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Integrated Sustainability Appraisal of the Thurrock Local Plan: Issues and Options (Stage 2)

Appendices

Prepared by LUC
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1.0	19/10/18	Draft for client comment	Sarah Smith Sarah Bannister Natalie Collins	Jon Pearson	
2.0	19/12/18	Final for consultation	Sarah Smith	Jon Pearson	Philip Smith

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Appendix 1

Consultation responses received in relation to the Integrated Sustainability Appraisal

Table A1.1: Consultation comments received in relation to the SA Scoping Report for the Local Plan and how they have been addressed in this SA report

Organisation	Issues raised	The Council's Responses
Gladman Developments Ltd.	"In accordance with Section 19 of the 2004 Planning and Compulsory Purchase Act, policies set out in Local Plans must be subject to SA. Incorporating the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004, SA is a systematic process that should be undertaken at each stage of the Plan's preparation, assessing the effects of the Local Plan's proposals on sustainable development when judged against reasonable alternatives. The Thurrock Local Plan should ensure that the results of the SA process clearly justify its policy choices. In meeting the development needs of the area, it should be clear from the results of the assessment why some policy options have been progressed, and others have been rejected. Undertaking a comparative and equal assessment of each reasonable alternative, the Thurrock Local Plan's decision making and scoring should be robust, justified and transparent."	Noted – no change required. The SA assessment will be appropriately detailed and robust to make an informed judgement about the sustainability and suitability of each reasonable alternative. A clear methodology for assessment, based on the issues identified during the baseline collection has been derived, and assessment of all reasonable and realistic alternatives will be carried out in conformity guidance such as a 'Practical Guide to the Strategic Environmental Assessment Directive' and the National Planning Practice Guidance. The plan will be informed by the SA, but planning decisions will take into account a range of additional factors as well. Nevertheless, the SA will record the reasons for selecting preferred options and rejecting other alternatives.
Essex County Council	"ECC consider the SA Scoping Report to be thorough and comprehensive and is considered to pick up the majority of the key issues of the Plan area, to identify the appropriate Objectives. However there are a number of omissions which need to be addressed within the scope of the SA, as the local plan progresses, and these points are set out below: <u>Cross boundary matters:</u> It is considered that the SA Scoping Report could be expanded to include the issues and processes surrounding any cross-boundary issues or development sites that may arise from the Local Plan Issues and Options consultation. This could include some commentary on how any cross-	Noted – no change required. We will consider cross boundary matters in the forthcoming Integrated Sustainability Appraisal Report where necessary.

Organisation	Issues raised	The Council's Responses
	boundary sites could be appraised in the SA, in consideration of their location in multiple administrative areas and thus the requirement for their appraisal in multiple SA documents. It is recommended that a note on this potential matter could be included in the forthcoming Environmental Report, should the need arise."	
	"Table 6-4: SA Site Appraisal Methodology: It should be noted that for SA Topic Cultural Heritage, it is unlikely that Historic England would support the application of proximity testing to determine negative impacts on heritage assets and their settings in line with their guidance to appraising sites through the SA process."	Noted and changed. For the Cultural Heritage SA Topic (now 'Historic Environment'), site selection criteria have been reviewed and amended to reflect the Council's historic environment review.
	"Table 6-4: In general it is considered that specific criteria should be included regarding certain topics commensurate to the scope and remit of the Local Plan. Additional criteria or different qualifying rationale should be included regarding the requirements for Gypsy and Traveller accommodation, and crucially for minerals and waste development sites and wider historic environment."	Noted – no change required. The site assessment criteria are given as a guide and do not relate to a specific type of development. The Council is proposing to prepare a separate and stand-alone Minerals and Waste Local Plan. This will be subject to a separate SA during its preparation.
	"Historic Environment: Although designated assets are referred to, there are no references to the extensive undesignated historic environment assets identified in the Historic Environment Record including cropmark complexes and Palaeolithic deposits. ECC recommend that the Historic Environment Record should be identified in the SEA as containing this data. Due to the omission of this data the appraisal methodology is considered to be flawed and should be reviewed with the further data included. ECC also consider the use of an arbitrary distance buffer not a very effective method for assessing impact.	Noted. The site selection criteria for the Historic Environment have been updated. Site assessments will now rely on the Council's historic environment review, which is expected to take into account undesignated assets.

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	"Climate Change: It is considered that SA Scoping Report adequately uses the most up to date data/ information/ policies with regards to climate change adaptation and mitigation. That the report recognises and the plan has taken into consideration the need to respond to climate change issues and is positive that adaptation to climate change will be addressed within each topic where there are clear links, as relevant and applicable to the proposals and remit of the Local Plan."	Noted – no change required.
	Paragraph 4.3.3 Climate Change & Energy: In respect of the Review of National Policies and Legislation, it should be noted that the NPPF requires Local Plans to deliver sustainable development in accordance with the policies in the framework and to set out the strategic priorities and polices for their area, this included strategies to mitigate and adapt to climate change in line with the Climate Change Act 2008. The framework highlights that responding to climate change is central to the economic, social and environmental elements of sustainable development. It is considered important to ensure all developments will be planned to minimise the vulnerability to climate change impacts and that such development will not exacerbate vulnerability in other areas.	Noted – no change required.
Environment Agency	No specific representations on SA Scoping Report and SA process were made.	Noted.
Historic England	Historic England refers to Table 6-4 where threshold distances for major negative and minor negative impacts (200 metres distance) have been introduced for the SA topic Cultural Heritage. Instead of relying on distance thresholds, it recommends understanding the significance of any heritage assets and their settings that would be affected by a potential site allocation.	Noted and changed. For the SA Topic Cultural Heritage, site selection criteria have been reviewed and amended. The SA will draw on the historic environment review being prepared for Thurrock Council.

Organisation	Issues raised	The Council's Responses
Natural England	"Natural England is encouraged to see the key environmental assets of the districts identified but the plan and Sustainability Appraisal should also consider impacts on environmental designations in adjoining districts particularly where there are clear impact pathways or housing allocations near sites that are likely to attract recreational pressure.	Noted – no change required. The Sustainability Appraisal will consider impacts on environmental designations in adjoining districts particularly where there are clear impact pathways or housing allocations near sites that are likely to attract recreational pressure. The Sustainability Appraisal will also be informed by the results of the Habitats Regulations Assessment (HRA).
	"We are also pleased to see geology, soils and water quality identified as 'topics' against which proposals will need to be assessed."	Noted – no change required.
	"Natural England is broadly supportive of the Sustainability objectives in Table E.1, but would recommend that there is an objective relating to the creation, management and enhancement of green infrastructure. It may also be helpful for the scoping report to look at greenspace provision to assist in the targeting of where new green infrastructure and greenspace provision would have the most benefits, particularly in relation to biodiversity, human wellbeing and health."	Noted and changed. A new guide question relating to the creation, management and enhancement of green infrastructure has been included in the SA framework, with regards to both biodiversity and health.
	"Table 6-4: SA Site Appraisal Methodology does not identify any circumstance under which air quality impacts could be considered a 'Showstopper'. Natural England considers that where there may be potential for air quality to impact on a designated site and if that impact cannot be avoided or mitigated then we may consider air quality to be a 'showstopper'. We would expect the plan to address the impacts of air quality on the natural environment. In particular, it should address the traffic impacts associated with new development, particularly where this impacts on European sites and SSSIs. The environmental assessment of the plan (Sustainability Appraisal and HRA) should also consider any detrimental impacts on the natural environment, and suggest appropriate avoidance or mitigation measures where applicable. Natural England advises that one of the main issues which should be	Noted. The 'showstopper' criteria have been removed from the Site Appraisal Methodology, as it is considered that such effects would deem an option unreasonable and therefore such options need not be subject to SA. Note that the effects of the plan on European sites (and their underlying SSSIs) will be assessed through the HRA. The SA will take account of the conclusions of the HRA, when these are available.

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	considered in the plan and the SA/HRA are proposals which are likely to generate additional nitrogen emissions as a result of increased traffic generation, which can be damaging to the natural environment The effects on local roads in the vicinity of any proposed development on nearby designated nature conservation sites (including increased traffic, construction of new roads, and upgrading of existing roads), and the impacts on vulnerable sites from air quality effects on the wider road network in the area (a greater distance away from the development) can be assessed using traffic projections and the 200m distance criterion followed by local Air Quality modelling where required. We consider that the designated sites at risk from local impacts are those within 200m of a road with increased traffic, which feature habitats that are vulnerable to nitrogen deposition/acidification. APIS provides a searchable database and information on pollutants and their impacts on habitats and species."	
	"Natural England commends the precautionary intent of considering sites undeliverable within 200m of an internationally or internationally designated site, however, whilst this may be true in some instances distances are less relevant that pathways and impact. Some sites within 200m may be deliverable without impact whist other sites more than 200m away may have greater concerns. The same is true of Geological SSSIs, locally designated sites, ancient woodlands and habitats supporting protected species."	Noted. The 'showstopper' criteria have been removed from the Site Appraisal Methodology, as it is considered that such effects would deem an option unreasonable and therefore such options need not be subject to SA.
	"The Local Plan should be screened under Regulation 102 of the Conservation of Habitats and Species Regulations 2010 (as amended) at an early stage so that outcomes of the assessment can inform key decision making on strategic options and development sites. It may be necessary to outline avoidance and/or mitigation measures at the plan level, including a clear direction for project level HRA work to ensure no adverse effect on the integrity of internationally designated sites. It may also be necessary for plans to provide policies for strategic or cross boundary approaches, particularly in areas where designated sites cover more than one Local Planning Authority boundary."	Noted – no change required. An HRA will be carried out during the next iteration of the Plan, details of which we will discuss with Natural England in due course.

Organisation	Issues raised	The Council's Responses
	"Natural England would welcome early discussion on the Habitats Regulations Assessment (HRA) of the plan and can offer further advice as policy options are progressed." "Cross boundary issues and in combination effects will be particularly important when considering potential impacts on European sites through the Habitats Regulations Assessment (HRA) process" "Habitats Regulations Assessment (HRA) Natural England notes that a HRA has not been provided with this iteration of the plan but that further assessment of impacts on European sites will be provided at subsequent stages. Natural England would like to discuss the HRA work for the Local Plan with you in more detail in due course."	
Strutt & Parker	"Of the 20 proposed SA Objectives, the majority address environmental concerns. It is important the sufficient weight is afforded to the social and economic SA objectives to redress what could otherwise represent an imbalance with the potential to distort the assessment process."	Noted – no change required. Sustainability appraisals incorporate the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 (commonly referred to as the 'Strategic Environmental Assessment Regulations'). SA objectives therefore should cover the likely significant effects on the environment, 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, landscapes and the interrelationship between the above factors, alongside social and economic considerations. The SA objectives streamline three dimensions of sustainable development and each strand of sustainability is given an equal weighting in the SA assessment process, ensuring a balanced approach to the

Organisation	Issues raised	The Council's Responses
		assessment process.
	Suggests that Thurrock Council include 'uncertain' as one of the potential scores in its assessment methodology. "As the Thurrock Local Plan Sustainability Appraisal Scoping Report at paragraph 6.3.6, there will be occasions when the effects cannot be predicated and are uncertain. Such effects may only follow through further detailed assessment outside of the plan-making process, through for example a detailed planning application (again as recognised at paragraph 6.3.6). It is important that the Council does not seek to attribute a 'score' in such circumstances, but rather acknowledge the uncertainty."	The SA has clarified that 'uncertain' is one of the potential scores in its assessment methodology (see **Figure 2.1**), although it is considered that this does not need to be included as a column in the Site Assessment Methodology table as there are no specific criteria for a score to be uncertain . This score acknowledges that a policy/proposal could have uncertain effects on the objective, and the level of information available at a time of assessment does not enable a clear judgement.
	"We note that in respect of potential development sites, the Sustainability Appraisal Scoping Report proposes inclusion of a 'showstopper' rating, which it states may be given to a site which cannot be developed. This is a somewhat unorthodox approach, and if it is to be pursued we would urge the Council to exercise caution in attributing this to a potential site – if a site were to be erroneously assessed as having a 'showstopper', this could lead to the Plan failing to consider a reasonable alternative, resulting in a breach of the SEA Regulations and leaving the plan vulnerable to challenge." We have significant concerns regarding a number of criteria proposed to constitute a 'showstopper'. In respect of the SA Objective on biodiversity, flora and fauna, it is unclear why any site within 200 metres of an internationally or nationally designated site should be deemed to be intrinsically unacceptable, regardless of the particular circumstances, the nature of the development in question, or the potential for mitigation to be incorporated. We have similar concerns in respect of the	The 'showstopper' criteria have been removed from the Site Appraisal Methodology, as it is considered that such effects would deem an option unreasonable and therefore such options need not be subject to SA.

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	geology and soils SA Objective, and the suggestion that sites within 200m of an SSSI be automatically considered unacceptable Further on the issue of 'showstoppers', there is no justification as to why sites that include a heritage asset such as a Scheduled Monument, Grade I, or Grade II* Listed Building should be seen as being fundamentally incapable of being appropriate developed. The potential impact on a heritage asset is naturally an important consideration, but this does warrant the preclusion of a site containing a heritage asset from due consideration. By way of example, a number of Local Plans include the allocation of existing town centres for regeneration, including in the case of town centres with multiple heritage assets. Such allocations often seek to enhance the setting of such heritage assets, acknowledging that development has the potential to improve an asset. Equally, the Council's own Issues and Options (Stage 1) consultation, published alongside this SA consultation, promotes the enhancement of historic assets in paragraphs 3.81 - 3.83. Automatic rejection of sites because they include a heritage asset, without due consideration as to how that heritage asset may be effected, could result in the unjustified rejection of a reasonable alternative, rendering the plan contrary to the SEA Regulations."	
Thurrock Public Health Department	A number of hand-written comments on the data contained in the Scoping Report have been made.	Comments have been taken into account in the relevant sections of this SA report and the approach to HIA has been developed taking into account comments from the Thurrock Public Health Department.

Appendix 2
Review of plans, policies and programmes

Table A2.1: Review of plans, policies and programmes relevant to the preparation of the Thurrock Local Plan and the SA

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
INTERNATIONAL AND NATIONAL		
<u>Planning and Development</u> Århus Convention (1998), and amendment (2005) Environmental Information Regulations (2004) Strategic Plan for the Convention (2008) Riga Declaration towards the EU Urban Agenda (2015) SEA Directive 2001/42/EC Environmental Assessment of Plans and Programmes Regulations (2004) The Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended) Planning and Compulsory Purchase Act (2004) Localism Act (2011) MHCLG (2017) Housing White Paper: Fixing our broken housing market	The UK Environmental Information Regulations transpose into law the European Århus Convention, which establishes a number of rights of the public (citizens and their associations) with regard to the environment. Public authorities (at national, regional or local level) are to contribute to allowing these rights to become effective. The Århus Convention creates obligations in three fields or 'pillars': • Public access to environmental information; • Public participation in decision-making on matters related to the environment: provision; and • Access to justice (i.e. administrative or judicial review proceedings) in environmental matters. The Strategic Plan for the Convention highlights challenges and reinforces the need to address them. This includes the requirement that public authorities take responsibility for both the quality and level of public participation. The Riga Declaration provides political support for the development of the EU Urban Agenda in full respect of the principles of subsidiarity and proportionality and takes account of the intergovernmental work of Member States so far. The Planning and Compulsory Purchase Act 2004 established a system of local development planning in England. The Town and Country Planning (Local Planning) (England) Regulations 2012 make provision for the operation of that system. The Act imposes a duty to co-operate in relation to planning of sustainable development. The Act makes provision in relation to the local plan and supplementary planning documents. The Regulations prescribe the form and content of local plans and supplementary planning	Public consultation and access to the environmental information used to support decision-making must be provided as part of the Local Plan development process. The SEA Directive and Regulations require that public consultation is carried out on the draft Local Plan and its accompanying SA. The quality and level of participation needs to be sufficient to enable the public and stakeholders to actively take part in development of the Local Plan. The SA report and all accompanying documents should be as transparent, readable and accessible to the full range of stakeholders.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	documents (to be prepared by local planning authorities) and prescribes which documents are to be local plans. The Regulations also prescribe the process for preparation of the local plans and supplementary planning documents The Localism Act abolished Regional Strategy (which previously local plans had to be in general conformity with) and replaced this with a Duty to Co-operate. This requires local authorities and other public bodies to work together in the preparation of development plans. The 2017 Housing White Paper sets out proposals to achieve the aims of boosting housing development and access to sufficient, decent housing through the following steps: • Planning for the right homes in the right places. • Building homes faster. • Diversifying the market. • Helping people now.	
National Planning Policy Framework (NPPF), MHCLG 2018 Planning Policy Guidance, MHCLG https://www.gov.uk/government/collections/planning-practice-guidance	**Presumption in favour of sustainable development.** There are economic, social and environmental objectives of the planning system, which should be pursued in mutually supportive ways. The development plan has a statutory status as the starting point for decision making. The NPPF sets out the following ways in which sustainable development should be achieved: • Delivering a sufficient supply of homes. • Building a strong, competitive economy. • Ensuring vitality of town centres. • Promoting healthy and safe communities. • Promoting sustainable transport. • Supporting high quality communications. • Making effective use of land.	The SA should look to ensure that the Local Plan guides development to the most appropriate locations, maximising the environmental, social and economic benefits in line with NPPF principles. The SA will include economic, social and environmental objectives.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	• Achieving well-designed places. • Protecting Green Belt Land. • Meeting the challenge of climate change, flooding, and coastal change. • Conserving and enhancing the historic environment. Facilitating the sustainable use of materials.	
Equality Equality Act (2010) Homelessness Act (2002) Regulatory Framework for Social Housing (2015)	The Equality Act 2010 brought together the following preceding acts: • The Equal Pay Act 1970 • the Sex Discrimination Act 1975 • the Race Relations Act 1976 • the Disability Discrimination Act 1995 • the Employment Equality (Religion or Belief) Regulations 2003 • the Employment Equality (Sexual Orientation) Regulations 2003 • the Employment Equality (Age) Regulations 2006 • the Equality Act 2006, Part 2 • the Equality Act (Sexual Orientation) Regulations 2007 The Equality Act requires public authorities to take a pro-active approach to eliminating discrimination. Specifically, they must promote equality of opportunity, good relations between people of different racial groups and positive attitudes towards those with disabilities, while eliminating unlawful discrimination. The Homelessness Act places a duty on local authorities to formulate a homelessness strategy by carrying out a homelessness review for the district.	The Local Plan will be guided by an Equalities Impact Assessment, which will be carried out as part of the SA. Issues relating to age, disability, gender, race, religion/belief and sexual orientation will be accounted for and addressed, as required. The Local Plan should look at ways in which homelessness could be reduced
Health The Human Rights Act Healthy lives, healthy people (White Paper)	The Human Rights Act makes provision for the protection and improvement of human health. The Health lives paper sets out the Government's intention	The Local Plan will be guided by a Health Impact Assessment, which will be carried out as part of the SA.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
DoH, (2010) EU Health 2020 Health and Social Care Act (2012) Fair Society, Healthy Lives (the Marmot Review) (2010)	to improve health and wellbeing and tackle inequalities; highlights the need to put local communities at the heart of public health. The Marmot Review found that individual health is influenced by wider determinants such as income, education, local environmental quality and employment – what Marmot calls the 'social determinants of health'. The review set out six policy objectives for reducing health inequalities including 'to create and develop healthy and sustainable places and communities'	The Local Plan and SA should seek opportunities to improve access to health services and promote health behaviours, which can contribute to tackling health inequalities.
Sustainability The Johannesburg Declaration of Sustainable Development (2002) Renewed EU Sustainable Development Strategy (2006) Securing the Future: The Government's Sustainable Development Strategy, Defra (2005) The UK Government Sustainable Development Strategy: Securing the Future, DTI (2005)	These documents affirm international and national commitments to sustainable development and set out actions for nations to strengthen and improve governance at all levels, for the effective implementation of Agenda 21. The principal aim of the EU Sustainable Development Strategy is to ensure environmental protection (including natural resources and quality of the environment, pollution, sustainable consumption and protection), social equity (healthy, just society) and cohesion and economic prosperity. The UK Sustainable Development Strategy outlines objectives for sustainable development. The objectives are driven by environmental improvement, equality and inclusiveness, 'polluter pays' principle and incentives for natural resource efficiency, promoting participation and applying strong scientific evidence with accounting for uncertainty, public attitudes and public values.	The Local Plan should support the sustainability aims of Agenda 21 at the local level, and will need to reflect the principles of sustainable development. The SA will, under various topics, consider potential impacts of the Local Plan on sustainability. The SA will address impacts on the climate via greenhouse gases (including CO_2) emissions. The aim of the Local Plan should reflect the first three objectives of the UK Sustainable Development Strategy. All five objectives of the strategy are reflected in the general approach to the appraisal. The SA should examine the cumulative effects that may result from the Local Plan in combination with other housing delivery strategies.
Environment The Seventh Environment Action Programme of the European Community (2014)	The latest Environment Action Programme guides European environmental policy until 2020, giving a long-term direction of vision beyond that of where it wants the Union to be by 2050. It advocates three key objectives: • protect, conserve and enhance the Union's natural capital; • turn the Union into resource-efficient, green and	In developing the Local Plan, the Council should consider how their strategy can positively influence issues such as air quality, the urban environment, natural resource use and waste prevention and recycling. The SA will help to take these issues into account during Local Plan

