Bromley Borough's Third Local Implementation Plan

Strategic Environmental Assessment (SEA)

Environmental Report

Bromley Council

November 2018

Quality information

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Revision History

Revision	Revision date	Details	Name	Position
v1	01 November 2018	Draft for internal review	Alastair Peattie	Associate Director
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1. Introduction

Background

1.1 AECOM has been commissioned to undertake an independent Strategic Environmental Assessment (SEA) of Bromley Borough's Third Local Implementation Plan (LIP3).

Strategic Environmental Assessment (SEA) explained

1.2 SEA is a mechanism for considering and communicating the environmental impacts of an emerging plan or strategy and potential alternatives. The aim of SEA is to inform and influence the plan-making process with a view to avoiding and mitigating negative impacts as well as maximising opportunities for positive effects. Through this approach, the SEA seeks to maximise the environmental performance of the LIP3.

1.3 As prescribed by the Environmental Assessment of Plans and Programmes Regulations 2004[1] an SEA is required for a plan or programme which is prepared for transport, town and country planning or land use, and which sets the framework for future development consent of projects listed in Annex I or II to Council Directive 85/337/EEC.

1.4 The SEA Regulations require that a report is published for consultation alongside the draft LIP that 'identifies, describes and evaluates' the likely significant effects of implementing 'the plan, and reasonable alternatives'. The report must then be taken into account, alongside consultation responses, when finalising the Plan.

1.5 The 'likely significant effects on the environment', are those defined in Annex I of the SEA Directive as 'including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors'. Reasonable alternatives to the plan need to take into consideration the objectives for the plan and its geographic scope. The choice of 'reasonable alternatives' is determined by a means of case-by-case assessment and a decision.[2]

1.6 More specifically, the SEA Report must answer the following three questions:

1. What has plan-making / SEA involved up to this point?
    - Including in relation to 'reasonable alternatives'.
2. What are the SEA findings at this stage?
    - i.e. in relation to the Draft Strategy
3. What happens next?
    - What steps will be taken to finalise (and monitor) the Strategy?

[1] Directive 2001/42/EC
[2] Commission of the European Communities (2009) Report from the Commission to the Council, The European Parliament, The European Economic and Social Committee and the Committee of the Regions on the application and effectiveness of the Directive on Strategic Environmental Assessment (Directive 2001/42/EC). (COMM 2009 469 final).

This Environmental Report

1.7 This Environmental Report[3] is published alongside the Draft LIP3, and answers each of the three questions (outlined in paragraph 1.6 above) in turn, with a 'part' of the report dedicated to each.

1.8 Before answering the first question however, two initial questions are answered in order to further 'set the scene' – i) what is the Plan trying to achieve?; and ii) what is the scope of the SEA?

[3] See **Appendix I** for further explanation of the regulatory basis for answering certain questions within the Environmental Report and a 'checklist' explaining more precisely the regulatory basis for presenting certain information.

2. The Local Implementation Plan

Introduction

2.1 Under the Transport Act 2000, as amended by the Local Transport Act 2008, local authorities in England are required to produce a Local Transport Plan (LTP). The 2008 Act requires that LTPs contain policies and implementation plans. In this context, the current Mayor's Transport Strategy is the overarching LTP for London and was adopted in 2018 to cover the period up to 2041.

2.2 The LIP is a statutory document, required by the Greater London Authority Act 1999, and sets out how the Mayor's Transport Strategy (MTS) will be implemented within the borough. The plan will detail how the transport related targets set by the Mayor of London will be addressed.

Mayor's Transport Strategy

2.3 Three key themes are at the heart of the MTS:

- **Healthy streets and healthy people** - Creating streets and street networks that encourage walking, cycling and public transport use will reduce car dependency and the health problems it creates;
- **A good public transport experience** - Public transport is the most efficient way for people to travel over distances that are too long to walk or cycle, and a shift from private car to public transport could dramatically reduce the number of vehicles on London's streets; and
- **New homes and jobs** - More people than ever want to live and work in London. Planning the city around walking, cycling and public transport use will unlock growth in new areas and ensure that London grows in a way that benefits everyone.

2.4 The expected outcomes of the MTS are presented below under the three key themes:

Health streets and healthy people

1. London's streets will be healthy and more Londoners will travel actively.
2. London's streets will be safe and secure.
3. London's streets will be used more efficiently and have less traffic on them.
4. London's streets will be clean and green.

A good public transport experience

5. The public transport network will meet the needs of a growing London.
6. Public transport will be safe, affordable and accessible to all.
7. Journeys by public transport will be pleasant, fast and reliable.

New homes and jobs

8. Active, efficient and sustainable travel will be the best option in new developments.
9. Transport investment will unlock the delivery of new homes and jobs.

2.5 The MTS requires that the following priorities are addressed through the borough LIPs:

- A contribution to reducing Londoners' dependency on cars in favour of active, efficient and sustainable modes of travel, with the central aim for 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041.
- The application of the Healthy Streets Approach across all areas of local transport and public realm policy.

- The improvement of street environments for people who are walking, cycling and spending time, including the introduction of traffic reduction strategies.
- The provision of a good public transport experience for those who live in, work in, or visit the borough.
- The use of the transport principles of Good Growth to guide the development of new homes and jobs.

2.6 The MTS sets an ambitious target for 80 per cent of all trips in London to be made on foot, by cycle or by public transport by 2041. In the case of Bromley the target is for 60% of trips to be made by public transport, walking and cycling by 2041. A shorter term mode share target is for 47% of trips to be made by those sustainable modes by 2021. This represents a one percentage point change from the current public transport, walking and cycling mode share of 46%.

Bromley's LIP

2.7 The Borough's high level objectives are set out in 'Building a Better Bromley' (2016)[4] and are as follows:

- A Quality Environment;
- Regeneration;
- Vibrant Thriving Town Centres;
- Supporting our Children and Young People;
- Supporting Independence;
- Safe Bromley; and
- Healthy Bromley.

2.8 The LIP3 sets out how the MTS (2018) will be implemented within the borough and details how the transport related targets set by the Mayor of London will be addressed. It initially sets out borough level objectives in line with each of the nine MTS outcomes identified earlier in this Chapter. Following that, it sets out a delivery plan for achieving those borough objectives, this includes:

- Linkages to Mayor's Transport Strategy priorities;
- A list of potential funding sources for the period 2019/20 to 2021/22;
- Long-term interventions;
- Three year indicative Programme of Investment for period 2019/20 to 2021/22; and
- A detailed annual programme for 2019/20.

2.9 The LIP3 also outlines how the Council will work with TfL and other stakeholders such as Network Rail, to assist with delivering the outcomes, polices and proposals of the MTS in a locally appropriate way that supports the quality of life, health and economy of the borough.

[4] https://www.bromley.gov.uk/info/10020/policies_and_plans/993/building_a_better_bromley

3. What is the scope of the SEA?

3.1 The scope of the SEA is the sustainability issues and objectives that should be a focus of (and provide a broad methodological framework for) the SEA. The SEA Regulations require that 'when deciding on the scope and level of detail of the information that must be included in the report, the responsible authority shall consult the consultation bodies'. In England, the consultation bodies are the Environment Agency, Historic England and Natural England.[5]

3.2 As such, these authorities were consulted on the SEA scope for 5 weeks from 17th September to 23rd October 2018. No response was received from the Environment Agency and while a response from Natural England was received no specific comments were made. The response from Historic England stated that the SEA Scoping Report (2018) sets out a proportional overview of heritage assets. Historic England recommended that reference is made to the twenty seven Archaeological Priority Areas within the borough as well as the inclusion of text relating to non-designated heritage assets and their significance. These recommendations have been taken forward and the scoping information updated in **Appendix I** of this Environmental Report

3.3 The SEA themes, key sustainability issues, SEA objectives and assessment questions identified through scoping are presented in **Table 3.1** below.

Table 3.1: SEA themes, key issues and SEA objectives

Key issues	SEA objective	Assessment questions – will the option/ proposal help to…..
Air Quality		
• There is one AQMA covering the north and north-west of the London borough of Bromley, which is currently exceeding nationally set objectives for concentrations of nitrogen dioxide emissions. • Cars and heavy goods vehicles (HGVs) are key contributors to nitrogen dioxide emissions in the Plan area. • Local Implementation Plan actions to address issues such as modal shift, reducing traffic volumes at 'pinch points' and freight movement within the borough will directly impact levels of NO_2 and as such the success of the AQAP.	Deliver improvements in air quality in the London borough of Bromley	• Reduce emissions of pollutants from transport? • Improve air quality within the designated AQMA? • Promote the use of low emission vehicles? • Promote enhancements in sustainable modes of transport, including walking, cycling and public transport? • Support enhancements to green infrastructure networks?
Biodiversity and Geodiversity		
• There are no European sites designated for biodiversity within or immediately adjacent to the London borough of Bromley. • Six Sites of Special Scientific Interest (SSSI)s lie within the borough of Bromley: Elmstead Pit SSSI, Ruxley Gravel Pits SSSI, Crofton Woods SSSI, Keston and Hayes Commons SSSI, Downe Bank and High Elms SSSI and Saltbox Hill SSSI. • There are five Local Nature Reserves (LNRs) within Bromley, as well as 87 rare and threatened species.	Support the integrity of nationally and locally designated sites	• Protect the integrity of the five nationally designated SSSIs in Bromley? • Manage pressures on locally designated and regionally important sites for biodiversity and geodiversity in Bromley?
	Protect and enhance habitats and species in Bromley	• Protect and enhance semi-natural habitats? • Protect and enhance priority habitats, and the habitat of priority species? • Achieve a net gain in biodiversity? • Increase the resilience of

[5] In accordance with Article 6(3) of the SEA Directive, these consultation bodies were selected because 'by reason of their specific environmental responsibilities,[they] are likely to be concerned by the environmental effects of implementing plans and programmes.'

Key issues	SEA objective	Assessment questions – will the option/ proposal help to…..
		Bromley's biodiversity to the potential effects of climate change?
	Minimise the potential for negative cumulative and synergistic effects resulting from the in-combination effects of Implementation Plan proposals and new development areas in Bromley	• Limit the effects of new transport infrastructure on biodiversity? • Support enhancements to multifunctional green infrastructure networks? • Support access to, interpretation and understanding of biodiversity and geodiversity?
Climate Change		
• Bromley has recorded consistently lower greenhouse gas emissions per capita than both the South East and England since 2005. In addition, Bromley's average reduction in transport emissions per capita between 2005 and 2012 is greater than its regional and national counterparts. • A range of flood risk issues exist across Bromley, including linked to fluvial, surface water, and groundwater flooding. • The transport network has the potential to become increasingly vulnerable to the potential effects of climate change in forthcoming years. As such the resilience of the transport network to the likely impacts of climate change will be a key factor in its effective functioning.	Support climate change mitigation in Bromley through limiting the contribution of transport to greenhouse gas emissions in the county.	• Limit the increase in the carbon footprint resulting from new transport infrastructure provision? • Promote the use of sustainable modes of transport, including walking, cycling and public transport? • Reduce the need to travel? • Reduce energy consumption from non-renewable resources? • Encourage the update of electric and alternatively fuelled vehicles?
	Support the resilience of Bromley's transport networks to the potential effects of climate change.	• Increase the resilience of the transport network to the potential effects of climate change? • Promote a coordinated approach to the management of flood risk across public infrastructure provision? • Improve and extend green infrastructure networks as part of transport infrastructure provision to support adaptation to the potential effects of climate change? • Sustainably manage water run-off, reducing surface water runoff? • Ensure the potential risks associated with climate change are considered through new transport network programmes? • Increase the resilience of biodiversity in Bromley to the effects of climate change, including enhancements to ecological networks (e.g. through the use of green bridges / tunnels)?
Historic Environment and Landscape		
• There are a variety of heritage assets within Bromley including eight Grade I, 23 Grade II*, 376 Grade II listed buildings, six	Preserve and enhance Bromley's cultural heritage resource, including its	• Conserve and enhance the significance of buildings and structures of architectural or

Key issues	SEA objective	Assessment questions – will the option/ proposal help to…..
historic parks and gardens and 45 conservation areas. • Bromley has been determined to be London's 'greenest' borough, encompassing 156 parks, 52 allotments and 21 outdoor facilities. • 51.47% of the borough's area is covered by the London Metropolitan Green Belt.	historic environment and archaeological assets.	historic interest, both designated and non-designated, and their setting? • Conserve and enhance the special interest, character and appearance of conservation areas and their settings? • Support access to, interpretation and understanding of the historic environment? • Conserve and enhance archaeological remains and support the undertaking of archaeological investigations and, where appropriate, recommend mitigation strategies?
	Protect and enhance the character and quality of Bromley's landscapes and townscapes.	• Support the management objectives of the greenspace and parks in Bromley? • Support the integrity of the LCAs within Bromley? • Conserve and enhance locally important landscape features within Bromley? • Improve accessibility to Bromley's landscape resources?
Land, Soil and Water Resources		
• New transport infrastructure has the potential to directly or indirectly lead to the loss of areas classified as the best and most versatile agricultural land in Bromley. • New transport infrastructure has the potential to modify water flow regimes and lead to effects on water quality. • Increased use of existing transport infrastructure, which may not be designed to current standards has the potential to lead to a deterioration of water quality in controlled waters. • The construction, maintenance and operation of transport infrastructure should seek to reduce the amount of primary materials required, make beneficial use of surplus materials and minimise the landfill disposal of waste generated throughout the asset's lifecycle.	Ensure the efficient and effective use of land.	• Facilitate the use of previously developed land? • Avoid the development of the best and most versatile agricultural land (Grade 1 to 3a agricultural land)?
	Promote sustainable waste management solutions that encourage the reduction, re-use and recycling of waste during construction.	• Encourage recycling of materials and minimise consumption of resources during construction, operation and maintenance of new transport infrastructure? • Encourage the use of alternative transport methods for the movement of waste in the county?
	Manage Bromley's water resources in a sustainable manner.	• Support improvements to water quality? • Help to minimise diffuse surface water pollution? • Protect surface water and groundwater resources?
Communities		
• The population of Bromley increased by 4.7% between 2001 and 2011. Whilst this less than the trends for London, the South East of England and England, the population of the borough grew by approximately 6% between 2011 and	Promote sustainable transport use and reduce the need to travel.	• Encourage modal shift to more sustainable forms of travel? • Reduce the need to travel?
	Delivery of a transport infrastructure to meet the foreseeable needs of the	• Improve accessibility to services, facilities and amenities?

Key issues	SEA objective	Assessment questions – will the option/ proposal help to…..
2017. • Generally, there are a slightly higher proportion of residents within the working age categories (25-44 and 45-59) in Bromley (47.9%) in comparison to the totals for the South East of England (46.4%) and England (46.9%). However, this is lower than the proportion of residents within the work age categories in London (52.5%) • Bromley can be considered relatively affluent with the majority of resident's living in areas which are within the 40% least deprived areas in England • The most popular method of travelling to work in Bromley is via car or van, but a much larger proportion of residents get the train to work compared to London and regional and national averages.	varied communities of Bromley.	• Meet the needs of a growing population? • Address the needs of all age groups? • Maintain or enhance the quality of life of residents?
	Support sustainable economic development in Bromley.	• Support sustainable economic development? • Improve accessibility to employment opportunities?
Health and Wellbeing		
Health levels are favourable compared to averages in London, the South East and England. 10% of residents in Bromley reported that their daily activities were limited in some way, which is 4.1% lower than the total for London, 5.7% lower than the total for the South East of England and 7.6% lower than the national average.	Improve the health and well-being of Bromley's residents.	• Reduce the impacts of air and noise pollution on health? • Promote accessibility to a range of leisure, health and community facilities, for all age groups? • Encourage healthy lifestyles and reduce health inequalities? • Enhance the provision of, and access to, green infrastructure in the county, in accordance with national standards? • Improve access to the countryside for recreation?
	Enhance road safety in Bromley	• Improve road safety and reduce road accidents?

Part 1: What has plan-making / SEA involved up to this point?

4. Introduction (to part 1)

4.1 In accordance with the SEA Regulations the Environmental Report must include:

- An outline of the reasons for selecting the alternatives dealt with; and
- The likely significant effects on the environment associated with alternatives/ an outline of the reasons for selecting the preferred approach in light of alternatives appraised.

4.2 The 'narrative' of plan-making/ SEA up to this point is told within this part of the Environmental Report.

5. Developing reasonable alternatives and the preferred approach

5.1 The SEA Regulations require the Environmental Report to identify, describe and evaluate the likely significant effects on the environment of:

a) Implementing the plan or programme; and

b) Reasonable alternatives taking into account the objectives and geographical scope of the plan or programme.

5.2 Taking account of the above, the development of alternatives for the LIP3 should therefore focus on the objectives of the Plan that seek to implement the MTS outcomes and priorities and in turn the costed Delivery Plan of interventions that sit below the borough objectives.

5.3 While the MTS outcomes and priorities have already been set out in Chapter 2, it is useful to set them out again below in the context of trying to develop alternatives. The expected outcomes of the MTS are presented below under the three key themes:

Health streets and healthy people

1. London's streets will be healthy and more Londoners will travel actively.
2. London's streets will be safe and secure.
3. London's streets will be used more efficiently and have less traffic on them.
4. London's streets will be clean and green.

A good public transport experience

5. The public transport network will meet the needs of a growing London.
6. Public transport will be safe, affordable and accessible to all.
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New homes and jobs

8. Active, efficient and sustainable travel will be the best option in new developments.
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5.4 The MTS requires that the following priorities are addressed through the borough LIPs:

- A contribution to reducing Londoners' dependency on cars in favour of active, efficient and sustainable modes of travel, with the central aim for 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041.

- The application of the Healthy Streets Approach across all areas of local transport and public realm policy.
- The improvement of street environments for people who are walking, cycling and spending time, including the introduction of traffic reduction strategies.
- The provision of a good public transport experience for those who live in, work in, or visit the borough.
- The use of the transport principles of Good Growth to guide the development of new homes and jobs.

5.5 It is important to note that an Integrated Impact Assessment (incorporating SEA) process was carried out for the MTS. It assessed three strategic options that were derived from the modelling options developed by TfL. Each of the strategic options was comprised of a number of different packages that involved increasing levels of investment and a range of different types of intervention.

5.6 The Council is limited in terms of identifying realistic and reasonable alternatives to deliver the MTS through the LIP3. Transport for London's LIP guidance specifies that the LIPs must follow the MTS and set its objectives and strategy closely in line with this. It is quite specific, aimed at achieving the Mayor's priorities for London.

5.7 The development of alternatives is also limited by the opportunities available (i.e. existing infrastructure and planned infrastructure in other plans/ programmes, including wider strategic investment programmes), the short-timescales of the plan and the amount of funding available during that period.

5.8 Firstly, it is important to state that a 'do nothing' scenario is not considered to be a realistic or reasonable alternative. The Greater London Authority Act 1999 requires each London borough to prepare a LIP that sets out how the borough will deliver the MTS at the local level. Not preparing the LIP is therefore not a reasonable alternative for the purposes of the SEA process.

5.9 In most cases there is not an alternative or genuine choice to be made with regard to what would be considered a larger scale or strategic intervention. Where there are choices in terms of lower scale interventions, these are not mutually exclusive and could not in isolation deliver the MTS outcomes and priorities. Furthermore, the lower scale interventions are less likely to result in significant effects in isolation; however, it is acknowledged that this is dependent on the precise location, scale and design of that intervention. The reality is that a package of different interventions and types will be required in order to deliver the MTS and targets.

5.10 It would not be proportionate for the SEA to assess every possible intervention at a local level. As stated above, individual interventions are not mutually exclusive and therefore not reasonable alternatives in their own right. A package of different measures/ interventions will be required to deliver the MTS.

5.11 The SEA could potentially assess high level alternatives that explore the trade-offs between hard (new infrastructure) and soft (education and behaviour changes) interventions. However, these options would not be based on an actual package of realistic interventions and as a result the assessment of them would not add value to, or inform the plan-making process.

5.12 In developing the LIP3 the Council has sought to identify and take advantage of any realistic opportunities to maximise potential benefits, for example, ensuring that public transport investment is linked to housing and employment growth set out in the Borough's Draft Local Plan.

