Size A3	Drawing Number A4.1a



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Flood Zone 3a Surface Water

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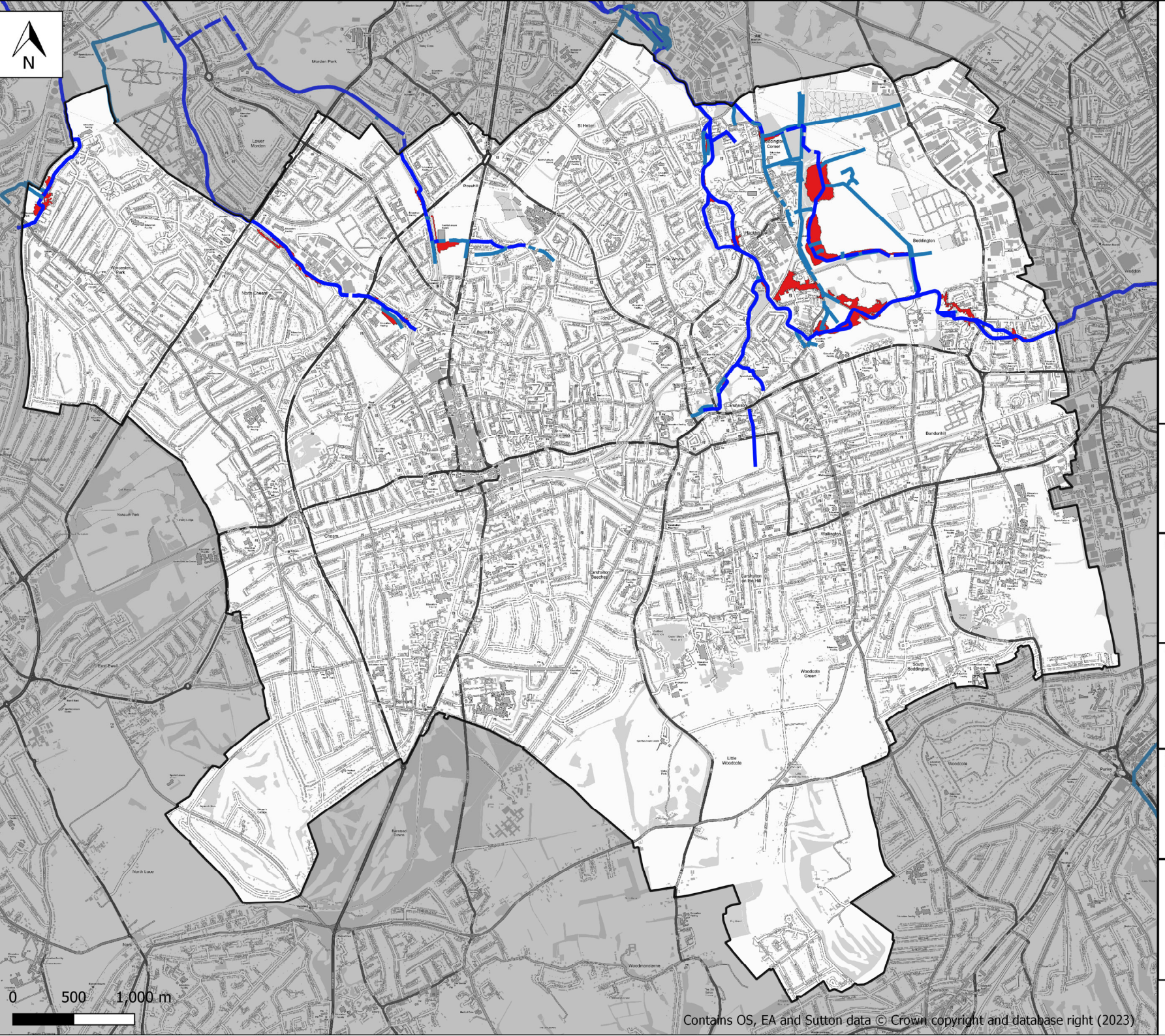
Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Flood Zone 3a Surface Water

1:30,000	Drawing Size A3	Drawing Number A4.1b



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Fluvial Flood Zone 3b

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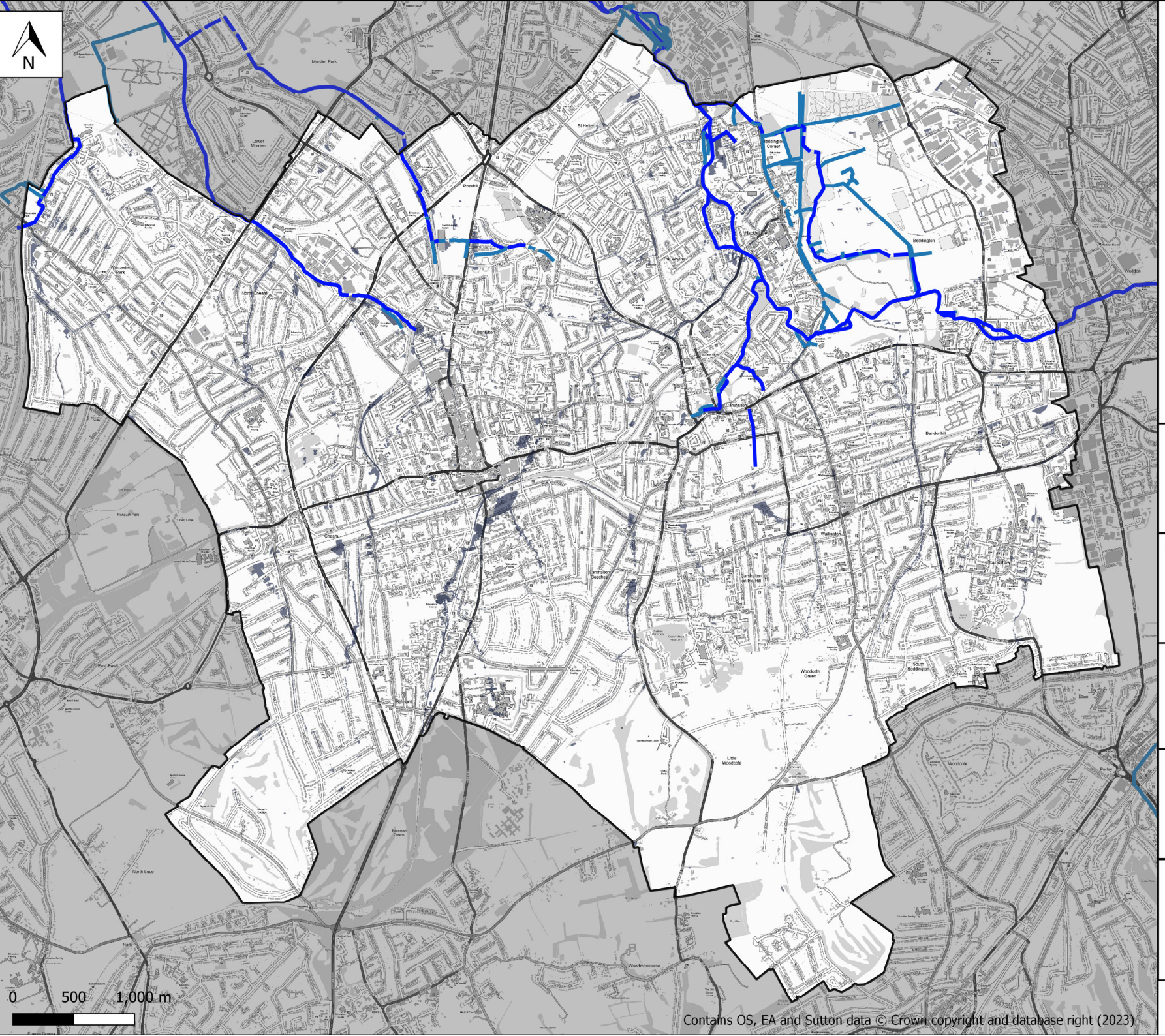
Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Fluvial Flood Zone 3b

1:30,000	Drawing Size A3	Drawing Number A4.1c



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Flood Zones

- Flood Zone 3b Surface Water

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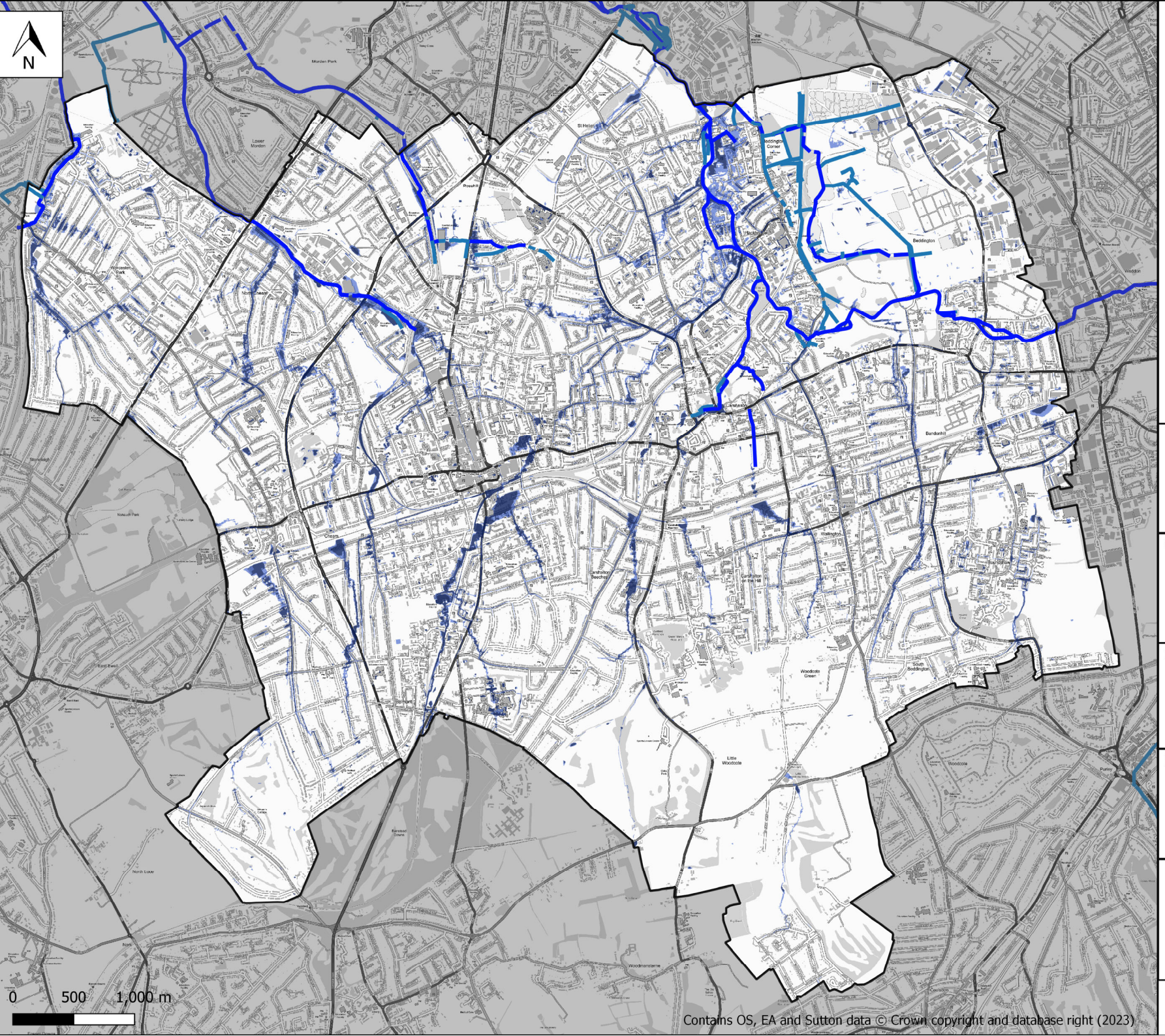
Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Flood Zone 3b Surface Water

1:30,000	Drawing Size A3	Drawing Number A4.1d



Legend

- Borough Boundary

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year

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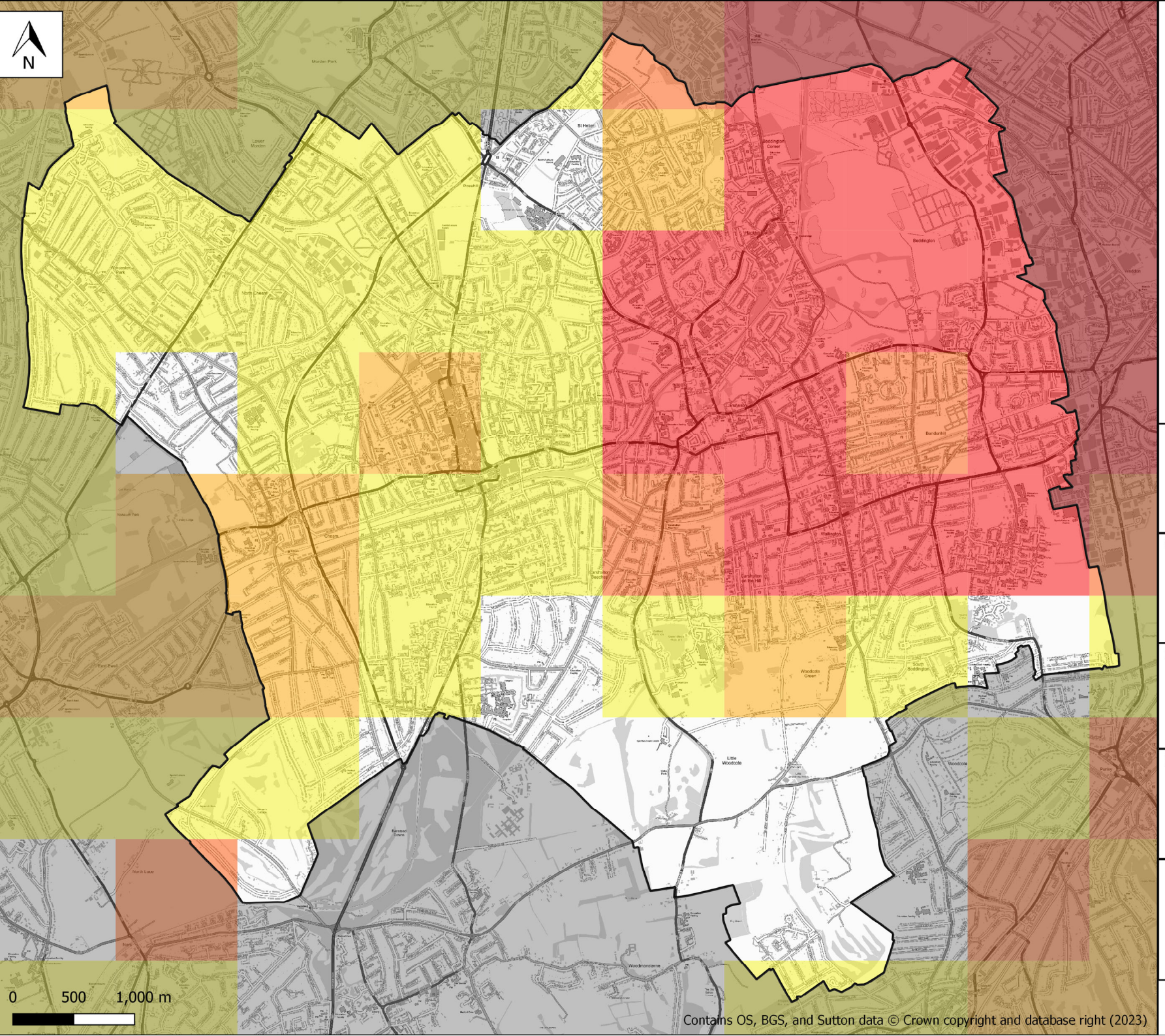
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Surface Water Flood Extent (1 in 30 and 1 in 100 year)