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	competitive low-carbon economy; and • safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing.	development.
Climate Change United Nations Framework Convention on Climate Change, (1992 – came into force 1994) Kyoto Protocol (1997) and Doha Amendment (2012) Climate Change Act (2008) Climate Change: the UK Programme (2006) The UK Low Carbon Transition Plan: National strategy for climate and energy (2009) Energy from Renewable Sources Directive (2009/28/EC)	These documents aim to mitigate the negative impacts of climate change, and to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Under the Kyoto Protocol, 38 Countries (plus the EU) committed to individual, legally binding targets to limit or reduce their greenhouse gas emissions. These add up to a total cut in greenhouse gas emissions of at least 5% from 1990 levels in the commitment period 2008-2012. The UK has committed to an 8% reduction (base year = 1990). The Climate Change Act aims to achieve the 5% Kyoto target, setting out a legally binding framework for the UK to cut carbon emissions. It also paves the way for the UK to adapt to climate change. The Climate Change Programme emphasises the contribution that Local Planning Authorities can make to reducing transport-related emissions of greenhouse gases. The national strategy sets out ambitious targets to reduce harmful carbon emissions over the next 50 years, with major increases in renewable energy and energy efficiency. The UK Low Carbon Transition Plan sets out how the UK will meet a 34% cut in emissions on 1990 levels (or an 18% cut on 2008 levels) by 2020 to deliver the UK's legally binding target to cut emissions by at least 80% by 2050. It will do this through a set of five-year "carbon budgets" to 2022 to keep the UK on track.	The Local Plan should be strongly based on the need to reduce greenhouse gas emissions, particularly by reducing the need to travel and the distances travelled. Development and its management should be energy-efficient. The impact of likely climate change on all types of infrastructure (e.g. future drainage requirements, resilience to extreme temperatures) should also be considered. The SA will consider the effect of the Local Plan on emissions.
Conservation and Biodiversity Convention on Biodiversity (1992) EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora 92/43/EEC	The convention requires development of strategies plans and programmes for conservation and sustainable use of biological diversity. These pieces of legislation aim to protect biodiversity - the variety of life - through the conservation of natural habitats	The Local Plan and SA should consider effects on all nature conservation, including designated sites and other natural habitats, as well as biodiversity impacts. The SA should take a holistic view of ecosystems

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(1992) EC Directive on the Conservation of Wild Birds 09/147/EC (2009) Amended Wildlife and Countryside Act (1981) The Conservation of Habitats and Species Regulations (2017)) The Marine and Coastal Access Act (2009) UK Post-2010 Biodiversity Framework, JNCC and DEFRA (July 2012) National Environment and Rural Communities Act (2006) 'Working with the Grain of Nature': A Biodiversity Strategy for England (2002)	and wild plants and animals. They create a network of 'Natura 2000' sites which include Special Areas of Conservation (SA / IIACs) and Special Protection Areas (SPAs), which, on land, are already Sites of Special Scientific Interest (SSSIs), with they also aim to protect. The Habitats Regulations are the UK legislation transposing The Birds Directive and Habitats Directive into UK law. The Habitats Regulations also include for the protection of priority habitats and species, and SSSIs. The Marine and Coastal Access Act allows for the creation of Marine Conservation Zones, which protect a range of nationally important marine wildlife, habitats, geology and geomorphology. The UK Post-2010 Biodiversity Framework replaces the UK Biodiversity Action Plan (1992). The purpose of the Framework is to set a broad enabling structure for action across the UK between now and 2020. The Strategy seeks to ensure biodiversity considerations become embedded in all main sectors of public policy and economic activity and set out a programme to make the changes necessary to conserve, enhance and work with the grain of nature and ecosystems rather than against them. It is the principal means by which the Government will comply with duties under section 74 of the CRoW Act.	rather than focusing on 'islands' of protected species. The strategy should be consistent with the objectives of national conservation strategies and their local implementation mechanisms - e.g. the Thurrock Greengrid Strategy (2007). The SA will recommend mitigation for any negative nature conservation impacts, considering first avoidance of impacts, and then minimisation and compensation where they cannot be avoided. Mitigation should be proactive through site selection, alternatives and timing. Opportunities to benefit nature conservation and biodiversity will also be sought. Habitats Regulations Assessment (HRA) screening will be conducted in order to ensure that European sites within and outside of Thurrock are not affected.
Water The Water Framework Directive 2000/60/EC - 'The WFD' Water Act (2003) Water Resources Strategy for England and Wales (2009) Directing The Flow – A new approach to integrated water resources management EC, (2006) A Framework for River Basin Planning in	The WFD expands the scope of water protection to all waters, surface waters and groundwater, and aimed to achieve 'good' status or potential for all waters by 2015, or under certain provisions, 2021 or 2025. The Water Act is national legislation which transposes the WFD, and the River Basin Management Plan (RBMP) for the Thames River Basin District implements this at a regional level – see regional documents below. The Water Resources Strategy includes various actions to plan for sustainable, reliable water supplies for people and businesses, whilst also protecting the environment.	The Local Plan and SA should address climate change, water and flood risk and seek to achieve the protection and improvement of water resources and quality. The Local Plan should not lead to a worsening – and where possible should lead to an improvement – in conditions in the water environment. The SA will address the potential for the Local Plan to improve surface runoff quality

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England and Wales, EA (2006)		and look at ways in which the Local Plan could improve the quality of aquatic ecosystems through new development.
Flood Risk Flood & Water Management Act (2010) UK Water Strategy – Future Water (2008) Making Space for Water: A Government Strategy for Flood and Coastal Erosion Risk Management in England, DEFRA (2005)	The Flood & Water Management Act 2010 assigned new responsibilities to local authorities to work in partnership with the Environment Agency (EA), water companies and others to manage various aspects of flood risk. It requires Lead Local Authorities to produce a local strategy setting out significant flood risks affecting their area, and how they intended to address them. The UK Water Strategy (2008) builds on the principles of the existing Government Strategy or Flood and Coastal Erosion Risk Management - 'Making Space for Water' (2005) to ensure a fully integrated approach to flood risk and water management up to 2030.	The Local Plan and SA should take into account priorities and measures included in the Strategy to ensure new development avoids increasing flood risk as fully as possible, and in situations where it could, adequate mitigation is provided. Development should be located away from areas of flood risk, where possible, and sustainable use of water should be promoted in new development. The SA can consider how the Local Plan can reduce the threat of flooding to communities.
Soil EU Thematic Strategy for Soil Protection (2006) EU Environmental Liability Directive (99/31/EC) (1999) Safeguarding Our Soils - A Strategy for England (2009)	The EU Soil Strategy (2006) was widely regarded as a precursor to the development of a Soil Framework Directive to protect and ensure the sustainable use of soil. Its aim was to prevent further soil degradation and restore degraded soil in line with its current and intended use. While the European Commission decided in May 2014 to withdraw the proposal for a Soil Framework Directive, the Seventh Environment Action Programme (2014) recognises that soil degradation is a serious challenge. The EU Environmental Liability Directive (99/31/EC) focuses on prevention and remediation of environmental damage, including land contamination, which presents a threat to human health. The England Soil Strategy sets out a vision to improve the management of soil and tackle soil degradation within 20 years in England as part of maintaining sustainable food supplies and developing resilience to climate change.	The Local Plan should consider the need to conserve soil resources, particularly those of high quality, and improve the quality of soils in general. The SA should consider the likely significant effects of the Local Plan on soil resources and quality, and aim to minimise negative effects.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
Land Use Territorial Agenda of the European Union 2020 (2011)	More recently, integrated spatial development has been addressed by the Territorial Agenda of the EU (2011) which focuses on mobilising the potential of European regions and cities for sustainable economic growth and more jobs.	The Local Plan should address the issue of land use and aim to ensure that land is used and managed sustainably. The SA should consider and reflect the need for land to be developed to enable growth; recognising that this can come at a trade-off in terms of environmental priorities.
Cultural Heritage The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1987) The European Convention on the Protection of Archaeological Heritage (1990) Hedgerows Regulations 1997 (amended 2003) Ancient Monuments and Archaeological Areas Act (1979) Planning (Listed Buildings and Conservation Areas) Act (1990)	The Conventions and this key historic environment legislation set out a framework for the protection of assets of national value, as well as archaeological assets generally. It includes for the protection of Scheduled Monuments, Conservation Areas, Registered Parks and Gardens and Listed Buildings. The Hedgerow Regulations set the legislative context for the protection of countryside boundary features.	The Local Plan could influence the historic environment in several ways, including impacts upon townscape, historic structures and other historic features. The potential contribution of the Local Plan to the historic environment should be taken into account, and the SA should seek to identify opportunities for improvements, ensuring the Local Plan protects historic environmental features as much as possible- offering the highest protection to nationally designated or significant features.
Noise Environmental Noise Directive – 2002/49/EC (2002) The Environmental Noise (England) (Amendment) Regulations (2010)	The EU Noise Directive is implemented in the UK by the Environmental Noise Regulations. Amongst their provisions, they require the production of noise mapping to determine exposure to environmental noise, and the adoption of noise action plans which should respond to the identification of noise issues and effects; managing and reducing them where necessary.	The Local Plan should consider the implications of policies and measures on noise levels. The SA should identify potential significant effects of the Local Plan with regard to noise, referring to existing noise mapping or the relevant action plan(s), if available.
Air Quality Air Quality Framework Directive 2008/50/EC (2008) UK Air Quality Strategy (2007) Air Quality Standards Regulations (England) (2010) Air Quality Regulations (2000) DEFRA draft plans to improve air quality in the	This Directive involves the merging of most existing air quality legislation into a single directive (except for the fourth daughter directive) with no change to existing air quality objectives. The Directive seeks to define and establish objectives for ambient air quality to avoid, reduce or prevent harmful effects on human health and the environment as a whole. The UK strategy sets out the planning framework for addressing air quality issues and establishes the standards	Development of the Local Plan and the SA will take into account any emissions caused by new development, including any increase in traffic levels. The SA will address the potential for significant air quality impacts. The Local Plan should prioritise reducing the need to travel and include general traffic reduction strategies through optimum siting

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
UK (2015) EU Thematic Strategy on Air Pollution (2005)	and objectives to be achieved.	of new development.
Waste Waste Framework Directive (2008/98/EC) and daughter directives e.g. Landfill Directive (1999/31/EC) The Waste (England and Wales) (Amendment) Regulations 2012 Waste Strategy for England (2007) PPS10: Planning for Sustainable Waste Management, DCLG (2005)	The EU directive sets the basic concepts and definitions related to waste management and lays down waste management principles such as the "polluter pays principle" and the "waste hierarchy". The Directive is transposed into UK law through the Waste Regulations (2012). The National Planning Policy for Waste sets out detailed waste planning policies and places responsibility on waste planning authorities to ensure that waste management is considered alongside other spatial planning concerns, such as housing and transport, recognising the positive contribution that waste management can make to the development of sustainable communities. This includes preparing Local Plans which identify sufficient opportunities to meet the identified needs of their area for the management of waste streams. The Waste Strategy describes a vision for managing waste and resources better and sets out changes needed to deliver more sustainable development in England.	The Local Plan should help to reduce waste through the appropriate location of new development and the promotion of recycling and use of recycled materials. The SA can help to identify any potential effects on waste resulting from new development allocations. The Local Plan and SA should look at ways in which waste can be reduced through new development allocations, including provision of recycling and composting facilities. When siting new development, consideration should also be given to the distance waste will be required to travel.
Landscape and Rural Issues European Landscape Convention (Florence Convention) (2000) Rural Strategy, DEFRA (2004) Countryside and Rights of Way Act 2000 (CRoW) Natural Environment and Rural Communities Act 2008	The European Landscape Convention defined landscape and highlighted the importance of developing landscape policies dedicated to the protection, management and creation of landscapes, and establishing procedures for the general public and other stakeholders to participate in policy creation and implementation. The Rural Strategy (2004) reviews and updates the Rural White Paper (2000) following the creation of the Department for Environment, Food and Rural Affairs in 2001. It set out a new devolved and targeted approach to rural policy and development delivery. The Countryside and Rights of Way Act (2000) addresses the designations of Areas of Outstanding Natural Beauty	The Local Plan and SA should be informed by Thurrock's Landscape Character Assessment(s) and consider the interaction of landscape with other sustainability topics such as biodiversity, flora and fauna access to recreation, and human health and well-being.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	(AONBs), Sites of Special Scientific Interest (SSSIs), Open Country and Common Land. It also adds provisions to the consideration and management of the Public Right of Way (PRoW) network.	
Transport Local Transport Act 2008 Action for roads Command Paper in July 2013 Consultation on the Lower Thames Crossing (2016)	Action for Roads set out the Government's policy for investment in and maintenance of strategic and local roads to 2021.	The SA should consider the potential for effects relating to transport which fall under multiple sustainability topics – i.e. human health resulting from emission levels, and changes in physical activity from promoting non-motorised means of transport. SA needs to take account of planned investment in the strategic road network in terms of potential phasing, impacts, accessibility and development opportunities.
Energy Energy Efficiency Directive (2012) Renewable Energy Directive (2009/28/EC) (2009) Energy White Paper, Meeting the Energy Challenge DTI (2007) Energy Act, DECC 2010	The Energy Efficiency Directive sets out the framework for measures to promote energy efficiency across the EU and help the EU reduce its energy consumption by 20% The Renewable Energy Directive establishes an overall policy for the production and promotion of energy from renewable sources in the EU. It requires the EU to fulfil at least 20% of its total energy needs with renewables by 2020 – to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020. The white paper sets out the international and domestic energy challenge. The Energy Act includes provisions on: • introducing a new carbon capture and storage incentive; • tackling fuel poverty by lowering the energy bills of the most vulnerable consumers; • clarifying Ofgem's remit; and • tackling market power exploitation.	The Local Plan and SA should consider ways in which CO2 emissions could be reduced and how new housing can be heated adequately and affordably. The Local Plan should address any outstanding issues of fuel poverty and ensure that new development reduces the risk of increasing fuel poverty in the borough.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
Education and Skills Skills for Sustainable Growth Strategy (2010) Rigour and Responsiveness in Skills document (2013) Europe 2020	The strategy set out the direction for skills policy for the next five years and the shared responsibility of Government, employers and individuals to create a system for skills in which all parties can invest with confidence and benefit with consistency. The aim was to develop the skills needed to support a competitive economy that is environmentally sound and resource efficient. In 2013, the Government built on this work with publication of a document entitled 'Rigour and Responsiveness in Skills', with the objective of setting out the framework to accelerate reforms to the skills system to ensure that the UK's vocational training offer allows its citizens to compete with any in the world.	The Local Plan and SA should incorporate aspirations set out in these documents and aim to ensure that spatial development facilitates skills development in Thurrock, particularly with regard to the siting and nature of new employment developments.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
REGIONAL AND LOCAL		
River Basin Management Plan (RBMP) for the Thames River Basin District, Updated December 2015	This plan focuses on protection, improvement and sustainable use of the water environment. Many organisations and individuals help to protect and improve the water environment for the benefit of people and wildlife. River basin management is the approach the Environment Agency uses to achieve the improvement needed in the Thames River Basin District.	Data from this plan will be used to inform the evidence base, while aims and objectives will be considered in development of the SA Objectives and Framework.
Planning and Transport Strategy for Thames Gateway South Essex (2013)	The strategy was set up to raise overall prosperity levels of Thames Gateway South Essex to equal the Greater South East, and provide a better quality of life for the population by developing and maintaining a sustainable transport system that promotes growth and strengthens provision for all users, whilst minimising impact on the built and natural environments. It sets out objectives to: • facilitate sustainable employment, economic and housing growth; • minimise the impact of development and transport on the environment; • enhance connectivity internationally, nationally and within Thames Gateway South Essex (TGSE) to jobs, education and services; and • enhance the quality of life across TGSE through sustainable transport system.	These objectives should be taken into account in development of the Sustainability Objectives that form part of the Sustainability Framework.
Adopted Local Plan The Core Strategy and Policies for Management of Development (2011) The Core Strategy and Policies for Management of Development Focused Review (2015) Thurrock Proposed Submission Core Strategy and Policies for Management of Development Plan (2010)	The adopted Core Strategy contains objectives and policies covering a range of spatial development issues in relation to education, health, community safety, sustainable development, climate change, energy and flood management, housing, employment, sport and leisure, community facilities and the natural and historic environment. The focus review amended selected number of policies to accord with current Governmental advice and the NPPF (2012).	The Core Strategy and Policies for Management of Development are being updated as part of the emerging Local Plan. Adopted documents should be reviewed to help inform development of the SA Objectives and Frameworks, with a cross-checking exercise to ensure the new Local Plan does not conflict with previous plans. This document should be used to inform consideration of HRA, as well as development of objectives around