5.13 Taking the above into account, it is considered that there are no realistic or reasonable alternatives to be explored through the SEA process at this stage. In line with the SEA regulations an assessment of the Draft LIP3 has been carried out and presented in Chapter 8 of this Environmental Report. If the assessment identifies that there is the likelihood for a significant negative effect as a result of any of the proposed interventions, they will be considered it in more detail to determine if there is a reasonable (i.e. realistic and deliverable) alternative that could avoid or minimise the identified effect.

Part 2: What are SEA findings at this current stage?

6. Introduction (to Part 2)

6.1 The aim of this chapter is to present an appraisal of the Draft LIP3 as currently published for consultation.

Methodology

6.2 The assessment identifies and evaluates 'likely significant effects' of the Draft LIP3 on the baseline, drawing on the SEA themes/objectives identified through scoping (see **Table 3.1** and **Appendix I**) as a methodological framework. In total, there are seven topics relating to:

- Air quality
- Biodiversity and Geodiversity
- Climate Change
- Historic Environment and Landscape
- Land, Soil and Water Resources
- Communities
- Health and Wellbeing

6.3 Every effort is made to predict effects accurately; however, this is inherently challenging given the high level nature of the Draft LIP3 and proposals under consideration, and understanding of the baseline (now and in the future under a 'no plan' scenario) that is inevitably limited. Given uncertainties there is a need to make assumptions, e.g. in relation to plan implementation and aspects of the baseline that might be impacted. Assumptions are made cautiously, and explained within the text (with the aim to strike a balance between comprehensiveness and conciseness/ accessibility). In many instances, given reasonable assumptions, it is not possible to predict 'significant effects', but it is nonetheless possible and helpful to comment on merits (or otherwise) of the Plan in more general terms.

6.4 Finally, it is important to note that effects are predicted taking account of the effect characteristics and 'significance criteria' presented within Schedules 1 and 2 of the SEA Regulations.[6] So, for example, account is taken of the probability, duration, frequency and reversibility of effects as far as possible. Cumulative effects are also considered, i.e. the potential for the Plan to impact an aspect of the baseline when implemented alongside other plans, programmes and projects. Explicit reference is made within the appraisal as appropriate (given the need to balance the desire of systematic appraisal with a desire to ensure conciseness/accessibility).

6.5 Within the assessment, specific objectives and interventions are referred to only as necessary (i.e. it is not the case that systematic consideration is given to the merits of every proposal in terms of every SEA theme/objective).

[6] Environmental Assessment of Plans and Programmes Regulations 2004.

7. Assessment of the Draft LIP3

Introduction

7.1 As introduced above, the aim of this chapter is to present an assessment of the Draft LIP3 under the SEA themes, which are closely linked to the SEA framework.

Air quality

7.2 Overall, the Bromley LIP3 seeks to improve highways network capacity and function within Bromley and provide greater opportunity for modal shift to accommodate for the expected growth within Bromley and the surrounding areas. The LIP3 identifies that Bromley's population is predicted to increase by almost 30,000 by 2032 and this growth may seriously impact upon congestion and air quality, particularly in key air quality hotspots such as the designated Bromley Air Quality Management Area. As such, the LIP3 is a strategy that seeks to improve transport infrastructure - in particular improvements to sustainable transport options - in order to accommodate this growth with minimal impact, and deliver long term improvements that can support continued population growth beyond the plan period. Without the Bromley LIP3 it is forecasted that such growth could lead to significant negative effects on air quality in Bromley.

7.3 In terms of the proposed sub-programmes, key initiatives that will support air quality improvements include;

- **Network reliability**; which focuses on smoothing traffic flow at key pinch points to reduce congestion. Reduced congestion will support improvements to air quality with the potential for long term positive effects. The measures to improve traffic flow will also improve reliability of bus routes, which will support sustainable transport options for travel with the potential for long term positive effects.
- **Local cycle infrastructure**; which will provide infrastructure that can unlock the potential for cycling at a local level and support a modal shift with the potential for long term positive effects on air quality. The local improvements will support the delivery of strategic cycle routes (such as Quietways) funded and delivered outside of the LIP3 by TfL.
- **Walking infrastructure development**; delivering improvements for pedestrians such as new crossings and improved paths. Again, this sub-programme is likely to support a modal shift with the potential for long term positive effects for air quality.
- **Public transport interchange and access**; focuses on improving the interchange between modes (e.g. bus and rail), thus providing greater connectivity for sustainable transport modes and supporting a modal shift with the potential for long term positive effects for air quality.
- **Road Safety education and behaviour change initiatives**; these 'soft' measures are aimed at changing behaviour and encouraging a modal shift with the potential for long term positive effects.

7.4 The proposals outlined under Outcome 4, including the development of an anti-idling education programme during 2019/20 to be delivered during the three years of the LIP, support for the adoption of electric taxis; and promoting a move from diesel to electric vehicles car club fleets will support air quality in the borough.

7.5 Air quality will also be supported be enhanced green infrastructure provision, including the aim in the plan to introduce a minimum of 50 new street trees, each year, throughout the three years of LIP3 as part of traffic projects, including the strategic cycle network and Liveable Neighbourhood projects. This will facilitate the increased absorption and dissipation of nitrogen dioxide and other pollutants.

7.6 It is considered that there is the potential for minor negative effects on air quality in the short term arising during construction phases of the programmed works. However, project level mitigation should ensure that no significant negative effects arise from construction activities.

Biodiversity and Geodiversity

7.7 Transport interventions proposed in the borough have the potential to negatively affect biodiversity and geodiversity. This includes in the short-term during construction phases through habitat loss, disturbance, noise, air and light pollution. Longer term effects on biodiversity include from noise and light pollution (e.g. along new cycle routes), and enhanced access to biodiversity sites in the borough, which has the potential to lead to disturbance of habitats and species without appropriate mitigation measures.

7.8 Potential impacts are likely to be limited by the MTS's aim to ensure that all transport schemes deliver a net positive impact on biodiversity, its focus on green infrastructure provision and project level mitigation. This will help ensure that significant negative effects from new transport schemes are avoided and mitigated, and benefits secured.

7.9 In this context there are significant opportunities for enhancements for green infrastructure provision to deliver longer term biodiversity benefits in Bromley. This is recognised through the LIP3's aim to introduce a minimum of 50 new street trees each year as part of traffic projects, including the strategic cycle network and Liveable Neighbourhood projects. This will help enhance biodiversity linkages along key transport corridors in the borough, supporting borough-wide ecological networks.

7.10 As discussed above, the implementation of the LIP3 is considered overall to have positive effects for air quality in the borough. This will bring indirect positive effects for biodiversity, including through limiting the effects of nitrogen deposition and ground-level ozone on ecosystems.

Climate Change

7.11 A key challenge for climate change mitigation is the reduction of emissions from transport. In this respect, the LIP3 for Bromley proposes a number of programmes that will support reduced emissions and enhance opportunities for modal shift. These are outlined in the air quality theme narrative above. In this context the LIP3 is considered to proactively manage the pressures of forecasted growth on transport infrastructure to reduce the potential for significant negative effects in terms of emissions, with the potential to deliver long term positive effects for climate change. The LIP also supports carbon sequestration through a commitment to plant a minimum 50 street trees a year.

7.12 In terms of climate change adaptation, the measures proposed do not seek to deliver significant new road infrastructure, and as such are not considered likely to lead to development which significant increases flood risk, or increase flood risk associated with surface water run-off. In this respect the proposed packages of transport improvements enable the implementation of measures which help reduce and manage flood risk, as well as to decrease vulnerability to extreme weather events in the future. In particular, the schemes have significant potential to address and limit surface water run off issues in the vicinities of the schemes through the integration of features within these enhancements which reduces such flood risk, such as sustainable drainage systems (SuDS) and appropriate design and layout. A key aim of the LIP3 is therefore to support the integration of SuDS within new infrastructure where appropriate. This includes through undertaking a SuDS feasibility assessment as part of all new traffic schemes where civil engineering takes place. Likewise the maintenance requirements of any SuDS measures introduced will be factored into the design and costing of every new traffic scheme in the borough. Supporting flood risk management further, where appropriate, it is anticipated that flood risk assessments (FRAs) will be undertaken on engineered schemes. The FRAs will incorporate appropriate allowances for climate change, in

accordance with Environment Agency guidance[7], to help to minimise vulnerability and provide resilience to flooding.

7.13 The LIP3 also seeks to implement green infrastructure provision that reduces the urban heat island effect as part of its transport projects. This will support adaptation to the likely effects of climate change.

Historic Environment and Landscape

7.14 Transport infrastructure and traffic flows have a strong influence on the setting of the historic environment and townscape and landscape character and quality. Effects can occur from poor design of transport infrastructure, including insensitively designed layouts, inappropriate signage, noise from poor road surfaces or excessive clutter.

7.15 Transport interventions proposed through the LIP3 have the potential to negatively affect the historic environment and landscapes, predominantly in the short-term during construction phases (through noise, air and light pollution), but also potentially in the long term by increased noise and light pollution (e.g. along new cycle routes) and poor design. It is likely though that project level mitigation in conjunction with the provisions of the MTS (which seeks to maximise opportunities to protect, promote and enhance London's built heritage and sites of cultural importance that are affected by transport development) will help ensure that development does not lead to any significant negative effects.

7.16 A number of the initiatives proposed by the LIP3 will directly or indirectly support the protection and enhancement of the historic environment and landscape and townscape quality. This includes tree planting, enhancements to the public realm around stations, and high quality pedestrian and cycle networks. The LIP3 also suggests that where appropriate, larger schemes may seek to enhance and 'promote the borough's heritage'. This will support the integrity of the historic environment and promote local distinctiveness and character through facilitating enhancements to the public realm. In the absence of the LIP3 the growth pressures on the highways network are considered likely to increase congestion. This could negatively affect both landscapes and the historic environment in terms of noise, light and air pollution. The delivery of the LIP3 will therefore help manage the effects of the predicted growth on the highways network and thus significantly reduce this potential for negative effects

7.17 The programmes proposed through the LIP3 will also help enhance the setting of heritage assets through helping facilitating modal shift from the private car. In this context pedestrian network enhancements, local cycle network development, cycle contraflows, severance reduction, high quality cycle parking, healthy routes to school, travel planning and other measures proposed through the LIP3 will directly or indirectly support the quality of the public realm through helping to limit the impact of road traffic townscape quality and the setting of the historic environment. The LIP3's focus on connectivity and accessibility is also likely to support improved access to heritage assets.

7.18 In-combination effects on the historic environment and landscape / townscape quality may result from the strategic allocations proposed for Bromley and LIP3 initiatives. This includes through a stimulation of traffic growth and increasing visual effects on the setting of the historic environment and landscape / townscape quality. However it is likely that the initiatives proposed by the LIP3 will in many respects support the integrity of the historic environment and landscape / townscape quality through helping to mitigate the impacts of new development areas from transport.

Land, Soil and Water Resources

7.19 The majority of the programmes proposed through the LIP3 focus on the development and improvement of existing infrastructure. As such the LIP3 is not considered likely to lead to significant negative effects in terms of land, soil and water resources in relation to landtake or soil quality. The sub-programme for local cycle infrastructure may lead to development such as

[7] Environment Agency (2016) Flood risk assessments: climate change allowances [online] available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (Accessed 19 December 2016).

local feeder routes that connect with the wider Quietways being delivered by TfL. However, any landtake from these schemes on greenfield land and soil resources are likely to be minor.

7.20 The LIP3 seeks to integrate SuDS within new infrastructure where appropriate and undertake a SuDS feasibility assessment as part of all new traffic schemes where civil engineering takes place. Likewise the maintenance requirements of any SuDS measures introduced will be factored into the design and costing of every new traffic scheme in the borough. These measures will support water quality through helping to regulate surface water runoff and managing drainage in ways which will help limit the potential for pollutants from transport to enter watercourses in the borough.

Communities

7.21 Overall, the Bromley LIP3 seeks to improve highways network capacity and function within Bromley and provide greater opportunity for modal shift to accommodate for the expected growth within Bromley and the surrounding areas. The LIP3 identifies that Bromley's population is predicted to increase by almost 30,000 by 2032 and this growth may seriously impact upon congestion, accessibility and journey reliability. As such, the LIP3 is a strategy that seeks to improve transport infrastructure - in particular improvements to sustainable transport options - in order to accommodate this growth with minimal impact, and deliver long term improvements that can support continued population growth beyond the plan period. Without the Bromley LIP3 it is forecasted that such growth could lead to significant negative effects for communities in Bromley.

7.22 In this respect, all of the programmes proposed through the LIP3 are considered to positively affect communities in the long term through: reduced congestion on the highways network; improved connectivity and accessibility; enhanced opportunities for sustainable transport including active travel opportunities; and improved safety and reduced road danger and reduced impacts of inappropriate and unsafe parking. Public transport and pedestrian and cycle network enhancements proposed through the initiatives will have particular benefits for transport disadvantaged individuals and groups. This includes those from deprived communities, and younger and older groups who have increased reliance on public transport networks.

7.23 The Equalities Impact Assessment (EqIA) which accompanies the draft plan has considered potential impacts of the LIP3 proposals on different groups with protected characteristics in detail.

Health and Wellbeing

7.24 The programme of works proposed through the LIP3 may potentially negatively affect health and wellbeing in the short term – during construction phases – as a result of noise and air pollution, however, it is expected that project level mitigation will ensure that no significant negative effects arise in this respect.

7.25 A number of the sub-programmes are considered likely to lead to long term positive effects for health and wellbeing. These include as follows:

- **Casualty and road danger reduction**; this programme intends to identify casualty hot spots and undertake interventions that provide safer road layouts to reduce collisions which will support health and wellbeing in the long term.
- **Local cycle infrastructure**; providing infrastructure at the local level to unlock the potential for cycling. The local interventions will support the delivery of the strategic cycleways proposed by TfL. The programme will support active travel opportunities that can positively affect health and wellbeing.
- **Walking infrastructure development**; will include improved pathways and new crossings which will improve safety and promote active travel with the potential to positively affect health and wellbeing.

- **Road Safety education and behaviour change initiatives;** a package of 'soft' measures aimed at changing behaviour to improve road safety which will positively affect health and wellbeing.

7.26 Overall the LIP3 proposals will bring a range of benefits for the health and wellbeing of residents in Bromley through a focus on enhancing accessibility to services, facilities and opportunities by non-car modes and promoting enhanced active transport links.

Part 3: What happens next?

8. Introduction (to Part 3)

8.1 The aim of this chapter is to explain next steps in the plan-making/SEA process.

Plan finalisation

8.2 Subsequent to consultation on the Draft LIP3 and the Environmental Report, an SEA Adoption Statement will be prepared. The role of the SEA Adoption Statement is essentially twofold:

- It must bring the story of plan-making/ SEA up to date. Whereas the Environmental Report must only explain the reasons behind selecting the Draft LIP3 approach subsequent to a consideration of alternatives, the SEA Statement must also explain the reasons behind decisions taken subsequent to the consultation on the Draft LIP3 (and the influence of the Environmental Report).
- It must present 'measures decided concerning monitoring' (as opposed to the Environmental Report, which must present only 'measures envisaged concerning monitoring').

Monitoring

8.3 At the current time, there is a need only to present 'measures envisaged concerning monitoring'. The SEA Regulations expect monitoring and mitigation to be linked, and that the focus should be on any significant negative effects identified through the assessment. Where possible existing arrangements for monitoring should be used to avoid duplication of effort.

8.4 The Draft LIP3 includes a range of indicators to monitor the delivery of the outcomes of the MTS. Based on the findings of the SEA at this stage, which predicted no significant negative effects, no specific monitoring measures have been proposed.

8.5 Further consideration will be given to monitoring in due course once the responses to the Draft LIP3 and accompanying Environmental Report have been received. If necessary, the SEA Adoption Statement will set out monitoring measures against SEA objectives, including responsibilities.

Appendices

Appendix I: Scoping Information

Air Quality

Focus of theme

- Air pollution sources
- Air quality hotspots
- Air quality management

Policy context

The UK's Air Quality Strategy[8] details a long term vision for improving air quality in the UK, which involves objectives and policies for the different pollutants and the environmental implications associated with these.

Key messages from the National Planning Policy Framework[9] (NPPF) include:

- 'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'
- 'Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health.'
- 'New and existing developments should be prevented from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of air pollution.'

Published in January 2018 by the UK Government, 'A Green Future: Our 25 Year Plan to Improve the Environment'[10] sets out a number of goals and policies in order to help the natural world regain and retain good health. In this context, Goal 1 'Clean Air' and the policies contained within 'Chapter 4: Increasing resource efficiency, and reducing pollution and waste' within the 25 year plan directly relate to the air quality SEA theme.

The London Environment Strategy[11] delivers a plan to reduce air pollution, with an aspiration to turn London into a zero carbon city by 2050. In this context, Chapter 4 on clean air sets the aim that '*London will have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities*'.

[8] DEFRA (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf [accessed 29/08/18]
[9] MHCLG (2018) National Planning Policy Framework [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf [accessed 29/08/18]
[10] HM GOV (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf [accessed 29/08/18]
[11] Greater London Authority (2018) London Environment Strategy [online] available at: https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf [accessed 29/08/18]

DEFRA's emerging Clean Air Strategy[12] identifies how all sources of air pollution will be tackled, and sets out a wide range of actions on which the UK government is consulting. The consultation will inform the final Clean Air Strategy and a detailed National Air Pollution Control Programme to be published by March 2019.

The Mayor's Transport Strategy[13] seeks to reduce emissions from vehicles on London's streets, and in this context Policy 6 directly relates to the air quality SEA theme. The policy identifies that measures to reduce emissions may include; retrofitting vehicles with equipment to reduce emissions; promoting electrification; road charging; the imposition of parking charges/levies; responsible procurement; the making of traffic restrictions/regulations; and local actions. Further to this, Proposal 24 seeks to introduce the central London Ultra Low Emission Zone (ULEZ) standards and charges in 2019, tighter emissions standards London-wide for heavy vehicles in 2020, and an expanded ULEZ covering inner London in 2021. Proposal 25 also seeks to ensure that all Transport for London buses meet the Euro VI diesel standards for NO_x and particulate matter by 2020 by accelerating the switch to new vehicles, installing proven retrofit technology and creating priority Low Emission Bus Zones. Further proposals include:

- Comprehensive alert systems to inform Londoners about air pollution episodes
- Fiscal incentives so that only the cleanest vehicles are incentivised for purchase
- A national diesel scrappage fund
- To make London's transport network zero emission by 2050

The emerging Bromley Local Plan[14] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the air quality SEA theme include:

- Policy 31: Relieving congestion
- Policy 37: General design of development
- Policy 120: Air quality
- Policy 121: Ventilation and odour control
- Policy 123: Sustainable design and construction
- Policy 124: Carbon dioxide reduction, decentralised energy networks and renewable energy

In terms of the local context, Bromley Council is required under Section 82 of the Environment Act (1995) to monitor air quality across the borough, report regularly to DEFRA, and take action where nationally set levels are likely to be exceeded. Monitoring is undertaken to assess levels of nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3), benzene (C_6H_6), carbon monoxide (CO), 1,3-Butadiene (C_4H_6), Lead (Pb), and particulates (PM_{10}). Where exceedances exist, areas are declared as Air Quality Management Areas (AQMAs) and local authorities are required to produce an Air Quality Action Plan (AQAP) to improve air quality in the area.

Within Bromley, in 2006 it was identified that Air Quality Objectives (set at the national level) for nitrogen dioxide were unlikely to be met. Consequently in 2007 an AQMA was declared to address exceedances in six wards in the north and north-west of the borough, and an AQAP[15] was produced. The AQAP identifies that most of the pollution is due to road traffic, and that air quality improves as distance from major roads increases. Therefore, the AQAP identifies the relationship between road transport and levels of NO_2 and brings into focus the need for combined action within the AQAP and the Local Implementation Plan. Local Implementation Plan actions to address issues such as modal shift, reducing traffic volumes at 'pinch points' and freight movement within the borough will directly impact levels of NO_2 and as such the success of the AQAP.