1:30,000	Drawing Size A3	Drawing Number A4.2



Legend

- Borough Boundary

Area Susceptibility to Groundwater Flooding

- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

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Sutton

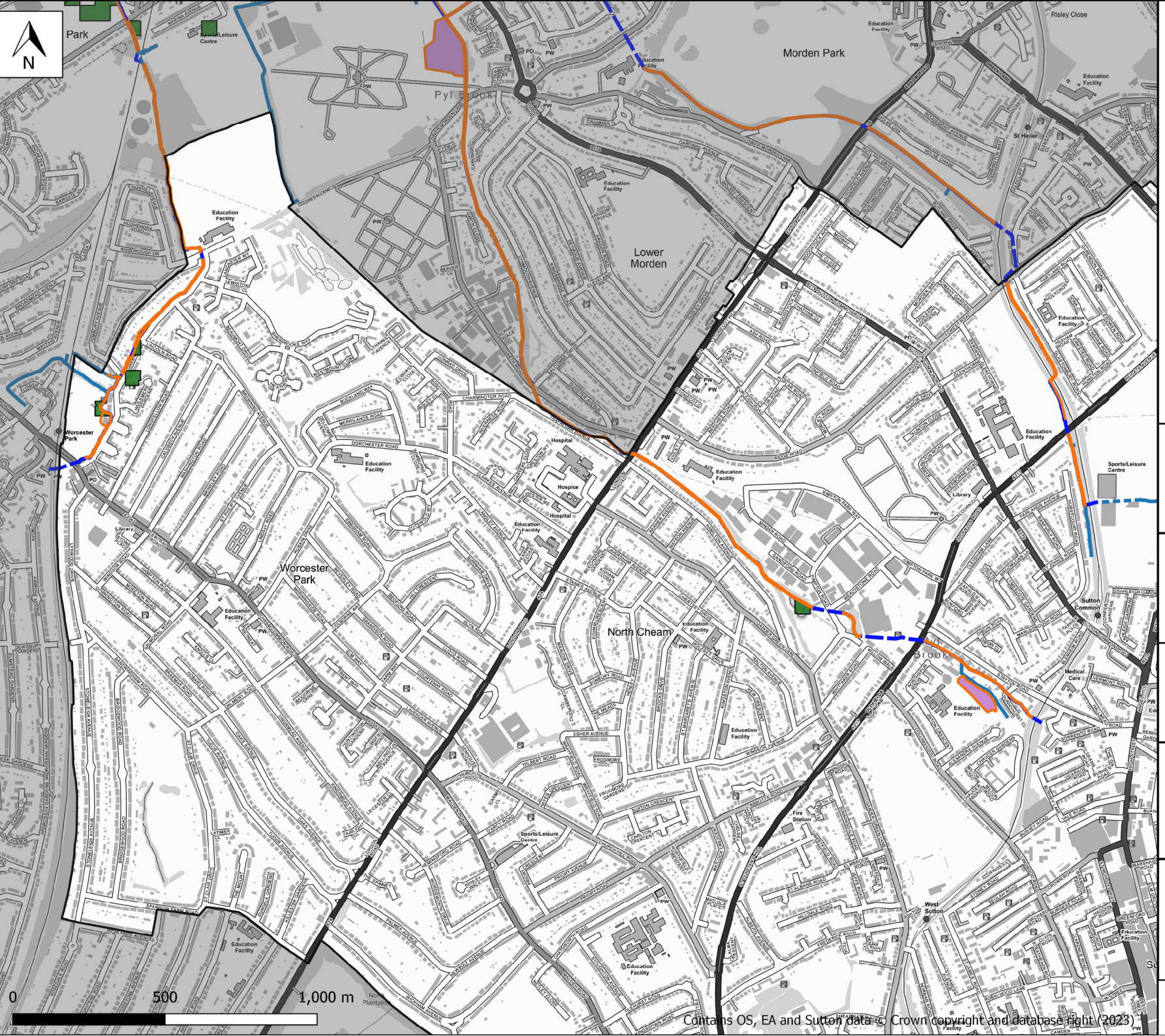
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Area Susceptibility to Groundwater Flooding

1:30,000	Drawing Size A3	Drawing Number A4.3



Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Flood Defences
- Flood Storage Area
- Reduction In Risk Of Flooding From Rivers And Sea

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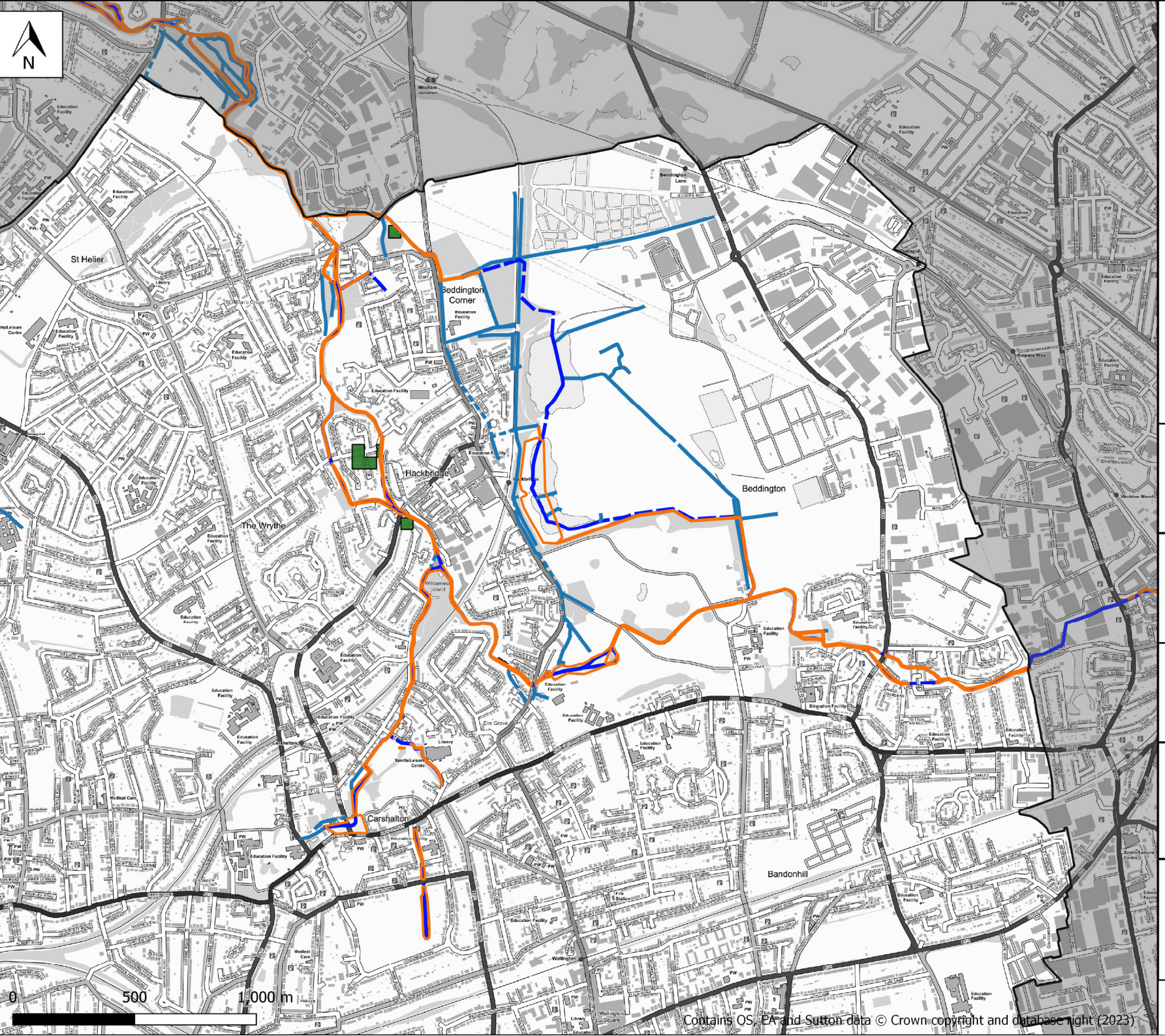
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Flood Defences, Flood Storage Area, and Reduction in Risk Of Flooding From Rivers and Sea (Sutton North-West)

1:12,000	Drawing Size A3	Drawing Number A4.4



Legend

- Borough Boundary
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Flood Defences
- Reduction In Risk Of Flooding From Rivers And Sea

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Sutton

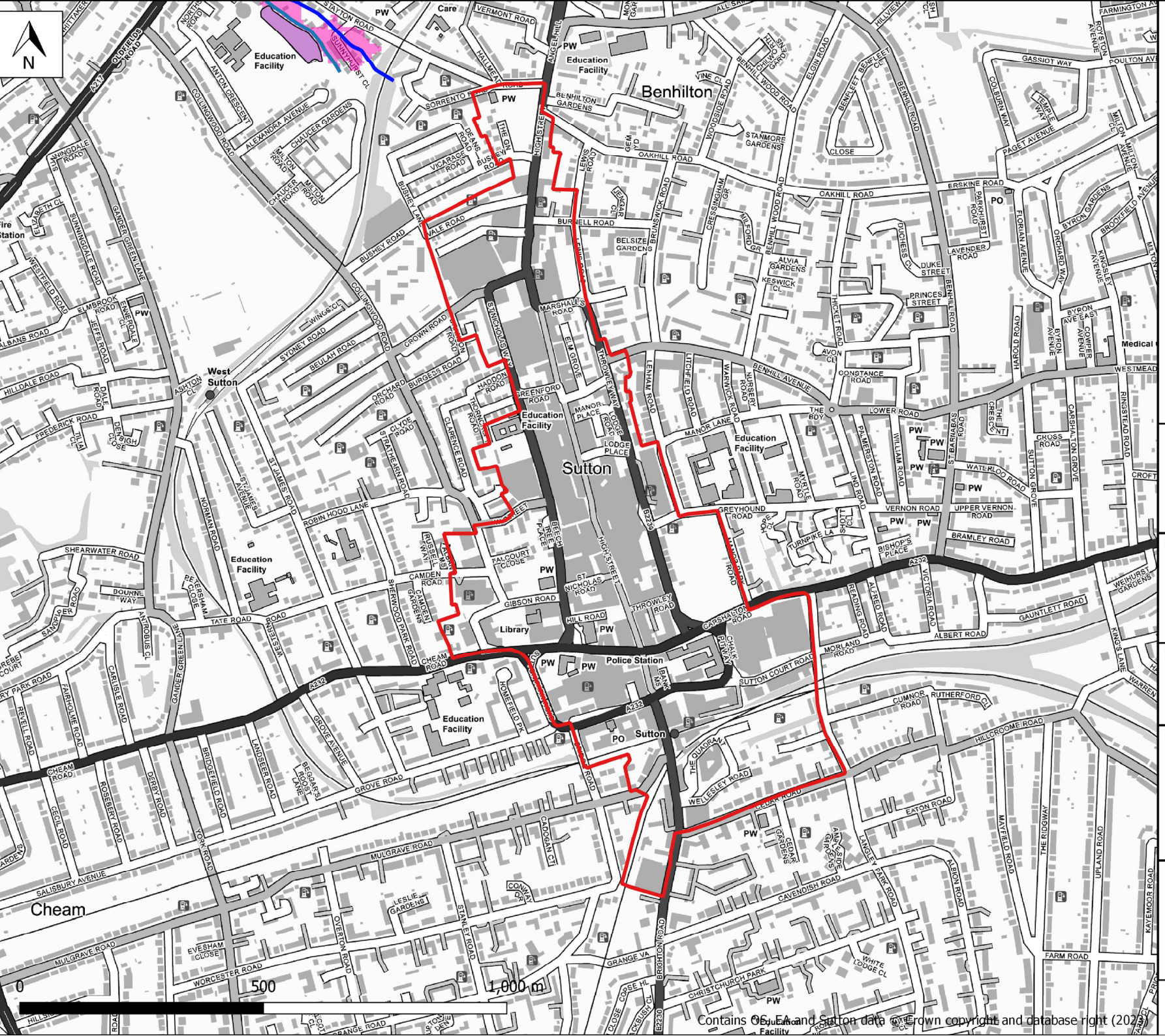
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Policy Map: Flood Defences, Flood Storage Area, and Reduction in Risk Of Flooding From Rivers and Sea (Sutton North-East)