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	This document reports the findings of a Habitats Regulation Assessment of the potential effects of Thurrock's 2010 LDF Core Strategy (CS) on the Natura 2000 network.	biodiversity, flora and fauna for both the SA and Local Plan.
The Site Specific Allocations and Policies Local Plan (2013)	A planning document that set out sites allocation for new development in Thurrock, together with area-based policies. The plan was prepared to support the delivery of the adopted Core Strategy; however, on 12 Feb 2014 Thurrock's cabinet authorised the preparation of a new Local Plan for Thurrock. Work on this plan will instead be incorporated into the new Local Plan.	Work undertaken on the Site Allocations Local Plan should be kept and used to inform the new Local Plan. The new Local Plan should include site-specific detail, which was proposed to be set out in the prepared plan.
Emerging Local Plan Thurrock Borough Local Development Scheme(2015)	The LDS is the Council's project plan for preparing a Local Plan for the Borough, which will eventually replace the Thurrock Core Strategy which was adopted in December 2011.	The LDS should be considered throughout the SA process as the point of reference for Local Plan Development. The staged process to SA should correspond to a similar staged process in the Local Plan's development.
Thurrock Economic Growth Strategy 2016-2021	The Economic Growth Strategy was created as a basis for securing investment and economic diversification, including the identification of opportunities for Thurrock. The strategy signifies a shift towards enhancing growth potential. It aims to ensure provision of an appropriate number of jobs but also to create higher value jobs, improve wage levels and increase productivity.	The Local Plan and SA should make provision for identifying and delivering economic objectives. Updated baseline information contained in the strategy will be used to inform the SA evidence base.
Thurrock Council's Housing Strategy 2015-2020	The housing strategy sets out the Council's vision for working together with all housing providers to deliver both housing led growth and regeneration in the borough and improve the health, wellbeing and life opportunities for communities.	Provision of housing, particularly housing that is affordable will be considered in the SA through the inclusion of a housing topic. In particular this topic will seek to identify areas of particular housing deprivation.
Thurrock Homelessness Review and Prevention Strategy 2015-2020 (2015)	This strategy document underpins and seeks to address the four main reasons why people are homeless, and sets out action plans to target reduction in the number of homeless people for the next five years.	
Thurrock Joint Strategic Needs Assessments	The Joint Strategic Needs Assessment (JSNA) is an assessment of the current and future health and social care	Data from these assessments will be incorporated into the Evidence Base, while

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	needs of the local community that could be met by local authority, NHS England and Commissioning Group (CCGs). The JSNA: Children and Young People looks specifically at the Thurrock has prepared many topic-specific JSNAs, including adult mental health, children and young people's mental health and whole systems obesity.	aims and objectives will help shape development of the SA Objectives and Framework.
Thurrock Children and Young People Plan 2015-2016 (2015)	The plan is the overarching strategy for Thurrock's Children and Young people Partnership, setting the direction and priorities for services for children, young people and families over the next year.	Data from these assessments will inform the Evidence Base, while aims and objectives will help shape development of the SA Objectives and Framework.
Thurrock Housing Strategy 2015-2020 (2015)	The strategy document set out three core priorities for working together with housing providers to deliver housing-led growth and regeneration in the borough and improve the health, wellbeing and the life opportunities for the communities.	The Local Plan should take into consideration the vision and policies of the Housing Strategy for Thurrock to improve health and wellbeing of the community. The SA should consider the potential cumulative effects of any planned development with this Strategy.
Thurrock School Travel Strategy (SMOTS) 2015-2018 (2015)	The strategy was developed in response to the Education Act 2006 and builds on previous Sustainable Modes of Travel Strategies. It focuses on delivering sustainable, healthy and safe journeys to education facilities for children. The strategy aims to increase the proportion of children and young people who travel by sustainable and active mode to education sites for the next three years.	Aims and objectives should be used to shape development of the SA objectives, particularly around the topic of obesity and physical activity.
Thurrock Community Safety partnership Crime and Safety Assessment (2015)	The assessment covers the scale and scope of crime, disorder and community safety issues in Thurrock.	The results of this assessment will form part of the baseline of the appraisal, in addition to helping identify the key sustainability issues.
Thurrock Health and Well-being Strategy 2016-2021	The strategy sets out the vision, principles, goals and objectives to improve the health and wellbeing of all residents in Thurrock. This includes ensuring more residents have access to education and employment, creating attractive and decent outdoor spaces and homes, addressing emotional health and wellbeing, focusing care around the	Data from this strategy will be incorporated into the evidence base, while aims and objectives will help shape development of SA Objectives and Framework, particularly for health topics.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	person and addressing key health issues in the area, such as obesity.	
Thurrock Transport Strategy 2013-2026	The strategy sets out the aims, objectives and a series of policies to help deliver and enhance an accessible and sustainable transport network which will enable users to access education, healthcare and employment opportunities in Thurrock. It pays particular attention to major development projects, including Tilbury Port, London Gateway and Lakeside, which are vital to the economic prosperity of Thurrock. Tackling congestion, delivering accessibility, improving air quality and making Thurrock's roads safer are core elements of the Transport Strategy which support economic growth and will help facilitate regeneration throughout the borough for years to come.	The Local Plan should include policies which help to deliver a reliable, well maintained transport system, promoting measures aimed at reducing congestion, improving health (walking and cycling measures), air quality and road safety. The SA should consider transport-related effects which fall under multiple topics – i.e. human health resulting from emissions, and changes in physical activity from promoting non-motorised means of transport.
Thurrock Community Strategy (2012)	This Strategy identifies a long-term vision for improvements across Thurrock and its communities to create a place of opportunity, enterprise and excellence, where individuals, communities and businesses flourish. The five priorities it supports are to: • create a great place for learning and opportunity; • encourage and promote job creation and economic prosperity; • build pride, responsibility and respect; • improve health and wellbeing; and • promote and protect our clean and green environment.	These priorities should be taken into account in development of the Sustainability Objectives that form part of the Sustainability Framework.
Thurrock Interim Air Quality Action Plan for Transport 2012/13-2014/15 (2012)	An action plan to improve air quality in Thurrock focusing purely on reducing emissions of pollutants from Transport sources.	Data from this Plan will inform the Evidence Base. Aims and objectives will help shape development of the SA Objectives and Framework.
Thurrock Traffic Management Plan: 2012-2026	A plan to help manage congestion and comply with the Traffic Management Act 2004; setting out the traffic	Data from this plan will be incorporated into the Evidence Base, while aims and

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
(2012)	management issue the Borough faces and what the Council plans to do to address those issues.	objectives will help shape development of the SA Objectives and Framework.
Thurrock Energy Study (2010) The Local Climate Impacts Profile Report: Planning for Thurrock's Adaptation to Impacts of Climate Change (2010)	The study assesses renewable and low-carbon energy generation opportunities for Thurrock Council, providing an evidence base to support proposed planning policies and evaluate the feasibility of renewable energy targets in new residential and non-residential buildings. The Local Climate Impacts Profile Report was developed to assist the Council and its partners in developing a comprehensive risk-based, site and service-specific action plan to ensure that Thurrock's infrastructure, services and communities are resilient to impacts of climate change.	Data from this study will be incorporated into the SA Evidence Base, while aims and objectives will help shape development of the SA Objectives and Framework.
Thurrock Local Flood Risk Management Strategy (2015)	In December 2015, Thurrock published a Local Flood Risk Management Strategy to provide a framework for how the council, as the Lead Local Flood Authority, will work alongside other Risk Management Authorities (RMAs) to manage and respond to local flood risk identified in Thurrock. .	This Strategy will be incorporated into the SA Evidence Base, while aims and objectives will help shape development of the SA Objectives and Framework.
Thurrock Surface Water Management Plan (2014)	The document describes the Thurrock Council's preferred surface water management strategy including consideration of flooding from sewers, drains groundwater and runoff from land, small watercourses and ditches that occurs as a result of heavy rainfall.	Data from this study will be incorporated into the SA Evidence Base, while aims and objectives from the management plan will help shape development of the SA Objectives and Framework.
Thurrock Water Cycle Study (2010)	The study assessed the impact of proposed growth targets for Thurrock on its water cycle infrastructure and water environment, in order to determine where additional investment was required to build new infrastructure or implement management measures.	
Mineral and Waste Development Plan Document (2009) Issues and Options Thurrock Waste Management Capacity Needs Assessment (2010)	The aim of this document was to implement the vision and policies for minerals and waste planning set out in the Core Strategy through the provision of appropriately located and sized sites, in order to meet the regional need for primary mineral extraction, secondary/recycled aggregates processing and the management of waste originating within	Aims and objectives should be used to shape development of the SA material and waste objective and appraisal guiding questions.

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	the borough up to 2021. It will be superseded by the new Local Plan.	
Thurrock Unitary Historic Environment Characterisation Project (2009)	This report considers the sensitivity, diversity and value of the historic environment resources within Thurrock and aims to facilitate development of positive approaches to the integration of historic environment objectives into spatial planning.	Aims and objectives should be used to shape development of the SA objectives, particularly around the topic of cultural heritage.
Green Infrastructure Plan for Thurrock 2006-2011 (2007) Open Spaces Strategy 2006-2011 (2006) Thurrock Biodiversity Study 2006-2011 (2006) Thurrock Green and Blue Infrastructure Strategy (in progress)	The Green Infrastructure Plan, Open Spaces Strategy and Biodiversity Strategy documents together form a Green Grid Strategy for Thurrock. A new Green and Blue Infrastructure (GBI) Strategy is currently being produced. The GBI strategy will set out a range of strategic opportunities to improve green and blue infrastructure in Thurrock.	The Local Plan should incorporate the Green and Blue Infrastructure opportunities identified. The SA should recognise the multiple benefits green infrastructure can bring.
Thurrock Active Travel Strategy (2017)	• The study carried out route analysis for walking and cycling. It also identifies any gaps in provision, the potential impact of routes for greater use as well as their suitability for improvement. The strategy focused on active travel to growth areas and key destinations.	The Local Plan should include policies which help deliver a reliable, well maintained transport system, promoting measures aimed at reducing congestion, improving health (walking and cycling), road safety and air quality and reducing transport-related emissions. The Local Plan should promote equality of transport opportunity. The SA should include an objective to consider access to active and sustainable travel opportunities.
Thurrock Parking Strategy and Policies 2016 to 2021	The strategy sets out the council's policies strategies and policies for parking within the borough. The vision for the strategy is '*A place of opportunity, enterprise and excellence, where individuals, communities and businesses flourish.*' It sets out an action plan for parking improvements in the borough, including provision and improvement of parking facilities and improving enforcement.	The Local Plan could include policies to ensure the strategy is carried through in new developments.
Thurrock Biodiversity Action Plan 2007-2012	The plan identifies Thurrock's most important species and habitats; it includes a short term action plan for the	Data from this plan will inform the baseline. Aims and objectives will shape development

Document	Objectives and Requirements Relevant to the Local Plan	Implications for the Local Plan and Sustainability Appraisal (SA)
	conservation of each priority species or habitat identified.	of the SA Objectives and Framework.
Thurrock Single Equality Scheme (2012)	The scheme aims to ensure Thurrock services are provided fair and equal to the communities. Provide equal access to jobs, promote diversity and tolerance and prevent harassment and victimisation of residents, service users and employees.	This scheme and its aims will be considered as part of the equalities SA topic.

Appendix 3
Updated baseline information

Introduction

The evidence base is a key feature of the SA process. The NPPF makes it clear that Local Plans must be informed by a robust and credible, proportionate evidence base, and the SA is a key part of this evidence. Gathering sound information about the current and future state of the environment and communities will allow the SA to influence plan-making. A good SA evidence base provides the Council with the necessary assurance that the SA has identified the plan's potential effects correctly, so that it can consider whether and how to address those potential effects – for example, whether or not to adopt a particular SA recommendation.

An SA evidence base may include data gaps or be missing information and yet still be sound; it is important during the appraisal stage of SA to recognise opportunities to gather better information at appropriate stages in the future (e.g. site-specific assessments or planning applications), and this may form part of the SA's recommendations.

The Council is in the process of undertaking a comprehensive and extensive update of the Local Plan evidence base to ensure that the new Local Plan is compliant with the NPPF, and based upon up-to-date information and data. As studies and reports are completed they will be published on the Council's Local Plan website and will inform preparation of the plan and further iterations of the SA.

Data sources

A desk-based review has been undertaken to identify baseline conditions in Thurrock. The baseline review is based on readily available data and information gathered online and supplied by the Council. No specific site surveys have been undertaken to inform this work. Each sub-section in this Chapter includes a summary of relevant planning policies and legislation, along with an overview of the current and projected baseline for each SA topic. The topics have been grouped under three themes: Environment, Socio-economics and Health.

Environmental baseline

Air Quality

Introduction

Air quality is defined as the condition of the air with respect to the presence (or absence) of pollutants, including oxides of nitrogen (NO_x), carbon monoxide (CO), hydrocarbons, carbon dioxide (CO_2) and particulate matter (PM). The presence of such pollutants in the air can have wide ranging consequences from an environmental and health perspective.

Air with a high concentration of pollutants can exacerbate respiratory conditions such as asthma and bronchitis. From an environmental point of view, pollutants such as NO_x, CO and CO_2 can have significant global warming potential. In sufficient concentrations, NO_x can also lead to deposition of nitrogen in sensitive habitats, contributing to eutrophication or otherwise degrading the habitat.

Policy and Legislation

International

The EU Ambient Air Quality Directive (2008/50/EC) is a revision of previously existing European air quality legislation, and sets out long-term air quality objectives and legally binding limits for ambient concentrations of certain pollutants in the air. For NO_2 there are two limit values for the protection of human health. These require Member States to ensure that:

a. annual mean concentration levels of NO_2 do not exceed 40µg/m^3; and

b. hourly mean concentration levels of NO_2 do not exceed 200µg/m^3 more than 18 times a calendar year.

The 2008 directive replaced nearly all the previous EU air quality legislation and was made law in England through the Air Quality Standards Regulations 2010.

The EU Thematic Strategy on Air Pollution (2005) aims to cut the annual number of premature deaths from air pollution-related diseases by almost 40% by 2020 (using 2000 as the base year), as

well as substantially reducing the area of forests and other ecosystems suffering damage from airborne pollutants.

National

The Air Quality Standards Regulations 2010 establish mandatory standards for air quality and set limits and guides values for sulphur and nitrogen dioxide, suspended particulates and lead in air. Those limit values relevant to Thurrock are shown in **Table A3.1**.

Table A3.1 Air Quality Objectives relevant to Thurrock

Pollutant	Objective	Concentration Measured as	Date (European obligations)
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual Mean	1 January 2010
Particulate Matter (PM_{10})	50µg/m^3 not to be exceeded more than 35 times a year	24 Hour Mean	1 January 2005

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007)[1] sets health-based objectives for nine main air pollutants. Performance against these objectives is monitored where people are regularly present and might be exposed to air pollution.

The NPPF (2018) identifies that '*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... 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'*.

In terms of addressing air pollution, the 2010 Defra report 'Action for air quality in a changing climate'[2] focuses on the synergies between air quality and climate change issues. In particular, it highlights the potential for achieving health benefits through closer integration of climate and air pollution policy.

This was further expanded on in draft plans published by Defra in 2015[3], which suggests that the challenges of improving UK air quality and tackling climate change can be realised through a variety of joint measures, including promoting low-carbon vehicles, clean transport technologies and renewable energy sources.

Local

The Thurrock Interim Air Quality Action Plan for Transport (2012/13 – 2014/15) highlights air quality issues in relation to two regulated air pollutants- NO_2 and PM_{10}. The plan sets out a range of priorities and actions to target air quality issues arising from transport across Thurrock.

The Thurrock Air Quality & Health Strategy November (2016) sets out a strategy to tackle poor air quality and associated poor health within the Borough. The strategy adopts three main aims:

1 Implementing measures for managing air quality throughout the borough to prevent new AQMAs arising.

2 Implementing measures contained within action plans existing AQMAs

3 Working with external bodies to reduce background pollution from inside and outside the Borough.

[1] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf
[2] Defra (2010) Air Pollution: Action in a Changing Climate [online] Available at: www.defra.gov.uk/publications/files/pb13378-airpollution.pdf
[3] Defra (2015) Draft plans to improve air quality in the UK: Tackling nitrogen dioxide in our towns and cities [online] Available at: https://consult.defra.gov.uk/airquality/draft-aq-plans/supporting_documents

The strategy adopts a number of policies to meet the aims above. These are concerned with tackling transport emissions, managing Clean Air Zones or Low Emissions Zones, and future development and planning.[4]

Current Baseline

The majority of air pollution in Thurrock is caused by road vehicle emissions, particularly from Heavy Goods Vehicles (HGVs). Thurrock is situated along a number of busy road transport routes, including the M25, A13, A128, A126, A1089 and A1306. HGVs produce large quantities of NO_2 and PM_{10} from their diesel engines and from brake and tyre wear. The mix of residential and industry areas along these transport routes has further exacerbated air quality issues.

Potential cross-boundary pollution affects Thurrock due to its close proximity to London and power stations located nearby at Kingsnorth, Littlebrook and Grain, as well as from shipping along the Thames estuary. Other pollution sources, including commercial, industrial and domestic sources, also make a contribution to background pollution concentrations.[5]

There are currently 18 AQMAs in Thurrock, all of which have been declared for high NO_2 levels, with a further four of them also declared due to high levels of PM_{10}.[6] All of these AQMAs have been declared as a result of road transport-related air pollution.