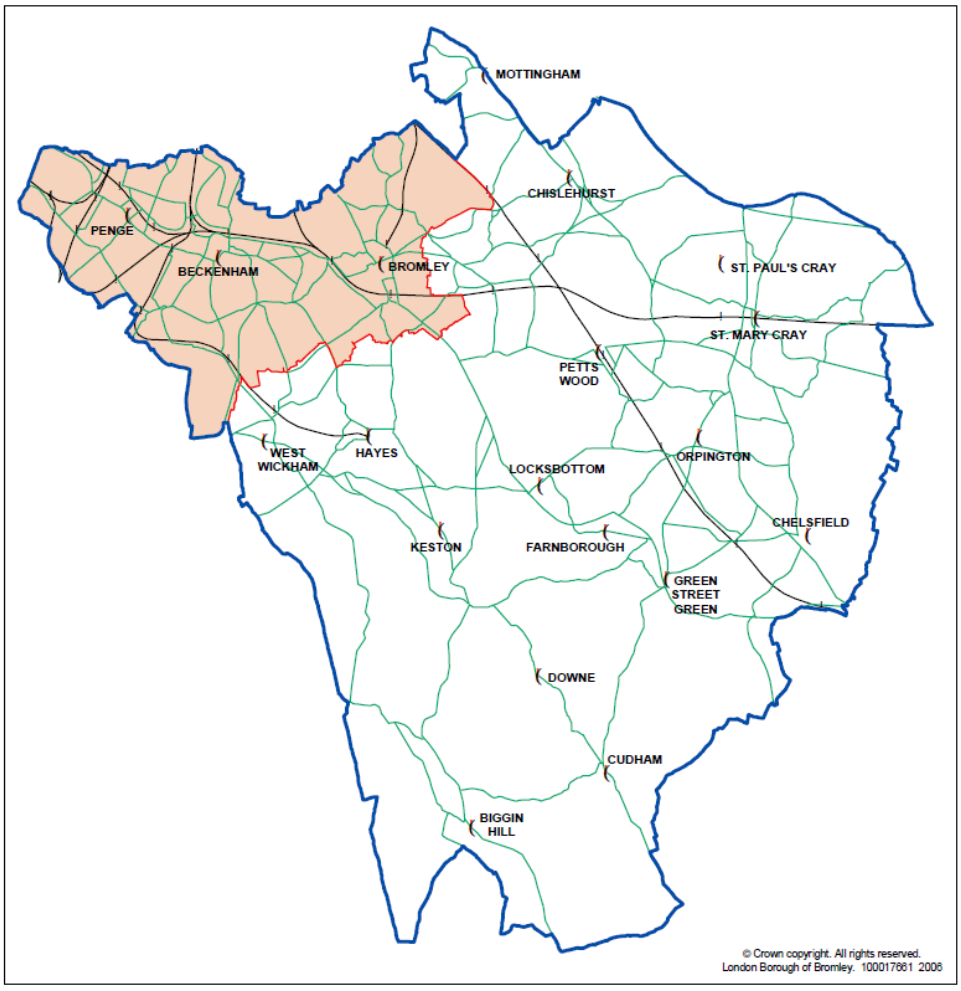
[12] DEFRA (2018) Clean Air Strategy – consultation draft [online] available at: https://consult.defra.gov.uk/environmental-quality/clean-air-strategy-consultation/user_uploads/clean-air-strategy-2018-consultation.pdf [accessed 29/08/18]
[13] Greater London Authority (2018) Mayor's Transport Strategy [online] available at: https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf [accessed 31/08/18]
[14] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]
[15] London Borough of Bromley (2010) Local Air Quality Management – Air Quality Action Plan [online] available at: https://www.bromley.gov.uk/downloads/file/680/air_quality_action_plan_aqap_2010 [accessed 29/08/18]

Baseline summary

Summary of current baseline

Within the London borough of Bromley there is one designated AQMA covering the north and north-west of the borough. This includes Bromley, Beckenham and Penge, as highlighted in **Figure 2.1** below.

Figure 0.1: London borough of Bromley Air Quality Management Area[16]



The AQAP[17] identifies that Bromley will continue to meet all but one of the national objectives, with the annual mean target for NO_2 being exceeded. Whilst background concentrations of NO_2 are projected to fall, modelled concentrations at roadside junctions are likely to remain above the national objective level and will require further action to achieve reductions.

The AQAP further identifies that cars and heavy goods vehicles (HGVs) are the key contributors to NO_2 emissions in the transport sector, and will be the focus for improvements. Actions to address the air quality issues include (but are not limited to); resisting development that could cause air quality objectives to be breached (particularly within the AQMA); promoting a restriction on bonfires based on area and time; the use of Section 106 agreements for development within the AQMA; promoting sustainable design and construction and energy efficiency in new development; encouraging efficient local energy generating schemes; and the use of smoke control areas (where enforcement action can be taken if unauthorised fuels are burned or unauthorised appliances are used). Currently the whole

[16] London Borough of Bromley (2018) Bromley Air Quality Management Area (AQMA) map [online] available at: https://www.bromley.gov.uk/downloads/file/682/bromley_air_quality_management_area_aqma_map [accessed 29/08/18]
[17] London Borough of Bromley (2010) Local Air Quality Management – Air Quality Action Plan [online] available at: https://www.bromley.gov.uk/downloads/file/680/air_quality_action_plan_aqap_2010 [accessed 29/08/18]

of the borough is deemed a smoke control area other than the more rural south east of the borough (certain areas of Darwin ward and Chelsfield and Pratts Bottom ward are exempt).

There are currently three modern automatic air pollution monitoring stations located at Harwood Avenue, Crystal Palace Park Parade, and Biggin Hill. This is supplemented with additional diffusion data from an additional ten locations targeted at major road junctions within the AQMA as follows:

- Elmers End;
- Beckenham Lane;
- London Rd / Hope Park;
- Widmore Road;
- Burnt Ash Lane;
- Bromley Common;
- Anerley Hill;
- Anerley Road;
- Beckenham Road; and
- Harwood Avenue.

Summary of future baseline

Improvements to future air quality are dependent, in part, on whether the aims of the London Environment Strategy and DEFRA Clean Air Strategy are achieved and whether the measures within the AQAP are successfully implemented. The AQAP recognises its interconnections with the Local Implementation Plan, which will be a key document in implementing measures to address congestion and freight movement in the borough, which is intrinsically linked to NO_2 emissions and thus the success of the AQAP.

It should also be noted that cleaner vehicles, including the update of electric vehicles, have the potential to lead to improvements in air quality in the longer term.

Headline Sustainability Issues

- There is one AQMA covering the north and north-west of the London borough of Bromley, which is currently exceeding nationally set objectives for concentrations of nitrogen dioxide emissions.
- Cars and heavy goods vehicles (HGVs) are key contributors to nitrogen dioxide emissions in the Plan area.
- Local Implementation Plan actions to address issues such as modal shift, reducing traffic volumes at 'pinch points' and freight movement within the borough will directly impact levels of NO_2 and as such the success of the AQAP.

What are the SEA objectives and appraisal questions for the air quality SEA theme?

SEA objective	Assessment questions – will the option/proposal help to:
Deliver improvements in air quality in the London borough of Bromley	• Reduce emissions of pollutants from transport? • Improve air quality within the designated AQMA? • Promote the use of low emission vehicles? • Promote enhancements in sustainable modes of transport, including walking, cycling and public transport? • Support enhancements to green infrastructure networks?

Biodiversity and geodiversity

Focus of theme

- Nature conservation designations
- Habitats
- Species
- Geodiversity

Policy context

The EU Biodiversity Strategy[18] was adopted in May 2011 in order to deliver an established new Europe-wide target to 'halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020'.

Key messages from the National Planning Policy Framework[19] (NPPF) include:

- One of the three overarching objectives of the NPPF is an environmental objective to 'contribute to protecting and enhancing our natural, built and historic environment' including by 'helping to improve biodiversity.'
- 'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value[…], take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scape across local authority boundaries.'
- 'Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with the statutory status or identified quality in the development plan); and minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks that are more resilient to current and future pressures.'
- 'To protect and enhance biodiversity and geodiversity, plans should:
    a. Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
    b. Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'
- Take a proactive approach to mitigating and adapting to climate change, considering the long term implications for biodiversity.
- The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined.

[18] European Commission (2011) Our life insurance, our natural capital: an EU biodiversity strategy to 2020 [online] available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0244&from=EN [accessed 03/08/18]
[19] MHCLG (2018) National Planning Policy Framework [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf [accessed 03/08/18]

The Natural Environment White Paper (NEWP)[20] sets out the importance of a healthy, functioning natural environment to sustained economic growth, prospering communities and personal wellbeing. It was in part a response to the UK's failure to halt and reverse the decline of biodiversity by 2010, and it signalled a move away from the traditional approach of protecting biodiversity in nature reserves to adopting a landscape approach to protecting and enhancing biodiversity. The NEWP also aims to create a green economy in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature. It includes commitments to:

- Halt biodiversity loss, support functioning ecosystems and establish coherent ecological networks by 2020;
- Establish a new voluntary approach to biodiversity offsetting to be tested in pilot areas;
- Enable partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas; and
- Address barriers to using green infrastructure to promote sustainable growth

Reflecting the commitments within the Natural Environment White Paper and the EU Biodiversity Strategy; the 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services[21] aims to 'halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people'.

The recently published 25 Year Environment Plan[22] sets out the Government's environmental plan of action over the next quarter century, in the context of Brexit. The Plan aims to tackle the growing problems of waste and soil degradation, improving social justice through tackling pollution and promoting the mental and physical health benefits of the natural world. It also sets out how the Government will address the effects of climate change. These aims are supported by a range of policies which are focused on the following six key areas:

- Using and managing land sustainably;
- Recovering nature and enhancing the beauty of landscapes;
- Connecting people with the environment to improve health and wellbeing;
- Increasing resource efficiency, and reducing pollution and waste;
- Securing clean, productive and biologically diverse seas and oceans; and
- Protecting and improving the global environment

In this context, Goal 3 'Thriving plants and wildlife' and the policies contained within Chapter 2 'Recovering nature and enhancing the beauty of landscapes' and Chapter 5 'Securing clean, productive and biologically diverse seas and oceans' directly relate to the Biodiversity SEA theme.

Published in June 2015, the Highways England (HE) Biodiversity Plan[23] identifies the approach which HE is taking to meet the challenge of a national decline in biodiversity. The Plan contains five specific outcomes, with a series of related actions. These outcomes aim to provide the most support for biodiversity across the HE network, and include:

- Outcome 1: HE and our suppliers are equipped to produce good biodiversity performance;
- Outcome 2: The Strategic Road Network is managed to support biodiversity;
- Outcome 3: We have delivered biodiversity enhancements whilst implementing a capital programme of network improvements;

[20] HM Gov (2011) The Natural Choice: securing the value of nature [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf [accessed 03/08/18]
[21] DEFRA (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf [accessed 03/08/18]
[22] HM GOV (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf [accessed 01/08/18]
[23] Highways England (2015): 'Biodiversity Plan', [online] available to access via: <https://www.gov.uk/government/publications/biodiversity-plan> last accessed [05/06/18]

- Outcome 4: We have addressed the legacy of biodiversity problems on out network via a targeted programme of investment; and
- Outcome 5: We are fully transparent about our biodiversity performance (achieved via the production of annual progress reports)

The London Environment Strategy[24] aims to make London "*the world's first National Park City, where more than half of its area is green, where the natural environment is protected, and where the network of green infrastructure is managed to benefit all Londoners*". The strategy identifies that "*all Londoners should be able to enjoy the very best parks, trees and wildlife*" and that "*action will be taken now to plant more trees, make green spaces more accessible, and ensure more green roofs and green features are designed into new developments. Local authorities and community groups will be supported to manage and value London's parks and biodiversity better. This will help to make sure that more than half of London is green by 2050*."

The Mayor's Transport Strategy[25] seeks to enhance London's natural and built environment, in particular Policy 8 seeks to:

- Ensure that transport schemes protect existing green infrastructure where possible, or – if there is a loss – providing new green infrastructure in order to deliver a net gain in biodiversity
- Find additional opportunities to build new green infrastructure into the existing transport estate
- Monitor and protect designated spaces on transport land, such as Sites of Importance for Nature Conservation

The emerging Bromley Local Plan[26] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the biodiversity and geodiversity SEA theme include:

- Policy 37: General Design of Development
- Policy 54: South East London Green Chain
- Policy 55: Urban Open Space
- Policy 56: Local Green Space
- Policy 57: Outdoor Recreation and Leisure
- Policy 58: Outdoor Sport, Recreation and Play
- Policy 68: Development and SSSI
- Policy 69: Development and Nature Conservation Sites
- Policy 70: Wildlife Features
- Policy 71: Additional Nature Conservation Sites
- Policy 72: Protected Species
- Policy 73: Development and Trees
- Policy 74: Conservation and Management of Trees and Woodlands
- Policy 75: Hedgerows and Development
- Policy 78: Green Corridors
- Policy 79: Biodiversity and Access to Nature

At the local level, the Bromley Biodiversity Plan[27] aims to sustain local species and habitats for future generations, ensuring that a long-term strategy for conserving, protecting and enhancing biodiversity

[24] Greater London Authority (2018) London Environment Strategy [online] available at: https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf [accessed 30/08/18]
[25] Greater London Authority (2018) Mayor's Transport Strategy [online] available at: https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf [accessed 31/08/18]
[26] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]

is in place. The plan intends to provide a coordinated approach for biodiversity actions at the local level and recommends best practise guidelines for protecting and enhancing biodiversity in the borough. The Plan identifies the following general principles for biodiversity management in Bromley:

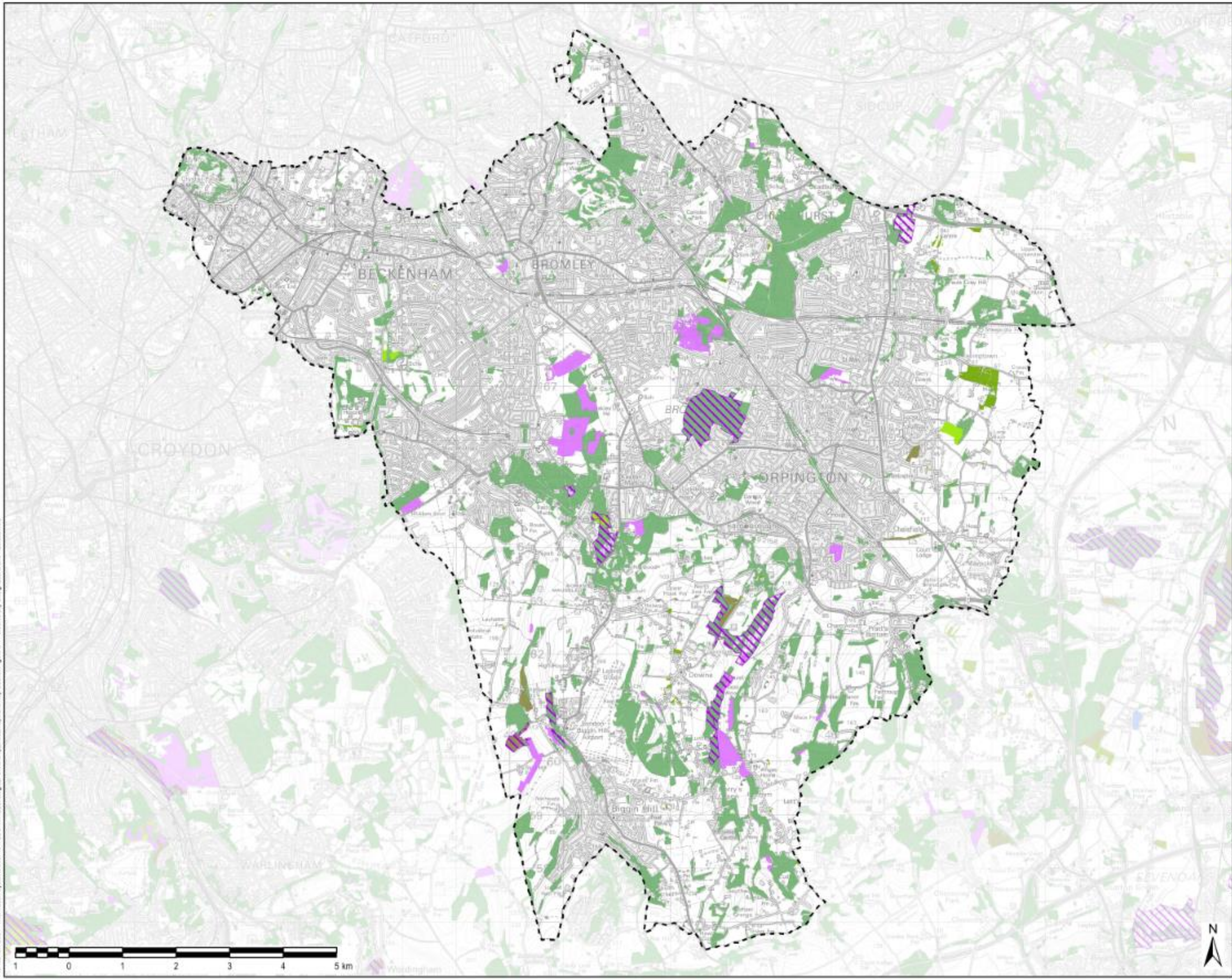
- Maintain, enhance and restore Sites of Importance for Nature Conservation (SINCs) and other green spaces for biodiversity;
- Following existing site Management Plans, updating as necessary;
- For sites lacking appropriate Management Plans, follow generic management guidance for Land Managers, Friends and Volunteers, and Schools (contained within the Plan);
- Safeguard Bromley's protected, rare or threatened species and monitor all wildlife in the borough to inform appropriate management and planning practices;
- Promote a landscape scale approach to biodiversity management through partnership working and the planning system;
- Promote wildlife corridors between existing habitats, for example along rivers (rivers Ravensbourne, River Cray and their tributaries) and walking routes (London LOOP, Green Chain); and
- Protect, enhance and promote the public's access to nature for example through environmental education and walks, talks and events.

Baseline summary

Summary of current baseline

The designated biodiversity sites and BAP Priority Habitats within and surrounding the London borough of Bromley is depicted in **Figure 3.1 and Figure 3.2.**

[27] London Borough of Bromley and the Bromley Biodiversity Partnership (2015) Bromley Biodiversity Plan 2015 – 2020 [online] available at: https://www.bromley.gov.uk/downloads/file/2185/bromley_biodiversity_plan_2015_-_2020 [accessed 29/08/18]



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- London Borough of Bromley Boundary
- Site of Special Scientific Interest (SSSI)

Biodiversity Action Plan Priority Habitats

- Coastal and Floodplain Grazing Marsh
- Deciduous Woodland
- Good Quality Semi-improved Grassland
- Lowland Calcareous Grassland
- Lowland Heathland
- Lowland Meadows
- Reedbeds
- Traditional Orchard

Purpose of Issue
DRAFT

Client
BROMLEY COUNCIL

Project Title
LOCAL IMPLEMENTATION PLAN
SEA SCOPING REPORT

Drawing Title
BIODIVERSITY DESIGNATIONS AND HABITATS

Drawn	Checked	Approved	Date
CN	JW	TS	04/07/2018

AECOM Internal Project No.	Scale @ A3
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AECOM

Drawing Number
FIGURE 3.1

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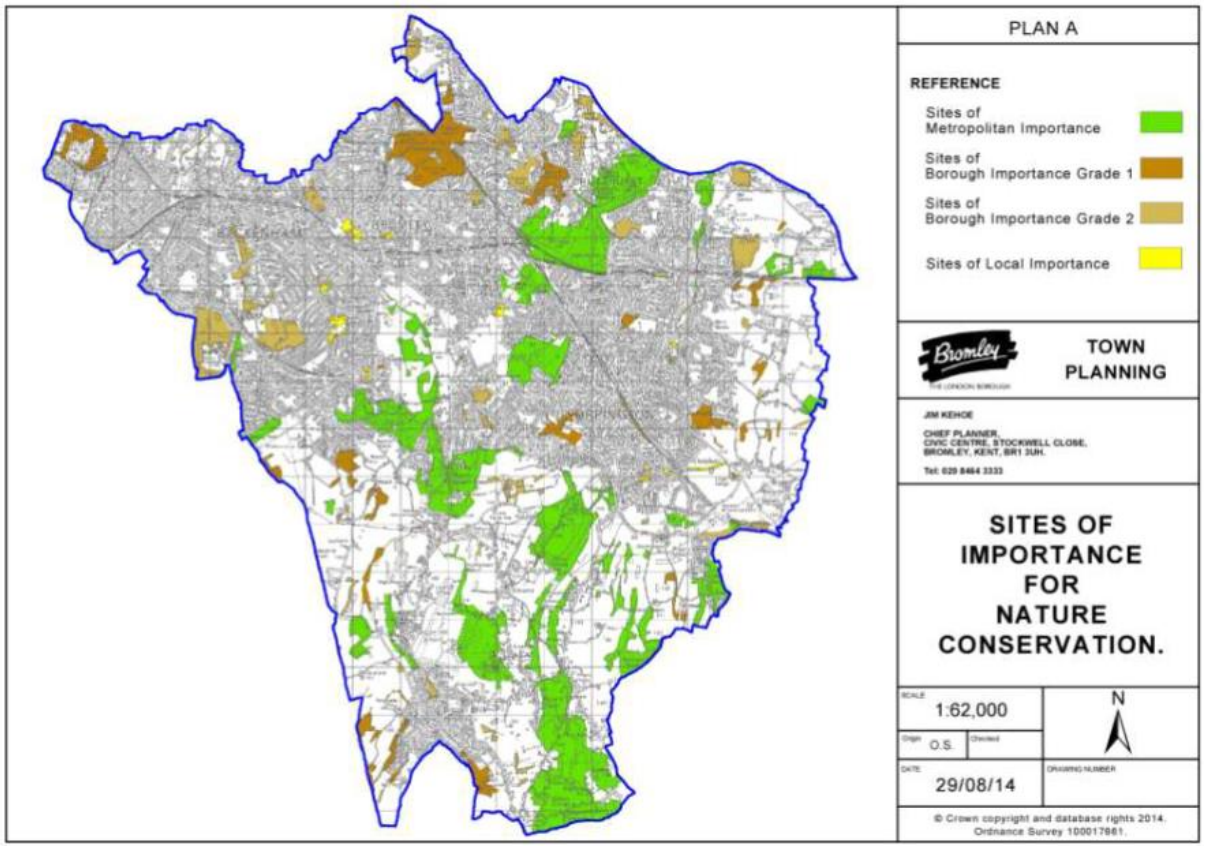


Figure 3.2: Sites of Importance for Nature Conservation [28]

European protected sites

There are no European sites designated for biodiversity within or immediately adjacent to the London borough of Bromley.