1:15,000	Drawing Size A3	Drawing Number A4.5



Legend

- Sutton Town Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Beverley Brook and Pyl Brook Flood Extent 1 in 100 year_20CC
- Flood Storage Area

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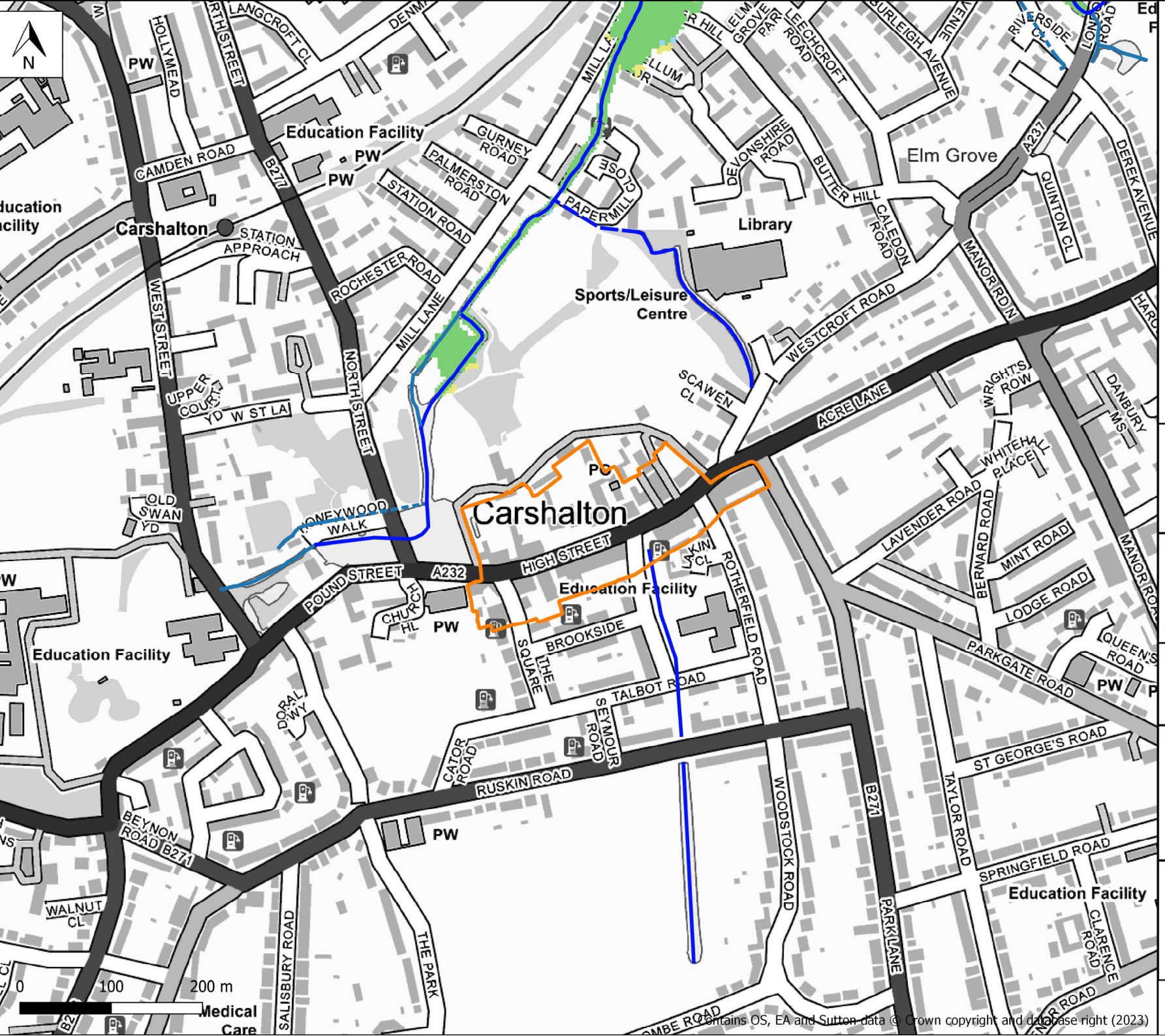
Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Sutton Town Centre: Beverley Brook and Pyl Brook Flood Extent (1 in 100 year with 20% climate change consideration), and Flood Storage Areas

1:7,500	Drawing Size A3	Drawing Number A5.1



Legend

- Carshalton Village District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

River Wandle Flood Extents

- 1 in 100yr_25CC
- 1 in 100yr_35CC
- 1 in 100yr_70CC

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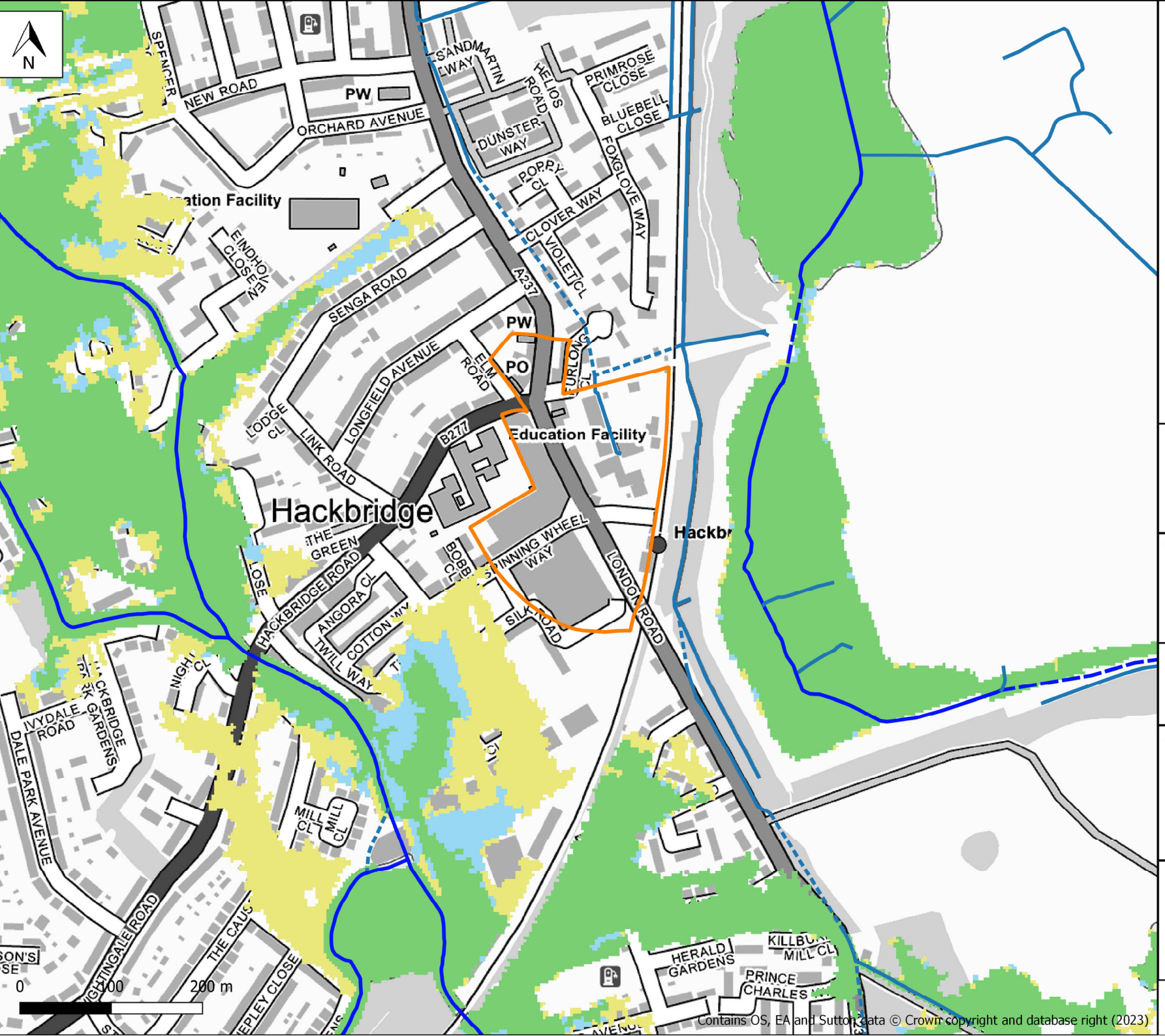
Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Carshalton Village District Centre: River Wandle Flood Extents (1 in 100 year with climate change considerations)

1:4,000	Drawing Size A3	Drawing Number A5.2



Legend

- Hackbridge District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

River Wandle Flood Extents

- 1 in 100yr_25CC
- 1 in 100yr_35CC
- 1 in 100yr_70CC

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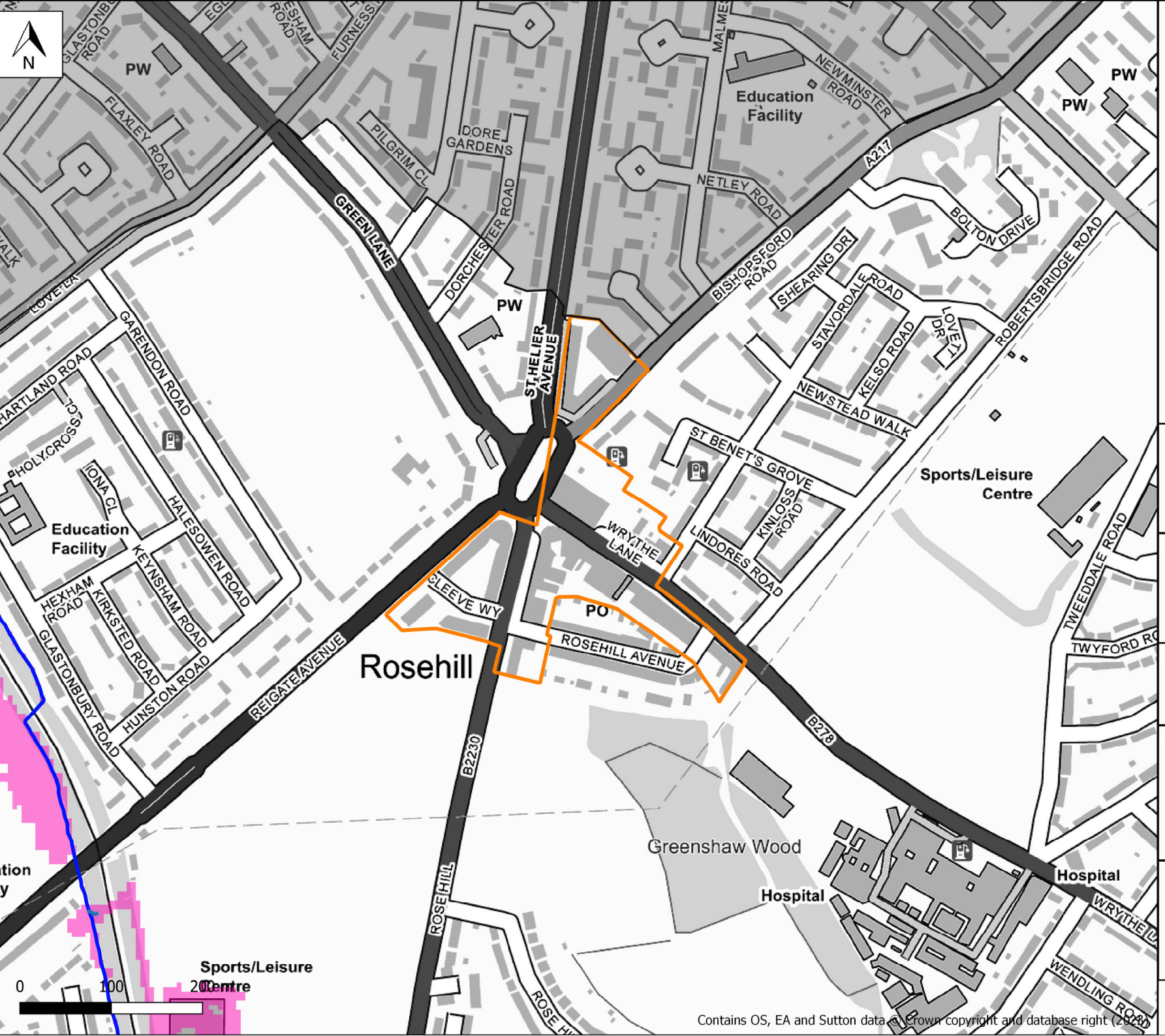
Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Hackbridge District Centre: River Wandle Flood Extents (1 in 100 year with climate change considerations)

1:4,000	Drawing Size A3	Drawing Number A5.3



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Legend

- Rosehill District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Beverley Brook and Pyl Brook Flood Extent 1 in 100 year_20CC