In September 2009, Thurrock's AQMAs were prioritised in order of importance to assign air quality measures to best counteract poor air quality from transport-related sources of pollution.[7] The aim was to increase the focus and spending of money in certain AQMAs which have the greatest air quality issues. The top three priority areas were identified as:

- London Road Aveley, next to the A1306;
- London Road Purfleet, near to Jarrah Cottages; and
- West of Chafford Hundred Visitor Centre.

Although air pollution has fallen in some areas of Thurrock in recent years – largely due to improvements in motor vehicle technologies – there are still substantial air quality issues in parts of the borough. This is primarily due to the increased volume of vehicles on the road network, which has offset potential improvements.[8]

Monitoring of all pollutants over 2015/6 did not highlight any new potentially poor air quality areas within the borough other than the ones which are already AQMAs. [9] Both the rolling annual mean NO_x and NO_2 trends monitored at sites across the borough show a gradual overall decline over the last 17 years. Some monitored results for NO_2 in certain AQMAs have shown in recent years that they are below the objective level.

In 2016 Thurrock Council undertook modelling work that suggested eight AQMAs should be revoked for NO_2 and all four should be revoked for PM_{10}. Whilst Defra did not agree with the model used in coming to these conclusions, it highlights that many of these AQMAs may no longer be in exceedance. Additional monitoring locations were set up and the designations will be reviewed again in 2020.[10]***Projected Baseline***

Predictions of post-2014 NO_2 concentrations were made by Thurrock Council using the Defra year adjustment factors, based on 2014 measurements. [11] The estimates indicated that despite the predicted reduction in concentrations, of the 10 locations exceeding the objective in 2014, 8 are predicted to still be exceeding the annual mean objective in 2015 with 0 sites predicted to be exceeding in 2020. This prediction must be used with some caution, as the diffusion tube results have not shown this level of decrease in previous years, suggesting this would be a significant

[4] Thurrock Council (2016). Thurrock Air Quality & Health Strategy. [online] Available at: http://democracy.thurrock.gov.uk/documents/s10765/Appendix%201%20-%20Thurrock%20Air%20Quality%20and%20Health%20Strategy.pdf [Accessed 9 Aug. 2017].

[5] Thurrock Council (2017) Air Quality Annual Status Report for Thurrock Council [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/air-quality-report-2017.pdf

[6] Thurrock Council (2015) Air Quality Updating and Screening Assessment for Thurrock [online] Available at: http://www.essexair.org.uk/Reports/Thurrock_USA_2015.pdf

[7] Thurrock Council (2012) Fifth Round Updating and Screening Assessment for Air Quality [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/air-quality-report-2012.pdf

[8] Kings College London (2011) Essex Air [online] Available at: http://www.essexair.org.uk/AQInEssex/LA/Thurrock.aspx

[9] Thurrock Council (2017) 2017 Air Quality Annual Status Report

[10] Thurrock Council (2017) 2017 Air Quality Annual Status Report

[11] Kings College London (2011) Essex Air [online] Available at: http://www.essexair.org.uk/AQInEssex/LA/Thurrock.aspx

change in the trend. In addition, of the 18 current AQMAs, the Council has suggested that eight are likely to be revised and possibly revoked in 2020. [12]

NO_2 emissions are expected to continue to fall gradually, extending the trend seen over the last two decades.

Monitoring of PM_{10} concentrations at a number of sites across Thurrock between 1997 and 2014 has shown a small overall decrease, with seasonal and annual spikes, particularly in 2003 and 2011. However, since 2006 the rate of reductions has slowed to the extent that in 2014 there was little or no change in PM_{10} concentrations registered at the majority of sites compared to previous years. It is likely that this trend will continue, with gradual but small reductions in PM_{10} concentrations across the borough.

Annual Mean Sulphur Dioxide (SO_2) concentrations across Thurrock between 1996 and 2014 have seen a substantial decline, from around 17 $\mu g/m^3$ in 1996 to around 2 $\mu g/m^3$ in 2014. Concentrations are now approaching the limit of detection.[13] As reductions have slowed considerably since 2011, with the annual mean concentration plateauing at about 2 $\mu g/m^3$, it is likely that SO_2 concentrations will continue to remain at this level for the foreseeable future.

If pollutant concentrations continue to fall, it will be the Council's aim to review some of its AQMA's with the intention of either reducing the current size of them or revoking some entirely. It should be noted that there is a possibility that air quality may worsen in the long-term as result of climate change due to a greater likelihood of prolonged periods of still, dry days, and to-date this relationship has been difficult to predict. This will need to be taken into account in development of future air quality action plans and monitoring regimes, as will the effects of proposed major infrastructure developments such as the Lower Thames Crossing (LTC) and London Gateway. Development of the LTC could increase traffic levels within Thurrock. Whilst the LTC is intended to reduce congestion at the Dartford Crossing (and therefore may reduce air pollution in this area), it may also generate additional traffic by creating new north to south links, therefore improving the ease of travel across the River Thames.

Biodiversity, Flora and Fauna

Introduction

Biological diversity, or 'biodiversity', is the term given to the variety of life on Earth. It is the variety within and between all species of plants, animals and micro-organisms and the ecosystems within which they live and interact. It performs a number of important roles, from maintaining the function of the biosphere as a whole, to providing food and medicine ingredients and enhancing health and well-being.

Nature conservation is concerned with maintaining a viable population of the country's fauna, flora and wildlife communities. Impacts on nature conservation are broadly split into two categories; habitats and species.

Policy and Legislation

International

The EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora 92/43/EEC (1992) ('the Habitats Directive') and the EC Directive on the Conservation of Wild Birds 09/147/EC (2009) ('the Birds Directive') aim to protect biodiversity through the conservation of natural habitats and wild plants and animals. The network of 'Natura 2000' sites which these directives protect, include SACs, which host rare, endangered and vulnerable habitats and species of European importance, and SPAs which support significant populations of wild birds of European impacts and their habitats.

National

The Conservation of Habitats and Species Regulations (2017) provide for the designation and protection of Natura 2000 sites, the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites in the UK.

The Wildlife & Countryside Act 1981 (as amended) is the principal piece of UK legislation relating to the protection of wildlife. It consolidates and amends existing national legislation to implement the

[12] Thurrock Council (2017) 2017 Air Quality Annual Status Report

[13] Thurrock Council (2015) Air Quality Updating and Screening Assessment for Thurrock [online] Available at: http://www.essexair.org.uk/Reports/Thurrock_USA_2015.pdf

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain. The Countryside and Rights of Way (CRoW) Act 2000 was passed to provide additional levels of protection for wildlife whilst also strengthening the protection afforded to Sites of Special Scientific Interest (SSSI).

The Natural Environment & Rural Communities (NERC) Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities. Section 40 of NERC carries a duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. Section 41 requires the Secretary of State to publish a list of the living organisms and types of habitat which it deems of principal importance for the purpose of conserving biodiversity.

The Marine and Coastal Access Act 2009 allows for the creation of Marine Conservation Zones (MCZs), which protect a range of nationally important marine wildlife, habitats, geology and geomorphology.

The National Planning Policy Framework 2018 requires planning authorities to protect and enhance biodiversity and provide net biodiversity gains, including establishing coherent ecological networks.

The UK Post-2010 Biodiversity Framework (2012) replaces the UK Biodiversity Action Plan (1992). The purpose of the Framework is to set a broad enabling structure for action across the UK to 2020.

Local

The Thurrock Biodiversity Action Plan (BAP) 2007-2012 (2007) identifies important species and habitats found in Thurrock and includes an action plan for their conservation. The Council intends to commission a number of studies to update the evidence basis which underpinned the original Thurrock BAP.

Current Baseline

Special Protection Area (SPA)/Ramsar

Thames Estuary and Marshes SPA and Ramsar site is located in the south east of the borough, approximately 1km from East Tilbury and 2km from Stanford-le-Hope along the River Thames. Much of the site is brackish grazing marsh, although some parts have been converted to arable use. The estuary and adjacent marsh areas support an important assemblage of wintering water birds including grebes, geese, ducks and waders. Over winter, the area regularly supports a large population of waterfowls and is also important during spring and autumn for migratory birds.[14]

Marine Conservation Zones (MCZ)

Thurrock does not border or encompass any Marine Conservation Zones (MCZ). The River Thames and its estuary was put forward as a potential MCZ in 2011, but was not selected for designation following a two year consultation process.[15]

Although it is not designated as a MCZ, the Thames Estuary is an important fish nursery and spawning ground with a high density of European eels. It also protects the seasonal seaward migration of smelt for which this is the only site in the south east of England. The site is also considered the best in the region for the tentacled lagoon worm.[16]

Sites of Special Scientific Interest (SSSIs)

There are 12 Sites of Special Scientific Interest (SSSI) within Thurrock, covering a total area of over 1,300 hectares. **Table A3.2** provides a description of the nine sites designated for their biological or nature conservation value. Three sites are designated for their geological characteristics.[17] These are described in Section 'Geology & Soils'.

[14] Joint nature Conservation Committee (JNCC): SPA description Thames Estuary and Marches [online] Available at: http://jncc.defra.gov.uk/page-2042

[15] Kent Wildlife Trust (2016) Marine Conservation Zones [online] Available at: http://www.kentwildlifetrust.org.uk/MCZs

[16] DEFRA (2013) Marine Conservation Zones: Consultation on proposals for designation in 2013 [online] Available at: https://www.gov.uk/government/consultations/marine-conservation-zones-consultation-on-proposals-for-designation-in-2013

[17] DEFRA (2016) Magic Mapping [online] Available at: http://www.magic.gov.uk/MagicMap.aspx

Table A3.2 Thurrock SSSIs[18]

SSSI sites	Grid reference	Description
Vange and Fobbing Marshes	TQ729844	An alluvial plain of the lower River Thames. Its unimproved coastal grassland and associated dykes and creeks support a diversity of maritime grasses and herbs, many of which are nationally important or rare, and together they form an outstanding assemblage of plants.
Holehaven Creek	TQ753834	The intertidal mudflats and saltmarsh habitats of Holehaven Creek support a nationally important number of black-tailed godwit. These sheltered inner estuary conditions are rare within the Thames Estuary.
Mucking Flats and Marshes	TQ698791	An extensive stretch of the Thames mudflats and saltmarshes together with sea wall grassland. Wintering wildfowl and waders both reach nationally and internationally important numbers on the mudflats, roosting and feeding on adjacent saltmarsh and disused silt lagoon.
Hangman's Wood and Deneholes	TQ630793	The remains of the medieval chalk mines provide an important underground hibernation site for bats in Essex.
Grays Thurrock Chalk Pit	TQ609789	An active mineral extraction site which ceased operation in the early 1920s. Since then natural colonisation of the pit bottom has created a range of woodland, scrub and calcareous grassland; an important habitat for the assemblage of invertebrate fauna.
West Thurrock Lagoon and Marshes	TQ582763	One of the most important sites for wintering waders and wildfowl on the Inner Thames Estuary. The combination of extensive intertidal mudflats together with a large and secure high tide roost attracts waders in nationally important numbers, with significant populations of other bird species.
Purfleet Road Aveley	TQ555798	The silts and sands of the site yield important assemblages of molluscs, insects, pollen and mammal remains which are indicative of temperate or interglacial conditions.
Inner-Thames Marshes	TQ531802	The site forms the largest remaining expanse of wetland bordering the upper reaches of the Thames Estuary. It is particularly notable for its diverse ornithological interest especially for the variety of breeding birds and the numbers of wintering wildfowl, waders, finches and birds of prey, with wintering teal populations reaching levels of international importance.
Langdon Ridge	TQ684868	The site is of special interest for the following nationally important features that occur within and are supported by the wider habitat mosaic: species-rich neutral grasslands and fen meadows, ancient and long-established semi-natural woodlands, assemblages of invertebrates chiefly associated with open short swards and scrub-heath, and populations of the plant Deptford pink.

Local Nature Reserves (LNR)

There are two Local Nature Reserves (LNRs) within Thurrock. Grove House Wood in Stanford-Le-Hope is a 2.24 hectares area with a mixture of habitats including reed beds, a pond and brook as well as the woods. The site is an important haven for wildlife in an area where no similar large habitats are found, while dead elms in the wood provide nesting sites for woodpeckers.[19] Linford Wood LNR in Linford is an area of woodland covering 3.46 hectares. It consists of a hedge bank, mixed woodland, willow plantation, ditches and an open area surrounded by arable farmland. The wood provides a habitat for wildlife, including tawny owls, great spotted woodpeckers and green woodpeckers, as well as migrant birds in spring and autumn.

[18] Natural England (2016) Designated Sites List [online] Available at: https://designatedsites.naturalengland.org.uk/

[19] Natural England (2016) Local Nature Reserves List [online] Available at: http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themeid=1009001

Local Wildlife Sites (LWS)

There are currently 70 Local Wildlife Sites (LWS) in Thurrock.[20] LWS are selected using established criteria recognising their significance as habitat and/or for the species that they support. Designated habitats within the borough include ancient woodland, grazing marsh, post-industrial brownfield sites, reedbeds and chalk grassland. An updated Biodiversity Study for Thurrock has been drafted. Once published, this will be taken into consideration in future iterations of the SA.

Ancient Woodland

There are 22 areas of ancient woodland in Thurrock, clustered mainly in two locations: the Langdon Hills/One Tree Hill complex in the north east of the borough, and the Aveley/South Ockendon area in the south west.[21] The majority of ancient woodlands in the borough are also designated as Local Wildlife Sites.[22]

Protected Habitats and Species

Thurrock contains a number of national Priority Habitats, including ancient and semi-natural woodland, ancient replanted woodland, deciduous woodland, broadleaved woodland, coastal and floodplain grazing marsh, good quality semi-improved grassland, coastal saltmarsh, mudflats, reed beds and Open Mosaic Habitat on Previously Developed Land (known to support important invertebrate populations).

Road verges and drainage ditches can provide local habitat for important species. Some are recognised as a Local BAP habitat, whilst others may be recognised as a local non-designated site.[23]

Key habitats in the borough as set out in the Thurrock Biodiversity Action Plan include[23]:

- Estuarine habitats: Coastal areas from Corringham to East Tilbury provide nationally important feeding grounds for a wide variety of over-wintering waders and wildfowl.
- Farmland: As the major land use within Thurrock, sympathetic management of farmland is considered to be vital to the conservation of the areas wildlife and landscape.
- Thames Terraces: The Purfleet-Grays ridge rises from the Thames, forming a central belt of sands and gravels across the borough, where short acidic grassland can develop.
- Woodland: There are many small semi-natural broad-leaved woods in the north of the borough, covering 2% of the land area.

Priority species identified within the Thurrock Biodiversity Action Plan are: brown hare, bats, hedgehogs, water vole, black redstart, skylark, song thrush, adder, grass snake, great crested newts, glow-worm, hornet robberfly, shrill carder-bee, stag beetle, black poplar and broadleaved cudweed.

There are a few Essex and national BAP species not covered by the Thurrock BAP which could be present in the borough, including the brown carder-bee, digger wasp and the dormouse.

Projected Baseline

Evidence on the status and trends of biodiversity in the UK suggests long-term declines, but there have been improvements recently for some species and habitats. Of the range of ecosystem services delivered in the UK by eight broad habitat types, about 30% have been assessed as declining since 1990.[24] Reductions in ecosystem services are associated with declines in habitat extent or condition and changes in biodiversity, though the exact relationships are not well-documented.

There is currently no assessment of spatial indicators of ecosystem health at a regional or local level. This makes it difficult to predict future changes in the baseline. What is clear from past trends is that development can have both adverse and beneficial impacts on biodiversity, flora and fauna. Land-take required to facilitate development can cause loss of and damage to habitats, but intelligent

[20] Essex Wildlife Trust Biological Records Centre (2016) [online] Available at: http://www.essexwtrecords.org.uk/lowsfinder#

[21] Thurrock Council (2012) Site Specific Allocations and Policies Development Plan Document Issues and Options Consultation- Technical Appendices [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/consult_sites_201203_maps_p3_4.pdf

[22] DEFRA (2016) Magic Mapping [online] Available at: http://www.magic.gov.uk/MagicMap.aspx

[23] Thurrock Council (2007) Biodiversity Action Plan [online] available at: https://www.yumpu.com/en/document/view/11846083/thurrock-council-biodiversity-action-plan-2007-2012 (accessed 01/2016)

[24] UK National Ecosystem Assessment (2011) Synthesis of the key findings [online] Available at: http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=ryEodO1KG3k%3D&tabid=82

design and creation of green corridors can help to offset such impacts and even enhance biodiversity at a local level.

Climate Change and Energy

Introduction

Climate change is one of the key challenges facing the UK and the world today. It poses many environmental risks; including extended period of dryness and heat in the summer which could lead to drought; heightened flood risk due to more intensive and prolonged rainfall, particularly in winter months; and sea level rise and changes in wave patterns and strength which may result in increased erosion of coastal areas. Such environmental effects may also have significant socio-economic and health implications, particularly for nations and regions less able to mitigate or adapt to changes.

As climate change is difficult to quantify and predict, approaches to addressing impacts tend to focus on reducing emissions of carbon dioxide and other greenhouse gases (GHG) which contribute to anthropogenic global warming and thus may bring about climate change.

Policy and Legislation

International

The United Nations Framework Convention on Climate Change, (1992 – came into force 1994) aimed to mitigate the negative impacts of climate change and stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Under the Kyoto Protocol (1997) many of the world's developed countries agreed to reduce collective emissions of GHG by 5.2% from 1990 levels by 2012. The Doha amendment adds a second commitment period, in which parties must reduce emissions by at least 18% below 1990 levels between 2013 and 2020.

Through the Promotion of The Use of Energy from Renewable Sources Directive (2009/28/EC), the EU committed to providing 20% of energy from renewable sources by 2020 and a mandatory 10% minimum target should be achieved by all Member States for the share of biofuels in transport petrol and diesel consumption.

National

The Climate Change Act (2008) aims to achieve the Kyoto target, setting out a legally binding framework for the UK to cut carbon emissions. It also paves the way for the UK to adapt to climate change.

The UK Low Carbon Transition Plan (2009) sets out how the UK will meet a 34% cut in emissions on 1990 levels (or an 18% cut on 2008 levels) by 2020 to deliver the UK's legally binding target to cut emissions by at least 80% by 2050. It will do this through a set of five-year "carbon budgets" to 2022 to keep the UK on track.