Nationally designated sites

Elmstead Pit SSSI[29]

The Elmstead Pit SSSI is a Geological Conservation Review Site designated in 1985 and covers an area of 0.05ha. The reasons for notification are as follows:

"Elmstead Pit provides a nationally important exposure of the Oldhaven (Blackheath) Beds through a section containing an unusually rich fossil fauna. A wide range of geological features are present providing information on the changing disposition of land and sea in the Greater London area during Eocene times.

The site covers a 6 metre high pit face cut into a series of Blackheath Beds consisting of fine quartz sands and an abundance of flint pebbles. These beds accumulated as sub-tidal bars in an estuarine environment during Eocene times approximately 50 million years ago. They are particularly noted for very large scale 'cross-bedding' with angles of dip of up to 25 degrees.

The sediments are bound by heavy calcite cement which has preserved an unusually abundant and diverse fossil fauna. Pits at Elmstead have yielded a substantial part of the known molluscan fauna from the Blackheath Beds and a number of sharks teeth and fish scales have also been recovered. The site is now the only exposure in this locality of these highly fossiliferous beds."

[28] London Borough of Bromley and the Bromley Biodiversity Partnership (2015) Bromley Biodiversity Plan 2015-2020 [online] available at: https://www.bromley.gov.uk/downloads/file/2185/bromley_biodiversity_plan_2015_-_2020 [last accessed 07/09/18]
[29] Natural England (2018) Designated Sites View [online] available at: https://designatedsites.naturalengland.org.uk/ [accessed 30/08/18]

The whole site is considered to be in a 'favourable' condition. The SSSI Impact Risk Zone is relatively small covering existing developed areas immediately surrounding the site at Station Approach and Elmstead Lane.

Ruxley Gravel Pits SSSI[30]

The Ruxley Gravel Pits SSSI is managed as a nature reserve by the Kent Trust for Nature Conservation covering an area of 18.73ha. The reasons for notification are identified as follows:

"Ruxley Gravel Pits are one of the few areas of relatively undisturbed open water in Greater London south of the Thames. They contain a high diversity of habitats and species; the variety of insects and breeding wetland birds are also notable features.

The site comprises four small gravel pits with patches of fen vegetation surrounded by a thin fringe of dry land. The River Cray flows through three of these pits while the fourth is fed by springs. The pits date from 1929 and with extraction ceasing in 1951 the pits have been colonised by an increasingly diverse range of plants and animals. Since 1947 when the first Kent record for breeding little ringed plover was noted, the bird community has evolved with the changing pattern of vegetation. Over 500 species of vascular plant and 169 species of bird, including 53 breeding species, have been recorded. There is also a species-rich community of insects with 23 butterfly, 9 dragonfly, and in excess of 500 beetle species. This variety of insects in particular reflects the structural and floristic diversity of the range of habitats present: wooded islands and fringes of mature trees, scrub, swamp and fen, and open water.

The margins of the pits support a scattered band of swamp and fen vegetation; on the northern bank of the main lake greater reedmace Typha latifolia, reed-grass Phalaris arundinacea and mare's-tail Hippuris vulgaris predominates while in the south-eastern part of the site is a more extensive and species-rich fen community which contains an intricate mosaic of plants. This includes reed Phragmites australis, great willow-herb Epilobium hirsutum, reed-grass Glyceria maxima, common spikes-rush Eleocharis palustris and a number of sedges. Overall, ten species of sedge have been recorded including sand sedge Carex arenaria and the very local panicled sedge Carex paniculata. Among the bankside vegetation is the uncommon glaucous club rush Schoenoplectus tabernaemontani and one of the very few London stations for 'common' meadow rue Thalictrum flavum. The breeding bird community of this swamp and fen habitat is diverse and contains species such as great crested grebe, little grebe, tufted duck, reed bunting, reed and sedge warblers. Wintering birds include water rail and snipe.

The open water areas, particularly the small northern pit, contain scattered rafts of yellow water-lily Nuphar lutea and white water-lily Nymphaea alba. The water quality is generally high and supports a good diversity of fresh water invertebrates which have been studied on a number of occasions. Other aquatic plants include horn-wort Ceratophyllum demersum, spiked water milfoil Myriophyllum spicatum, and a number of pond weeds Potamogeton species. A range of waterfowl is present throughout the winter months.

The beetle fauna contains over 30 species with a localised distribution including the ground beetle Demetrias imperialis. This is found in the decaying stems of greater reed-mace in only one part of the site and is considered to be an indicator of good wetland conditions. The least carpet moth Idaea vulpinaria is one of four notable species of moth, while the site is also of significance for the diversity of dragonflies."

The whole site is considered to be in a 'favourable' condition. The SSSI Impact Risk Zone (IRZ) encompasses areas of Chislehurst and Sidcup, and within this IRZ transport proposals may require further consultation with Natural England.

Crofton Woods SSSI[31]

Crofton Woods SSSI is an extensive area of ancient woodland covering an area of 76.6ha. The reasons for notification are identified as follows:

[30] Ibid.
[31] Ibid.

"Crofton Woods forms an extensive area of ancient woodland on London Clay and is amongst the largest woods of this kind in Greater London. The woodland supports a rich variety of ancient woodland trees, shrubs and herbs, most of which are found in the oak woodland communities, although an area of alder also occurs. The diversity of the site is increased by areas of rough neutral grassland and scrub. These are surrounded by the woodland, and provide glade conditions that benefit invertebrates and feeding birds.

A high forest canopy is found across the majority of the woodland and is comprised of an abundance of pedunculated oak Quercus robur with some sessile oak Quercus petraea. Ash Fraxinus excelsior and downy and silver birches Betula pubescens and B. pendula, are also frequent canopy components, with the former two species being found particularly on the damper ground. Other regular tree species include aspen Populus tremula, field maple Acer campestre and crab apple Malus sylvestris.

A well-developed shrub layer forms a good woodland structure through a large part of the wood. The most abundant species is hazel Corylus avellana, but hawthorn Crataegus monogyna and midland hawthorn C. laevigata are also abundant. In wetter areas the shrub layer also contains alder buckthorn Fragula alnus and guilder rose Viburnum opulus, both of which are uncommon in Greater London.

The ground flora reflects variations in light penetration through the canopy and the soil moisture conditions. Bramble Rubus fruticosus is abundant throughout the wood, with dense bluebell Hyacinthoides non-scripta carpets close to the woodland edge and in areas of lighter canopy. Wood anemone Anemone nemorosa and wood sorrel Oxalis acetosella are most frequent on the drier ground with creeping soft-grass Holcus mollis and wood millet Milium effusum where more light reaches the floor. Surface water drains slowly from the lower-lying areas, and these damper localities, together with the banks of Kid Brook, are especially rich in herb species. These include pendulous sedge Carex pendula, remote sedge C. remota, wood sedge C. sylvatica, giant fescue Festuca gigantean, yellow archangel Lamiastrum galeobdolon, lesser celandine Ranunculus ficaria, red current Ribes rubrum and wood speedwell Veronica montana. Forster's woodrush Luzula forsteri and saw-wort Serratula tinctoria, both uncommon London plants, are more locally distributed in these wet situations.

A similarly diverse ground flora occurs within the coppiced alder Alnus glutinosa woodland on Gumping Common. Bluebell and stinging nettle Urtica dioica are abundant here, and an additional number of more uncommon plants for Greater London are also found: marsh marigold Caltha palustris, large bitter-cress Cardamine amara and common valerian Valeriana officinalis.

In close juxtaposition with the ancient woodlands is a mosaic of younger woodland, scrub and neutral grassland providing valuable 'glade' features. The grasslands comprise a variety of coarse grass species with other plants such as glaucous sedge Carex flacca, hairy sedge C. hirta, oval sedge C. ovalis, wild angelica Angelica sylvestris, common centaury Centaurium erythraea, meadow vetchling Lathyrus pratensis, bird's-foot trefoil Lotus corniculatus and common fleabane Pulicaria dysenterica. These plants in conjunction with the scrub species form a varied habitat structure of value to invertebrates. Of particular note are the micro-moths Microlepidoptera of which 147 species were found in a recent survey.

Crofton Woods as a whole holds a diverse community of typical woodland bird species. Many of these are associated with mature tree habitats. These include great spotted, lesser spotted, and green woodpeckers Dendrocopus major, D. minor and Picus viridis, nuthatch Sitta europaea, tree creeper Certhia familiaris, chiff-chaff Phylloscopus collybita and blackcap Silvia atricapilla."

The whole site is considered to be in a 'favourable' condition. The SSSI IRZ encompasses the land surrounding the site in Orpington and within this area transport proposals may require further consultation with Natural England.

Keston and Hayes Commons SSSI[32]

The Keston and Hayes Commons cover an area of 26.56ha. The reasons for notification are identified as follows:

[32] Ibid.

"Keston and Hayes Commons support examples of open Common Land habitats which have become scarce in Greater London. Of particular note are the areas of heathland and valley mire, and, in conjunction with the adjoining Ravensbourne Meadows, the gradation from dry acid grassland to wet neutral grassland. The special interest is derived from the close spatial association of these habitats and the manner in which their distribution reflects the underlying soil conditions.

The heathland and dry acid grassland communities occupy the higher ground on the dry, infertile, acid soils of the Blackheath Pebble Beds. The heathland is characterised by closed stands of heather Calluna vulgaris, and is also notable for the widespread occurrence of bell heather Erica cinerea, with bilberry Vaccinium myrtillus (in one of its only two London localities), and lesser amounts of dwarf gorse Ulex minor. These shrubs have all become rare in London owing to loss of habitat. The heather stand on Hayes Common is also unusual for London because it still harbours nine associated species of lichen (mainly Cladonia spp). These lichens are now uncommon in London being extremely sensitive to the effects of urban pollution.

The acid grasslands occur interspersed within the heather stands and in larger areas where the heather cover has been lost. Grasses including wavy hair-grass Deschampsia flexuosa, sheep's fescue Festuca ovina and heath grass Sieglingia decumbens are characteristic of the community, as are the herb species sheep's sorrel Rumex acetosella and tormentil Potentilla erecta, and heath rush Juncus squarrosus. Other species present which are locally restricted in London include bird's foot Ornithopus perpusillus, lousewort Pedicularis sylvatica and pill sedge Carex pilulifera.

The pebble beds grade into more neutral, clayey soils on the lower slopes of the Ravensbourne Meadows. These support a neutral grassland community with sweet vernal grass Anthoxanthum odoratum and meadow foxtail Alopecurus pratensis dominant within a diverse sward. The rich herb component comprises over thirty species, the more frequent including field woodrush Luzula campestris, lesser stitchwort Stellaria graminea, and sorrel Rumex acetosa. Dyer's greenweed Genista tinctoria, an uncommon plant in the country, is also recorded.

The valley mire occurs along a seepage line where the two main soil types meet, and is a very rare habitat-type in Greater London. The mire is consequently of special note for the presence of a number of county rarities. Of particular interest is the occurrence of several species of bog moss Sphagnum spp. and a number of other peatland mosses which carpet the peaty surface. Other species of particular interest include cross-leaved heath Erica tetralix, marsh pennywort Hydrocotyle vulgaris, green-ribbed sedge Carex binervis, star sedge C. echinata, and common cotton-grass Eriophorum angustifolium. A strong population of bog asphodel Narthecium ossifragum is also found here in its only London locality.

Water draining from the mire becomes slightly enriched as it traverses Ravensbourne Meadows, and in conjunction with more localised seepages produces an area of wet neutral grassland. This is rich in species that are typical of the habitat but which are uncommon in London. Amongst these are sneezewort Achillea ptarnica, betony Stachys officinalis, ragged robin Lychnis flos-cuculi, greater spearwort Ranunculus lingua and a particular abundance of marsh marigold Caltha palustris.

Of additional interest for their flora and invertebrate fauna, are the wet alder Alnus glutinosa woods and shallow ponds found along the course of the Ravensbourne brook at the bottom of the valley."

The majority of the site is considered to be in an 'unfavourable – recovering' condition (77.92%), whilst the remainder of the site (22.08%) is considered to be in a 'favourable' condition. The SSSI IRZ extends into Keston Mark, Keston Court and Nash and West Wickham and any transport proposals in this area may require further consultation with Natural England.

Downe Bank and High Elms SSSI[33]

The Downe Bank and High Elms SSSI covers an area of 87.63ha and the reasons for notification are identified as follows:

"An area of woodland and chalk grassland on the western slope of a northward-running dry valley in the North Downs. The woodland at the top of the escarpment is chiefly beech and oak. Lower down is an area of hazel coppice with a rich ground flora including toothwort and spurge-laurel. The small

[33] Ibid.

areas of grassland have been subject to some scrub encroachment, but remain rich in plant species. The area is well known for its association with Charles Darwin, who lived nearby.

High Elms is a large, formerly private estate on a gentle north-facing slope of the Chalk. Most of the area is woodland which was formerly beech, but has been modified and extended by planting during the last hundred years. Although alien tree species have been planted, most of the original ground flora remains, including locally uncommon species such as green hellebore, bird's-nest orchid, spurge-laurel and yellow bird's-nest. A few open chalk grassland areas occur."

The whole site is considered to be in an 'unfavourable – recovering' condition. The SSSI IRZ extends into Farnborough, Pratts Bottom, Biggin Hill and Orpington and any transport proposals within this area may require further consultation with Natural England.

Saltbox Hill SSSI[34]

Saltbox Hill SSSI covers an area of 19.24ha. The reasons for notification are identified as follows:

"Saltbox Hill encompasses a relic complex of chalk grassland and open scrub clearings on the slopes of a downland valley. The grassland contains a diverse flora of typical chalk downland species and is especially rich in plants with a restricted distribution in Greater London. A large variety of butterfly species are present, including some of national importance due to their declining populations in Britain.

The site lies on steep sided slopes in a northward-running dry valley system on the North Downs. The eastern slope supports a mosaic of unimproved chalk grassland amongst an open scrub of mainly hawthorn Crataegus monogyna. These areas grade into dense scrub and belts of ash Fraximus excelsior and beech Fagus sylvatica hanger woodland which occupy adjoining banks on the steepest ground. To the west a small tributary valley contains a further expanse of chalk grassland with varying amounts of low hawthorn scrub. In recent years some of this scrub has been cleared and here the grassland is regenerating with a diverse variety of chalk downland plants.

Owing to the cessation of livestock grazing, the majority of the grassland is characterised by a few coarse grass species, especially upright broom Bromus erectus and false brome Brachypodium sylvaticum. Within this sward there are a variety of other grasses typical of chalk soils such as quaking-grass Briza media, meadow oat-grass Avenula pratensis and downy oat-grass Avenula pubescens. The grassland is however, particularly of interest for the rich diversity and abundance of colourful flowering herbs. Many are characteristic of unimproved chalk grassland but now have a very restricted distribution in Greater London due to a continuing reduction in the extent of such grassland areas. The more noteworthy of these species include: yellow-wort Blackstonia perfoliata, carline thistle Carlina vulgaris, dwarf thistle Cirsium acaule, wild basil Clinopodium vulgare, horseshoe vetch Hippocrepis comosa, marjoram Origanum vulgare and cowslip Primula veris. In addition the site is one of the last remaining examples of old grassland containing yellow rattle Rhinanthus minor in the county.

A further speciality of the site is the rich diversity of orchids. In total ten species are present including pyramidal orchid Anacamptis pyramidalis, white helleborine Cephalanthera damasonium, bee orchid Ophrys apifera and fly orchid Ophrys insectifera. Part of the eastern slope supports a notable abundance of man orchid Aceras anthropophorum a nationally uncommon plant which is mainly confined to the chalk downlands of southern England.

The scrub is characterised by an abundance of hawthorn which in places occurs in predominantly single species stands. Elsewhere associated shrubs include: dogwood Cornus sanguinea, buckthorn Rhamnus catharticus and wayfaring-tree Viburnum lantana.

The combination of habitats, from high woodland to sheltered grassland slopes rich in nectar yielding plants, supports a large and diverse range of butterflies. Over 30 species have been recorded, many on a regular basis. These include 4 species which are of national importance owing to their decline in numbers throughout Britain: the chalk-hill blue Lysandra coridon, dark green fritillary Argynnis aglaja, dingy skipper Erynnis tages and grizzled skipper Pyrgus malvae. Among the other commoner butterfly species are the small copper Lycaena phlaeas and common blue Polyommatus icarus."

[34] Ibid.

The whole site is considered to be in an 'unfavourable – recovering' condition. The SSSI IRZ encompasses areas of Biggin Hill and New Addington and any development that could cause air pollution may require further consultation with Natural England.

Locally designated sites

Sites of Importance for Nature Conservation (SINCs)

There are 93 SINCs within the borough, many of which are also designated as Sites of Metropolitan Importance (23), Sites of Special Scientific Interest (6), Local Nature Reserves (5), Sites of borough Grade I Importance (21), Sites of borough Grade II Importance (35), and Sites of Local Importance (14). [35] The location of SINCs are included in Figure 3.2.

Priority Habitats and Species

There are a number of different habitats and Protected Species present within the London borough of Bromley, these are identified in **Table 3.1** below which includes adverse and positive factors affecting the habitat, and management aims for the habitat type.

Table 0.1: Factors affecting, and management aims for habitats in Bromley[36]

Habitat type	Adverse factors affecting the habitat	Positive factors affecting the habitat	Management aims for the habitat
Woodland	Fragmentation of woodland, leaving isolated remnants Inappropriate management e.g. poor timing of forestry operations Lack of active management Loss of woodland to development or conversion of wood to scrub to other land uses Disturbance or compression of woodland soils by heavy machinery Replacement with non-native trees Planting bulbs etc. rather than waiting for natural regeneration Invasion of non-native species (e.g. rhododendron, sycamore, Norway maple, cherry laurel) Illegal picking of fungi and flora A changing climate Tree pests and diseases e.g. Ash dieback (Chalara fraxinea), Oak Processionary Moth (OPM), Acute Oak Decline Grazing and browsing damage (e.g. deer, squirrels) including encroachment of livestock Dumping, vandalism and arson Loss of deadwood through felling and 'tidying-up' Lack of money, reources and desire to manage woodlands Pollution from traffic, industry, agricultural chemicals affecting ground flora and epiphytes Overuse and unofficial paths leading to soil erosion and loss of ground flora	Public support for woodlands Desire for more trees and new woodland planting and better woodland management Sympathetic recreational opportunities Increased demand for domestic woodfuel from sustainable sources Increase in average timber and woodfuel prices	To protect and enhance Bromley's woodlands and link together wherever possible to improve biodiversity Promote access, information and quiet enjoyment of woodlands
Ancient Trees	Removal of trees as unsightly or dangerous Tarmac/concrete around the base can kill trees Cutting roots when work is undertaken close to the tree Loss through development	Increased awareness of the value of ancient trees Historical appreciation e.g. Bromley Oak	To protect Bromley's ancient trees and promote their historical and biological

[35] London Borough of Bromley and the Bromley Biodiversity Partnership (2015) Bromley Biodiversity Plan 2015 – 2020 [online] available at: https://www.bromley.gov.uk/downloads/file/2185/bromley_biodiversity_plan_2015_-_2020 [accessed 29/08/18]
[36] Ibid.