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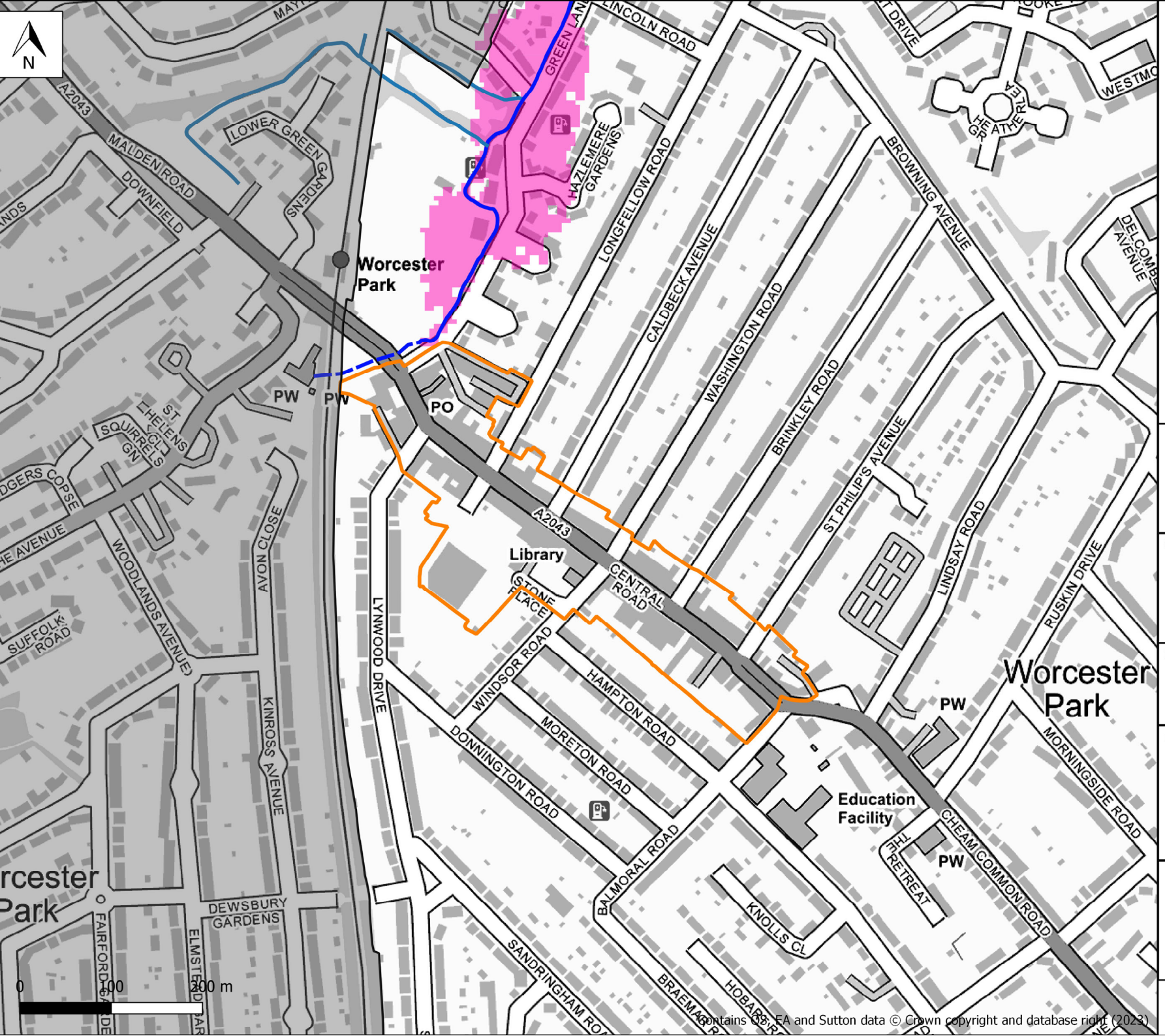
Client
Sutton

Project
Level 1 Strategic Flood Risk Assessment

Drawing Title
Rosehill District Centre: Beverley Brook and Pyl Brook Flood Extent (1 in 100 year with 20% climate change consideration)

1:4,000	Drawing Size A3	Drawing Number A5.4



Legend

- Worcester Park District Centre
- Detailed River Network
- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted
- Beverley Brook and Pyl Brook Flood Extent 1 in 100 year_20CC

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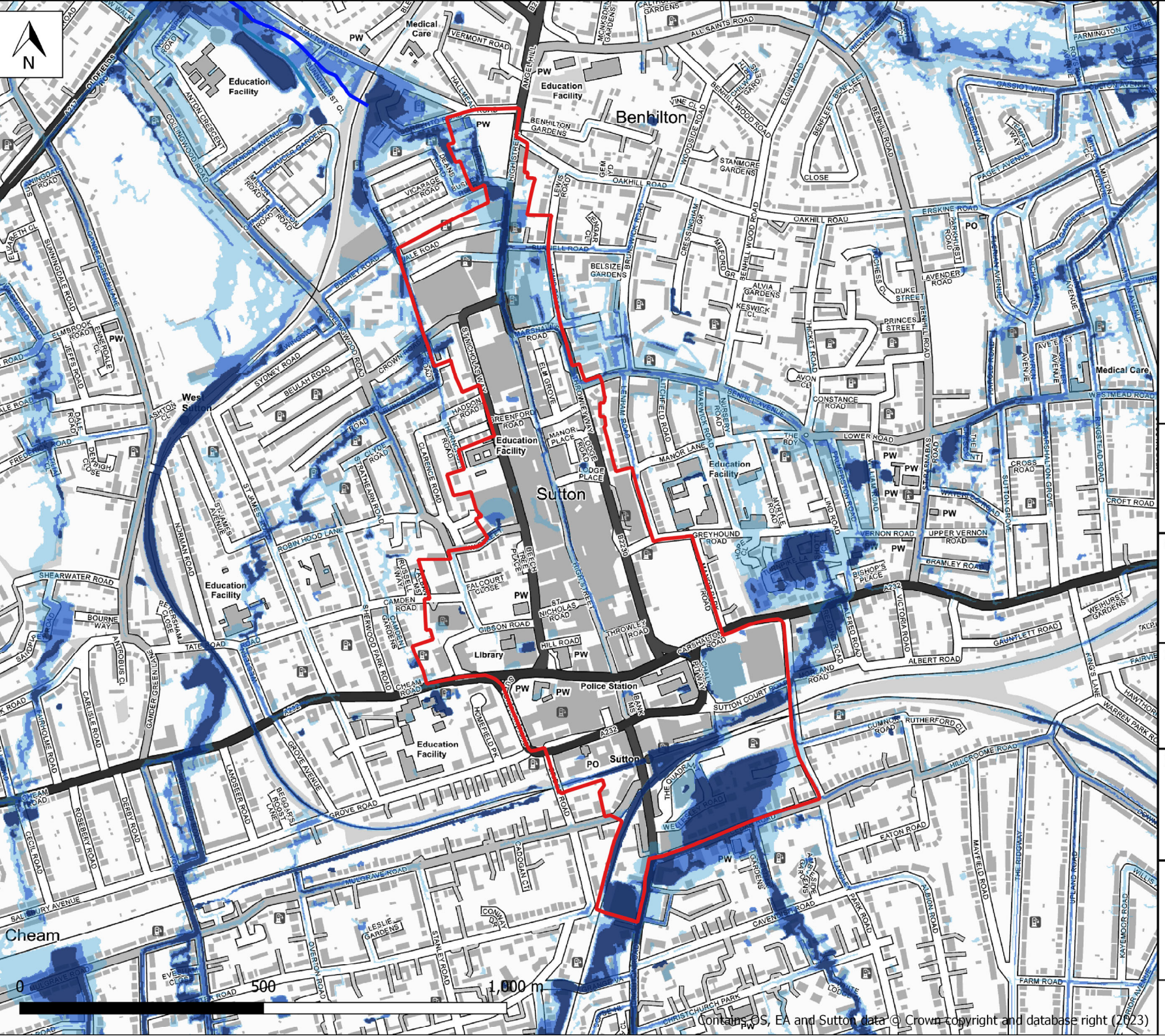
Level 1 Strategic Flood Risk Assessment

Drawing Title
Worcester Park District Centre: Beverley Brook and Pyl Brook Flood Extent (1 in 100 year with 20% climate change consideration)

1:4,000	Drawing Size A3	Drawing Number A5.5



Legend

- Sutton Town Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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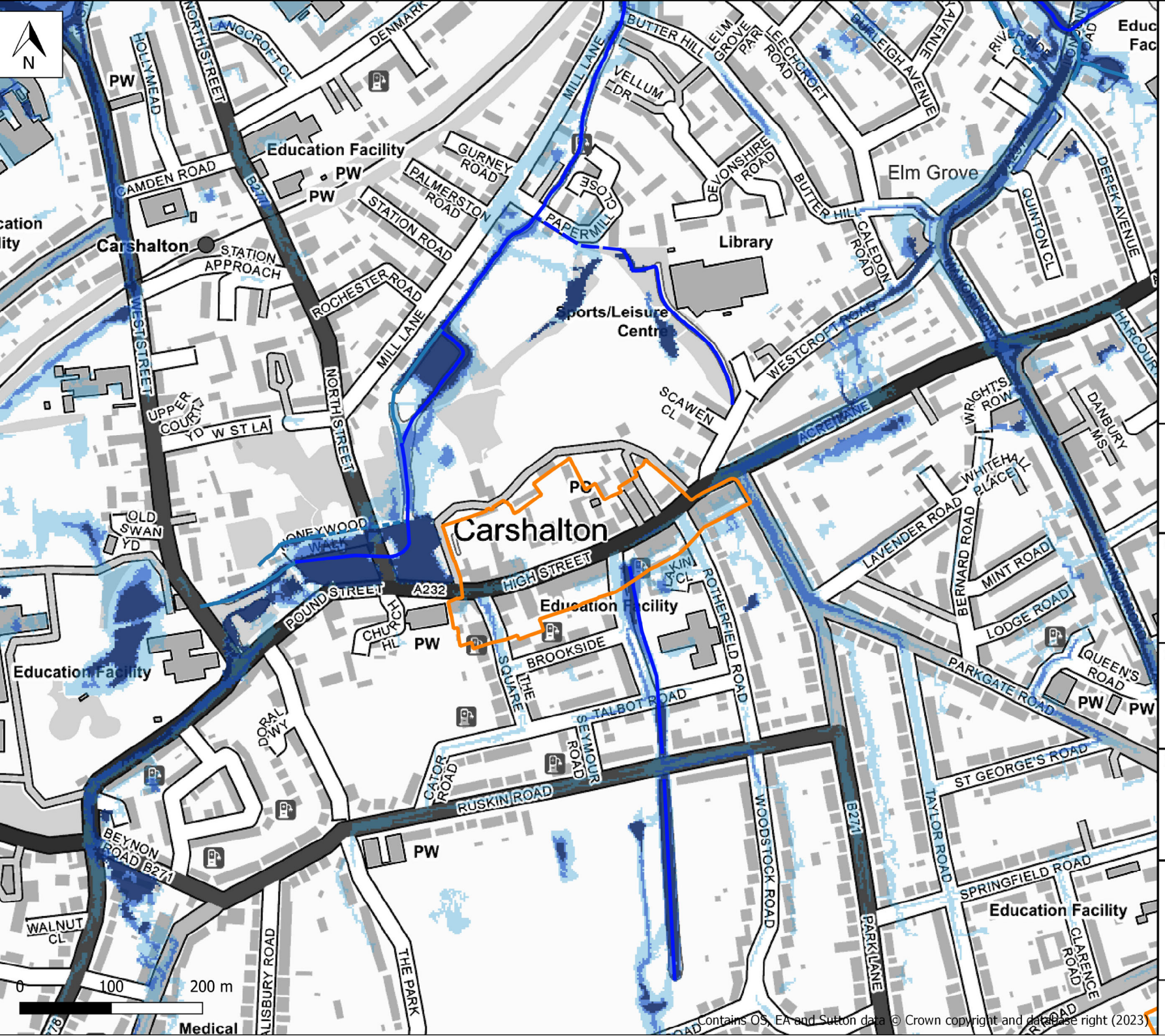
Project

Level 1 Strategic Flood Risk Assessment

Drawing Title

Sutton Town Centre: Surface Water Flood Extent

1:7,500	Drawing Size A3	Drawing Number A5.6



Legend

- Carshalton Village District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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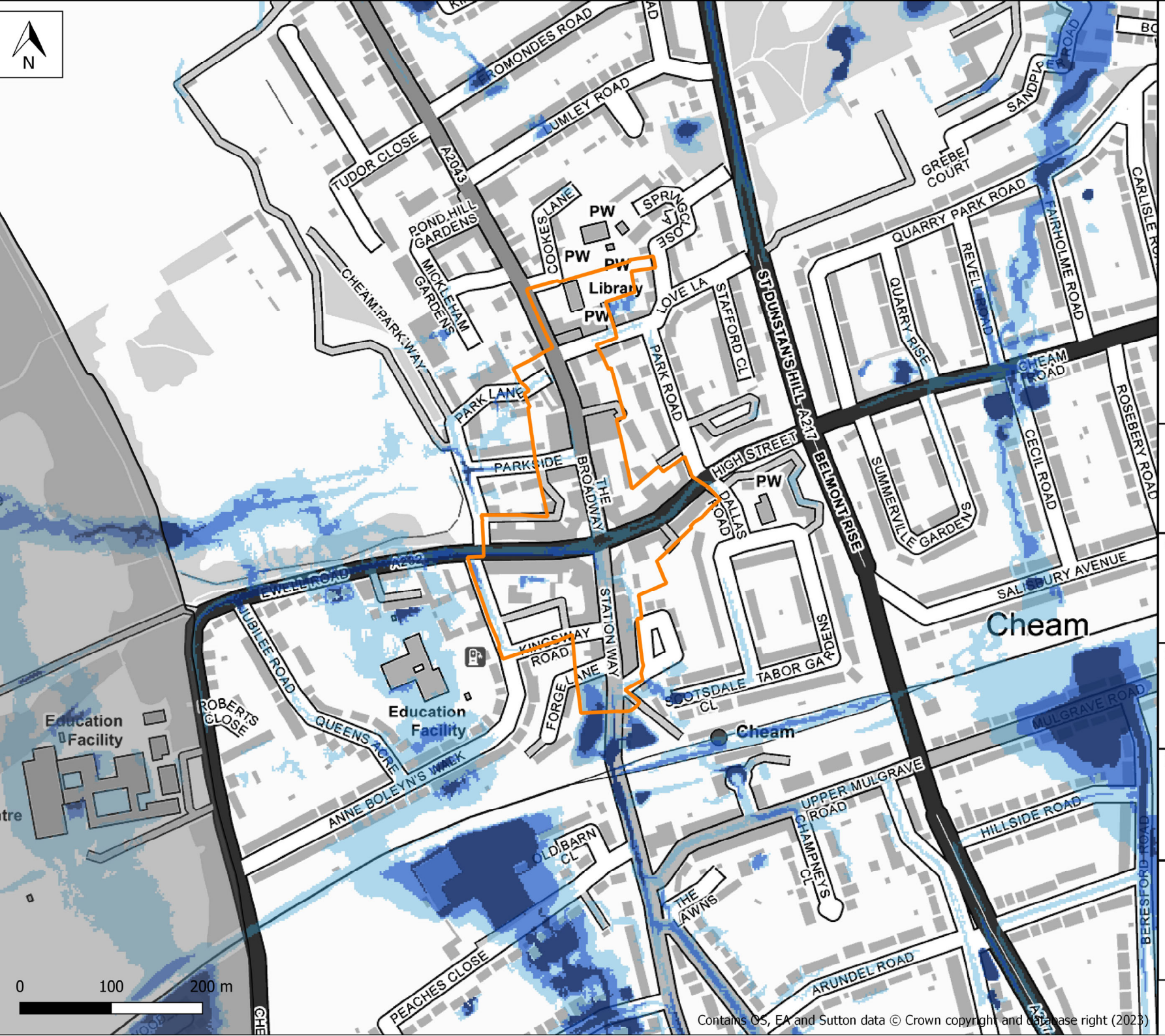
Level 1 Strategic Flood Risk Assessment