The UK Climate Change Programme (2006) emphasises the contribution that Local Planning Authorities can make to reducing transport-related emissions of GHG.

Local

Thurrock Council's Energy Study (2010) assessed renewable and low-carbon energy generation opportunities for Thurrock, providing an evidence base to support proposed planning policies and evaluate the feasibility of renewable energy targets in new residential and non-residential buildings.

The Local Climate Impacts Profile Report: Planning for Thurrock's Adaptation to Impacts of Climate Change (2010) was developed to assist the Council and its partners in the development of a comprehensive risk-based, site and service-specific action plan, to ensure that Thurrock's infrastructure, services and communities are resilient to the impacts of a changing climate.

Current Baseline

Emissions of carbon dioxide (CO_2) per capita in Thurrock have been falling in recent years but remain higher than regional and national averages. Total emissions per capita have fallen from 12.5 tonnes

in 2005 to 5.7 tonnes in 2016[25]. Reductions during the period from 2005 to 2016 can be broken down as follows[26]:

- transport emissions have fallen from 436.3 kt CO_2 in 2005 to 425.1 in 2016 (a reduction of around 2.6%[27]);
- domestic emissions have reduced from 333 kt CO_2 in 2005 to 218.5 in 2016(a decrease of approximately 34.4%); and
- industrial and commercial emissions have decreased from 1,098 kt CO_2 in 2005 to 317.9 kt CO_2 in 2016 (a reduction of around 71%).

Comparing this to regional and national figures - at 5.7 tonnes, the total emissions per capita figure for Thurrock is considerably higher than that of Essex (5.0 tonnes), and slightly higher than the total emissions per capita for East of England (5.4 tonnes) and England (5.3 tonnes).[28]

Figure A3.1shows how Thurrock's total CO_2 emissions in 2005 and 2016 were divided between industry and commercial, domestic and transport sources.

Per capita road transport emissions in Thurrock in 2013 were 39% higher than the national average. This may partly be due to the borough's proximity to London, which results in considerable levels of commuting.

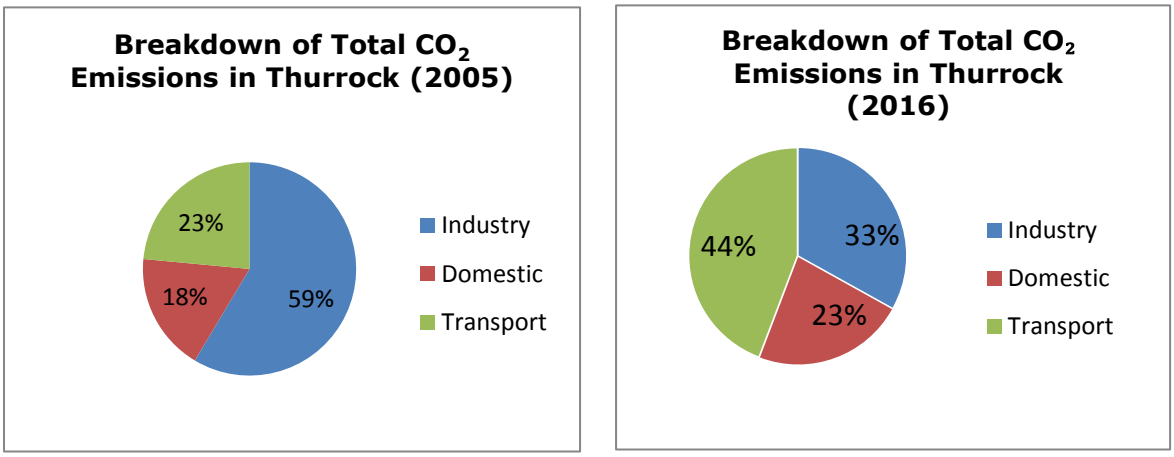


Figure A3.1 Break down of Thurrock CO^2 Emissions in Thurrock 2005-2015

Historically, energy and electricity consumption in Thurrock has been relatively high, with industrial and commercial energy consumption widely regarded as the cause of disproportionately high energy consumption per capita and related GHG emissions. In 2008, electricity consumption stood at 96,600 kWh per capita, three times the regional average.[29]

However, both domestic and non-domestic electricity consumption has gradually been falling. Between 2005 and 2014 total domestic consumption of electricity in Thurrock fell by around 8.7%; a greater reduction than that of the East of England (8.6%) and England (8.3%).[30] Non-domestic (commercial and industrial) consumption of electricity saw even greater reductions over this period, falling from 825 Gigawatt hours (GWh) in 2005 to 653 GWh in 2014, a decrease of approximately 21%. This reduction was far greater than that seen in the East of England (7.4%) and the national average (7.5%).

[25] DBEIS (2018) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016 GOV.UK [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2016 [Accessed 3 July 2018]

[26] DECC (2013) UK Local Authority and Regional Carbon Emissions National Statistics 2005-2013 [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013 (NB: Data not available for 2005-2015 dataset).

[27] Note that transport emissions fell to a low of 391.9 kt CO_2 in 2013 but have been increasing year on year since then.

[28] DBEIS (2018) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016 GOV.UK [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2016 [Accessed 3 July 2018]

[29] Thurrock Council (2008) Thurrock Climate Change Evidence Base [online] Available at http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_climate_2008.pdf

[30] Department of Energy & Climate Change (2015) Sub-national electricity sales and numbers of customers [online] Available at: https://www.gov.uk/government/collections/sub-national-electricity-consumption-data

In fact, the largest decrease in total energy consumption as a percentage between 2005 and 2015 seen anywhere in the UK occurred in Thurrock, where total energy consumption fell by 47%[31].) These changes were mostly brought about by reductions in the industry and commercial gas sector.

Projected Baseline

According to 2009 UK Climate Projections[32], by 2080 temperatures in Essex are likely to increase by 2.6 - 3.7°C in the winter and 2.9 - 4.7°C in the summer. This will be coupled with an anticipated increase in precipitation of 12.9 – 21.3% in the winter and a decrease of 14.9 – 27.9% in the summer.

These changes could create a number of risks, including increased risks to people, property and the environment from flooding; hotter and drier summers causing "heat stress" to buildings, utilities and the transport system and putting public health and safety at greater risk; and decreased moisture in soils (particularly during summer and autumn) potentially affecting agriculture, the natural environment and landscape.

Climate-related weather events identified as posing the greatest risk to Thurrock and its communities are:

- Heat wave and drought;
- Flooding (including flash, fluvial and tidal flooding); and
- Extreme weather events, including snow and ice and stronger winds.

Growth in traffic levels, largely as a result of ongoing development, is a continuing long-term trend in Thurrock. This means that the difference between Thurrock's per capita road transport emissions and the national average is widening. This could conflict with Thurrock's attempts to meet its carbon emission targets. However, improving technology and increased prevalence of electric vehicles could begin to reduce per capita emissions of greenhouse gases as a result of transport.

Cultural Heritage

Introduction

Cultural heritage is often thought of in environmental assessment terms as comprising three elements:

- archaeological remains – the material remains of human activity from the earliest periods of human evolution to the present, which may be buried traces of human activities, sites visible above ground, or moveable artefacts;
- historic buildings – architectural or designed or other structures with a significant 'historical value', which may include structures that have no aesthetic appeal or structures not usually thought of as buildings', such as milestones or bridges; and
- historic landscape – the current landscape, whose character is the result of the action and interaction of natural and human factors, and includes evidence of past human activities, which is a significant part of the historic landscape, and may derive both from archaeological remains and historic buildings within it.

Historic features and archaeological remains can be affected by new development through effects to their integrity - in the form of damage or degradation caused by land-take, or as is more often the case, effects on their setting from changes in the landscape.

Policy and Legislation

International

The European Conventions for the protection of the Architectural Heritage of Europe and the protection of Archaeological Heritage (1987) set out a framework for the protection of assets of national value, as well as archaeological assets generally.

[31] DECC (2017) UK Local Authority and Regional Carbon Emissions National Statistics 2005-2013 [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2015
[32] Thurrock Council (2010) Planning for Thurrock's Adaptation to Impacts of Climate Change [online] Available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_climate_201010.pdf

National

National legislation such as the Planning (Listed Buildings and Conservation Areas) Act (1990) and the Ancient Monuments and Archaeological Areas Act (1979) builds on the framework set out in the European conventions and includes for the protection of Scheduled Monuments, Conservation Areas, Registered Parks and Gardens and Listed Buildings.

The Hedgerow Regulations (1997- as amended 2003) set the legislative context for the protection of countryside boundary features.

Local

The Thurrock Unitary Historic Environment Characterisation Project (2009) considers the sensitivity, diversity and value of historic environment resources within Thurrock and aims to facilitate development of positive approaches to the integration of historic environment objectives into spatial planning.

Current Baseline

Thurrock contains a number of historic assets including seven conservation areas and 244 listed buildings.[33] Thirteen of Thurrock's Listed Buildings are Grade I, 19 are Grade II* and the remaining 212 are Grade II.

The seven conservation areas are Horndon-on-the-Hill, Corringham, Orsett, Fobbing, Purfleet, West Tilbury and East Tilbury. The Council continues to research and identify other potential conservation areas.

There are 17 scheduled monuments in Thurrock.[34] Four are in the south east of the borough, to the east of Tilbury and five are located in the centre of the borough near Orsett and Orsett Heath. The remainder are spread across the west, north and east of the borough, towards the edge of its administrative boundary.

The borough has one registered Grade II Park and Garden – Belhus Park, a remnant of a mid-18 century park which was converted to a golf course and leisure centre in 2000.[34]

The Historic England 'At Risk Register' identifies two Listed Buildings and one Scheduled Monument at Risk in Thurrock.[35] The Listed Buildings considered to be at risk are:

- The State Cinema, George Street, Grays.
- The Coalhouse Fort in Tilbury.

The Scheduled Monument considered to be at risk is:

- The Crop mark complex at Orsett.

Projected Baseline

The historic environment can be considered a finite resource. It cannot be replaced and is susceptible to decline over time as historic features experience degradation and decay. However, cultural heritage as a whole can evolve and change, and features which are not currently considered a valued part of the historic environment may become so in the future, either due to their uniqueness, past use or historic or cultural significance.

At a local level infrastructure, development and environmental pressures such as extreme weather and flooding present the greatest risk to cultural heritage assets.

Flood Risk

Introduction

Flood risk is a combination of the probability and the potential consequences of flooding from all sources. This includes flooding from rivers and the sea, directly from rainfall on the ground surface

[33] Thurrock Council (2017) Listed Buildings [online] available at: https://www.thurrock.gov.uk/listed-buildings/listed-buildings-in-thurrock

[34] DEFRA (2017) Magic Mapping [online] Available at: http://www.magic.gov.uk/MagicMap.aspx

[35] English Heritage (2012) Thurrock Heritage at Risk [online] Available at: http://risk.englishheritage.org.uk/register.aspx?rs=1&rt=0&pn=1&st=a&ua=Thurrock+(UA)&ctype=all&crit=

and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.[36]

Policy and Legislation

International

The Water Framework Directive (WFD) 2000/60/EC (2000) expands the scope of water protection to all waters, surface waters and groundwater, and aimed to achieve 'good' status or potential for all waters by 2015, or under certain provisions, 2021 or 2025.

National

The Flood & Water Management Act 2010 assigned new responsibilities to local authorities to work in partnership with the Environment Agency, water companies and others to manage various aspects of flood risk. It requires Lead Local Authorities to produce a local strategy setting out significant flood risks affecting their area, and how they intended to address them.

The UK Water Strategy (2008) builds on the principles of the existing Government Strategy for Flood and Coastal Erosion Risk Management - 'Making Space for Water' (2005) to ensure a fully integrated approach to flood risk and water management up to 2030.

Local

Flood Risk is included as a key consideration for development in the Thames Gateway South Essex Green Grid Strategy (2005).

Thurrock's Local Flood Risk Management Strategy (2015) [37] deals with flooding from sewers, drains and groundwater, and the runoff from land, watercourses and ditches that can follow heavy rainfall. The council set out 8 objectives for managing flood risk.

- Objective 1: Reduce the likelihood and consequence of flooding, particularly from surface water, groundwater and ordinary watercourses.
- Objective 2: Identify any gaps where further studies area required so we can get a better understanding of the causes and effects of local flooding
- Objective 3: Reduce the vulnerability of Thurrock, its residents and visitors to the detrimental effects of flooding
- Objective 4: Establish clear roles, powers and responsibilities for Thurrock RMAs and ensure RMAs area aware of each other's roles and responsibilities
- Objective 5: i) Provide improved communication of clear information on local flood risk, appropriate responses and the responsibilities for us and our partners. ii) State what we and other RMAs cannot take responsibility for, and facilitate engagement of the public and stakeholders to take action
- Objective 6: Improve co-operative working between all RMAs, including across administrative boundaries
- Objective 7: Improve natural habitat and the social environment through flood management schemes to provide multiple benefits
- Objective 8: Establish a strategic funding plan and programme so we identify priorities, secure funding for measures that are affordable and that wherever possible include provisions for contributions by those who benefit

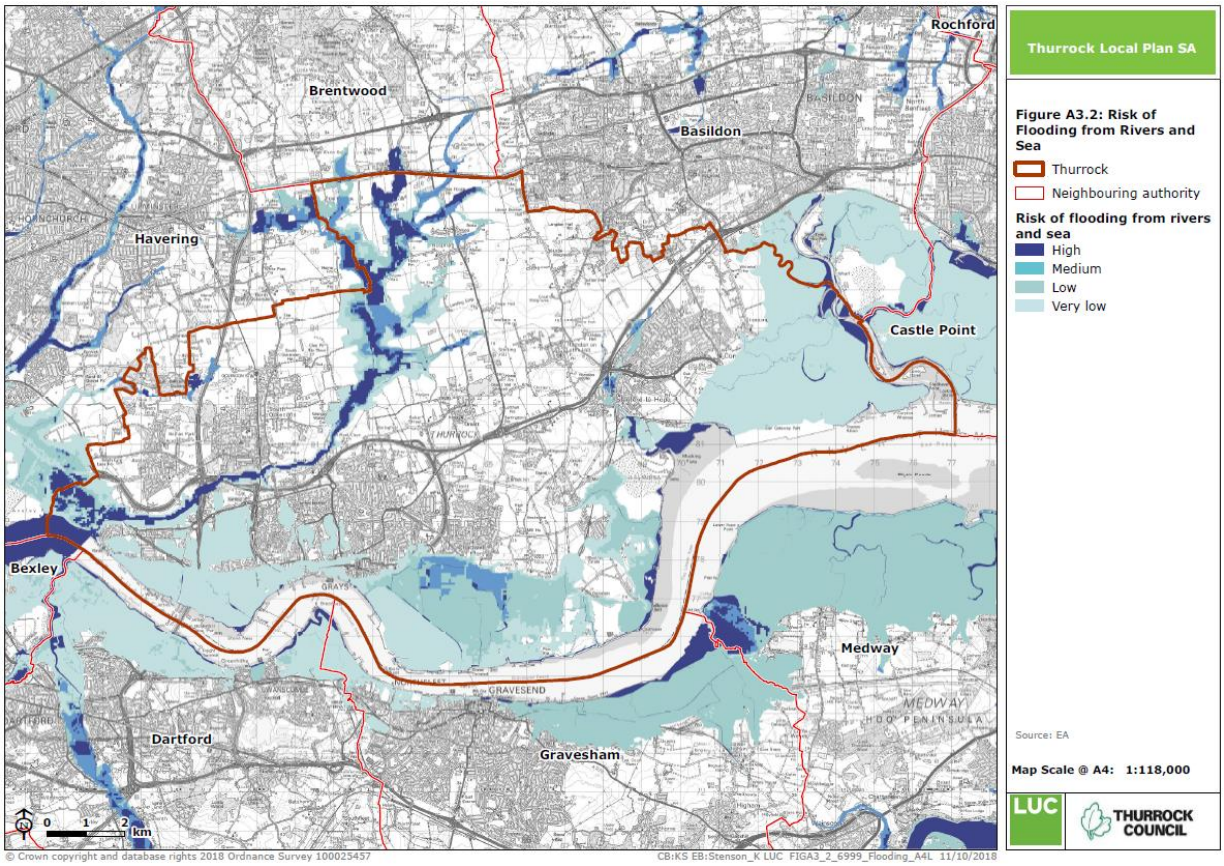
Current Baseline

Thurrock has suffered the consequences of flooding in recent years, and a large proportion of Thurrock's urban areas are located within Flood Zone 3 (highest risk with a 1 in 100 chance of annual

[36] Department of Communities and Local Government (2015) Planning Practice Guidance: Planning and Flood Risk [online] Available at: http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/planning-and-flood-risk/what-is-flood-risk/
[37] Thurrock Council (2015) Thurrock Local Flood Risk Management Strategy: Final Report [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/flood-risk-management-201512-v01.pdf

flooding). It has been estimated that in total there are approximately 11,000 properties currently at risk of tidal flooding, with several hundred properties at risk of fluvial flooding.[38]

Large areas of the borough are located within flood risk zones 2 and 3, especially in areas immediately adjacent to the River Thames and Mardyke (**Figure A3.2**). Some of the key areas identified for major development and regeneration (e.g. Tilbury, Thames Gateway) are partly located in Flood Zone 3.



Surface water flood risk is widespread across Thurrock, with the highest risk located in the more urbanised areas of the administrative area. Within Thurrock there are 14 areas of property, businesses and infrastructure that have been identified to be at significant risk of flooding. These 14 Critical Drainage Areas are spread across the borough but are largely concentrated in urban centres. For each Area of Critical Drainage the council have set out actions to reduce the risk or effects of surface water flooding. Examples include: drainage improvements, maintenance and emergency planning. Across the whole of Thurrock, actions include: restricting surface water runoff in new developments and promoting of water conservation. The greatest levels of surface water flooding in an extreme rainfall event would be expected in Stanford-Le-Hope and parts of Grays.[39] The 2010 Thurrock Water Cycle Study suggested that the use of Sustainable Urban Drainage Systems (SuDS) to manage urban drainage may be constrained in West Thurrock, Grays and East Tilbury as they overlie the Source Protection Zones for the Stifford and Linford Public Water Supplies.[40] An updated version of the Thurrock Water Cycle Study is in progress.