Habitat type	Adverse factors affecting the habitat	Positive factors affecting the habitat	Management aims for the habitat
	Neglect and inappropriate management Lack of future-generation trees due to grazing, cutting and intensive landscaping Removing deadwood which naturally collects around ancient trees Footpaths and tracks very close to ancient trees leading to soil compaction and removal of limbs for health and safety		importance
Hedgerows	Lack of management Too frequent and badly timed cutting of hedges Overstocking leading to over-browsing of hedgerows or hedgerow ground flora Landowners are sometimes reluctant to gap up existing hedgerows or create new hedgerows due to cost of plants and protective shelters/fencing Increased use of rural lanes by vehicles leading to undercutting and erosion of roadside hedgebanks The use of pesticides (herbicides & insecticides) and fertilisers at the base of hedgerows The cost of management favouring a mechanical approach Road widening and dumping of planings on to hedgerow banks Loss of hedgerow trees through senescence and felling, without replacements being made Loss of hedgerows through development and landscaping works, including around gardens	An increase in interest in the traditional skill of hedgelaying An increase in native hedgerow planting for wildlife	To protect and enhance Bromley's hedgerows Promote their wildlife and heritage value and encourage hedgerow restoration
Grasslands	Loss of habitat through lack of traditional management, especially grazing, causing encroachment by rank grasses, scrub and trees Over grazing by horses or change from hay cutting to spring and summer grazing Fragmentation and isolation of remaining habitat Damage to the habitat by ploughing and from inappropriate pesticide use, application of fertilisers or lime (on non-chalk grasslands), reseeding, over-cutting, irrigation, tree planting Damage and erosion caused by increased recreational pressure (e.g. thin turf of chalk and acid grassland Pollution and a changing climate Direct loss of habitat through development Genetic variation of 'imported' seeds Lack of awareness leading to inappropriate mowing of grass preventing development and seeding of wildflowers	Creation of new grasslands on arable land Nationwide promotion of wildflower meadows to help pollinating insects Popularity and appreciation of orchid walks by the public Funding from Higher Level Stewardship (HLS) schemes Increased interest in wildflower gardening	To protect important grassland habitat and seek establishment and good management of semi-natural grasslands, including through the planning process Promote areas of wildflower meadow habitat on all soil types
Lowland heathland and mire	Loss of habitat through lack of traditional management, especially grazing and cutting, causing encroachment by trees and scrub Intensive or inappropriate management through regular mowing, fertiliser application or tree planting Fragmentation and disturbance from development such as road construction Nutrient enrichment (eutrophication), particularly deposition of nitrogen compounds emitted from	Increasing awareness of heathland ecology amongst the public Gradual extension of fringes of heathland through scrub and woodland clearance and re-establishment through re-seeding Support for restoration	To protect and enhance Bromley's heathland habitats Continue to promote the importance of heathland and valley mire for wildlife and its historic importance

Habitat type	Adverse factors affecting the habitat	Positive factors affecting the habitat	Management aims for the habitat
	car exhausts Management constraints e.g. stock availability, public access Limited opportunity for expansion of habitat Increasing recreational pressure and illegal parking Management of water table and water quality Arson and accidental fires	from HLS funding	for Darwin's studies at Keston and Hayes Commons
Wetland	Widely fluctuating annual rainfall led to drought conditions in the 1990s and flooding in the 2000s Water abstraction from rivers Disturbance and damage of wetland habitat as a result of recreational use Eutrophication and pollution (e.g. sewage contamination, dumping of rubbish, road run-off) The spread of invasive and non-native species, including *Crassula helmsii*, *Azolla filiculoides*, signal and Turkish crayfish and Canada geese Viruses such as red leg disease of frogs and the *Phytophora* disease of alder trees Ecological succession Filling in of ponds Introduction of fish to wildlife ponds, use of ponds for ornamental fish Fisheries: overuse of bait Over-feeding of ducks Flood lighting and lighting along river corridors (detrimental to insects, birds and bats) Discarded fishing lines (detrimental to birds and bats) Rubbish dumping	Increasing range of dragonfly species Creation of wetland habitats, including ponds, within gardens and on farmland	To protect and enhance Bromley's wetland habitat To promote the importance of ponds and wetlands for wildlife
Scrub	Direct loss of habitat – many development sites contain large areas of scrub Lack of management Removal of scrub for the benefit of other habitats Lack of protection – scrub is not directly listed in SSSI guidelines Negative attitudes of the public towards 'untidy' habitat	Increased interest in 'foraging' and often valued by local people for blackberry picking, collecting sloes, plums etc Increased public interest in pollinators	To promote the importance of scrub for wildlife
Gardens & Allotments	Direct loss of habitat (e.g. redevelopment, replacement of traditional building materials) Inappropriate management and damage to habitat from pesticide and fertiliser application Pollution (e.g. rubbish, accumulation of chemicals including salt, illegal dumping of waste materials) Pressure and disturbance from people and pets Intensive management regimes Intolerance of certain species in urban areas (e.g. foxes)	Better understanding of certain species inhabiting urban areas (e.g. badgers, stag beetles) Increasing popularity of habitat creation in urban areas, especially wildlife gardens	To promote the importance of gardens and allotments for wildlife
Churchyards and cemeteries	Health and safety issues and repairs to the built structures and gravestones Inappropriate mowing regimes Overzealous tidiness Inappropriate use of herbicides and algicides		To protect and enhance the wildlife value of churchyards and cemeteries in a

Habitat type	Adverse factors affecting the habitat	Positive factors affecting the habitat	Management aims for the habitat
			way which is sympathetic to the prime purpose of these areas as burial grounds and places of remembrance

There are also 87 rare and threatened species found in Bromley. [37]

Summary of future baseline

Habitats and species will potentially face increasing pressures from future housing, employment and infrastructure delivery within the London borough of Bromley, with the potential for negative impacts on the wider ecological network. This may include a loss of habitats and impacts on biodiversity networks. The potential impacts on biodiversity from climate change are likely to include changes in habitat, changes in species distribution, changes in hydrology, changes in ecosystem functioning and a range of others.

To maintain and improve the condition of biodiversity in the future, it will be important to not only protect and enhance important habitats but the connections between them. It will be crucial to effectively coordinate the delivery of infrastructure to ensure that the opportunities to improve green infrastructure and ecological corridors are maximised.

Headline Sustainability Issues

- There are no European sites designated for biodiversity within or immediately adjacent to the London borough of Bromley.
- Six Sites of Special Scientific Interest (SSSI)s lie within the borough of Bromley: Elmstead Pit SSSI, Ruxley Gravel Pits SSSI, Crofton Woods SSSI, Keston and Hayes Commons SSSI, Downe Bank and High Elms SSSI and Saltbox Hill SSSI.
- There are five Local Nature Reserves (LNRs) within Bromley, as well as 87 rare and threatened species.

[37] London Borough of Bromley and the Bromley Biodiversity Partnership (2015) Bromley Biodiversity Plan 2015 – 2020 [online] available at: https://www.bromley.gov.uk/downloads/file/2185/bromley_biodiversity_plan_2015_-_2020 [accessed 29/08/18]

What are the SEA objectives and appraisal questions for the biodiversity and geodiversity SEA theme?

SEA objective	Assessment questions – will the option/proposal help to:
Support the integrity of nationally and locally designated sites	• Protect the integrity of the five nationally designated SSSIs in Bromley? • Manage pressures on locally designated and regionally important sites for biodiversity and geodiversity in Bromley?
Protect and enhance habitats and species in Bromley	• Protect and enhance semi-natural habitats? • Protect and enhance priority habitats, and the habitat of priority species? • Achieve a net gain in biodiversity? • Increase the resilience of Bromley's biodiversity to the potential effects of climate change?
Minimise the potential for negative cumulative and synergistic effects resulting from the in-combination effects of Implementation Plan proposals and new development areas in Bromley	• Limit the effects of new transport infrastructure on biodiversity? • Support enhancements to multifunctional green infrastructure networks? • Support access to, interpretation and understanding of biodiversity and geodiversity?

Climate Change

Focus of theme

- Climate change mitigation
- Climate change adaption
- Flood risk

Policy context

In its 2007 strategy on climate change, the European Commission assesses the costs and benefits of combating climate change and recommends a package of measures to limit global warming to 2° Celsius.[38] In relation to energy, the Commission recommends that the EU's energy efficiency improves by 20% and the share of renewable energy grows to 20% by 2020.

The UK Climate Change Risk Assessment is published on a 5-yearly cycle in accordance with the requirements of the Climate Change Act 2008. It required the Government to compile an assessment of the risks for the UK arising from climate change, and then to develop an adaptation programme to address those risks and deliver resilience to climate change on the ground. For both the 2012 and the 2017 UK Climate Change Risk Assessment, the Adaptation Sub-Committee commissioned an evidence report to achieve the following:

- 'Based on the latest understanding of current, and future, climate risks and opportunities, vulnerability and adaptation, what should the priorities be for the next UK National Adaptation Programme?'[39]

The evidence report contains six priority risk areas requiring additional action in the next five years, see below:

1) Flooding and coastal change risks to communities, businesses and infrastructure;
2) Risks to health, well-being and productivity from high temperatures;
3) Risk of shortages in the public water supply, and for agriculture, energy generation and industry;
4) Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
5) Risks to domestic and international food production and trade; and
6) New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals

Key messages from the National Planning Policy Framework[40] (NPPF) include:

- One of the three overarching objectives of the NPPF is an environmental objective to 'contribute to protecting and enhancing our natural, built and historic environment' including by 'mitigating and adapting to climate change' and 'moving to a low carbon economy.' 'The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of

[38] Commission of the European Communities (2007) Limiting Global Climate Change to two degrees Celsius: The way ahead for 2020 and beyond [online] available at:< http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0002:FIN:EN:PDF> last accessed [30/08/18]
[39] GOV UK: 'UK Climate Change Risk Assessment Report January 2017', [online] available to download from: <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017> last accessed [30/08/18]
[40] MHCLG (2018) National Planning Policy Framework [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf [accessed 30/08/18]

existing buildings; and support renewable and low carbon energy and associated infrastructure.'

- '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. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.'
- Direct development away from areas at highest risk of flooding (whether existing or future). 'Where development is necessary, it should be made safe for its lifetime without increasing flood risk elsewhere.'

The Flood and Water Management Act[41] highlights that alternatives to traditional engineering approaches to flood risk management include:

- Incorporating greater resilience measures into the design of new buildings, and retro-fitting properties at risk (including historic buildings);
- Utilising the environment in order to reduce flooding, for example through the management of land to reduce runoff and through harnessing the ability of wetlands to store water;
- Identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere;
- Planning to roll back development in coastal areas to avoid damage from flooding or coastal erosion; and
- Creating sustainable drainage systems (SuDS)[42]

Further guidance is provided in the document 'Planning for SuDs'.[43] This report calls for greater recognition of the multiple benefits that water management can present. It suggests that successful SuDS are capable of 'contributing to local quality of life and green infrastructure'.

The London Environment Strategy[44] aims to "*make London a zero carbon city by 2050, with energy efficient buildings, clean transport and clean energy"*. The strategy identifies that "*to fully decarbonise London, GHG emissions will need to be reduced from around 34 megatons in 2015 to near zero by 2050. To make this happen, London will require careful but far reaching reforms, which are underpinned by three high-level objectives:*

- *Decarbonise London's homes and workplaces, while protecting the most disadvantaged by tackling fuel poverty*
- *Develop clean and smart, integrated energy systems using local and renewable energy resources*
- *Deliver a zero emission transport network by 2050"*

The Mayor's Transport Strategy[45] seeks to enhance London's natural and built environment, in particular Policy 8 seeks to:

- Ensure that transport schemes protect existing green infrastructure where possible, or – if there is a loss – providing new green infrastructure in order to deliver a net gain in biodiversity
- Find additional opportunities to build new green infrastructure into the existing transport estate

[41] Flood and Water Management Act (2010) [online] available at: http://www.legislation.gov.uk/ukpga/2010/29/contents
[42] N.B. The provision of Schedule 3 to the Flood and Water Management Act 2010 came into force on the 1st of October 2012 and makes it mandatory for any development in England or Wales to incorporate SuDs.
[43] CIRIA (2010) 'Planning for SuDs – making it happen' [online] available to access via <http://www.ciria.org/Resources/Free_publications/Planning_for_SuDS_ma.aspx> last accessed [30/08/18]
[44] Greater London Authority (2018) London Environment Strategy [online] available at: https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf [accessed 30/08/18]
[45] Greater London Authority (2018) Mayor's Transport Strategy [online] available at: https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf [accessed 31/08/18]

- Monitor and protect designated spaces on transport land, such as Sites of Importance for Nature Conservation
- Maximise opportunities to protect, promote and enhance London's built heritage and sites of cultural importance that are affected by transport development.

Policy 9 further seeks to ensure that London's transport is resilient to the impacts of severe weather and climate change, so that services can respond effectively to extreme weather events while continuing to operate safely, reliably and with a good level of passenger comfort. Further to this, proposals include:

- The creation of Sustainable Drainage Systems (SuDS) to enable, each year, an additional effective surface area of 50,000m^2 to first drain into SuDS features rather than conventional drains and sewers
- A dedicated programme of research to understand and prioritise the risk of severe weather and climate change adversely affecting the operation of London's transport network and to minimise any such impacts on the most vulnerable user groups

The emerging Bromley Local Plan[46] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the climate change SEA theme include:

- Policy 31: Relieving congestion
- Policy 37: General Design of Development
- Policy 54: South East London Green Chain
- Policy 115: Reducing Flood Risk
- Policy 116: Sustainable Urban Drainage Systems
- Policy 120: Air Quality
- Policy 123: Sustainable Design and Construction
- Policy 124: Carbon Dioxide Reduction, Decentralised Energy Networks and Renewable Energy

Baseline summary

Summary of current baseline

Greenhouse gas emissions

In relation to greenhouse gas emissions, source data from the former DECC suggests that Bromley has had consistently lower per capita emissions total than both the South East of England and England since 2005. Additionally, Bromley has seen a slightly greater average reduction in emissions per capita between 2005 and 2012 (38.47%) compared to the South East (36.7%) and England (a 37.6% reduction). See Table 4.1 below for more details.

[46] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]

Table 4.1: Carbon dioxide emissions and sources, plus emissions per capita, 2005-2016[47]

	Industrial and Commercial (t CO_2)	Domestic (t CO_2)	Transport (t CO_2)	Total (t CO_2)
Bromley				
2005	1.3	2.7	1.2	5.2
2006	1.4	2.7	1.2	5.3
2007	1.2	2.6	1.2	5.0
2008	1.2	2.6	1.1	4.9
2009	1.1	2.3	1.1	4.5
2010	1.1	2.5	1.0	4.6
2011	1.0	2.2	1.0	4.1
2012	1.1	2.3	1.0	4.3
2013	1.0	2.3	1.0	4.2
2014	0.8	1.9	0.9	3.6
2015	0.7	1.8	0.9	3.5
2016	0.6	1.7	0.9	3.2
South East				
2005	3.0	2.5	2.6	7.9
2006	3.0	2.5	2.6	7.8
2007	2.8	2.4	2.6	7.6
2008	2.7	2.4	2.4	7.3
2009	2.4	2.2	2.3	6.6
2010	2.4	2.3	2.3	6.8
2011	2.2	2.0	2.2	6.2
2012	2.2	2.2	2.1	6.3
2013	2.1	2.1	2.1	6.1
2014	1.7	1.7	2.2	5.4
2015	1.6	1.7	2.2	5.3
2016	1.4	1.6	2.2	5.0
England				
2005	3.8	2.5	2.3	8.5

[47] Department of Energy and Climate Change (2015) 2005 to 2013 UK local and regional CO2 emissions – data tables [online] available at: < https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2016 > last accessed [04/09/18]

	Industrial and Commercial (t CO_2)	Domestic (t CO_2)	Transport (t CO_2)	Total (t CO_2)
2006	3.8	2.5	2.2	8.4
2007	3.6	2.4	2.2	8.1
2008	3.5	2.4	2.1	7.8
2009	3.0	2.1	2.0	7.0
2010	3.0	2.3	2.0	7.2
2011	2.7	2.0	1.9	6.5
2012	2.9	2.1	1.9	6.8
2013	2.8	2.0	1.9	6.6
2014	2.4	1.7	1.9	5.9
2015	2.3	1.6	1.9	5.7
2016	2.0	1.5	1.9	5.3

In the context of the above, emissions from transport fell from 1.2 to 0.9 tonnes of CO_2 per capita in Bromley between 2005 and 2016 (a 25% reduction). In the South East emissions from transport reduced by 15.39% and in England by 37.7%.

Potential effects of climate change

The outcome of research on the probable effects of climate change in the UK was released in 2009 by the UK Climate Projections (UKCP09) team[48]. UKCP09 gives climate information for the UK up to the end of this century and projections of future changes to the climate are provided, based on simulations from climate models. Projections are broken down to a regional level across the UK and are shown in probabilistic form, which illustrate the potential range of changes and the level of confidence in each prediction.

As highlighted by the research, the effects of climate change for the South East of England by 2050 for a medium emissions scenario are likely to be as follows:

- The central estimate of increase in winter mean temperature is 2.2ºC and an increase in summer mean temperature of 2.8ºC; and
- The central estimate of change in winter mean precipitation is 16% and summer mean precipitation is –19%.

Resulting from these changes, a range of risks may exist for Bromley. These include:

- Increased incidence of heat related illnesses and deaths during the summer;
- Increased incidence of illnesses and deaths related to exposure to sunlight (e.g. skin cancer, cataracts);
- Increased incidence of pathogen related diseases (e.g. legionella and salmonella);
- Increase in health problems related to rise in local ozone levels during summer;
- Increased risk of injuries and deaths due to increased number of storm events;
- Effects on water resources from climate change;
- Reduction in availability of groundwater for abstraction;

[48] The data was released on 18th June 2009: See: <http://ukclimateprojections.metoffice.gov.uk > last accessed [11/09/2018]

- Adverse effect on water quality from low stream levels and turbulent stream flow after heavy rain;
- Increased risk of flooding, including increased vulnerability to 1:100 year floods;
- Changes in insurance provisions for flood damage;
- A need to increase the capacity of wastewater treatment plants and sewers;
- A need to upgrade flood defences;
- Soil erosion due to flash flooding;
- Loss of species that are at the edge of their southerly distribution;
- Spread of species at the northern edge of their distribution;
- Deterioration in working conditions due to increased temperatures;
- Changes to global supply chain;
- Increased difficulty of food preparation, handling and storage due to higher temperatures;
- An increased move by the insurance industry towards a more risk-based approach to insurance underwriting, leading to higher cost premiums for business;
- Increased demand for air-conditioning;
- Increased drought and flood related problems such as soil shrinkages and subsidence;
- Risk of road surfaces melting more frequently due to increased temperature; and
- Flooding of roads

Flood Risk

A general overview of flood risk present within Bromley is found within the Strategic Flood Risk Assessment (SFRA).[49] The types of flood risk present, as described in the SFRA, are presented below.

Fluvial Flooding

In the urban parts of the borough, high intensity rainstorms result in increased flows due to the short response time of the built-up catchment to rainfall. The risk of fluvial flooding within the urban parts of Bromley has been greatly reduced by the construction of defences and channel alterations such as straightening and culverting. There is however still a residual risk of fluvial flooding due to potential failure of this infrastructure, for example breaching of defences or collapse of culverts.