Drawing Title

Carshalton Village District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.7



Legend

- Cheam Village District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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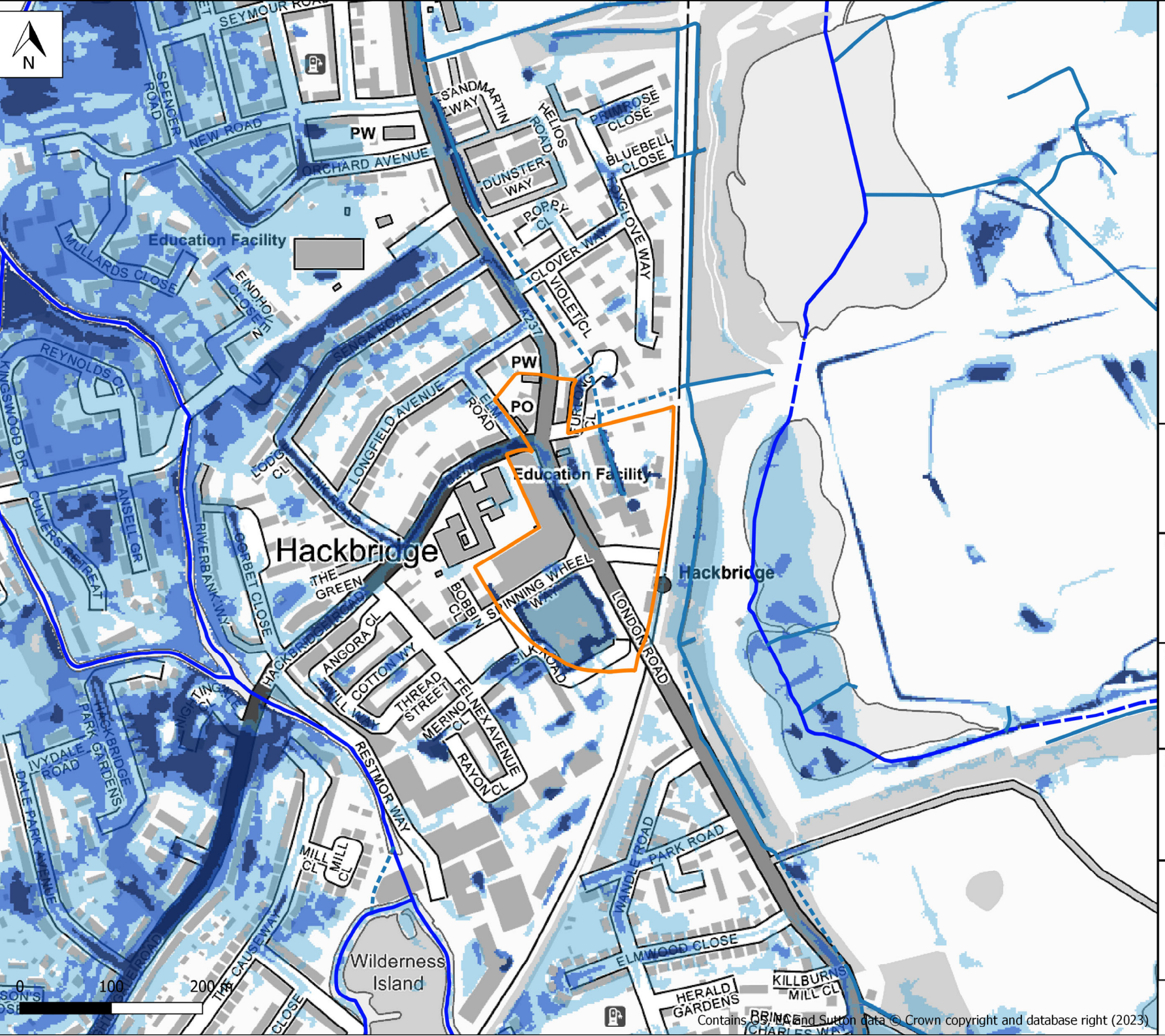
Level 1 Strategic Flood Risk Assessment

Drawing Title

Cheam Village District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.8



Legend

- Hackbridge District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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Level 1 Strategic Flood Risk Assessment

Drawing Title

Hackbridge District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.9

Legend

- North Cheam District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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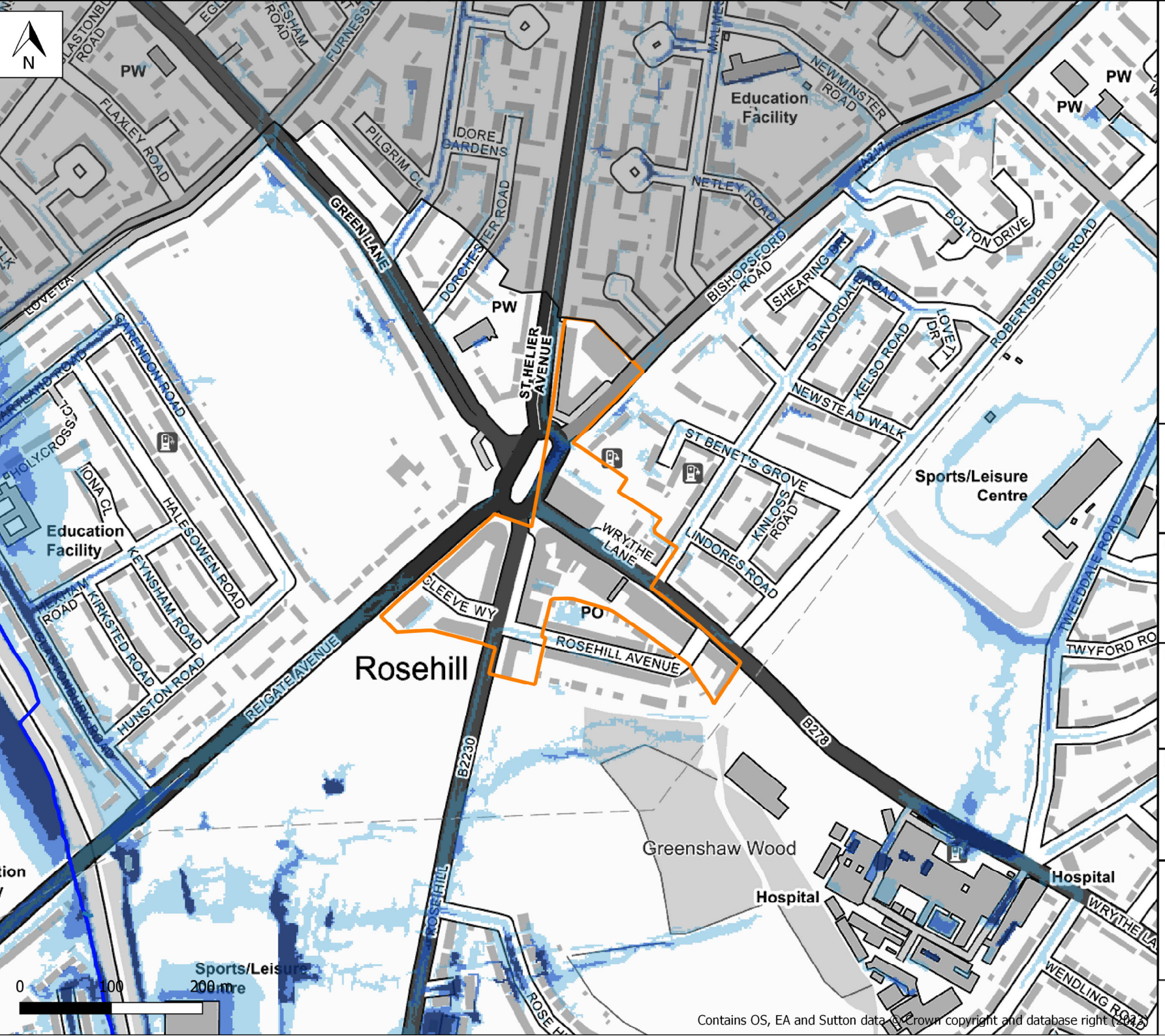
Level 1 Strategic Flood Risk Assessment

Drawing Title

North Cheam District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.10



Legend

- Rosehill District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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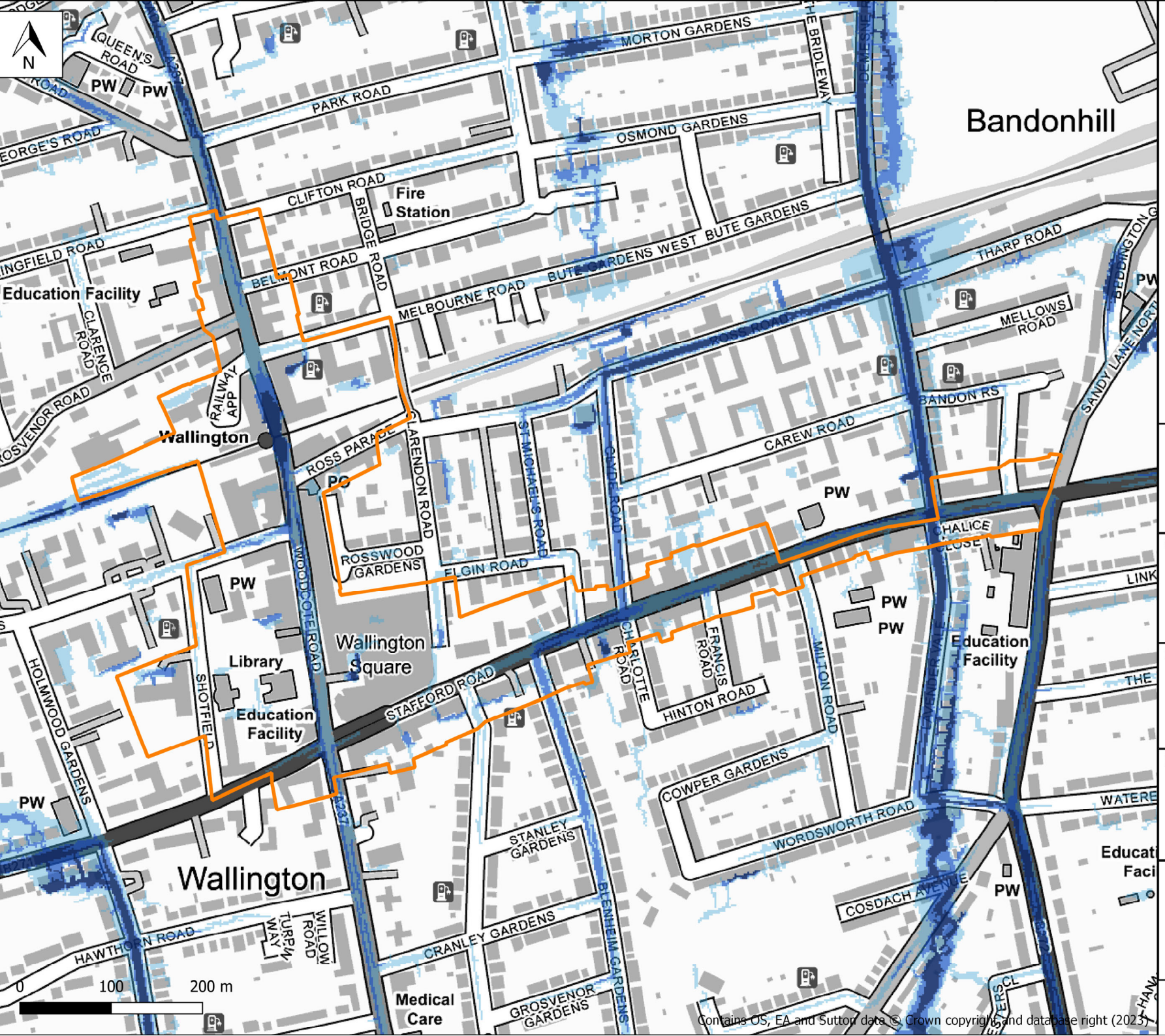
Level 1 Strategic Flood Risk Assessment

Drawing Title

Rosehill District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.11



Legend

- Wallington District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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Sutton