Projected Baseline

Flooding (including flash, fluvial and tidal flooding) is highlighted as one of the greatest risks to Thurrock from climate change. According to UK Climate Change Projections made in 2009, the East of England region including Thurrock is predicted to experience an increase in winter rainfall of 12.9

[38] Thurrock Council (2013) Core Strategy and Policies for Management of Development Focused Review- Consistency with the NPPF [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/consult_core_nppf_sa_201305.pdf
[39] Thurrock Council (2015) Thurrock Local Flood Risk Management Strategy: Final Report [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/flood-risk-management-201512-v01.pdf
[40] Scott Wilson (2010) Thurrock Water Cycle Study [online] available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_water_outline_2010.pdf (accessed 12/2012)

– 21.3% and a decrease in summer rainfall of 14.9 – 27.9% by 2080. Climate change will likely result in sea level rise and subsidence which could lead to more frequent flooding in Thurrock.[41]

Projected changes in sea levels could impact communities, businesses and local authority services in coastal areas. In addition, incidences of heavy rainfall are expected to continue to rise and will present challenges in terms of drainage and flood risk.[42]

It is predicted that the main risk of future flooding in the borough will come from tidal and fluvial sources; from storm surges coupled with high spring tides to produce high tidal water levels in the Thames Estuary and in the north of the borough from the River Mardyke.[43] The Council intends to commission an update to its existing Water Cycle and Flood Risk Studies to better understand these potential changes.

Geology and Soils

Introduction

This topic considers potential effects of development on soil resources and quality (including contamination and the potential for activities to disturb historic contamination), as well as potential effects on protected or important geological features such as designated geological sites.

Policy and Legislation

International

The EU Soil Strategy (2006) was widely regarded as a precursor to the development of a Soil Framework Directive to protect and ensure the sustainable use of soil. Its aim was to prevent further soil degradation and restore degraded soil in line with its current and intended use.

While the European Commission decided in May 2014 to withdraw the proposal for a Soil Framework Directive, the Seventh Environment Action Programme (2014) recognises that soil degradation is a serious challenge. It aspires that by 2020 land is managed sustainably in the Union, soil is adequately protected and the remediation of contaminated sites is well underway. It commits the EU and its Member States to increase efforts to reduce soil erosion and increase soil organic matter, and remediate contaminated sites.

The EU Environmental Liability Directive (99/31/EC) focuses on prevention and remediation of environmental damage, including land contamination, which presents a threat to human health. The Directive is based on the polluter pays principle, where polluters are responsible for remediating damage they cause to the environment.

National

Little statutory protection exists specifically for soils in the UK, although they are indirectly protected by other legislation such as that covering the prevention of pollution and contamination, and for land use planning.

The England Soil Strategy (2009) sets out a vision to improve the management of soil and tackle soil degradation within 20 years in England as part of maintaining sustainable food supplies and developing resilience to climate change.

Current Baseline

Thurrock lies on four main types of underlying geology found in layers that transition from the north of the borough to the south: the Thames Group (clay, silt, sand and gravel); the Lambeth Group (clay silt, sand and gravel); Thanet formation (sand, silt and clay) and the White Chalk Subgroup (chalk). The underlying geology gets finer towards the River Thames.[44]

Excluding urban areas where soils have not been mapped, there are three main soil types in Thurrock reflecting the underlying geology and pattern of drainage in the area.[45] Adjacent to the

[41] Essex County Council (2012) Local Flood Risk Management Strategy: SEA Consultation Environmental Report [online] Available at: https://www.essex.gov.uk/Publications/Documents/The%20Essex%20Local%20Flood%20Risk%20Strategy%20%E2%80%93%20strategic%20environmental%20assessment%20environmental%20report.pdf

[42] Thurrock Council (2010) Planning for Thurrock's Adaptation to Impacts of Climate Change [online] Available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_climate_201010.pdf

[43] Scott Wilson (2010) Thurrock Level 1 SFRA [online] Available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_sfra_level1.pdf

[44] British Geological Survey (2017) Geology of Britain viewer [online] Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

[45] Environmental Agency (2015) Environment Agency Groundwater [online] Available at http://maps.environment-agency.gov.uk

shores of the Thames and the Mar Dyke the low-lying floodplain land is dominated by groundwater gley soils, which are characteristically a mixture of coarse and fine loamy permeable soils affected by groundwater. To the north of the borough away from the main rivers, there are seasonally waterlogged slowly permeable surface-water gley soils intersected by a network of drainage ditches. In the east, brown soil dominates except within the river flood zones. These soils are loamy or clayey with reddish or reddish mottles, clay-enriched subsoil.[46]

There are three Sites of Special Scientific Interest (SSSIs) in Thurrock designated for their geological characteristics - Globe Pit, Lion Pit and Purfleet Chalk Pits. These sites are described in **Table A3.3**.

Table A3.3 Geological SSSIs in Thurrock

SSSI	Grid reference	Description
Purfleet chalk Pits	TQ563784	Mid-Pleistocene sand and gravel deposits overlying chalk are exposed in a series of disused quarried sites. The compiled lithstratigraphical and biostratigraphical evidence contained here indicates the importance of this site in the scientific study of both the evolution of the Thames and Northern European interglacial sequences.
Globe Pit	TQ625783	An important site for the interrelationship of archaeology with geology since it is vital in the correlation of the Lower Palaeolithic chronology with the Pleistocene Thames Terrace sequence.
Lion Pit	TQ598781	A pit that exhibits a complex sequence of Pleistocene Thames deposits overlying and banked against chalk, representing the northern edge of the river's floodplain at the time of deposition.

Geo-Essex is currently undertaking an assessment of sites within Thurrock that could be designated Local Geological Sites. Where relevant, the outcomes of this assessment will inform the SA.

The majority of agricultural land in Thurrock is classed as grades 2 and 3, defined as being among the 'best and most versatile' soils. There is a small area of highest quality grade I agricultural land in the west of the borough. Thurrock Council directly manages two allotment sites; one in Corringham and one in Stanford-le-Hope. There are also 22 self-managed sites throughout the borough.[47]

Projected Baseline

Soil is a finite natural resource on which life depends. It regenerates only over extremely long geological timescales and provides many essential services on which humans rely, including food production, water management and support for valuable biodiversity and ecosystems. As a large store of carbon, it also plays a vital role in preventing adverse climate change.

Soils in England have degraded over the last 200 years due to intensive agricultural production and industrial pollution. Soils continue to face three main threats:

- Soil erosion by wind and rain - erosion affects the productivity of soils as well as water quality and aquatic ecosystems.
- Compaction of soil - reduces agricultural productivity and water infiltration, and increases flood risk through higher levels of runoff.
- Organic matter decline - loss of organic matter reduces soil quality, affecting the supply of nutrients and making it more difficult for plants to grow, as well as increasing emissions to the atmosphere.

According to UK Climate Projections made in 2009, the south east of the UK will face a decrease in soil moisture (particularly during summer and autumn months) in the future, which is likely to affect agriculture, the natural environment and the landscape.[48]

[46] Thurrock Council (2005) Thurrock landscape capacity study [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_landscape.pdf
[47] Thurrock Council (2017) Allotments in Thurrock [online] Available at: https://www.thurrock.gov.uk/allotments/allotments-in-thurrock /
[48] Thurrock Council (2010) Local Climate Impacts Profile (NI 188): Planning for Thurrock's Adaptation to Impacts of Climate Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_climate_201010.pdf

Landscape, Townscape and Visual Impacts

Introduction

The landscape takes its character from a combination of elements, including topography, watercourses, land use and pattern, vegetation, public open space and cultural heritage features. Landscapes vary considerably in character and quality, and are often considered a key component of the distinctiveness of any local area or region. The concept of 'townscape' applies the same principles to an urban context, with greater emphasis on the built environment.

Policy and Legislation

International

The European Landscape Convention (2000) established a definition of landscape and highlighted the importance of developing policies dedicated to the protection, management and creation of landscapes, and establishing procedures for stakeholders and the public to participate in policy creation and implementation.

National / Regional

The Rural Strategy (2004) reviews and updates the Rural White Paper (2000) following the creation of the Department for Environment, Food and Rural Affairs in 2001. It set out a new devolved and targeted approach to rural policy and development delivery.

The Countryside and Rights of Way Act (2000) addresses the designation of Areas of Outstanding Natural Beauty (AONBs), Sites of Special Scientific Interest (SSSIs), Open Country and Common Land. It also adds provisions to the consideration and management of the Public Right of Way network.

Local

A Landscape Character Assessment and a Landscape Sensitivity Assessment for Thurrock are both in progress. The Landscape Character Assessment divides Thurrock into areas of similar landscape character, taking into account local variations. The Landscape Sensitivity Assessment considers what impact various types and scales of development are likely to have within these Landscape Character Areas.

Current Baseline

Thurrock forms part of the Northern Thames Basin National Character Area (NCA), which extends from Hertfordshire in the west to the Essex coast in the east.[49] Whilst arable agriculture is a large industry in the area, the London Clay provides a poor quality soil that becomes waterlogged in winter and cracks and shrinks in summer. Better quality soil is found in areas that contain alluvial deposits from the Thames and other rivers.

The Northern Thames Basin is an area rich in geodiversity, archaeology and history and diverse landscapes ranging from the wooded Hertfordshire plateaux and river valleys, to the open landscape and predominantly arable area of the Essex heathlands, with areas of urbanisation throughout. Urban expansion has been a feature of this area since the 16th century, and it increased dramatically from the mid-19th century as infrastructure improved and people could travel to work in London from the surrounding areas. This has put increased pressure on the area in terms of extra housing developments, schools and other necessities for expanding populations, with a consequential reduction in tranquillity.

Small parts of the Northern Thames Basin NCA fall within The Thames Gateway Growth Area, including the new town of Basildon, the hinterland of Thurrock and most of Southend. Industrialisation has left a legacy of industrial and minerals sites that are now used as geology and wildlife nature reserves or to house development, as is the case in Thurrock. The sub-regional priorities include promoting green infrastructure to improve the quality of the environment, create habitats and attract tourism.

Thurrock also falls within the Greater Thames Estuary NCA, a predominately remote and tranquil landscape of shallow creeks, drowned estuaries, low-lying islands, mudflats and broad tracts of tidal salt marsh and reclaimed grazing marsh. The coastal habitats here are internationally important for

[49] Natural England (2014) National Character Area Profiles [online] Available at: http://publications.naturalengland.org.uk/publication/4721112340496384?category=587130

their biodiversity and support large numbers of wintering and breeding wetland birds, rare plant and invertebrate species, and diverse marine wildlife.[50]

Thurrock's landscape divides roughly into industrial and urban land south of the A13 and mixed urban, village and rural land to the north of the A13. Approximately 60% of the borough is open countryside, predominately agricultural land and dispersed villages.[51] Over 70% of the borough is designated Green Belt.

The borough contains a number of distinct landscape types including the coastal marshes, the Thames terrace, the rolling hills in the north and the urban fringe. Over half of Thurrock has been designated as Landscape Improvement Area, which are in need of remedial treatment to improve their environmental quality. These include areas of derelict land and former mineral workings.[51]

Thurrock exhibits a mosaic of markedly contrasting landscapes; from open and relatively tranquil and undeveloped farmland in the rural parts of the borough to the north, to the densely developed urban areas and industrial development adjacent to windswept grazing marshes along the Thames riverside. The Landscape Character Assessment (LCA) (LUC, 2018) identifies seven strategic landscape character types and areas, 12 local scale character types and 24 local scale character areas. The LCA presents a profile of each landscape character type, divided into local scale character areas, where applicable. This includes identification of the key features and vulnerabilities of each area, as well as a vision for each area and guidance to conserve and enhance the character of the area.

In terms of topography, Thurrock is generally low-lying, with the highest point in the north east at Westley Heights (less than 116m above sea level). In the River Thames floodplain and the surrounding marshes the land is generally lower than 20m above sea level. North of the surrounding floodplain and surrounding marshes, where the geology alters from fluvial deposits to chalk and head, there is a small ridge which loops around the centre of the borough from north of South Ockendon, south through Grays, south of Chadwell St. Marys and northwards east of Corringham. North of this ridge the land gently undulates rising up to Westley Heights but for a low-lying, broad, flat river floodplain centred around Mar Dyke near Bulphan.

Thurrock does not fall within or close to a designated Area of Outstanding Natural Beauty (AONB) or National Park. The nearest AONB is Kent Downs, located approximately 5 km to the south of the borough.

Projected Baseline

Many future changes in Thurrock's landscape will be set out in the new Local Plan, but are likely to include major transport developments such as Lower Thames Crossing and a continuation of the current urban regeneration programme. This programme has already had an effect on Thurrock's landscape and townscape, with the expansion of retail services through Lakeside shopping Centre, the creation of a huge container port at London Gateway, the regeneration of Purfleet, the continuation of the High House Production park housing, the Royal Opera House development and the expansion of the Port of Tilbury being key drivers for the change.[52]

At a strategic level, the 2005 Landscape Capacity Study concluded that much of the borough's landscape is highly sensitive to most scales of urban development without substantial investment in green infrastructure provision.[51] More locally, the study suggests there is scope within the urban fringe and selected settlement edge landscapes to accommodate varying scales of development without significant adverse effects on important qualities of the landscape. The Council intends to commission an update to this study to reflect recent changes in the borough.

Materials and Waste

Introduction

Material resources include primary raw materials such as aggregates and minerals, and secondary manufactured products. The production, sourcing, transport, handling, storage and use of materials, as well as the disposal of any surplus, have the potential to affect the environment. At the same time, the beneficial reuse of materials prevents them from becoming waste and reduces the need to use finite resources obtained from elsewhere.

[50] Natural England (2013) National Character Area profile: 81: Greater Thames Estuary [online] Available at: http://publications.naturalengland.org.uk/publication/4531632073605120

[51] Thurrock Council (2005) Landscape Capacity Study [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_landscape.pdf

[52] Thurrock Council (2011) Shaping Thurrock Community Strategy Towards Thurrock's Centenary [online] Available at: http://democracy.thurrock.gov.uk/Data/Council/201103301900/Agenda/$6531%20-%2015127.doc.pdf

Wastes are materials, substances or objects which have no further use and are disposed of, are intended to be disposed of, or are required to be disposed of by the provisions of national law.

Policy and Legislation

International

The European Community Waste Framework Directive (2008/98/EC) provides an overarching legislative framework for the management of waste across Europe. The Directive requires Member States to draw up waste management plans and for those plans to contain specific information including details of major disposal and recovery installations.

National

Requirements of the EU Waste Framework Directive have been transposed in England through The Waste Regulations (England and Wales) (Amendment) 2012.

The National Planning Policy for Waste (2014) sets out detailed waste planning policies and places responsibility on waste planning authorities to ensure that waste management is considered alongside other spatial planning concerns such as housing and transport; recognising the positive contribution waste management can make to developing sustainable communities. This includes preparing Local Plans which identify opportunities to meet the needs of their area for the management of waste streams.

The UK Waste Strategy for England (2007) describes a vision for better managing waste and resources and sets out changes needed to deliver more sustainable development in England.

Local

Thurrock began preparation of a Minerals and Waste Local Plan with production of a Mineral and Waste Development Plan Document- Issues and Options (2009), which was to include site allocations considered able to deliver required mineral extraction and waste management capacity up to 2021. Its aim was to implement the strategic vision and policies for minerals and waste planning set out in the Core Strategy through the provision of a number of appropriately located and sized sites. This would help meet the regional need for primary mineral extraction, secondary/recycled aggregates processing and ensure the careful management of all waste streams originating within the borough.

Progress on the Minerals and Waste Local Pan was stopped following the decision by Thurrock Council in February 2014 that a new Local Plan will be produced which will cover waste and mineral planning issues.

Current Baseline

There are two currently active mineral extractions sites in Thurrock: The East Tilbury Quarry and Mill House Farm, West Tilbury.[53]

There are seven operational landfill sites in Thurrock (including two mothballed sites available for future use). There are a further five landfill sites that are currently in the restoration stage. Thurrock also has a number of waste treatment sites.

In 2015/16, there were 78,695 tonnes of municipal (household and non-household) waste arisings in Thurrock.[54] Of this, 16.2% was sent to landfill. The remainder was sent for recycling, reuse, incineration or composting. The proportion landfilled was a decrease on the previous year when 17.9% of waste was landfilled (**Table A3.4** & **Table A3.5**).