Comparison of the 1960s historical flooding extents with the flood zones shows that previous flooding covers most of the length of the flood zones, which highlights the importance of maintaining these river corridors. Whilst culverting seems to have been effective against recent flooding, increased flows due to climate change may exceed their capacity, particularly if adequate measures are not taken to avoid future development increasing surface runoff.

The flood zones of the River Cray extend much further south than the watercourse itself, and there is also a dry 'tributary' flood zone in the far east of the borough. These extended zones lie over high permeability ground, where ephemeral flow may occur, and historical localised flooding areas indicate these topographic lows are susceptible to collecting floodwater.

Tidal Flooding

The inland location of Bromley means that tidal flooding is not an issue in this borough.

Groundwater Flooding

Recorded groundwater flood incidents are confined to the northern half of the borough, although this is likely to be a reflection of incidents in urban areas being reported more than in the less populated areas to the south, particularly as soil in the south is generally of high permeability. In most of the

[49] Bromley Borough Council (2008) Strategic Flood Risk Assessment [online] available at: https://www.bromley.gov.uk/downloads/file/954/strategic_flood_risk_assessment_-_bromley last accessed [05/09/2018]

north of the borough, soil is of medium permeability, predominantly Harwich or Thanet Sands and this is where most of the groundwater incidents occur, particularly the Harwich Formation – this holds a water table which could cause flooding; emergence of the water table would be most likely near the edge of the formation outcrop and where valleys cut into the side of the hill. There are some incidents indicated in the lowest permeability areas of London Clay, which is not usually particularly susceptible to groundwater. In some cases apparent groundwater flooding may be due to surface runoff leaking into basements and ponding, or the basement may have penetrated the clay layer to an aquifer below. Development in areas of historical groundwater flooding are likely to continue to be at risk since this is a particularly difficult type of flooding to prevent and therefore building design is particularly important here.

Surface Water Flooding

Surface water flooding is a potential risk in urban areas. High intensity rainfall creates large volumes of surface water runoff over the impermeable surfaces. If the surface drainage system capacity is insufficient to drain the surface water quickly enough, flooding will occur. Surface water flooding incidents have been recorded at numerous locations throughout the borough, with flooding occurring on an annual basis at many places. Many of the localised flooding zones are caused by surface flooding.

Development may increase surface water flood risk by increasing impermeable surface area and thus runoff volume. The existing drainage system may not have the capacity to cope with this increase. Mitigation measures will be required in order to ensure development does not increase surface water flood risk.

Sewerage Flooding

Sewage flooding is not a widespread problem in Bromley, although a few instances of foul flooding have been recorded.

Combined Sources of Flooding

Often a flood event has more than one source and it is not always easy to isolate the cause of a particular flood event. One type of flooding can trigger and exaggerate the effects of another. Fluvial flooding, for example, may occur due to a combination of intense rainfall falling on an impermeable area, overwhelmed surface water drainage systems and blocked culverts decreasing conveyance. Conversely, high river levels may prevent drainage systems from being able to discharge so that water backs up and causes flooding from the drainage system. The urban nature of the local catchments in Bromley and the reliance on man-made channels and structures to convey flow through long stretches of channel mean that the risk of flooding from these combinations of events is high and will continue to increase in the future as climate change increases rainfall intensity and channel infrastructure nears the end of its lifetime. This is recognised by the Catchment Flood Management Plans and Policy Units covering Bromley and reflected in their proposed management approach and aims.

Local Flood Risk Management Strategy

Under the Flood and Water Management Act (2010), Bromley Council was designated as Lead Local Flood Authority (LLFA). Under the Act, Bromley Council was required to produce a Flood Risk Management Strategy (2015).

As part of this process Bromley produced a Preliminary Flood Risk Assessment (PRFA) in 2011. 50 The PFRA is a high level screening exercise that compiles information on significant local flood risk (any flood risk that does not originate from main rivers, the sea or large reservoirs) from past and future floods, based on readily available and derivable information. The PFRA also includes the identification of flood risk areas where the subsequent two stages of the Flood Risk Regulations apply; stage two delivers Flood Risk Maps and stage three delivers Flood Risk Management Plans.

[50] London Borough of Bromley(2011) Preliminary Flood Risk 'assessment [online] available at: http://webarchive.nationalarchives.gov.uk/20140328170848/http:/cdn.environment-agency.gov.uk/flho1211bvkp-e-e.pdf last accessed [05/09/2018]

This PFRA for the London borough of Bromley forms part of the Drain London project, which is a wider initiative that involves the undertaking of Surface Water Management Plans and PFRAs for each of the thirty three London boroughs. The PFRA informs the Strategic Flood Risk Assessment.

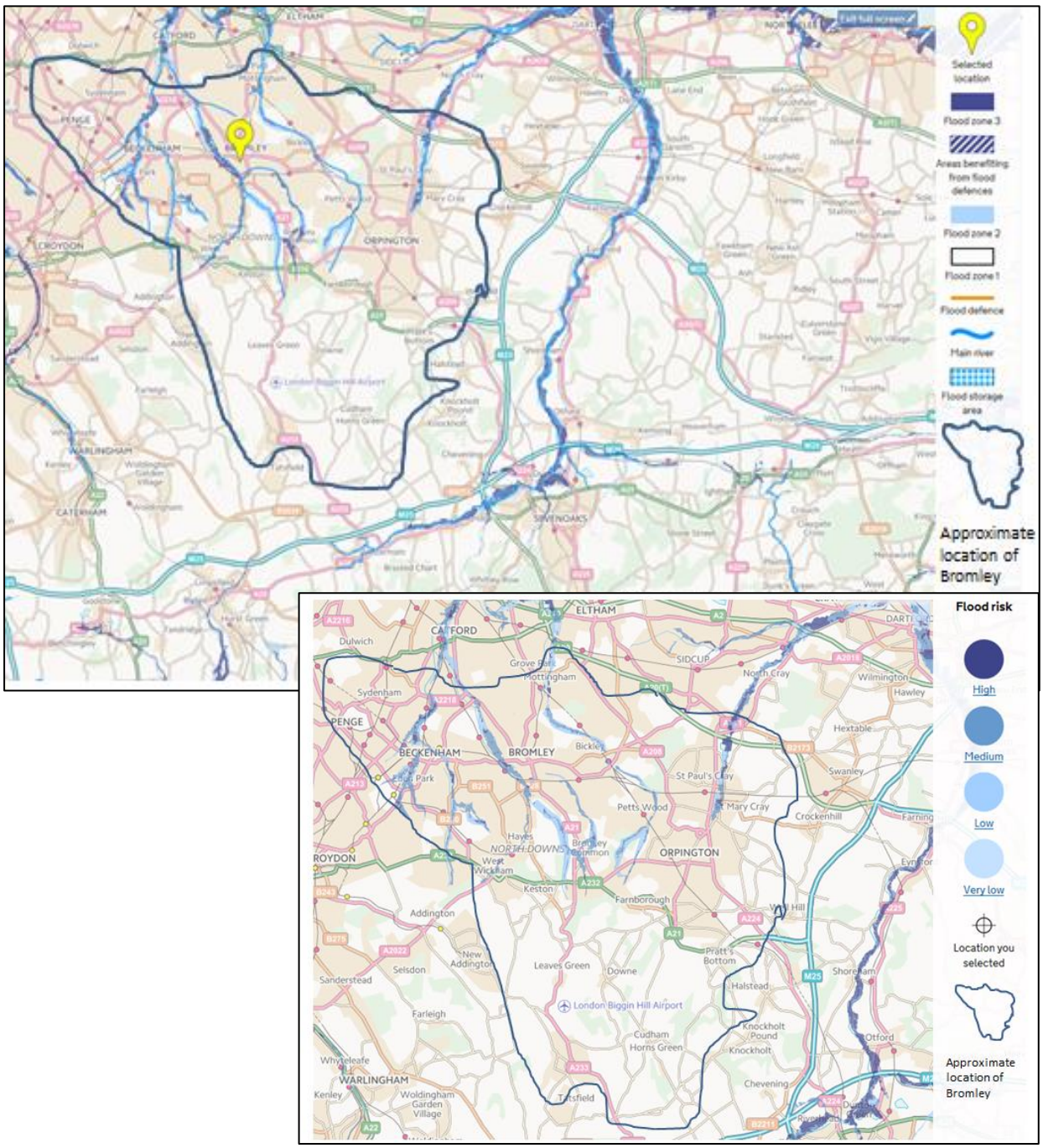


Figure 4.1: Fluvial flood risk within Bromley[51]

The borough is covered by two catchments; the Ravensbourne and the Cray. Both of these rivers and many of their tributaries have their source in Bromley and flow northwards through the borough towards the Thames.

The areas at the highest risk of flooding in Bromley are those near the river Ravensbourne and the river Cray, which are in Flood Zone 3. Flood Zone 3 is of a high probability of flooding; representing that there is a 1% (1 in 100) or greater chance of flooding happening each year.

[51] GOV UK (2017): 'Flood Map for Planning', [online] available to access via: <https://flood-map-for-planning.service.gov.uk/> last accessed [05/09/18]

Summary of future baseline

Climate change has the potential to increase the occurrence of extreme weather events in Bromley, with increases in mean summer and winter temperatures, increases in mean precipitation in winter and decreases in mean precipitation in summer. This is likely to increase the risks associated with climate change (including surface water and fluvial flood risk, as well as flooding by sea). This will result in an increased need for resilience and adaptation for transport infrastructure.

In terms of climate change mitigation, per capita emissions are likely to continue to decrease as energy efficiency measures, renewable energy production and new technologies become more widely adopted. This includes relating to the update of more energy efficient and less polluting vehicles, including electric cars.

Headline Sustainability Issues

- Bromley has recorded consistently lower greenhouse gas emissions per capita than both the South East and England since 2005. In addition, Bromley's average reduction in transport emissions per capita between 2005 and 2012 is greater than its regional and national counterparts.
- A range of flood risk issues exist across Bromley, including linked to fluvial, surface water, and groundwater flooding.
- The transport network has the potential to become increasingly vulnerable to the potential effects of climate change in forthcoming years. As such the resilience of the transport network to the likely impacts of climate change will be a key factor in its effective functioning.

What are the SEA objectives and appraisal questions for the Climate Change SEA theme?

SEA objective	Assessment Questions
Support climate change mitigation in Bromley through limiting the contribution of transport to greenhouse gas emissions in the county.	Will the option/proposal help to: • Limit the increase in the carbon footprint resulting from new transport infrastructure provision? • Promote the use of sustainable modes of transport, including walking, cycling and public transport? • Reduce the need to travel? • Reduce energy consumption from non-renewable resources? • Encourage the update of electric and alternatively fuelled vehicles?
Support the resilience of Bromley's transport networks to the potential effects of climate change.	Will the option/proposal help to: • Increase the resilience of the transport network to the potential effects of climate change? • Promote a coordinated approach to the management of flood risk across public infrastructure provision? • Improve and extend green infrastructure networks as part of transport infrastructure provision to support adaptation to the potential effects of climate change? • Sustainably manage water run-off, reducing surface water runoff? • Ensure the potential risks associated with climate change are

considered through new transport network programmes?

- Increase the resilience of biodiversity in Bromley to the effects of climate change, including enhancements to ecological networks (e.g. through the use of green bridges / tunnels)?

Historic Environment and Landscape

Focus of theme

- Designated and non-designated sites and areas
- Setting of heritage assets
- Archaeological assets
- Landscape character and quality
- Designated and non-designated sites and areas of landscape value

Policy context

Key messages from the National Planning Policy Framework (NPPF) include:

- Heritage assets should be recognised as an 'irreplaceable resource' that should be conserved in a 'manner appropriate to their significance', taking account of 'the wider social, cultural, economic and environmental benefits' of conservation, whilst also recognising the positive contribution new development can make to local character and distinctiveness.
- Set out a 'positive strategy' for the 'conservation and enjoyment of the historic environment', including those heritage assets that are most at risk.
- Protect and enhance valued landscapes, giving particular weight to those identified as being of national importance.
- Develop 'robust and comprehensive policies that set out the quality of development that will be expected for the area. Such policies should be based on stated objectives for the future of the area and an understanding and evaluation of its defining characteristics'.
- Consider the effects of climate change in the long term, including in terms of landscape. Adopt 'proactive strategies' to adaptation and manage risks through adaptation measures including well planned green infrastructure.
- Maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas defined as Heritage Coast, and improve public access to and enjoyment of the coast.

The policies contained within Chapter 2 'Recovering nature and enhancing the beauty of landscapes' and Goal 6 'Enhanced beauty, heritage and engagement with the natural environment' of the Government's ''A Green Future: Our 25 Year Plan to Improve the Environment' directly relates to the Historic Environment and Landscape SEA theme.

The Government's Statement on the Historic Environment for England[52] sets out its vision for the historic environment. It calls for those who have the power to shape the historic environment to recognise its value and to manage it in an intelligent manner in light of the contribution that it can make to social, economic and cultural life.

[52] HM Government (2010) The Government's Statement on the Historic Environment for England [online] available at: <http://webarchive.nationalarchives.gov.uk/+/http://www.culture.gov.uk/reference_library/publications/6763.aspx> last accessed [05/09/18]

The London Environment Strategy[53] identifies that as London grows, critical infrastructure should "*boost the enjoyment of culture and heritage"* and *"The Mayor will ensure that opportunities for a complementary relationship between cultural heritage and green infrastructure are fully explored in the interests of good place-making".* The strategy also aims to "*Protect, conserve, and enhance the landscape and cultural value of London's green infrastructure".*

The Mayor's Transport Strategy[54] seeks to enhance London's natural and built environment, in particular Policy 8 seeks to maximise opportunities to protect, promote and enhance London's built heritage and sites of cultural importance that are affected by transport development.

The emerging Bromley Local Plan[55] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the Historic Environment and Landscape SEA theme include:

- Policy 38: Statutory Listed Buildings
- Policy 39: Locally Listed Buildings
- Policy 40: Other Non-Designated Heritage Assets
- Policy 41: Conservation Areas
- Policy 42: Development Adjacent to a Conservation Area
- Policy 43: Trees in Conservation Areas
- Policy 44: Areas of Special Residential Character
- Policy 45: Historic Parks and Gardens
- Policy 46: Ancient Monuments and Archaeology
- Policy 47: Tall & Large Buildings
- Policy 49: The Green Belt
- Policy 50: Metropolitan Open Land
- Policy 54: South East London Green Chain
- Policy 55: Urban Open Space
- Policy 56: Local Green Space
- Policy 57: Outdoor Recreation and Leisure

Another key document at the local level includes: A Parks, Greenspace and Countryside Strategy for the borough of Bromley[56] which delivers the borough of Bromley's Council Parks and Greenspace Service. The working document provides focus for a number of service-specific plan and strategies.

[53] Greater London Authority (2018) London Environment Strategy [online] available at: https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf [accessed 30/08/18]
[54] Greater London Authority (2018) Mayor's Transport Strategy [online] available at: https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf [accessed 31/08/18]
[55] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]
[56] The Landscape Group (2015) A Parks, Greenspace and Countryside Strategy for the Borough of Bromley [online] available at: < https://www.idverde.co.uk/wp-content/uploads/2016/04/16.04-Bromley-Green-Space-Strategy.compressed.pdf> [accessed 06/09/18]

Baseline summary

Summary of current baseline

Bromley has a rich historic environment resource. There are a variety of historical features of interest located within or adjacent to the borough, including scheduled monuments, Grade I, II * and II listed building, as well as conservation areas.

Scheduled monuments are sites of national importance and protected by the Ancient Monuments and Archaeological Areas Act 1979. According to the National Heritage List for England , there are fourteen scheduled monuments located within the borough of Bromley listed below:

- Iron Age settlement and Roman villa at Warbank, Keston
- Romano-British site, Wickham Court Farm, West Wickham
- Camp on Keston Common
- Orpington Roman villa
- Holwood camp
- Scadbury Manor moated site and fishponds
- High Elms ice house 130m south of Flint Lodge
- Romano-British masonry building and Saxon cemetery, Fordcroft, Orpington
- Ruxley old church

Historic England is the statutory consultee for certain categories of listed building consent and all applications for scheduled monument consent. The historic environment is protected through the planning system, via conditions imposed on developers and other mechanisms. The borough of Bromley contains eight Grade I, 23 Grade II* and 376 Grade II listed buildings. It also contains twenty seven Archaeological Priority Areas within the borough.

Historic parks and gardens are noted as a fragile and finite resource by Historic England[57], as they can easily be damaged beyond repair or lost. Historic England states that the emphasis of Historic England's register is on gardens, grounds and other planned open spaces, such as town squares. The majority of sites registered are, or started life as, the grounds of private houses, but public parks and cemeteries form important categories too. The register lists six within the borough of Bromley.

Conservation areas are designated because of their special architectural and historic interest. Conservation area appraisals are a tool to demonstrate the area's special interest, explaining the reasons for designation and providing a greater understanding and articulation of its character - mentioned within the 'Conservation Area Designation, Appraisal and Management' advice note by Historic England[58]. Ideally, appraisals should be regularly reviewed as part of the management of the conservation area, and can be developed into a management plan. There are 45 conservation areas in Bromley.[59] However, it is uncertain how many of these have up to date conservation area appraisals or management plans.

It should be noted that not all of the area's historic environment features are subject to statutory designations, and non-designated features comprise a large part of what people have contact with as part of daily life – whether at home, work or leisure. Although not designated, many buildings and areas are of historic interest and are seen as important by local communities. Any applications

[57] Historic England (2018): 'Registered Parks and Gardens' [online] available at: <https://www.historicengland.org.uk/listing/what-is-designation/registered-parks-and-gardens/> last accessed [05/09/18]
[58] Historic England (2016): 'Conservation Area Designation, Appraisal and Management Advice Note 1', [online] available to download from: <https://www.historicengland.org.uk/images-books/publications/conservation-area-designation-appraisal-management-advice-note-1/> last accessed [05/09/18]
[59] London Borough of Bromley (2018): 'Conservation areas', [online] available at: < https://www.bromley.gov.uk/info/668/conservation_areas_and_listed_buildings/136/conservation_areas> last accessed [05/09/18].

affecting non-designated heritage assets will be determined in accordance with their significance (NPPF Policy 197).

Figure 5.1 (overleaf) shows sites nationally designated for their historic environment interest and conservation areas within the borough of Bromley.

A Parks, Greenspace and Countryside Strategy for the borough of Bromley states that Bromley is London's greenest borough which encompasses 156 parks, 52 allotments and 21 outdoor facilities.

Green Belt Coverage

51.47% of the borough's area is covered by the London Metropolitan Green Belt (Figure 5.2). Whilst the green belt is not designated for landscape character, and is instead designated to prevent urban sprawl, it has provided a strong contribution to landscape character since designation.[60]

National Character Areas

National Character Areas (NCAs) are landscape areas which share similar characteristics, following natural lines in the landscape rather than administrative boundaries. Developed by Natural England, NCA profiles describe the natural and cultural features that shape each of these landscapes, providing a broad context to its character. Bromley falls within the North Kent Plain NCA. The following characteristics of this NCA are particularly relevant for Bromley[61]:

- Woodland occurs on the higher ground around Blean and in smaller blocks to the west, much of it ancient and of high nature conservation interest.
- Other semi-natural habitats include fragments of neutral, calcareous and acid grassland, and also heathland.

Large settlements and urban infrastructure (including lines of pylons) are often visually dominant in the landscape, with significant development around Greater London and the Medway Towns, as well as around towns further east and along the coast. Major rail and road links connect the towns with London.