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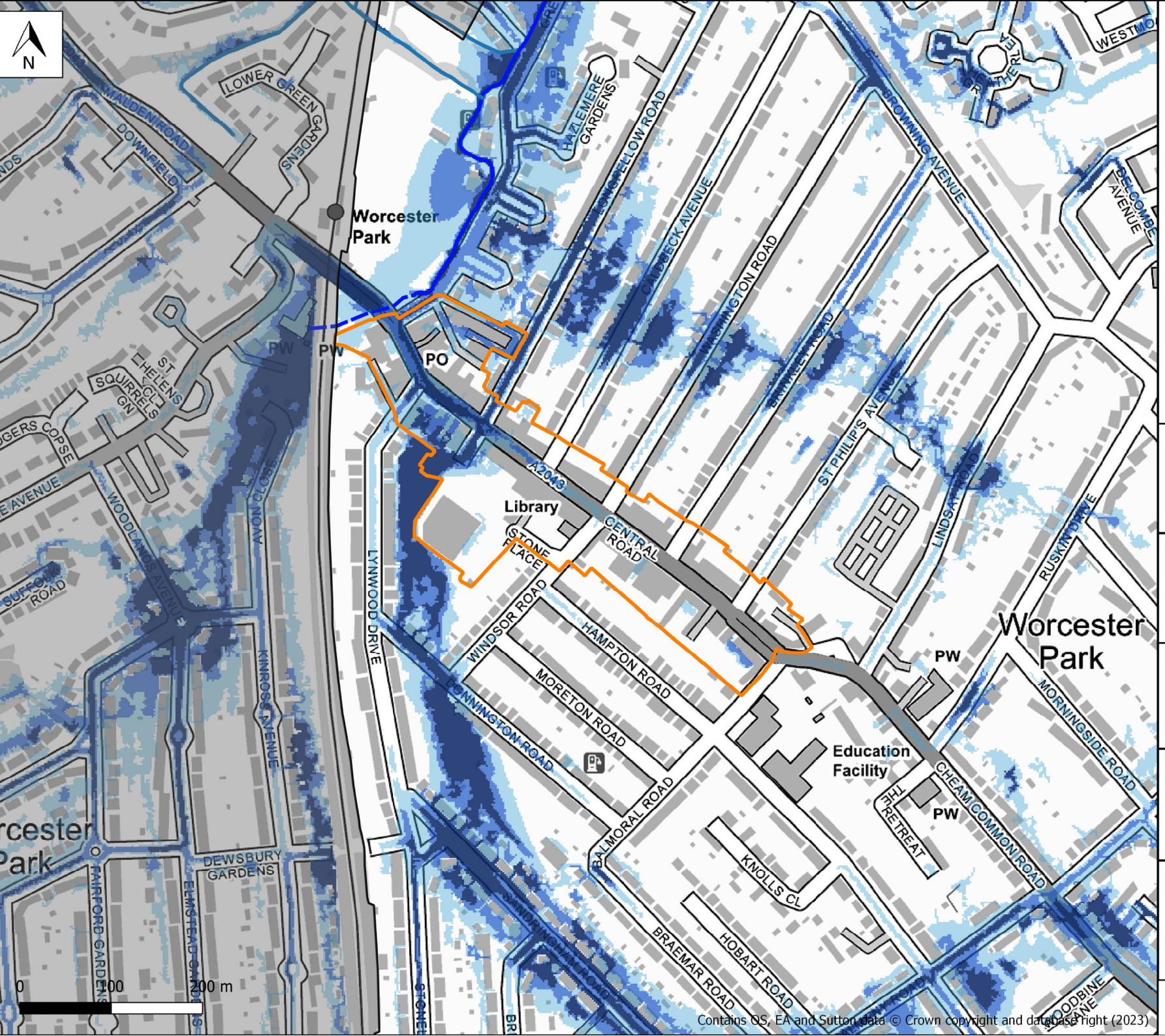
Level 1 Strategic Flood Risk Assessment

Drawing Title

Wallington District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.12



Legend

- Worcester Park District Centre

Detailed River Network

- Main River - Open Channel
- Main River - Culverted
- Ordinary Watercourse - Open Channel
- Ordinary Watercourse - Culverted

Risk of Flooding from Surface Water - Extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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Level 1 Strategic Flood Risk Assessment

Drawing Title

Worcester Park District Centre: Surface Water Flood Extent

1:4,000	Drawing Size A3	Drawing Number A5.13

APPENDIX B

Background to Sequential Test

The National Planning Policy Framework (NPPF, December 2023) requires that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local Plans should therefore apply a sequential, risk-based approach to the location of development to avoid flood risk to people and property and manage any residual risk, taking account of climate change, by applying the 'sequential test' and if necessary, applying the 'exception test' to all potential development sites in line with technical guidelines[1] set out in Government Planning Practice Guidance (PPG).

The purpose of the sequential test is to ensure that sites at little or no risk of flooding are developed in preference to sites at higher risk, taking the vulnerability of the proposed use into account. This will help avoid the development of sites that are inappropriate on flood risk grounds. The sequential approach should be applied at all levels and scales of the planning process, both for sites between flood zones and where a site has to be located in a higher risk zone, within the extent of that flood zone by locating the more vulnerable elements of the development in the areas of lowest risk. All opportunities to locate new developments in reasonably available areas of little or no flood risk should be explored, prior to any decision to locate them in areas of higher risk.

If, following application of the sequential test, it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the exception test can be applied if appropriate. For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk; and
- a site-specific flood risk assessment (FRA) must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. Both elements of the test will have to be passed for development to be allocated or permitted.

Strategic Flood Risk Assessment (SFRA) - Outcome of initial site screening

The outcome of initial site screening undertaken by Metis consultants as part of the SFRA Level 1 and Level 2 work is set out in the Table below. For each of the potential site allocations put forward in Sutton's Local Plan 'Issues and Preferred Options' (Regulation 18) document the Table sets out the following key information:

- sites requiring sequential test;
- sites requiring exceptions test; and
- sites requiring further assessment at SFRA Level 2 stage.

[1] formerly set out in the Government's Planning Policy Statement on Development and Flood Risk (PPS25) (now cancelled)

Table: Site Assessment and Screening of Potential Site Allocations included in the Local Plan Issues and Preferred Options (Regulation 18) document (July 2024)

SFRA ID	Name	Proposed Use	Vulnerability Classfication	Site Area (ha)	FZ2 (% of site area)	FZ3a (% of site area)	FZ3b (% of site area)	Main River 35% Climate Change (% of site area)	1 in 100yr RoFSW Extent (% of site area)	1 in 1000yr RoFSW Extent (% of site area)	Surface Water Flood Risk Increase due to CC (not currently in 1 in 100yr RoFSW, but in 1 in 1000yr RoFSW)	Groundwater Susceptibility Banding	Sewer Flooding?	Sequential Test Required?	Exception Test Required?	Level 2 SFRA Recommended?
DC1	The Grove House, Grove Park, High Street, Carshalton, SM5 3AL	Residential	More vulnerable	0.08	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
DC2	Charles Cryer Theatre, High Street, Carshalton SM5 3BB	Community (Class F2) Restaurant (Class E)	Less vulnerable	0.07	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
DC3	Former Fox & Hounds Public House, 41 High Street, Carshalton, SM5 3BB	Residential Public House (SG) Class E	More vulnerable	0.14	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
DC4	Greenview House, 5 Manor Road Wallington SM6 0BW	Class E Education (Class F) Residential	More vulnerable	0.10	0.00	0.00	0.00	0.00	10.50	24.21	NO	>= 75%	YES	NO	NO	NO
DC5	Former HSS Hire, 53 Malden Road Cheam SM3 8QW	Residential	More vulnerable	0.14	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
DC6	Tesco Esso Express (with petrol station), 50 Malden Road, Cheam SM3 8HB	Residential Class E	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
DC7	Cheam Library, Church Road, Cheam SM3 8QH	Library (Class F1) Health (Class E) Other (Sui Generis) Residential Public Car Parking (SG)	More vulnerable	0.30	0.00	0.00	0.00	0.00	0.01	0.37	NO	>= 25% <50%	YES	NO	NO	NO
DC8	Anne Boleyn House 9 - 13 Ewell Road Cheam SM3 8BZ	Residential	More vulnerable	0.10	0.00	0.00	0.00	0.00	8.07	13.60	NO	>= 25% <50%	YES	NO	NO	NO
DC9	Oceantech House, Station Approach, Cheam, SM2 7AU	Residential	More vulnerable	0.60	0.00	0.00	0.00	0.00	0.02	14.42	NO	>= 25% <50%	YES	NO	NO	NO
DC10	Peaches Court Sports Club, Peaches Close, Cheam SM2 7BJ	Residential Community (Class F2) Car Parking (Sui Generis)	More vulnerable	0.18	0.00	0.00	0.00	0.00	94.68	100.00	NO	>= 25% <50%	YES	NO	NO	NO
DC11	Former HG Wells Public House, 101 Cheam Common Rd, Worcester Park, KT4 8TA	Residential Public House (SG)	More vulnerable	0.20	0.00	0.00	0.00	0.00	0.00	6.75	YES	< 25%	YES	NO	NO	NO
DC12	Resource Centre, Covey Road / London Road SM3 9DL	Residential Community (Class F2) Class E (Offices)	More vulnerable	0.37	0.00	0.00	0.00	0.00	0.00	2.04	YES	< 25%	YES	NO	NO	NO
DC13	Tesco Esso Express (with petrol station), 668 London Road, Sutton, SM3 9BY	Residential Class E Petrol Station (SG)	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
DC14	Sainsbury's, 566 London Road, Sutton, SM3 9AA	Residential Class E	More vulnerable	2.90	0.00	0.00	0.00	0.00	1.99	2.98	NO	< 25%	YES	NO	NO	NO
DC15	Former Victoria House, 388 Malden Road, Cheam, SM3 8HY	Residential Class E Class F	More vulnerable	0.28	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
DC16	Cheam Leisure Centre, Malden Road / Priory Crescent SM3 8EP	Community (Class F2) Health (Class E)	More vulnerable	1.28	0.00	0.00	0.00	0.00	6.27	20.37	NO	N/A	YES	NO	NO	NO
DC17	Hill House, Bishopsford Road, Rosehill SM4 6BL	Community (Class F2) Residential	More vulnerable	1.05	0.00	0.00	0.00	0.00	1.95	22.11	NO	N/A	YES	NO	NO	NO
DC18	St Helier Ambulance Station, Bishopsford Road, Carshalton,SM4 6BN	Residential Ambulance Station (Sui Generis)	More vulnerable	0.30	0.00	0.00	0.00	0.00	0.00	14.40	YES	N/A	YES	NO	NO	NO
DC19	Lidl Rosehill, Wrythe Lane, Rosehill SM5 1AD	Retail (Class E) Residential	More vulnerable	0.43	0.00	0.00	0.00	0.00	0.00	6.03	YES	N/A	YES	NO	NO	NO
DC20	102-104 Rose Hill, Sutton, SM1 3HB	Residential	More vulnerable	0.98	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO

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DC21	St Helier Hospital, Wrythe Lane, Sutton, Carshalton, SM5 1AA	Residential Hospital (Class C2) Health (Class E) Public Car Parking (SG)	More vulnerable	4.00	0.00	0.00	0.00	0.00	5.00	10.92	NO	< 25%	YES	NO	NO	NO
DC22	Worcester Park Telephone Exchange and Royal Mail, Longfellow Road Kt4 8BB	Residential Class E Telephone Exchange and Sorting Office (SG)	More vulnerable	0.36	57.05	0.00	0.00	0.00	25.78	52.74	NO	< 25%	YES	YES	NO	YES
DC23	165-181 Central Road, Worcester Park KT4 8DR	Class E Public House (Sui Generis) Residential Open Space.	More vulnerable	0.44	97.99	0.00	0.00	0.00	5.61	55.27	NO	< 25%	YES	YES	NO	YES
DC24	Land at 1 Lynwood Drive, Worcester Park KT4 7AA	Residential (Use Class C3) Community (Class F2) Class E (Health)	More vulnerable	0.13	0.00	0.00	0.00	0.00	77.06	90.12	NO	< 25%	YES	NO	NO	NO
DC25	Stoneplace Car Park, 133B Central Road, Worcester Park KT4 8DY	Residential Class E Car Parking (Sui Generis)	More vulnerable	0.27	5.44	0.00	0.00	0.00	5.77	15.97	NO	< 25%	YES	YES	NO	YES
DC26	1-9 Windsor Road & 81-85 Central Road, Worcester Park KT4 8EB	Residential Class E	More vulnerable	0.10	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
DC27	Griffiths Close, 209 Cheam Common Road, Worcester Park, KT4 8SL	Retirement / Care Homes (Class C2)	More vulnerable	0.40	0.00	0.00	0.00	0.00	0.00	2.72	YES	< 25%	YES	NO	NO	NO
DC28	Land North of Braemar Road, Worcester Park, Sutton, KT4 8SW	Residential Community (Class F2)	More vulnerable	0.59	0.00	0.00	0.00	0.00	38.98	63.20	NO	< 25%	YES	NO	NO	NO
H1	Felnex Trading Estate, London Road, Hackbridge	Residential Class E Class B	More vulnerable	7.70	66.77	0.00	0.00	7.79	11.12	25.73	NO	>= 75%	YES	YES	NO	YES
H2	Land adj Hackbridge Station, London Road, Hackbridge SM6 7BJ	Residential Class E Class B	More vulnerable	1.20	0.00	0.00	0.00	0.00	7.33	14.60	NO	>= 75%	YES	NO	NO	NO
H3	Hackbridge Station, London Road, Hackbridge SM6 7BJ	Residential Class E Car Parking (Sui Generis)	More vulnerable	0.30	0.00	0.00	0.00	0.00	0.00	0.40	YES	>= 75%	YES	NO	NO	NO
H4	Vulcan House, Restmor Way, Hackbridge, SM6 7GF	Residential	More vulnerable	0.08	5.87	0.00	0.00	1.39	2.55	3.78	NO	>= 75%	YES	YES	NO	YES
H5	Land East of Sandmartin Way (BedZED), SM6 7DF	Community Open space	Less vulnerable	0.50	0.00	0.00	0.00	0.00	0.28	2.86	NO	>= 75%	YES	NO	NO	NO
H6	Hackbridge Primary School, Land north of BedZED, Hackbridge	Primary School Open Space	More vulnerable	1.59	17.53	0.00	0.00	0.00	7.58	28.08	NO	>= 75%	YES	YES	NO	YES
LCH1	London Cancer Hub, Downs Road / Brighton Road, Belmont, Sutton	Medical Research; Class E Class E(g), (i), (ii), and (iii) only; Health: Hospital; Education (Class F1); Hote (Class C1); Ancillary Accomodation; Allotments	More vulnerable	22.60	0.00	0.00	0.00	0.00	9.19	17.01	NO	< 25%	YES	NO	NO	NO
SB1	Haredon House, 810 London Road, North Cheam SM3 9BJ	Residential	More vulnerable	0.20	2.14	0.00	0.00	0.00	0.00	1.84	YES	< 25%	YES	YES	NO	YES
SB2	Wilsons Van Centre, 730-736 London Road, Sutton SM3 9BY	Residential Class E	More vulnerable	0.28	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
SB3	Stonecot Car Wash, Sutton Common Road, Sutton SM3 9HA	Residential Class E	More vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
SB4	Former Mortuary, Sutton Cemetery, Alcorn Close, Sutton SM3 9PX	Residential; Class E	More vulnerable	1.10	0.00	0.00	0.00	0.00	0.00	0.85	YES	< 25%	YES	NO	NO	NO