Since 2005 there has been a substantial rise in recycling and incineration rates and a decrease in the amount of waste landfilled in Thurrock (**Figure A3.3**). Over the last five years this trend has plateaued somewhat, although the proportion of waste incinerated has continued to rise gradually. The reason behind such a dramatic change in how waste is managed may be due largely to policies in the existing Minerals and Waste Local Plans for Thurrock (CSTP29 and CSTP31), which have encouraged the use of alternative aggregate sources and the development of facilities for the recycling of mineral, construction and demolition wastes. Requirements of the EU Waste Framework

[53] Thurrock Council (2014) Annual Monitoring Report [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/monitor_authority_2014.pdf
[54] DEFRA (2017) ENV18 – Local authority collected waste: annual results tables [online] Available at: https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

Directive introduced in 2008 and continued rises in Landfill Tax may also have played a significant part.[55]

Table A3.4 Municipal Waste Collected in Thurrock (2005 -2016) [56]

	2005/06	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Household - total waste (tonnes)	71,789	66,970	66,753	67,283	73,111	67,865	75,460
Non-household - total waste (tonnes)	3,023	2,866	2,860	2,606	4,416	3,131	3,235
Total waste collected (tonnes)	74,811	69,836	69,613	69,888	77,527	70,996	78,695

Table A3.5 Municipal Waste Management in Thurrock (2005-2016) [57]

	2005/06	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Total waste collected (tonnes)	74,811	69,836	69,613	69,888	77,527	70,996	78,695
% Landfilled (tonnes)	77.3% (57,843)	28.8% (21,549)	26.4% (19,716)	17.3% (12,920)	24.2% (18,098)	17.9% (13,360)	16.2% (12,750)
% Incineration with EfW (tonnes)	0.1% (71)	21.8% (16,295)	25.6% (19,157)	34.5% (25,826)	34.6% (25,915)	37.5% (28,028)	44.0% (34,683)
% Recycled/ Composted (tonnes)	22.6% (16,896)	42.8% (32,038)	41.1% (30,734)	41.6% (31,142)	44.1% (32,980)	39.8% (29,743)	39.8% (31,327)

[55] Thurrock Council (2005) Toward Thurrock Municipal Waste Strategy and position statement 2005-2010 [online] Available at: http://democracy.thurrock.gov.uk/thurrock/Data/Cabinet/200507201900/Agenda/$12277%20-%20458.doc.pdf
[56] DEFRA (2017) ENV18 – Local authority collected waste: annual results tables [online] Available at: https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables
[57] DEFRA (2017) ENV18 – Local authority collected waste: annual results tables [online] Available at: https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

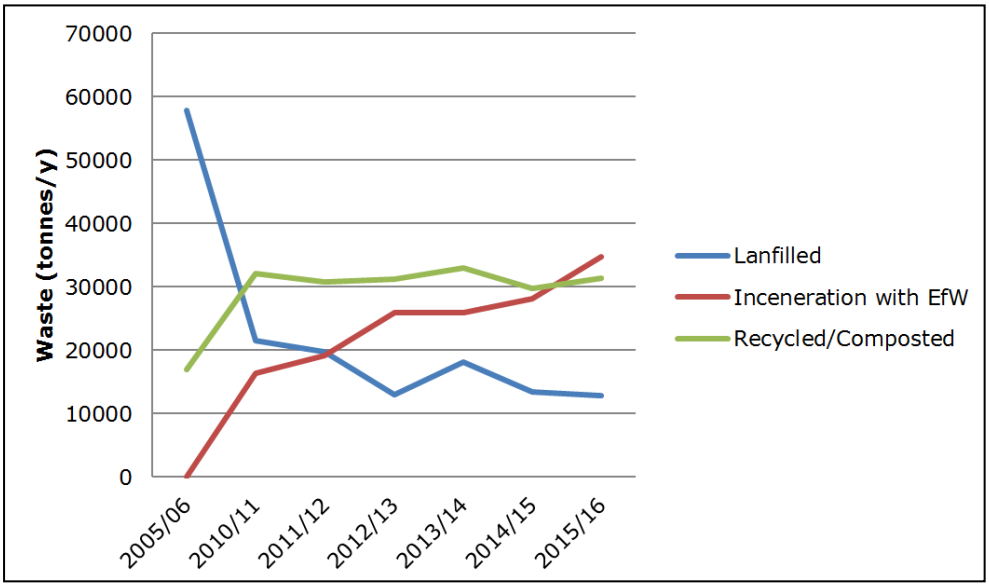


Figure A3.3 Waste Management Trends in Thurrock (2005-2015)

Projected Baseline

The 2010 Thurrock Waste Management Capacity Needs Assessment[58] found that Thurrock has considerable available landfill capacity to meet its needs. However, the rate at which its capacity is being depleted has often been greater than forecasted due to large amount of non-hazardous municipal solid waste and commercial and industrial waste being imported to the borough from London. Without imports from London, it was predicted that there would be capacity in Thurrock to take all the waste required until beyond 2027.

In terms of how waste arisings are managed, recent trends are predicted to continue; with gradual reductions in the proportion landfilled and gradual increases in the amount incinerated (see **Figure A3.3**). The trend seen over the last six years would suggest the proportion recycled or composted will remain at a similar level.[59] However, these projections are highly dependent on other variables, including population growth, implementation of large regeneration and infrastructure projects and the amount of waste that is imported from outside the borough.

The Council has identified a need to update the existing Minerals and Waste evidence base, and this work will be commissioned as work on the new Local Plan progresses.

Noise

Introduction

Noise is an often underestimated cause of short and long-term health problems, including for example sleep disturbance, cardiovascular effects, poorer work and school performance and hearing impairment (if noise levels are extreme).[60] It can come from industrial, agricultural, domestic, transportation or natural sources and, if experienced at high levels, may cause disturbance to people and wildlife.

Some demographic groups are particularly vulnerable to noise. As children spend more time in bed than adults, they are more exposed to night noise. Chronically ill and elderly people are more sensitive to disturbance, while shift workers are at increased risk because their sleep structure is under stress.

[58] Thurrock Council (2010) Thurrock Waste Management Capacity Needs Assessment – 2010 Update [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_waste_needs_201011.pdf
[59] DEFRA (2017) ENV18 – Local authority collected waste: annual results tables [online] Available at: https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables
[60] World Health Organisation (2016) Noise Data and Statistics [online] Available at: http://www.euro.who.int/en/health-topics/environment-and-health/noise/data-and-statistics

The less affluent, who cannot afford to live in quiet areas or have adequately insulated homes, can also suffer disproportionately.[61]

Policy and Legislation

International and National

The EU Noise Directive – 2002/49/EC (2002) is implemented in the UK by the Environmental Noise Regulations (2010). Amongst their provisions, they require the production of noise mapping to determine exposure to environmental noise, and the adoption of noise action plans which should respond to noise issues and effects; managing and reducing them where necessary.

Local

No specific local noise policy could be found. This is likely due to noise being covered in other documents such as the Thurrock Community Strategy (2012).

Current Baseline

According to a World Health Organisation publication[62]:

- about 40% of the population in EU countries is exposed to road traffic noise at levels exceeding 55 decibels (dB) (A);
- 20% is exposed to levels exceeding 65 dB(A) during the daytime; and
- more than 30% is exposed to levels exceeding 55 dB(A) at night.

The overall number of noise complaints received by Thurrock Council between 1999 and 2006 increased from 943 in 1999 to 1,682 in 2006. Whilst this would suggest that noise pollution is increasing across the borough, such figures should be used with caution as other factors such as changes to the noise-complaints process may have influenced this trend.

What is clear from monitoring that has been undertaken across the UK by Defra is that road traffic is a significant source of noise emissions. In particular, highly congested roads with high traffic volumes and large volumes of HGVs can cause substantial levels of noise and vibration for nearby residents.

Whilst no transport noise data is available for Thurrock at this time, the Essex Buildings Design Guide (2005) recognises that the major sources of noise pollution across Essex are heavily trafficked main roads, airports and heavy industry.[63]

The Campaign for Rural England tranquillity map[64] (**Figure A3.4**) shows that the western parts of Thurrock are generally the least tranquil, while northern and eastern areas are more tranquil. Built-up urban areas are also shown to be less tranquil than rural areas with smaller settlements. In terms of ranking, Thurrock's tranquillity rank is 57 out of 87, which is relatively low and just outside of the bottom quartile nationally.

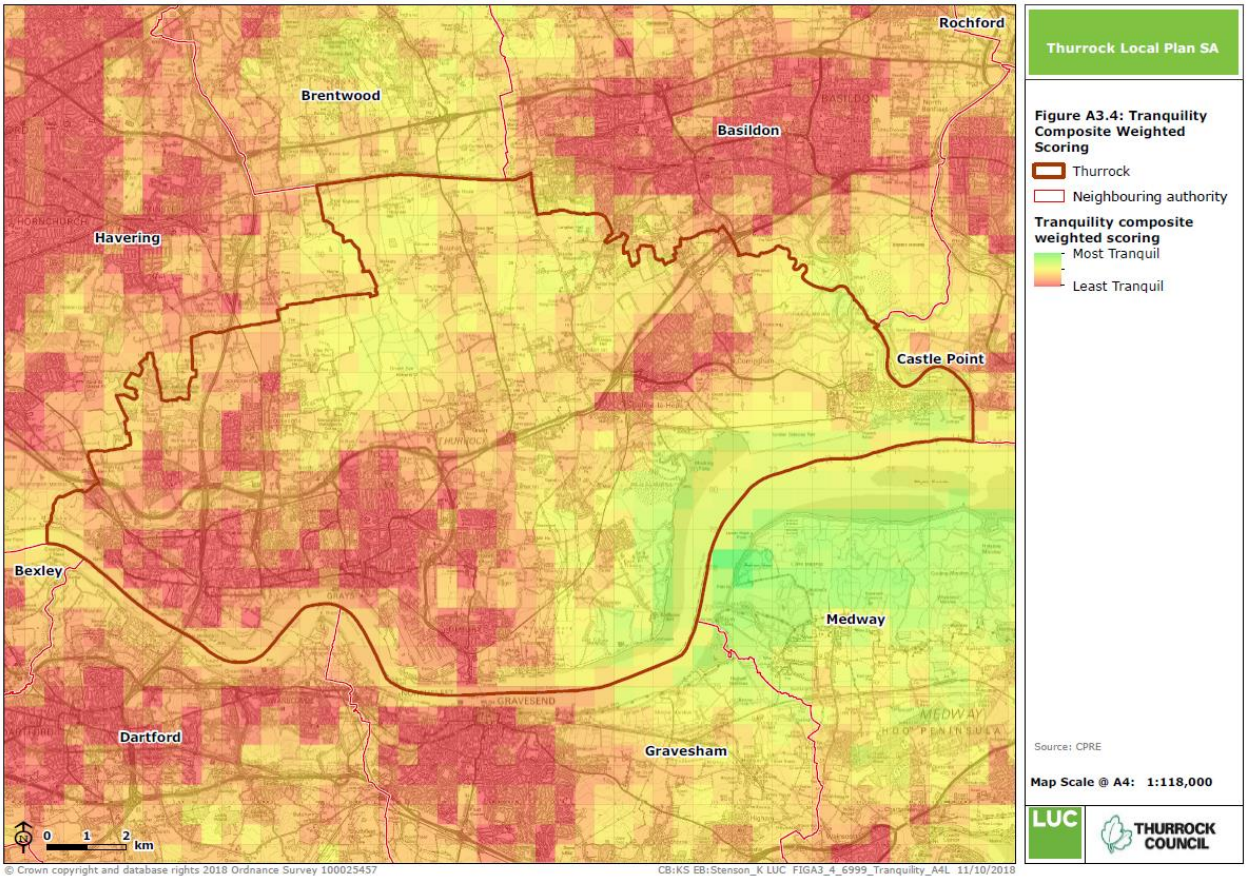
Projected Baseline

Future changes in noise levels are difficult to predict. In broad terms, there is an intrinsic relationship between development and noise, particularly large infrastructure developments which have the potential to create short-term noise impacts during construction and longer-term changes to the noise environment during their operation.

Loss of tranquillity is especially likely to result from growth pressures, while noise increases are often a by-product of traffic growth, particularly if green belt land is released for development. Housing growth at the periphery of existing towns can also extend the urban character of these areas into the landscape, thereby increasing noise and light pollution. Development of the LTC could increase traffic levels within Thurrock, therefore having associated effects on noise. Whilst the LTC is intended to

[61] World Health Organisation Europe (2011) Burden of disease from environmental noise [online] Available at: http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf?ua=1
[62] *Ibid*
[63] Essex County Council (2005) The Essex Design Guide [online] Available at: https://www.essex.gov.uk/Environment%20Planning/Planning/Transport-planning/Infomation-for-developers/Documents/19715_essexdesignguide.pdf
[64] Campaign to Protect Rural England (2017) Tranquillity Maps [online] Available at: http://maps.cpre.org.uk/tranquillity_map.html?lon=0.01712&lat=51.25375&zoom=9&gclid=CO7fvbOapMoCFcMRHwodS3sH3w

reduce congestion at the Dartford Crossing (and therefore may reduce noise pollution in this area), it may also generate additional traffic by creating new north to south links, therefore improving the ease of travel across the River Thames but introducing or increasing noise pollution in other parts of the borough.



Water Resources and Quality

Introduction

The water environment provides a number of vital functions to support communities. From providing drinking supplies to serving as recreational facilities, water bodies of all types are fundamental for maintaining a healthy and active population. Maintaining water resources and quality, including reducing pollution and abstraction, is therefore a key consideration for local planning.

Policy and Legislation

International

The Water Framework Directive (WFD) 2000/60/EC expands the scope of water protection to all waters, surface waters and groundwater, and aimed to achieve 'good' status or potential for all waters by 2015, or under certain provisions, 2021 or 2025.

National / Regional

The Water Act (2003) is national legislation which transposes the WFD into UK law.

The River Basin Management Plan (RBMP) for the Thames River Basin District (2009) implements the Water Act at a regional level, focusing on the protection, improvement and sustainable use of the water environment. Many organisations and individuals help to protect and improve the water environment for the benefit of people and wildlife. River basin management is the approach the Environment Agency is using to ensure combined efforts achieve the improvement needed in the Thames River Basin District.

The Water Resources Strategy for England and Wales (2009) includes various actions to plan for sustainable, reliable water supplies for people and businesses, whilst also protecting the environment.

Local

Thurrock's Water Cycle Study (2010)[65] assessed the impact of proposed growth targets for Thurrock on its water cycle infrastructure and water environment, in order to determine where additional investment was required to build new infrastructure or implement management measures to protect the water environment. This is due to be updated shortly.

Current Baseline

The East of England is the driest region in England and is one of the fastest growing in terms of development. Water resource availability is limited, with supply-demand issues in parts of the region. In some catchments, water abstraction is not reliable during dry winters.

Water availability has been a major challenge for Thurrock in the past. Development at the Abberton Reservoir to increase its storage capacity in 2014 has helped to improve water supply in the borough, but with anticipated changes in climate likely to exaggerate existing water resource demands, this challenge is likely to remain.

The main watercourses in Thurrock are the River Mardyke, Stanford Brook and Vange Creek/Holehaven Creek.

The River Mardyke, a Water Framework Directive water body, flows from the north of the borough to the west where it joins the River Thames. It is managed as part of the South Essex River Basin Management catchment in the Thames river basin district. [66] Under the WFD, the ecological and chemical status of the river are currently classed as 'moderate' and 'good' respectively, with the objective of maintaining these statuses by 2027.[67]

Water quality within the lower stretches of the River Mardyke which flows through Thurrock urban area is currently of moderate to poor quality and fails to meet 'good ecological status' under the WFD. Poorly managed surface water runoff occurs from development bordering the River Mardyke, and it is thought that this is largely responsible for the water quality issues.[68]

Thurrock does not fall within any surface water safeguard zones or surface water Nitrate Vulnerable Zone (NVZ) (an area of land that drains into water known to be polluted by nitrates).

The mid-section of the borough is under a secondary A aquifer (superficial deposits) between Purfleet and Stanford-le-Hope, with areas along the River Thames under secondary (undifferentiated) aquifer.[69]

There are two groundwater abstractions or 'Source Protection Zones' within the borough, one in Linford and another in west of North Stifford. The entire catchments of these two zones fall within the borough boundary.[70]

Projected Baseline

Under predicted scenarios for climate change, more frequent drought conditions are expected in the East of England, along with increased demands on water resources.[71] Future development will create additional requirements for water abstraction from surface and groundwater sources in Thurrock. Whilst this is expected to be met in the short and medium term through the increase in storage at Abberton Reservoir and the increase in abstraction and transfer from the Ely-Ouse transfer scheme, in the long term new sources may need to be identified.[72]

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[65] Scott Wilson (2010) Thurrock Water Cycle Study [online] Available at: www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_water_outline_2010.pdf

[66] Environmental Agency (2016) Water Framework Directive- 2009 River Basin Management Plans-Rivers [online] Available at: http://maps.environment-agency.gov.uk

[67] Environment.data.gov.uk. (2017). Environment Agency - Catchment Data Explorer. [online] Available at: http://environment.data.gov.uk/catchment-planning/OperationalCatchment/3297/Summary [Accessed 8 Aug. 2017].

[68] South Essex Catchment Partnership (2015). South Essex Catchment Plan 2015-2018. [online] Available at: http://www.thameschase.org.uk/uploads/Thames_Chase/Trust_Projects/SECaP_Final.pdf [Accessed 27 Jul. 2018].

[69] Natural England (2018) MAGIC map, [online], Available at: http://magic.defra.gov.uk/

[70] Natural England (2018) MAGIC map, [online], Available at: http://magic.defra.gov.uk/

[71] Thurrock Council (2010) Planning for Thurrock's Adaptation to Impacts of Climate Change [online] Available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_climate_201010.pdf

[72] Thurrock Borough Council (2009) Thurrock Water Cycle Study: Scoping Study [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_water_2010.pdf

Of the water supply companies active in Thurrock, Essex and Suffolk Water have indicated that proposed development up to 2025 is unlikely to require strategic level investment in the water supply network and that it should be able to connect to all proposed development areas via the existing strategic mains, though site-specific connections will still be required. Meanwhile, Anglian Water is undertaking work to improve the wastewater network to accommodate projected growth.[73]

At a high level, it is broadly assumed that the quality of water bodies such as the River Mardyke will improve in the future in line with WFD objectives. However, water quality is influenced by a wide range of internal and external factors, including climate change, geology and soils, human consumption (including population change) and pollution from human activities such as industry and agriculture. Future development, particularly in areas close to water bodies, may present a challenge to improving water quality.

Socio-economic baseline

Economy and Employment

Introduction

A strong economy is fundamental to securing long-term growth and sustainable development, while the creation and maintenance of employment opportunities can help to reduce poverty and facilitate sustainable economic and social development in communities. For this reason, job-creation is considered a core element in national strategies relating to growth, poverty and social equality.

Policy and Legislation

International

The 2002 World Summit on Sustainable Development reaffirmed the international commitment to sustainable development.

The EU Sustainable Development Strategy (2001) and updated Europe 2020 Strategy (2010) aim to identify and develop policies and actions to enable the EU to achieve a continuous long-term improvement of quality of life; creating sustainable communities that manage and use resources efficiently, tap the ecological and social innovation potential of the economy and ensure prosperity, environmental protection and social cohesion.

National

The UK Government set out its plans for the economy in the policy 'Achieving strong and sustainable economic growth' (2013). These include investing heavily in infrastructure development and science and technology, encouraging investment and creating a more educated workforce.

Local

The Thurrock Economic Growth Strategy2016-2021 was created as a basis for securing investment and economic diversification, including the identification of opportunities for Thurrock.

Key objectives and targets for economic growth across Thurrock and the wider South East region are set out in the South East Local Enterprise Partnership Strategic Economic Plan.[74]

Current Baseline

Thurrock's economy can be characterised by challenges in economic productivity but high levels of employment, which recovered sharply following the economic downturn of 2008/09. The Thurrock economy was worth around £2.8bn (unadjusted for inflation and local price variations) in 2013, equivalent to £17,300 per capita - 12.2% below the Essex County average of £19,700 and 28.2% below the England average of £24,100. This is primarily due to having a disproportionate concentration of jobs in several low value sectors, including ports and logistics and retail.