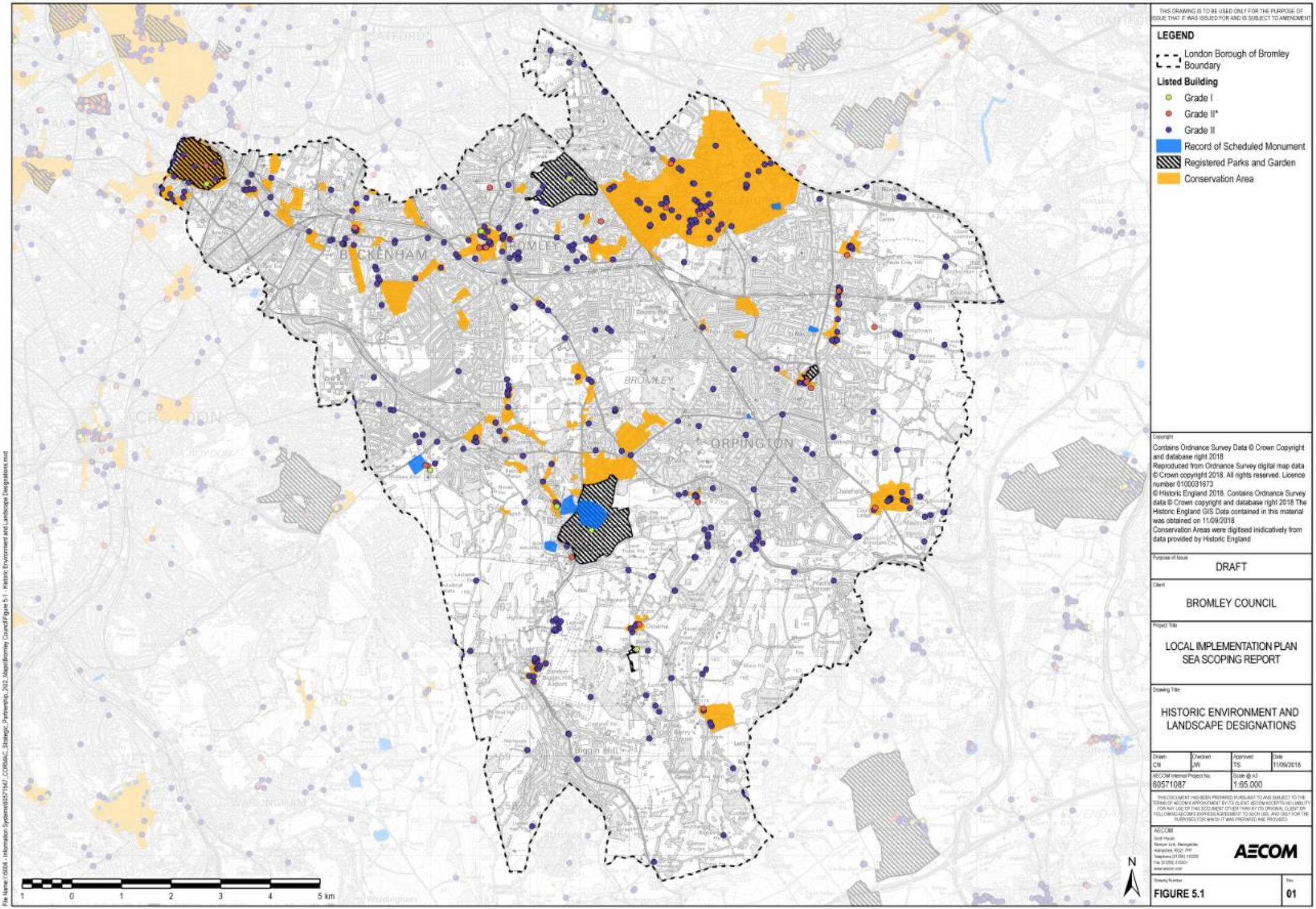
Summary of future baseline

New employment and infrastructure provision within Bromley has the potential to impact on the fabric and setting of cultural heritage assets; for example through inappropriate design and layout. It should be noted, however, that existing historic environment designations offer a degree of protection to cultural heritage assets and their settings, and there are a range of existing initiatives to enhance the historic environment of the borough.

Alongside, new development need not be harmful to the significance of a heritage asset, and in the context of the Implementation Plan there may be opportunity for new transport infrastructure to enhance the historic settings of localities and better reveal assets' cultural heritage significance.

New employment and infrastructure provision also has the potential to lead to incremental but small changes in landscape and townscape character and quality in Bromley. This includes from the loss of landscape features and areas with an important visual amenity value.

[60] Department for Communities and Local Government (2017): 'Local Authority Green Belt Statistics' [online] available to download via: https://www.gov.uk/government/statistics/local-authority-green-belt-statistics-for-england-2016-to-2017 last accessed [13/09/18].
[61] Natural England (2014): 'NCA Profile 130: Hampshire Downs (NE549)' [online] available to download via: < http://publications.naturalengland.org.uk/publication/6738147345956864> last accessed [28/08/18]



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LEGEND

- London Borough of Bromley Boundary

Listed Building

- Grade I
- Grade II*
- Grade II
- Record of Scheduled Monument
- Registered Parks and Garden
- Conservation Area

Purpose of Issue: DRAFT

Client: BROMLEY COUNCIL

Project Title: LOCAL IMPLEMENTATION PLAN SEA SCOPING REPORT

Drawing Title: HISTORIC ENVIRONMENT AND LANDSCAPE DESIGNATIONS

Drawn	Checked	Approved	Date
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Drawing Number: FIGURE 5.1

Rev: 01

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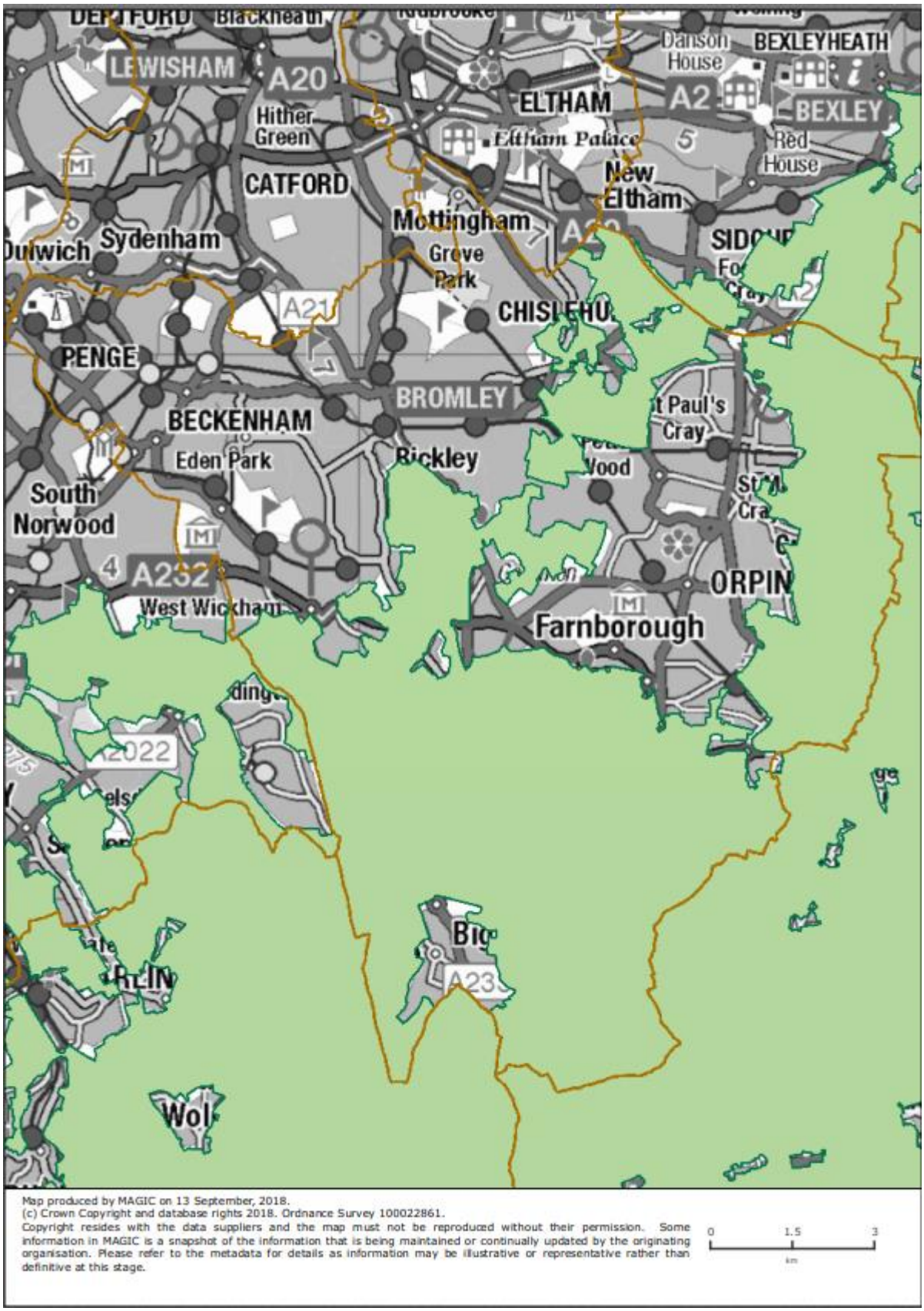

Figure 5.2: Green Belt land in Bromley

Headline Sustainability Issues

- There are a variety of heritage assets within Bromley including eight Grade I, 23 Grade II*, 376 Grade II listed buildings, six historic parks and gardens and 45 conservation areas.

- Bromley has been determined to be London's 'greenest' borough, encompassing 156 parks, 52 allotments and 21 outdoor facilities.
- 51.47% of the borough's area is covered by the London Metropolitan Green Belt.

What are the SEA Objectives and appraisal questions for the Historic Environment and Landscape SEA theme?

SEA objective	Assessment Questions
Preserve and enhance Bromley's cultural heritage resource, including its historic environment and archaeological assets.	Will the option/proposal help to: • Conserve and enhance the significance of buildings and structures of architectural or historic interest, both designated and non-designated, and their setting? • Conserve and enhance the special interest, character and appearance of conservation areas and their settings? • Support access to, interpretation and understanding of the historic environment? • Conserve and enhance archaeological remains and support the undertaking of archaeological investigations and, where appropriate, recommend mitigation strategies?
Protect and enhance the character and quality of Bromley's landscapes and townscapes.	Will the option/proposal help to: • Support the management objectives of the greenspace and parks in Bromley? • Support the integrity of the LCAs within Bromley? • Conserve and enhance locally important landscape features within Bromley? • Improve accessibility to Bromley's landscape resources?

Land, Soil and Water Resources

Focus of theme

- Soils resource
- Watercourses
- Water availability
- Water quality

Policy context

The EU's Soil Thematic Strategy[62] presents a strategy for protecting soils resources in Europe. The main aim of the strategy is to minimise soil degradation and limit associated detrimental effects linked to water quality and quantity, human health, climate change, biodiversity, and food safety.

The Water Framework Directive (WFD) drives a catchment-based approach to water management. In England and Wales there are 100 water catchments and it is Defra's intention to establish a 'framework for integrated catchment management' across England. The Environment Agency is establishing 'Significant Water Management Issues' and recently presented second River Basin Management Plans to ministers. The plans seek to deliver the objectives of the WFD namely:

- Enhance the status and prevent the further deterioration of aquatic ecosystems and associated wetlands which depend on aquatic ecosystems;
- Promote the sustainable use of water;
- Reduce the pollution of water, especially by 'priority' and 'priority hazardous' substances; and
- Ensure the progressive reduction of groundwater pollution.

Key messages from the National Planning Policy Framework (NPPF) include:

- Protect and enhance soils. The value of best and most versatile agricultural land should also be taken into account.
- Prevent new or existing development from being 'adversely affected' by the presence of 'unacceptable levels' of soil pollution or land instability and be willing to remediate and mitigate 'despoiled, degraded, derelict, contaminated and unstable land, where appropriate'.
- Encourage the effective use of land' through the reuse of land which has been previously developed, 'provided that this is not of high environmental value'. Whilst there is no longer a national requirement to build at a minimum density, the NPPF requires local planning authorities to 'set out their own approach to housing density to reflect local circumstances'.
- Produce strategic policies to deliver the provision of a variety of infrastructure, including that necessary for water supply.
- With regards to waste, the NPPF does not contain any specific waste policies as waste planning policy will be published as part of the National Waste Management Plan.

Other key documents at the national level include Safeguarding our Soils: A strategy for England[63], which sets out a vision for soil use in England, and the Water White Paper[64], which sets out the Government's vision for a more resilient water sector. It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources. In terms of waste management, the Government

[62] European Commission (2006) Soil Thematic Policy [online] available at: <http://ec.europa.eu/environment/soil/index_en.htm>
[63] Defra (2009) Safeguarding our Soils: A strategy for England [online] available to download from: <https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england>
[64] Defra (2011) Water for life (The Water White Paper) [online] available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf

Review of Waste Policy in England[65] recognises that environmental benefits and economic growth can be the result of a more sustainable approach to the use of materials.

The emerging Bromley Local Plan[66] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the Land, Soil and Water Resources SEA theme include:

- Policy 49: The Green Belt
- Policy 62: Agricultural Land

Baseline Summary

Quality of Agricultural Land

The Agricultural Land Classification (ALC) classifies land into six grades (plus 'non-agricultural' and 'urban'), where Grades 1 to 3a are recognised as being the 'best and most versatile' land and Grades 3b to 5 are of poorer quality.

In terms of the location of the best and most versatile agricultural land, a detailed classification has been undertaken towards the centre of the borough, just north east of High Elms Country Park. The majority of this land has been classified as 'Grade 3b', however parts of it are classified as 'Grade 2' and 'Grade 3a'. A small amount is also classified as 'Grade 4' and 'Other'[67].

It is not possible to confirm if land elsewhere in the borough comprises land classified as the Best and Most Versatile Agricultural Land, as a detailed classification assessment has not been undertaken. Based on the 1:250,000 series of ALC maps produced by Natural England and utilised for strategic purposes, many undeveloped areas of the borough have land classified as Grade 3 'good to moderate'. However, there is no detailed information available as to whether this land is Grade 3a land (i.e. land classified as the best and most versatile) or Grade 3b (which is not).

Watercourses

The Water Framework Directive (WFD) drives a catchment-based approach to water management with a view to improving the overall water quality of watercourses in any given catchment.

The main watercourse flowing through the borough is the River Ravensbourne which is tributary of the River Thames and the River Cray which is a tributary of the River Darent (see Figure 4.2). The River Ravensbourne begins in Keston, near the centre of the borough of Bromley and flows in a northerly direction out of the borough through Greenwich and Lewisham before it joins the Thames. The River Cray also begins in Bromley in Priory Gardens Orpington and also flows to northwards towards Dartford where it joins the River Darent.

Summary of Future Baseline

Due to increasing legislative and regulatory requirements, there are increasing pressures to improving recycling and composting rates.

In terms of water quality, the requirements of the Water Framework Directive (and its replacement) are likely to lead to continued improvements to water quality in watercourses in the wider area. Water quality has the potential to be affected by pollution incidents in the area, the presence of non-native species and future physical modifications to water bodies.

[65] Defra (2011) Government Review of Waste Policy in England [online] available at: <http://www.defra.gov.uk/publications/files/pb13540-waste-policy-review110614.pdf
[66] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]
[67] MAGIC Interactive Map (2018): 'Landscape; ; Post 1988 Agricultural Land Classification (England)' [online] layer available to view using the following mapping tool: <http://www.magic.gov.uk/MagicMap.aspx> last accessed [06/09/18]

Headline Sustainability Issues

- New transport infrastructure has the potential to directly or indirectly lead to the loss of areas classified as the best and most versatile agricultural land in Bromley.
- New transport infrastructure has the potential to modify water flow regimes and lead to effects on water quality.
- Increased use of existing transport infrastructure, which may not be designed to current standards has the potential to lead to a deterioration of water quality in controlled waters.
- The construction, maintenance and operation of transport infrastructure should seek to reduce the amount of primary materials required, make beneficial use of surplus materials and minimise the landfill disposal of waste generated throughout the asset's lifecycle.

What are the SEA Objectives and appraisal questions for the Land, Soil and Water Resources SEA theme?

SEA objective	Assessment Questions
Ensure the efficient and effective use of land.	Will the option/proposal help to: • Facilitate the use of previously developed land? • Avoid the development of the best and most versatile agricultural land (Grade 1 to 3a agricultural land)?
Promote sustainable waste management solutions that encourage the reduction, re-use and recycling of waste during construction	Will the option/proposal help to: • Encourage recycling of materials and minimise consumption of resources during construction, operation and maintenance of new transport infrastructure? • Encourage the use of alternative transport methods for the movement of waste in the county?
Manage Bromley's water resources in a sustainable manner.	Will the option/proposal help to: • Support improvements to water quality? • Help to minimise diffuse surface water pollution? • Protect surface water and groundwater resources?

Communities

Focus of theme

- Population size
- Population density
- Age structure
- Deprivation
- Car ownership
- Travel to work

Policy context

Key messages from the National Planning Policy Framework (NPPF) include:

- The NPPF attaches great importance to the design of the built environment. It explains how good design is a key aspect in sustainable development, and how development should improve the quality of the area over its lifetime, not just in the short term. Good architecture and landscaping are important, with the use of design codes contributing to the delivery of high quality outcomes. Design should reinforce local distinctiveness, raise the standard more generally in the area and address the connections between people and places.
- The social role of the planning system involves 'supporting vibrant and healthy communities
- The planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship
- Ensure that developments create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion. Places should contain clear and legible pedestrian routes, and high quality public spaces, which encourage the active and continual use of public areas
- Ensuring that there is a 'sufficient choice of school places' is of 'great importance' and there is a need to take a 'proactive, positive and collaborative approach' to bringing forward 'development that will widen choice in education

The 'Ready for Ageing?' report, published by the Select Committee on Public Service and Demographic Change[68] warns that society is underprepared for an ageing population. The report states that *'longer lives can be a great benefit, but there has been a collective failure to address the implications and without urgent action this great boon could turn into a series of miserable crises'*. The report recognises that the supply of specialist housing for the older generation is insufficient for the demand. There is a need for central and local Government, housing associations, and house builders to ensure that these housing needs are better addressed, giving as much priority to promoting an adequate market of social housing for the older generation as is given to the younger generation.

Policies contained in Chapter 1 'Using and managing land sustainably' and Chapter 4 'Increasing resource efficiency, and reducing pollution and waste' of the Government's 'A Green Future: Our 25 Year Plan to Improve the Environment' directly relates to the population and community SEA theme.

[68] Select Committee on Public Service and Demographic Change (2013) Ready for Ageing? [online] available at: <http://www.parliament.uk/business/committees/committees-a-z/lords-select/public-services-committee/report-ready-for-ageing/> last accessed [03/11/17]

The emerging Bromley Local Plan[69] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the communities SEA theme include:

- Policy 16: Bromley Common Renewal Area
- Policy 17: Cray Valley Renewal Area
- Policy 18: Mottingham Renewal Area
- Policy 19: Ravensbourne, Plaistow, Sundridge Renewal Area
- Policy 20: Community Facilities
- Policy 21: Opportunities for Community Facilities
- Policy 27: Education
- Policy 28: Educational Facilities

Baseline Summary

Population

Table 7.1: Population growth 2001-2011[70]

Date	Bromley	London	South East	England
2001	295,532	7,172,091	8,000,645	49,138,831
2011	309,392	8,173,941	8,634,750	53,012,456
Population Change 2001-2011	+4.7%	+12.3%	+7.9%	+7.9%

As shown in Table 7.1, the population of Bromley has increased by 4.7% between 2001 and 2011, which is less than the trends for London, the South East and England. Bromley is the largest borough in Greater London and it is also one of the most rural. Most of the population live in the east and west of the borough, or in Bromley Town Centre.[71]

The borough has seen significant growth since the last census in 2011. In 2017, the population was estimated to be 327,900, an increase in 6% since 2011.[72]

Age Structure

Table 7.2: Age Structure (2011)[73]

	Bromley	London	South East	England
0-15	19.6%	19.8%	19.0%%	18.9%
16-24	9.8%	12.3%	11.2%	11.9%
25-44	27.8%	35.5%	26.5%	27.5%
45-59	20.1%	17.0%	19.9%	19.4%

[69] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 31/08/18]
[70] ONS (no date): Census 2011: Population Density 2011 (Table QS102EW); Population Density 2001 (Table UV02)
[71] Mayor of London (2018) Bromley[online] available at: https://www.london.gov.uk/in-my-area/bromley [accessed 10/09/18].
[72] Mayor of London (2018) Bromley [online] available at < https://data.london.gov.uk/dataset/london-borough-profiles> [accessed 13/09/18].
[73] ONS (no date): Census 2011: Age Structure 2011 (Table KS102EW)

	Bromley	London	South East	England
60+	22.8%	15.3%	23.4%	22.3%
Total Population	309,392	8,173,941	8,634,750	53,012,456

Generally, the proportion of residents within each age category in Bromley aligns with the proportions in the South East of England and England. 22.8% of residents within Bromley are within the 60+ age category, broadly similar to the total of the South East of England (23.4%) and England (22.3%), as shown in Table 7.2 However, this is greater than the proportion of residents within the 60+ age category in London (15.3%). A slightly greater number of residents are within the working age categories (25-44 and 45-59) in Bromley (47.9%) in comparison to the totals for the South East of England (46.4%) and England (46.9%). However this is less than the proportion of residents within the working age category in London (52.5%), Additionally, 29.4% of residents within Bromley are within the younger age categories (0-15 and 16-24), broadly similar to the totals for the South East of England (30.2%) and England (30.8%), and only slightly less than the total for London (32.1%).