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SB5	Tesco Extra (with petrol station and car park), 55 Oldfields Road, Sutton, SM1 2NB	Class E Petrol Station Employment (Class B2/B8) Residential	More vulnerable	3.70	63.31	0.00	0.00	0.00	31.71	74.47	NO	< 25%	YES	YES	NO	YES
SB6	9 St Dunstans Hill, Cheam, SM1 2JX	Residential Class E	More vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
SB7	Sutton United Football Club, Gander Green Lane, Sutton SM1 2EY	Sports Ground Community Facilities (Class F2)	Less vulnerable	2.4	0.00	0.00	0.00	0.00	9.99	33.78	NO	>= 25% <50%	YES	NO	NO	NO
SB9	Tesco Express, 77 Angel Hill, Sutton, SM1 3EH	Residential; Class E	More vulnerable	0.22	0.00	0.00	0.00	0.00	0.00	5.20	YES	< 25%	YES	NO	NO	NO
SB10	All Saints Hall, Benhill Wood Road SM1 3SR	Residential; Community (Class F2)	More vulnerable	0.5	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
SB11	Land to the Rear of Middleton Circle, Assembly Walk, The Wrythe , SM5 1JH	Residential Place of Worship (Class F1	More vulnerable	0.12	0.00	0.00	0.00	0.00	0.00	0.01	YES	>= 25% <50%	YES	NO	NO	NO
SB12	Waltham Road Depot, Waltham Road, the Wrythe. SM5 1PW	Residential	More vulnerable	0.12	0.00	0.00	0.00	0.00	0.00	0.22	YES	>= 25% <50%	YES	NO	NO	NO
SB13	2-4 Prince Of Wales Road, Sutton, SM1 3PA	Residential	More vulnerable	0.12	0.00	0.00	0.00	0.00	0.00	13.01	YES	< 25%	YES	NO	NO	NO
SB14	Access Self Storage Sutton, 107 Westmead Road, Sutton, SM1 4JD	Residential; Class B8	More vulnerable	0.5	0.00	0.00	0.00	0.00	6.94	44.30	NO	< 25%	YES	NO	NO	NO
SB15	Former Chelsea Timber Merchants Ltd, 71-74 Westmead Road, Sutton, SM1 4JF	Residential	More vulnerable	0.25	0.00	0.00	0.00	0.00	0.14	19.82	NO	< 25%	YES	NO	NO	NO
SB16	Allen House, Westmead Road, Carshalton SM1 4JT	Residential	More vulnerable	0.04	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
SB17	Ambulance Station, Harrow Road Carshalton SM5 3QF	Community (Class F2); Residential	More vulnerable	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
SB18	Carshalton Institute and Social Club, North Street, Carshalton SM5 2HW	Community (Class F2); Car Parking (Sui Generis); Residential (Class C3)	More vulnerable	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
SB19	Council Offices, Denmark Road, Carshalton SM5 2JG	Residential	More vulnerable	0.4	0.00	0.00	0.00	0.00	0.00	0.14	YES	>= 75%	YES	NO	NO	NO
SB20	Council Car Park, Denmark Road, Carshalton	Residential	More vulnerable	0.4	0.00	0.00	0.00	0.00	0.00	0.02	YES	>= 75%	YES	NO	NO	NO
SB21	Land at Jessops Way, Croydon, CR0 4TS (OPTION 1)	Industrial - Class B2/B8 Class E (ii) and (iii) Residential	More vulnerable	12	0.00	0.00	0.00	0.00	0.80	5.98	NO	>= 75%	YES	NO	NO	NO
SB22	Land at Jessops Way, Croydon, CR0 4TS (OPTION 2)	Industrial - Class B2/B8 Class E (ii) and (iii)	Less vulnerable	4.13	0.00	0.00	0.00	0.00	0.30	0.63	NO	>= 75%	YES	NO	NO	NO
SB23	Land West of Beddington Lane, Sutton, CR0 4TS	Industrial - Class B2/B8 Class E (ii) and (iii)	Less vulnerable	0.11	0.00	0.00	0.00	0.00	0.88	28.59	NO	>= 75%	YES	NO	NO	NO
SB24	777 Recycling Centre, 11 Coomber Way, Croydon, CR0 4TQ	Industrial - Class B2/B8 Class E (ii) and (iii)	Less vulnerable	1	0.00	0.00	0.00	0.00	0.00	3.50	YES	>= 75%	YES	NO	NO	NO
SB25	156-160 Beddington Lane, Beddington CR0 4TE	Industrial - Class B2/B8 Class E (ii) and (iii)	Less vulnerable	1.81	0.00	0.00	0.00	0.00	2.15	30.65	NO	>= 75%	YES	NO	NO	NO
SB26	Former European Metal Recycling, Therapia Lane, Beddington	Industrial - Class B2/B8 Class E (ii) and (iii)	Less vulnerable	0.95	0.00	0.00	0.00	0.00	0.13	16.83	NO	>= 75%	YES	NO	NO	NO
SB27	Beddington Sub-Area 3: Asda Marlowe Way, Beddington, Sutton, CR0 4XS	Industrial - Class B2/B8 Class E (ii) and (iii); Supermarket (Class E)	Less vulnerable	3.6	93.62	0.00	0.00	0.00	1.78	6.56	NO	>= 75%	YES	YES	NO	YES
SB28	Beddington Sub-Area 3: Beddington South - 112 Beddington Lane, CR9 4EP	Industrial - Class B2/B8	Less vulnerable	0.74	11.15	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	YES	NO	YES

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SB29	Former PB Builders, 30 - 32 Beddington Lane, Beddington, Sutton, CR0 4TB	Residential	More vulnerable	0.14	47.19	0.00	0.00	28.61	0.00	26.81	YES	>= 75%	YES	YES	NO	YES
SB30	Land to rear of 81 Claydon Drive, Beddington, CR0 4QX	Residential	More vulnerable	0.25	0.00	0.00	0.00	0.00	0.00	8.08	YES	>= 75%	YES	NO	NO	NO
SB31	Sheen Way Playing Fields, Sheen Way, Beddington SM6 8NQ	School (Class F1) / Open Space Public Open Space	More vulnerable	2.5	0.00	0.00	0.00	0.00	49.95	75.75	NO	>= 75%	YES	NO	NO	NO
SB32	Land at Hannibal Way Beddington / Roundshaw CR0 4RW	Community (Class F2); Industry (Class B); Gypsy and Traveller Site	Highly vulnerable	0.31	0.00	0.00	0.00	0.00	7.99	25.59	NO	>= 75%	YES	NO	NO	NO
SB33	Land to East of 41-52 Alexandra Gardens, Carshalton SM5 4LJ	Residential	More vulnerable	0.24	0.00	0.00	0.00	0.00	0.00	9.45	YES	>= 75%	YES	NO	NO	NO
SB34	1-3 Metcalfe Avenue, Carshalton SM5 4AN	Residential; Class E; Employment (Class B); Health	More vulnerable	1	0.00	0.00	0.00	0.00	0.00	5.65	YES	< 25%	YES	NO	NO	NO
SB35	Former Carshalton Beeches Bowling Club and Land, 61 Banstead Road Sth, SM2 5LH	Residential	More vulnerable	0.54	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB36	Land East of Woodmansterne Lane, Wallington, SM6 0SU	Residential	More vulnerable	3.4	0.00	0.00	0.00	0.00	0.36	3.22	NO	>= 25% <50%	YES	NO	NO	NO
SB37	Woodcote Grove House, Orford House, Field Cottages 1-3 and Cottages 1-2, Woodcote Grove CR5 2XL	Retirement / Care Homes (Class C2); Residential (Class C3)	More vulnerable	16	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB38	Land to the East of Grove Place, Carshalton	Gypsy and Traveller Site	Highly vulnerable	0.26	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB39	The Mount, Clockhouse Estate, Clockhouse, Coulsdon (1)	Residential; Community (Class F)	More vulnerable	0.17	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB40	Longlands Avenue / Hillcrest Parade, Clockhouse Estate, Coulsdon (2) CR5 2PS	Residential; Community (Class F); Class E	More vulnerable	0.37	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB41	Downlands Close, Clockhouse Estate, Clockhouse, Coulsdon (4) CR5 2QH	Residential	More vulnerable	0.4	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB42	Longlands Avenue / Pembury Close, Clockhouse Estate, Clockhouse, Coulsdon (5); CR5 2QX	Residential	More vulnerable	0.51	0.00	0.00	0.00	0.00	0.00	2.62	YES	N/A	YES	NO	NO	NO
SB43	Trickett House, 125 Brighton Road, Sutton, SM2 5SN	Residential	More vulnerable	0.46	0.00	0.00	0.00	0.00	4.74	15.99	NO	< 25%	YES	NO	NO	NO
SB44	Sutton Ambulance Station, 18 Dorset Rd, Sutton, SM2 6HX	Residential; Ambulance Station (SG)	More vulnerable	0.12	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	NO	NO
SB45	Grantley Court Nursing Home, 22 York Road, Cheam SM2 6HH	Residential	More vulnerable	0.2	0.00	0.00	0.00	0.00	0.00	0.20	YES	< 25%	YES	NO	NO	NO
SB46	Health Education Books, Willow House, Willow Walk, Sutton, SM3 9QQ	Class B Class E	Less vulnerable	0.1	100.00	0.00	0.00	0.00	28.53	100.00	NO	< 25%	YES	YES	NO	YES
SB48	Land to sth of the Pastures, Carshalton Road, Woodcote	Gypsy and Traveller Site	Highly vulnerable	0.58	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO
SB49	Sainsbury's/Argos Distribution Centre, Marlowe Way, Beddington. CR0 4XS	Employment (Class B2/B8/E)	Less vulnerable	1.98	93.28	0.00	0.00	0.00	0.00	17.06	YES	>= 75%	YES	YES	NO	YES
SB50	Land to the south of Marlowe Way, Beddington, CR0 4XS	Employment (Class B2/B8/E)	Less vulnerable	1.1	83.72	0.00	0.00	0.00	1.01	46.33	NO	>= 75%	YES	YES	NO	YES
SB51	Garages at Radcliffe Gardens, Carshalton Beeches	Residential	More vulnerable	0.11	0.00	0.00	0.00	0.00	3.46	11.73	NO	>= 50% <75%	YES	NO	NO	NO
SB53				3.07	35.74	0.00	0.00	0.00	18.81	50.70	NO	>= 75%	YES	YES	NO	YES
SB54				1.28	15.31	0.00	0.00	0.00	31.50	59.77	NO	< 25%	YES	YES	NO	YES

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STC1	Helena House, 348-352 High Street, Sutton SM1 1QE	Residential; Class E	More vulnerable	0.14	0.00	0.00	0.00	0.00	0.00	14.64	YES	< 25%	YES	NO	NO	NO
STC2	Former Morrison's Local and Car Park, SM1 1LW	Residential; Class E	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.87	93.54	NO	>= 25% <50%	YES	NO	NO	NO
STC3	Lidl Block, High Street, Sutton SM1 1PG	Residential; Class E	More vulnerable	0.56	0.00	0.00	0.00	0.00	12.60	86.79	NO	>= 25% <50%	YES	NO	NO	NO
STC4	Halford Block, Throwley Way, Sutton SM1 1SE	Residential; Class E	More vulnerable	0.27	0.00	0.00	0.00	0.00	0.00	5.17	YES	>= 25% <50%	YES	NO	NO	NO
STC5	Northern Gateway, 246-254 High Street and 2 Marshalls Road, Sutton, SM1 1PA	Class E Education (Class F) Residential	More vulnerable	0.31	0.00	0.00	0.00	0.00	0.05	0.18	NO	>= 25% <50%	YES	NO	NO	NO
STC6	Elm Grove Estate, Sutton, SM1 4EU	Residential	More vulnerable	2.04	0.00	0.00	0.00	0.00	0.00	1.74	YES	>= 25% <50%	YES	NO	NO	NO
STC7	2-4 Greenford Road, Sutton SM1 1JY	Residential; Class E	More vulnerable	0.04	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC8	Rosebery Gardens, Sutton, SM1 4EZ	Residential	More vulnerable	0.5	0.00	0.00	0.00	0.00	9.21	65.48	NO	>= 25% <50%	YES	NO	NO	NO
STC9	Salvation Army Church, 45 Benhill Avenue, Sutton, SM1 4DD	Residential; Class E; Class F1	More vulnerable	0.12	0.00	0.00	0.00	0.00	8.84	28.42	NO	>= 25% <50%	YES	NO	NO	NO
STC10	Benhill Estate, Sutton, SM1 4DG	Residential Health (Class E)	More vulnerable	0.39	0.00	0.00	0.00	0.00	6.54	29.30	NO	>= 25% <50%	YES	NO	NO	NO
STC11	Herald House, 17 Throwley Way, Sutton SM1 4DA	Residential; Class E	More vulnerable	0.05	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC12	Old Court House Surgery, Court House, Throwley Way, Sutton, SM1 4AF	Residential; Class E; Health	More vulnerable	0.15	0.00	0.00	0.00	0.00	9.07	19.04	NO	>= 25% <50%	YES	NO	NO	NO
STC13	2-4 Lodge Place, Sutton, SM1 4AU	Residential; Class E	More vulnerable	0.4	0.00	0.00	0.00	0.00	0.00	0.04	NO	>= 25% <50%	YES	NO	NO	NO
STC14	Kwitfit Site, Throwley Way, Sutton SM1 4AF	Residential	More vulnerable	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC15	Times Square Car Park, Throwley Way SM1 4AU	Residential ; Car Park (Sui Generis)	More vulnerable	0.74	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC16	Times House, Throwley Way SM1 4AF	Residential; Class E	More vulnerable	0.2	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC17	Land ro Times Square, Throwley Way, Sutton, SM1 1LF	Residential; Indoor Play Space (D1); Class E	More vulnerable	0.4	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC18	Houses adjacent to Manor Park, Throwley Way SM1 4AE/4AF	Residential; Class E	More vulnerable	0.52	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC19	Former Wilko Site, High Street, Sutton SM1 1EZ	Residential; Class E	More vulnerable	0.11	0.00	0.00	0.00	0.00	0.00	0.08	YES	>= 25% <50%	YES	NO	NO	NO
STC20	Throwley Yard, Surrey House, Throwley Road, Sutton, SM1 1AD	Class E; Other (Sui Generis)	Less Vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC21	Sutton Park House, 15 Carshalton Road, Sutton SM1 4LD	Residential; Class E	More vulnerable	0.26	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC22	3-9 Carshalton Road, Sutton, SM1 4LE	Residential; Class E	More vulnerable	0.03	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC23	B&Q Site, Sutton Court Road, Sutton, SM1 4RQ	Residential; Class E; Health	More vulnerable	2.26	0.00	0.00	0.00	0.00	2.98	38.31	NO	< 25%	YES	NO	NO	NO
STC24	Sutton Station and Car Park, Brighton Road, Sutton SM2 5BW	Residential; Class E; Public Car Parking	More vulnerable	1.24	0.00	0.00	0.00	0.00	37.53	43.36	NO	< 25%	YES	NO	NO	NO
STC25	Quadrant House, Brighton Road, Sutton, SM2 5AS	Residential; Class E	More vulnerable	0.61	0.00	0.42	0.00	0.00	29.85	80.22	NO	< 25%	YES	NO	YES	NO
STC26	Petrol Station North of SubSea7, Brighton Road, Sutton SM2 5BN	Residential; Class E	More vulnerable	0.32	0.00	59.83	0.00	0.00	9.58	51.84	NO	< 25%	YES	YES	NO	YES

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STC27	2-4 Copse Hill and 52-54 Brighton Road, Sutton, SM2 6AD	Residential; Class E	More vulnerable	0.24	0.00	0.00	0.00	0.00	1.47	2.92	NO	< 25%	YES	NO	NO	NO
STC28	Shops Opposite Sutton Station, High Street, Sutton SM2 6LE	Residential; Class E	More vulnerable	0.18	0.00	0.00	0.00	0.00	2.07	2.70	NO	< 25%	YES	NO	NO	NO
STC29	1-3 High Street, Sutton, SM1 1DF	Residential; Class E	More vulnerable	0.07	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	YES	NO
STC30	Copthall House, Grove Road, Sutton, SM1 1DA	Residential; Class E	More vulnerable	0.07	0.00	73.48	0.00	0.00	2.25	3.36	NO	< 25%	YES	YES	NO	YES
STC31	Land North of Grove Road (44 - 74 Grove Road), Sutton, SM1 1BT	Residential; Class E	More vulnerable	0.18	0.00	0.00	0.00	0.00	0.00	0.00	NO	< 25%	YES	NO	YES	NO
STC32	Land North of Grove Road, Sutton SM1 1DD	Residential; Class E	More vulnerable	1.05	0.00	49.12	0.00	0.00	0.00	0.01	YES	>= 25% <50%	YES	YES	YES	YES
STC33	36 - 50 Grove Road, Sutton, SM1 1BS	Residential; Class E	More vulnerable	0.09	0.00	57.67	0.00	0.00	0.00	0.00	NO	< 25%	YES	YES	NO	YES
STC34	City House, Sutton Park Road, Sutton, SM1 2AE	Residential; Class E	More vulnerable	0.18	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC35	10-12 Cheam Road, Sutton, SM1 1SR	Residential; Class E	More vulnerable	1.24	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	YES	NO
STC36	Civic Offices, St Nicholas Way, Sutton, SM1 1EA	Residential; Class E; Health	More vulnerable	0.9	0.00	0.71	0.00	0.00	6.34	14.23	NO	>= 25% <50%	YES	YES	YES	YES
STC37	Former Secombe Theatre, 42 Cheam Rd, Sutton, SM1 2SS	Residential; Class E; Health	More vulnerable	0.4	0.00	47.72	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	YES	YES	YES
STC38	Gibson Road Multi-Storey Car Park, Sutton, SM1 2RF	Residential	More vulnerable	0.67	0.00	91.69	0.00	0.00	1.56	8.77	NO	>= 25% <50%	YES	YES	NO	YES
STC39	St Nicholas House, St Nicholas Way, Sutton, SM1 1EH	Residential; Class E	More vulnerable	0.08	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	YES	NO
STC40	Robin Hood Lane Health Centre, Robin Hood Lane, Sutton, SM1 2RJ	Health	More vulnerable	0.25	0.00	55.68	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	YES	NO	YES
STC41	8-25 Beech Tree Place and 29-35 West Street, Sutton SM1 1SF/1SJ	Residential	More vulnerable	0.42	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC42	St.Nicholas Centre, St Nicholas Way, Sutton, SM1 1AW	Retail; Offices; Library; Cafe & Restaurants; Leisure; Health; Residential; Class E; Class F1; Class F2	More vulnerable	2.1	0.00	0.00	0.00	0.00	0.36	6.89	NO	>= 25% <50%	YES	NO	NO	NO
STC43	St.Nicholas Centre Car Park, St Nicholas Way, Sutton, SM1 1AW	Car Park; Cinema; Residential; Class E	More vulnerable	0.5	0.00	0.00	0.00	0.00	15.19	57.69	NO	>= 25% <50%	YES	NO	NO	NO
STC44	Sutton West Centre, Robin Hood Lane SM1 2SD	Residential; Education (Class F1)	More vulnerable	1.1	0.00	0.00	0.00	0.00	15.12	41.03	NO	>= 25% <50%	YES	NO	NO	NO
STC45	31-35 St Nicholas Way, Sutton SM1 1JN	Residential; Class E	More vulnerable	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 25% <50%	YES	NO	NO	NO
STC46	219 - 227 High Street, Sutton, SM1 1LB (Former Argos)	Residential; Class E	More vulnerable	0.09	0.00	0.00	0.00	0.00	5.04	7.87	NO	>= 25% <50%	YES	NO	YES	NO
STC47	Bus Garage, Bushey Road, Sutton SM1 1QJ	Residential; Bus Garage (Sui Generis)	More vulnerable	0.55	0.00	10.52	0.00	0.00	0.32	20.45	NO	>= 25% <50%	YES	YES	YES	YES
STC48	Chaucer Estate, Milton Road, Sutton SM1 2RA	Residential; Class E	More vulnerable	3.06	1.05	2.63	0.00	0.00	8.76	19.96	NO	>= 25% <50%	YES	YES	YES	YES
STC49	Collingwood Estate, Sutton, Collingwood Road, Sutton SM1 1RX	Residential; Class E; Health	More vulnerable	2.83	0.00	16.59	0.00	0.00	12.25	34.00	NO	>= 25% <50%	YES	YES	YES	YES
STC50	Sutton Court Estate, Brighton Road, Sutton SM2 5BP	Residential; Class E	More vulnerable	2.03	0.00	0.61	0.00	0.00	7.15	31.17	NO	< 25%	YES	YES	NO	YES
STC51	Eothen 31 Worcester Road, Sutton SM2 6PT	Residential	More vulnerable	0.22	0.00	0.00	0.00	0.00	0.00	2.92	YES	< 25%	YES	NO	NO	NO

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STC52	Norman House, 70 Cheam Road, Sutton, SM1 2SU	Retirement / Care Homes (Class C2)	More vulnerable	0.17	0.00	0.00	0.00	0.00	0.01	15.60	NO	< 25%	YES	NO	NO	NO
W1	BTS House, 69 - 73 Manor Road, Wallington, SM6 0DD	Residential; Class E	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W2	Melbourne Road Car Park, Wallington SM6 8SF	Residential; Class E; Public Car Parking (Sui Generis)	More vulnerable	0.23	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W3	Wallington Telephone Exchange, Melbourne Road, Wallington SM6 8SD	Residential; Telephone Exchange (SG)	More vulnerable	0.17	0.00	0.00	0.00	0.00	0.00	0.06	YES	>= 75%	YES	NO	NO	NO
W4	Shell Garage, 102 Manor Road, Wallington, SM6 0DW	Residential; Class E; Petrol Station (SG)	More vulnerable	0.25	0.00	0.00	0.00	0.00	0.00	14.47	YES	>= 75%	YES	NO	NO	NO
W5	Wallington Delivery Office, Grosvenor Road, Wallington SM6 0EN	Residential; Class E; Postal Sorting Office (SG)	More vulnerable	0.34	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W6	Railway Approach, Wallington SM6 0DZ	Car Park (Sui Generis); Offices (Class E); Retail (Class E); Residential	More vulnerable	1.1	0.00	0.00	0.00	0.00	1.16	11.34	NO	>= 75%	YES	NO	NO	NO
W7	Lidl Site, Beddington Gardens, Wallington SM6 0HU	Retail (Class E); Residential	More vulnerable	0.3	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W8	Manor Road / Ross Parade (The Whispering Moon Pub) SM6 8QF	Pub (Sui Generis); Retail (Class E); Residential	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.10	0.49	NO	>= 75%	YES	NO	NO	NO
W9	Travis Perkins, 21 Ross Parade Wallington SM6 8QF	Residential; Class E	More vulnerable	0.15	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W10	Sainsbury's, 2 Stafford Rd, Wallington, SM6 9AA	Residential; Class E	More vulnerable	0.8	0.00	0.00	0.00	0.00	1.88	4.97	NO	>= 75%	YES	NO	NO	NO
W11	Shotfield Car Park, Shotfield Road, Wallington SM6 0EU	Residential Public Car Parking (SG)	More vulnerable	0.4	0.00	0.00	0.00	0.00	1.65	5.08	NO	>= 75%	YES	NO	NO	NO
W12	Former Wallington Hall Car Park, Wallington, SM6 0PR	Residential	More vulnerable	0.26	0.00	0.00	0.00	0.00	0.01	2.66	NO	>= 75%	YES	NO	NO	NO
W13	Crosspoint House, 28 Stafford Road, Wallington, SM6 9AA	Residential; Class E	More vulnerable	0.28	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W14	Land Rear of 105 Stafford Road, Wallington SM6 9AP	Residential; Class E; Warehouse (B8)	More vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W15	Land at St Elpheges Church, Stafford Road, Wallington SM6 9AY	Residential; Class E	More vulnerable	0.18	0.00	0.00	0.00	0.00	0.00	0.06	YES	>= 75%	YES	NO	NO	NO
W16	Cloverdale Court, 10 Stanley Park Road, Wallington, SM6 0EU	Residential	More vulnerable	0.35	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W17	Land Rear of 16-18 Stanley Park Road / Holmwood Gardens SM6 0EU	Residential	More vulnerable	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
W18	Crusader Hall, Stanley Park Road, Wallington SM6 0ET	Residential; Community (Class F2)	More vulnerable	0.1	0.00	0.00	0.00	0.00	0.02	37.57	NO	>= 75%	YES	NO	NO	NO
W19	Gower House, 75 Woodcote Road, Wallington SM6 0PU	Residential	More vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	>= 75%	YES	NO	NO	NO
SB47	Linney Fencing Ltd, Nursery Gardens, Goat Road, CR4 4HU	Employment (Class B2/B8/E)	Less vulnerable	0.46	35.47	0.00	0.76	18.28	0.15	43.78	NO	>= 50% <75%	YES	YES	NO	YES
SB8(a)	Rosehill Recreation Ground, Rose Hill, Sutton, SM1 3HH OPTION A	Education (Class F1)	More vulnerable	5.82	27.06	0.00	11.36	22.82	17.00	39.15	NO	< 25%	YES	YES	NO	YES
SB8(b)	Rosehill Recreation Ground, Rose Hill, Sutton, SM1 3HH OPTION B	Education (Class F1)	More vulnerable	2.51	28.34	0.00	14.11	24.44	19.05	40.47	NO	< 25%	YES	YES	NO	YES
SB52	Wandle Valley Trading Estate	Employment (Class B2/B8/E)	Less vulnerable	0.54	99.06	0.00	25.61	80.35	31.75	63.52	NO	>= 25% <50%	YES	YES	NO	YES

Key Assumptions

1. Sites with 0% of areas in FZ2 and FZ3a/b do not require the Sequential Test (on the basis that other forms of flood risk are generally manageable on a site by site basis)
2. Sites within FZ2 or 3a/b require the Sequential Test
3. Highly Vulnerable sites within FZ2 require the Exception Test
4. Essential Infrastructure sites within FZ3a or FZ3b require the Exception Test
5. More Vulnerable sites within FZ3a require the Exception Test
6. Level 2 SFRA recommended where the Sequential Test is need and the site is within FZ2, FZ3a, FZ3b, Main River +CC, or 20% of the site is within the RoFSW 1 in 100 year extent