Index of Multiple Deprivation

The Index of Multiple Deprivation 2015 (IMD) is an overall relative measure of deprivation constructed by combining seven domains of deprivation according to their respective weights, as described below. The seven deprivation domains are as follows:

- **Income**: The proportion of the population experiencing deprivation relating to low income, including those individuals that are out-of-work and those that are in work but who have low earnings (satisfying the respective means tests).
- **Employment**: The proportion of the working-age population in an area involuntarily excluded from the labour market, including those individuals who would like to work but are unable to do so due to unemployment, sickness or disability, or caring responsibilities.
- **Education, Skills and Training**: The lack of attainment and skills in the local population.
- **Health Deprivation and Disability:** The risk of premature death and the impairment of quality of life through poor physical or mental health. Morbidity, disability and premature mortality are also considered, excluding the aspects of behaviour or environment that may be predictive of future health deprivation.
- **Crime**: The risk of personal and material victimisation at local level.
- **Barriers to Housing and Services**: The physical and financial accessibility of housing and local services, with indicators categorised in two sub-domains.
    2. 'Geographical Barriers': relating to the physical proximity of local services
    3. 'Wider Barriers': relating to access to housing, such as affordability.
- **Living Environment**: The quality of the local environment, with indicators falling categorised in two sub-domains.
    4. 'Indoors Living Environment' measures the quality of housing.
    5. 'Outdoors Living Environment' measures air quality and road traffic accidents.

Two supplementary indices (subsets of the Income deprivation domains), are also included:

- **Income Deprivation Affecting Children Index**: The proportion of all children aged 0 to 15 living in income deprived families.
- **Income Deprivation Affecting Older People Index**: The proportion of all those aged 60 or over who experience income deprivation.

Lower Super Output Areas (LSOAs) are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. They are standardized geographies designed to be as consistent in population as possible, with each LSOA containing approximately 1,000 to 1,500 people. In relation to the IMD 2015, LSOAs are ranked out of the 32,844 in England and Wales, with 1 being

the most deprived. Ranks are normalized into deciles, with a value of 1 reflecting the top 10% most deprived LSOAs in England and Wales (see Table 7.4).

Bromley town centre lies within Bromley 026A. This LSOA is within the 10% most deprived areas in England. A number of other LSOAs to the south-west of the borough's boundary including Croydon 032B, Croydon 032E and Croydon 036B also lie within the 10% most deprived areas in England. Other LSOAs towards the centre of the borough including Bromley 036B and Bromley 042B lie within 50% most deprived areas in England. However, all other LSOAs within the borough are not considered particularly deprived and are within the 40% least deprived areas in England or lower.

Accessibility of Cars and Vans

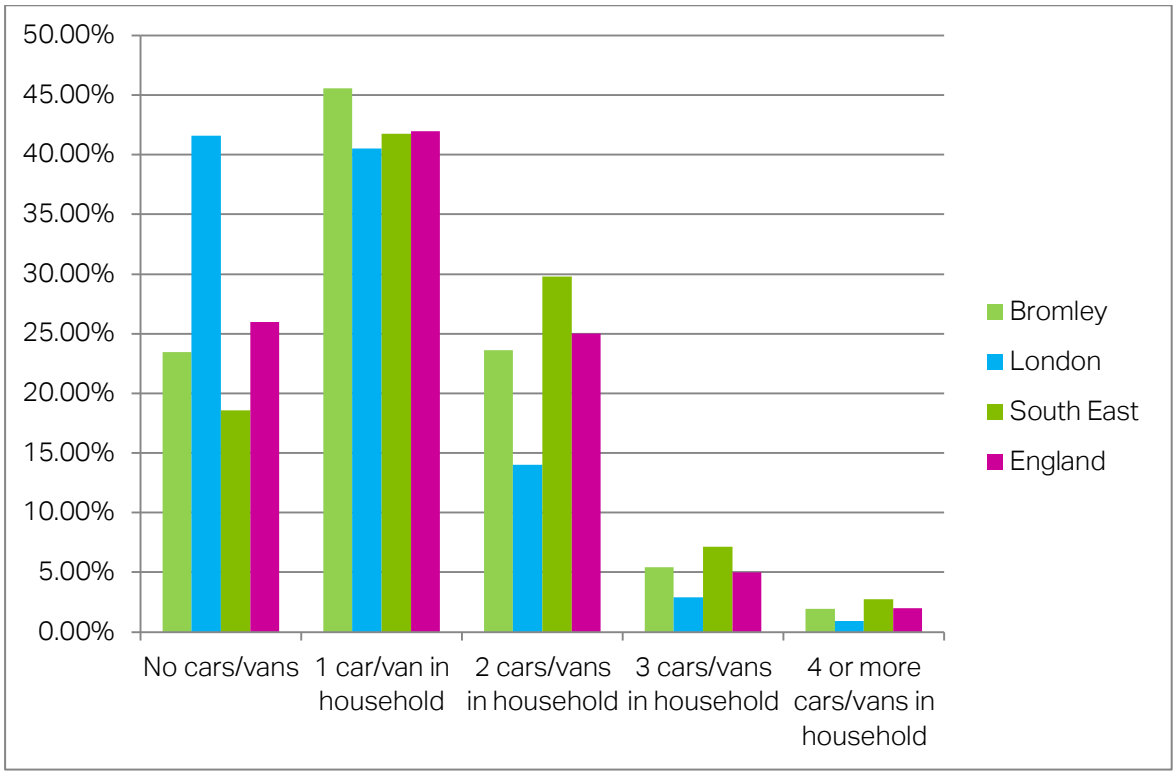

Figure 7.3: 'Car and van ownership'[74]

Based on the 2011 census data, 76.5% of households in Bromley have access to at least one car or van. This is 18.2% higher than the total for London (58.3%), 4.9% lower than the total for the South East of England (81.4%) and 2.3% higher than the total for England (74.2%).

[74] ONS (no date): 'Car or Van Availability 2011', (Table QS416EW)

Travel to Work

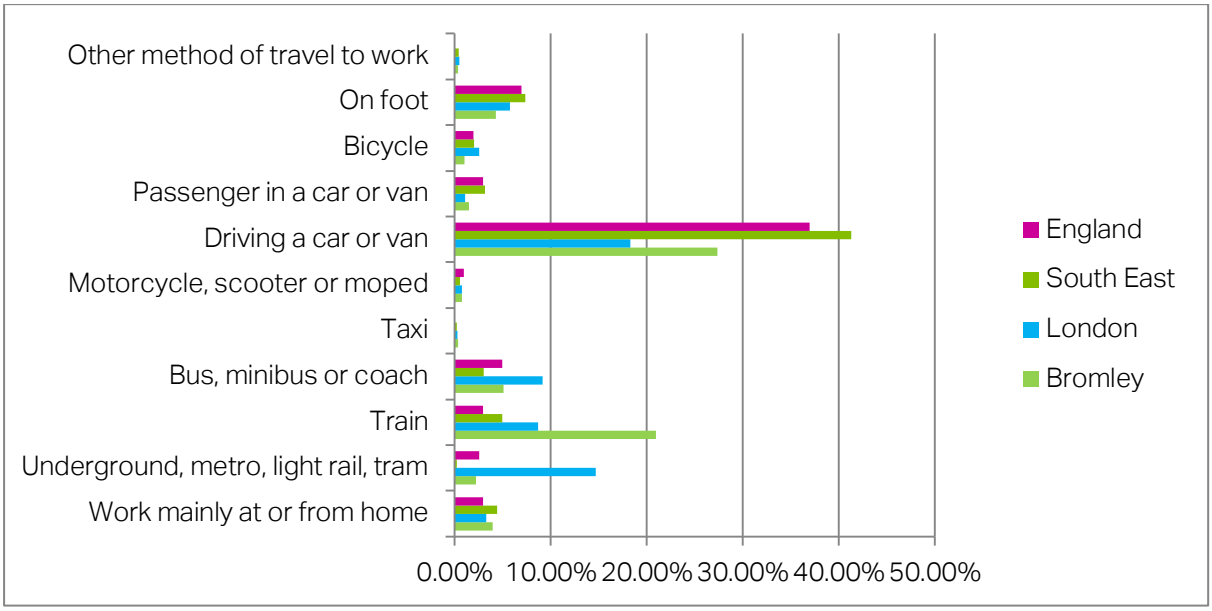

Figure 7.4: 'Method of Travel to Work'[75]

As shown in Figure 7.4, the most popular method of travelling to work in Bromley is via driving a car or van (27.3%), less than the total for the South East of England (41.3%), and less than the national total of 36.9%, but greater than the total for London (18.3%). Comparatively, 30.0% of the working population in Bromley choose to take the train to work. This is higher than the averages for London (8.7%), the South East of England (5.0%) and England (3.0%). This is likely to be due to the good rail network which links Bromley to central London. Fewer residents walk or cycle to work in Bromley (5.3%), compared to London (8.4%), the South East (9.4%) and England (9.0%). Fewer residents in Bromley get a bus, minibus or coach to work (5.10%) compared to the average for London (14.7%), but this is greater than the averages for the South East of England (3.0%) and England (5.0%).

Summary of Future Baseline

In common with many other parts of England, the population of Bromley is likely to age. This has the potential to increase issues relating to accessibility to services, facilities and amenities.

New housing and employment provision has the potential to increase traffic and cause congestion at key pinch points on Bromley's transport network. Although a larger proportion of residents in Bromley use public transport compared to the South East and England, this is less than the London averages. There is therefore a need to continue to encourage a modal shift from a reliance on private vehicles towards alternative modes of transport.

Headline Sustainability Issues

- The population of Bromley increased by 4.7% between 2001 and 2011. Whilst this less than the trends for London, the South East of England and England, the population of the borough grew by approximately 6% between 2011 and 2017.
- Generally, there are a slightly higher proportion of residents within the working age categories (25-44 and 45-59) in Bromley (47.9%) in comparison to the totals for the South East of England (46.4%) and England (46.9%). However, this is lower than the proportion of residents within the work age categories in London (52.5%)
- Bromley can be considered relatively affluent with the majority of resident's living in areas which are within the 40% least deprived areas in England

[75] ONS (no date): Census 2011: 'Method of Travel to Work 2011' (Table QS701EW)

- The most popular method of travelling to work in Bromley is via car or van, but a much larger proportion of residents get the train to work compared to London and regional and national averages.

What are the SEA Objectives and appraisal questions for the Communities SEA theme?

SEA objective	Assessment Questions
Promote sustainable transport use and reduce the need to travel	Will the option/proposal help to: • Encourage modal shift to more sustainable forms of travel? • Reduce the need to travel?
Delivery of a transport infrastructure to meet the foreseeable needs of the varied communities of Bromley	Will the option/proposal help to: • Improve accessibility to services, facilities and amenities? • Meet the needs of a growing population? • Address the needs of all age groups? • Maintain or enhance the quality of life of residents?
Support sustainable economic development in Bromley	Will the option/proposal help to: • Support sustainable economic development? • Improve accessibility to employment opportunities?

Health and Wellbeing

Focus of theme

- Health indicators and deprivation
- Influences on health and well-being
- Quality of life and road safety

Policy context

Key messages from the NPPF include:

- The social role of the planning system involves 'supporting vibrant and healthy communities'.
- A core planning principle is to 'take account of and support local strategies to improve health, social and cultural wellbeing for all'.
- The planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities'
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship.
- Set out the strategic policies to deliver the provision of health facilities.
- Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.

The policies contained in Chapter 3 'Connecting people with the environment to improve health and wellbeing' of the Government's 'A Green Future: Our 25 Year Plan to Improve the Environment' directly relates to the health and wellbeing SEA theme.

In relation to other key national messages in relation to health, Fair Society, Healthy Lives[76] ('The Marmot Review') investigated health inequalities in England and the actions needed in order to tackle them. Subsequently, a supplementary report was prepared providing additional evidence relating to spatial planning and health on the basis that that there is: "overwhelming evidence that health and environmental inequalities are inexorably linked and that poor environments contribute significantly to poor health and health inequalities".

The increasing role that local level authorities are expected to play in providing health outcomes is demonstrated by recent government legislation. The Health and Social Care Act 2012 transferred responsibility for public health from the NHS to local government, giving local authorities a duty to improve the health of the people who live in their areas. This will require a more holistic approach to health across all local government functions.

The Mayor's Transport Strategy[77] seeks to enhance London's natural and built environment, in particular Policy 2 seeks to :

- Make London a city where people choose to walk and cycle more often by improving street environments
- Ensure all Londoners do at least the 20 minutes of active travel they need to stay healthy each day

[76] The Marmot Review (2011) The Marmot Review: Implications for Spatial Planning [online] available to download from: < http://www.instituteofhealthequity.org/resources-reports/the-marmot-review-implications-for-spacial-planning> last accessed [10/09/18]

[77] Greater London Authority (2018) Mayor's Transport Strategy [online] available at: https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf [accessed 10/09/18]

- Provide 'Healthy Routes' to create attractive safe and accessible walking routes to schools and other local destinations
- Improve the accessibility of streets for older and disabled Londoners through measures including removing obstacles, widening pavements for wheelchair access, introduce tactile paving, raising sections of roadway to make crossing easier, providing seating, mitigating the impact of street works
- Reduce the severance caused by roads and railways, which can separate people from local services and limit social interaction, community engagement and active travel.
    - Ensure that transport schemes protect existing green infrastructure where possible, or – if there is a loss – providing new green infrastructure in order to deliver a net gain in biodiversity
    - Find additional opportunities to build new green infrastructure into the existing transport estate
    - Monitor and protect designated spaces on transport land, such as Sites of Importance for Nature Conservation
    - Maximise opportunities to protect, promote and enhance London's built heritage and sites of cultural importance that are affected by transport development.

The emerging Bromley Local Plan[78] seeks to deliver new housing, employment and infrastructure in the London borough, and identifies a policy framework to guide future development. In this respect the policies relevant to the Health and Wellbeing SEA theme include:

- Policy 5: Business and tourism;
- Policy 18: Mottingham Renewal Area
- Policy 19: Ravensbourne, Plaistow, Sundridge Renewal Area
- Policy 20: Community Facilities
- Policy 21: Opportunities for Community Facilities
- Policy 26: Health & Wellbeing
- Policy 33: Access for All

Baseline Summary

Air pollution is a major environmental risk to health. In this context air quality is a significant contributor to poor health nationally, and according to the NHS air pollution kills 40,000 people a year. Air quality has been discussed in detail in Chapter **Error! Reference source not found.**.

[78] London Borough of Bromley (2016) Proposed Submission Draft Local Plan [online] available at: https://www.bromley.gov.uk/downloads/file/3384/sd1_proposed_submission_draft_local_plan_november_2016 [accessed 10/09/18]

General Health

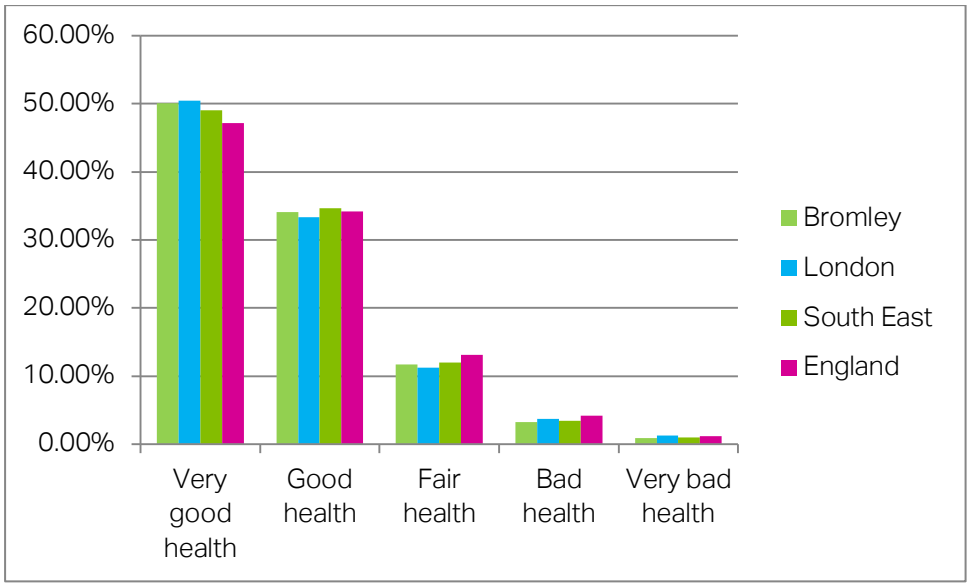

Figure 8.1: 'General Health'[79]

Deprivation is a significant contributor to poor health and can have adverse effects on wellbeing, with elements related to poor housing quality, living environment, income and employment previously discussed in detail in Chapter 8. As highlighted in Figure 8.1, 84.2% of residents in Bromley consider themselves as having 'very good health' or 'good health', broadly aligning to the totals for London (83.8%)the South East of England (83.7%), but slightly higher than the total for England (81.4%). Similarly, the percentage of residents in Bromley considering themselves to have 'bad health' or 'very bad health' is 4.1%, similar to the total for the South East (4.3%), but lower than the total for London (5.0%) England (5.4%).

Table 8.2: Disability[80]

	Bromley	London	South East	England
Activities limited 'a lot'	6.3%	6.7%	6.9%	8.3%
Activities limited ' a little'	3.7%	7.4%	8.8%	9.3%
Activities 'not limited'	85.0%	85.8%	84.3%	82.4%

The total percentage of residents within Bromley who report that their activities are limited 'a little' is less than London, the regional and national totals shown in Table 8.2. There are also slightly fewer residents within Bromley who report that their activities are limited 'a lot' (6.3%) in comparison to London (6.7%), the South East of England (6.9%) and England (8.3%). Overall, 85.0% of residents in Bromley report that their activities are 'not limited', slightly greater than the totals for the South East of England (84.3%) and England (82.4%) but slightly less than London (85.8%).

Summary of Future Baseline

The population of Bromley is predicted to grow and age in the future. In this context accessibility to existing and new health and community facilities is likely to become increasingly important.

Obesity is seen as an increasing issue by health professionals, and one that will contribute to significant health impacts on individuals, including increasing the risk of a range of diseases, including heart disease, diabetes and some forms of cancer. Transport planning will play a key role in

[79] ONS (no date): Census 2011: 'General Health 2011' (Table QS302EW)
[80] ONS (no date): Census 2011: 'Long-term Health Problem or Disability 2011' (Table QS303EW)

encouraging active transport choices (e.g. walking and cycling) as well as accessibility to sports and recreation facilities.

Health and wellbeing levels within Bromley are generally better than London, South East and England averages, with a higher percentage of residents reporting 'good' or 'very good' health, and a higher lower percentage of residents reporting that their activities are limited in some way.

Changes in air quality and noise quality in the vicinities of certain routes in Bromley are likely to take place with the implementation of ongoing transport improvements in the borough.

Headline Sustainability Issues

- Health levels are favourable compared to averages in London, the South East and England.
- 10% of residents in Bromley reported that their daily activities were limited in some way, which is 4.1% lower than the total for London, 5.7% lower than the total for the South East of England and 7.6% lower than the national average.

What are the SEA Objectives and appraisal questions for the Health and Wellbeing SEA theme?

SEA objective	Assessment Questions
Improve the health and well-being of Bromley's residents.	Will the option/proposal help to: • Reduce the impacts of air and noise pollution on health? • Promote accessibility to a range of leisure, health and community facilities, for all age groups? • Encourage healthy lifestyles and reduce health inequalities? • Enhance the provision of, and access to, green infrastructure in the county, in accordance with national standards? • Improve access to the countryside for recreation?
Enhance road safety in Bromley	Will the option/proposal help to: • Improve road safety and reduce road accidents?