[73] Scott Wilson (2010) Thurrock Water Cycle Study [online] Available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_water_outline_2010.pdf

[74] South East Local Enterprise Partnership (2014). Growth Deal and Strategic Economic Plan [online] Available at: http://www.southeastlep.com/images/uploads/resources/SECTION_2_South_East_LEP_-_Growth_Deal_and_Strategic_Economic_Plan_WEB-2%281%29.pdf

Thurrock saw its local employment rate decline after the economic downturn – falling from 75.4% of residents in 2007 to just 70% of working age residents in 2011. However, following a sharp rise in 2012/13, the employment rate has settled considerably above the national average. In the 12 months to December 2014, 73.4% of working age residents in Thurrock were in employment - above the England (72.5%) average and only slightly below the rate for Essex County (74.1%).[75]

The unemployment rate in Thurrock rose sharply after the onset of the economic downturn, peaking at 11.4% of economically active residents in Thurrock in the 12 months to March 2012 (9,400 people). It has since declined. The latest unemployment figures from April 2016 to March 2017 stand at 5% (4300 people)[76]. The unemployment rate is higher than Essex County (3.2%) and the national average (4.7%)[77], though significantly above the 3.3% (2,600 people) seen in 2007, prior to the recession.[75]

Thurrock has seen considerable growth in active enterprises in recent years. The number of active enterprises registered in the borough increased by 1,030 between 2007 and 2013, even during the recession, and has continued to increase though Thurrock remains below the national average for enterprises per 1,000 people (26.5 compared to 34.6 for England). At 25%, Thurrock saw a higher rate of business growth between 2007 and 2013 than any region in England, including London (23.4%). This was also significantly above the Essex County (6.3%) and national (7.7%) averages.[78]

There has been substantial growth in business space across Thurrock between 2007 and 2012, particularly in relation to interventions made by the Council which have resulted in increases of: 86,000m^2 of industrial floorspace, 19,000 m^2 of retail floorspace, 3,000 m^2 of office floorspace and 1,000 m^2 of 'other' floorspace.[79]

Table A3.6 shows the breakdown of jobs in Thurrock by industry and compares this to averages for the Eastern Region and Great Britain.[80] In 2015, 87.4% of jobs in Thurrock were in the services sector, particularly wholesale and retail (30.2%) and Transport and Storage (14.3 %). This is greater than the proportion of jobs in services for the Eastern Region (84.8%) and Great Britain (85.8%), which each have a smaller proportion of service jobs in wholesale and retail.

Table A3.6 Breakdown of Employment in Thurrock by Industry

Industry	Thurrock (employee jobs)	Thurrock (%)	East (%)	Great Britain (%)
B : Mining And Quarrying	5	0.0	0.1	0.2
C : Manufacturing	2,500	4.0	7.8	8.3
D : Electricity, Gas, Steam And Air Conditioning Supply	175	0.3	0.2	0.4
E : Water Supply; Sewerage, Waste Management And Remediation Activities	1,000	1.6	1.0	0.7
F : Construction	3,500	5.6	6.0	4.6
G : Wholesale And Retail Trade; Repair Of Motor Vehicles And Motorcycles	19,000	30.2	17.9	15.8

[75] Thurrock Council (2016) Cabinet Meeting of 7th January 2016: Economic Growth Strategy Refresh – Update [online] Available at: http://thurrock.moderngov.co.uk/documents/s6526/Economic%20Development%20Strategy%20Refresh.pdf

[76] Nomisweb.co.uk. (2017). Labour Market Profile - Thurrock. [online] Available at:https://www.nomisweb.co.uk/reports/lmp/la/1946157204/report.aspx#tabempunemp [Accessed 8 Aug.2017].
Nomisweb.co.uk. (2017). Labour Market Profile - Essex. [online] Available at:https://www.nomisweb.co.uk/reports/lmp/la/1941962833/report.aspx#tabempunemp [Accessed 8 Aug.2017].

[78] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016

[79] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016

[80] Nomisweb.co.uk. (2017). Labour Market Profile - Thurrock. [online] Available at:https://www.nomisweb.co.uk/reports/lmp/la/1946157204/report.aspx#tabempunemp [Accessed 8 Aug.2017]

Industry	Thurrock (employee jobs)	Thurrock (%)	East (%)	Great Britain (%)
H : Transportation And Storage	9,000	14.3	4.6	4.7
I : Accommodation And Food Service Activities	4,000	6.3	6.5	7.2
J : Information And Communication	800	1.3	3.9	4.2
K : Financial And Insurance Activities	450	0.7	2.4	3.6
L : Real Estate Activities	600	1.0	1.4	1.7
M : Professional, Scientific And Technical Activities	2,250	3.6	8.5	8.4
N : Administrative And Support Service Activities	6,000	9.5	10.4	8.9
O : Public Administration And Defence; Compulsory Social Security	1,250	2.0	3.4	4.4
P : Education	5,000	7.9	9.1	9.2
Q : Human Health And Social Work Activities	5,000	7.9	12.1	13.3
R : Arts, Entertainment And Recreation	700	1.1	2.2	2.4
S : Other Service Activities	1,000	1.6	2.4	2.0

Overall, Thurrock falls within the 40% most deprived areas in England for employment deprivation, with the south east of the borough being the most deprived (among the 10% most deprived) and the central areas of the borough being the least deprived (among the 20% least deprived areas in England).[81]

Projected Baseline

Looking ahead, there is a positive outlook for the Thurrock economy. According to data from the East of England Forecasting Model[82], Thurrock's economy is forecast to grow by an average of 3.2% per annum between 2012 and 2030 and total employment will grow by an average of 1.5% a year; equivalent to an increase of 21,200 jobs.[83] Thurrock is expected to see annual jobs and Gross Value Added growth significantly above projections for Essex County and the UK as a whole between 2012 and 2030.

Extrapolating trend growth from 2007-2013 would see an increase of 11,800 jobs by 2021. Potential investments in the local economy - in particular within identified economic hubs such as the London Gateway, Port of Tilbury and Lakeside - offer the potential for faster jobs growth in the coming years. Supporting and enabling delivery of those developments will play an important part in attempting to meet the target of 26,000 jobs by 2021.

Along with other South Essex authorities, the Council has carried out an Economic Development Needs Assessment[84]. This identified considerable economic opportunities for South Essex due to its location, including access to the Thames and links to London, which provide strong opportunities for economic and employment growth. Challenges include managing the decline or transition of more traditional industries and activities and the need to deliver sufficient infrastructure, particularly in terms of transport, to support a high level of economic growth.

[81] Indices of Deprivation (2015) explorer [online] Available at: http://dclgapps.communities.gov.uk/imd/idmap.html
[82] Cambridgeshire Insight (2014) East of England Forecasting Model [online] Available at: http://www.cambridgeshireinsight.org.uk/EEFM
[83] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016
[84] GVA (2017) South Essex Economic Development Needs Assessment

Along with other South Essex authorities, the council also commissioned a Retail and Leisure Study. The outcomes of this will feed into the future SA baselines.

Development of the Lower Thames Crossing will open up new links between North Kent and Thurrock, which may encourage expansion of businesses and trade across the Thames. This could also affect commuting patterns between South Essex and North Kent.

Education and Skills

Introduction

Education and skills provision is widely regarded as a fundamental component in unlocking the economic growth potential of an area. Having a population that is well-educated and sufficiently skilled can increase rates of employment, particularly for high earning jobs, and help to make an economy more productive and competitive.

Providing high quality education and training facilities gives residents opportunities for employment; regarded as an important contributor to an individual's health and well-being. It can also help to attract new people to an area, which can in turn offer further socio-economic benefits.

Policy and Legislation

International / National

Europe 2020, the EU's strategic growth strategy, seeks to promote smart, sustainable, and inclusive growth. A stated key factor in the achievement of this strategy is development of literacy, numeracy, science, and technology skills.

Each EU country is responsible for its own education and training systems. EU policy is designed to support national action and help address common challenges such as ageing societies, skills deficits in the workforce, technological developments and global competition. Education and training 2020 (ET 2020) is the framework for cooperation in education and training. It serves as a forum for exchange of best practices, mutual learning, gathering and dissemination of information and evidence of what works, as well as advice and support for policy reforms.

At the national level, in 2010 the Department for Business Innovation and Skills published the 'Skills for Sustainable Growth Strategy' document for England. The Strategy set out a five-year direction for skills policy and the shared responsibility of government, employers and individuals to create a system for skills in which all parties can invest with confidence and benefit with consistency. The aim was to develop the skills needed to support a competitive economy that is environmentally sound and resource efficient.[85]

In 2013, the Government built on this work with publication of a document entitled 'Rigour and Responsiveness in Skills', with the objective of setting out the framework to accelerate reforms to the skills system to ensure that the UK's vocational training offer allows its citizens to compete with any in the world.

Local

Thurrock makes provision for education and skills development within its Economic Growth Strategy 2016-2021, recognising that it is of paramount importance to Thurrock's economic future. It makes the case that skills need to improve to attract higher value jobs.

The South East Local Enterprise Partnership (SE LEP) Strategic Economic Plan recognises that residents do not offer all the skills that SE LEP employers, and employers in London need. This need underpins Thurrock's productivity and skills challenge.

Current Baseline

Thurrock has recently seen a significant shift towards attainment at the highest qualification levels (NVQ3 and above) among working age residents, and away from qualifications at the lowest levels (NVQ1 and below). In total there are 15,700 more working age residents qualified at Level 3 and above in 2016 than in 2007, and 18,000 fewer residents aged 16-64 whose highest level of

[85] Department for Business Innovation & Skills (2010) Skills for Sustainable Growth Strategy [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32368/10-1274-skills-for-sustainable-growth-strategy.pdf

qualification is at NVQ Level 1 or below.[86] Whilst this mirrors national trends, improvements have been particularly evident in Thurrock.

In 2013/14, 57.9% of key stage 4 students in Thurrock achieved 5 A*-C grades at GCSE including English and maths. This was above the Essex County (56.5%) and England (53.4%) averages, and a significant improvement on performance in 2007/08, when only 42.6% of KS4 students in Thurrock achieved 5 A*-C grades at GCSE including English and maths. It should be noted that figures for 2013/14 are not directly comparable with earlier years due to major education reforms which were introduced.[87]

Despite these improvements, Thurrock still has relatively low proportions of residents who are qualified at NVQ Level 3 and above – 43.1% of working age residents in 2016, compared to 56.9% nationally. There is also a relatively high proportion of working age adults with low or no qualifications, including 12,000 Thurrock residents aged 16-64, making up 11.3% of working age residents. This compares to just 8% nationally.[88]

A relatively low proportion of Thurrock students went on to a sustained education destination in 2013/14 (54% compared to 64% for England), although this was an improvement on 2009/10 when 51% of Thurrock students were registered in a sustained education destination. There continues to be a relatively low proportion of Thurrock young people going on to Higher Education.[89]

Thurrock ranks poorly in the education, skills and training domain of the Indices of Multiple Deprivation Index, with large portions of the borough ranked among the 20% most deprived areas in England.[90]

Projected Baseline

Higher skilled sectors such as advanced manufacturing and environmental technologies are expected to be become more prevalent in Thurrock in coming years, as evidenced by the establishment of Thames Enterprise Park. Many companies with offices, plant and premises in the area anticipate significant future growth; but many employers are already experiencing difficulties in attracting suitably skilled candidates and many report dissatisfaction with existing further education and higher education provision. Increasingly businesses are also referencing a lack of numbers, i.e. not enough people for the number of jobs that are being created, as a critical recruitment issue.

Between 2012 and 2022, UK Commission for Employment and Skills employment projections for the East of England show an increase of almost 417,000 (+40.1%) jobs requiring at least a university level qualification. Despite improving levels of attainment, there remain skill shortages in Thurrock's local labour pool.[91]

Housing

Introduction

Providing high-quality housing that people can afford is key to enabling residents of an area to live healthy and happy lives. This topic will not include a direct assessment of housing supply or the meeting of housing targets, as this is part of the Local Plan evidence base external to the SA and the meeting of plan objectives. However, this topic will consider the way in which housing delivery affects the housing needs of the community, such as issues of affordability and levels of homelessness, the housing mix and levels of overcrowding, and the adaptability of housing to people's changing needs (e.g. issues of age and disability).

Policy and Legislation

National

The Localism Act (2011) gave greater powers to local housing authorities and providers of social housing to meet local needs.

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[86] Nomisweb.co.uk. (2017). Labour Market Profile - Thurrock. [online] Available at:https://www.nomisweb.co.uk/reports/lmp/la/1946157204/report.aspx#tabempunemp [Accessed 8 Aug.2017]
[87] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021
[88] Nomisweb.co.uk. (2017). Labour Market Profile - Thurrock. [online] Available at:https://www.nomisweb.co.uk/reports/lmp/la/1946157204/report.aspx#tabempunemp
[89] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016
[90] Indices of Deprivation (2015) explorer [online] Available at: http://dclgapps.communities.gov.uk/imd/idmap.html
[91] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016

The regulatory framework for social housing (2015) is made up of regulatory requirements, codes of practice and regulatory guidance that apply to providers of social housing.

The Homelessness Act (2002) places a duty on local authorities to formulate a homelessness strategy by carrying out a homelessness review for their district.

Local

Thurrock Council's Housing Strategy 2015-2020[92] sets out the Council's vision for working together with all housing providers to deliver both housing led growth and regeneration in the borough and improve the health, wellbeing and life opportunities for communities. It includes a range of priorities and objectives to improve the quality of housing and housing services to make Thurrock an attractive place to live.

Thurrock Council's Homelessness Review and Prevention Strategy 2015-2020 set out targets to prevent homelessness and its impacts on people.

Current Baseline

There were 2,366 net additional dwellings built in Thurrock between 2006 and 2015, an under provision of 6,184 dwellings compared to the Adopted Core Strategy target of 950 dwellings per annum over the period 2006-2026.

There was a small increase in the number of total households in Thurrock between 2001 and 2011, rising from 58,485 to 62,353 (a 3.6% increase).[93] Over the same period, there was a significant rise in the proportion of private rented sector housing from 5.9% in 2001 to 13.2% in 2011. This is further demonstrated by the change in the total number of households in this sector, which rose from 3,456 in 2001 to 8,220 in 2011 (an increase of 137.9%).[94]

Despite increased housing provision in Thurrock, average house prices have continued to rise in recent years. The average house price (for all property types) in Thurrock in April 2018 was £269,910. This was an increase on the previous year and higher than the national average of £226,906 as of April 2018. .[95]According to the IMD, the further you go from the centre of the borough to its boundary, the greater the barriers to housing and services, with much of Thurrock's outer areas falling within the 40% most deprived category in England.[96]

Demand for good quality affordable housing is high largely due to an increasing population, high property prices and existing areas of poor quality housing within Thurrock. Home ownership remains unaffordable for many and an underlying upward trend in the housing waiting list provides an indication of affordable housing needs.[97]

Table A3.7 shows the proportion of affordable housing completions on sites liable to affordable housing provision under planning policy. In total, 76 affordable houses were completed during 2013/14. As a percentage of total dwellings on sites this equated to 28.6%, down on the previous year's figure of 38.1%.

[92] Thurrock Council (2015) A Housing Strategy for Thurrock [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/housing_strategy_2015_2020_v01.pdf
[93] Thurrock Council (2015) Joint Strategic Needs Assessment Demographic and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf
[94] Thurrock Council (2015) Joint Strategic Needs Assessment Demographic and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf

HM Land Registry Public Data (2018) [online] Available at: http://landregistry.data.gov.uk/app/ukhpi/browse?from=2017-05-01&location=http%3A%2F%2Flandregistry.data.gov.uk%2Fid%2Fregion%2Fthurrock&to=2018-05-01
[96] Indices of Deprivation (2015) Explorer [online] Available at: http://dclgapps.communities.gov.uk/imd/idmap.html
[97] Thurrock Council Housing Strategy 2012-2017 [online] Available at: www.thurrock.gov.uk/housing/pdf/housing_strategy_2012.pdf

Table A3.7 Affordable housing provision in Thurrock[98]

Year	Affordable Houses Completed	Total Dwellings on Sites Liable to Affordable Housing Provision	% Affordable
2009/2010	29	45	64.4
2010/2011	57	232	24.6
2011/2012	28	332	8.4
2012/2013	138	363	38.1
2013/2014	76	266	28.6

Projected Baseline

According to the recent projections, the total number of households in the borough will increase from 64,500 in 2008 to 89,100 by 2031. Estimates suggest a total of 2,597 dwellings will be delivered within the next 5 years on large sites with planning permission in Thurrock, and a further 3,308 over the longer term, the majority of which will be in Purfleet Centre.[99]

Thurrock existing Core Strategy provides for over 18,500 new homes by 2021 and up to 4,750 more by 2026.[100] These dwelling targets were established through the now revoked Regional Spatial Strategy for the East of England. The 2016 South Essex Strategic Housing Market Assessment[101] (SHMA) calculated an Objectively Assessed Need (OAN) of 1,381 dwellings per annum for Thurrock, which translates into a need for 31,763 homes over the plan period. The SHMA also indicated that 48% of new homes would have to be affordable to meet current housing needs.

Deprivation

Introduction

Deprivation relates to a person's social and economic position in relation to others, based on the extent to which their needs are being met.

The English Indices of Multiple Deprivation (IMD) is the most widely used measure of deprivation in this country. It works by measuring distinct dimensions of deprivation separately and then combining these to give an overall score or 'rank' for each Lower Super Output Area (LSOA).

Seven distinct domains of deprivation are included in the IMD, made up of 38 separate indicators. The domains are:

- income deprivation;
- employment deprivation;
- health deprivation and disability;
- education, skills and training deprivation;
- barriers to housing and services;
- living environment deprivation; and
- crime.

As employment, health and disability, education and skills, access to services, environment, housing and crime are each covered under separate SA topics in this report; this topic focuses specifically on patterns of overall deprivation across Thurrock.

[98] Thurrock Council (2014) Authority Monitoring Report [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/monitor_authority_2014.pdf
[99] Thurrock Council (2016) Five year housing land supply position statement
[100] Local Aggregate Assessment for Great Essex (2014) [online] Available at https://www.essex.gov.uk/Environment%20Planning/Planning/Minerals-Waste-Planning-Team/Planning-Policy/minerals-development-document/Documents/Greater_Essex_LAA_Update_14.pdf
[101] Turley Economics (2016) Strategic Housing Market Assessment: South Essex

Policy and Legislation

Thurrock's Community Strategy (2012) sets out a vision for the borough to encourage and promote job creation and economic prosperity.

The Thurrock Economic Growth Strategy 2016-2021 seeks to improve Thurrock's economy by stimulating. This could help to reduce economic and income deprivation across the borough.

Current Baseline

In 2015, Thurrock was ranked 125th out of 326 English authorities in the IMD (1 being most deprived). This is eighteen places higher (more deprived) than in 2010 (143rd out of 326).[102]

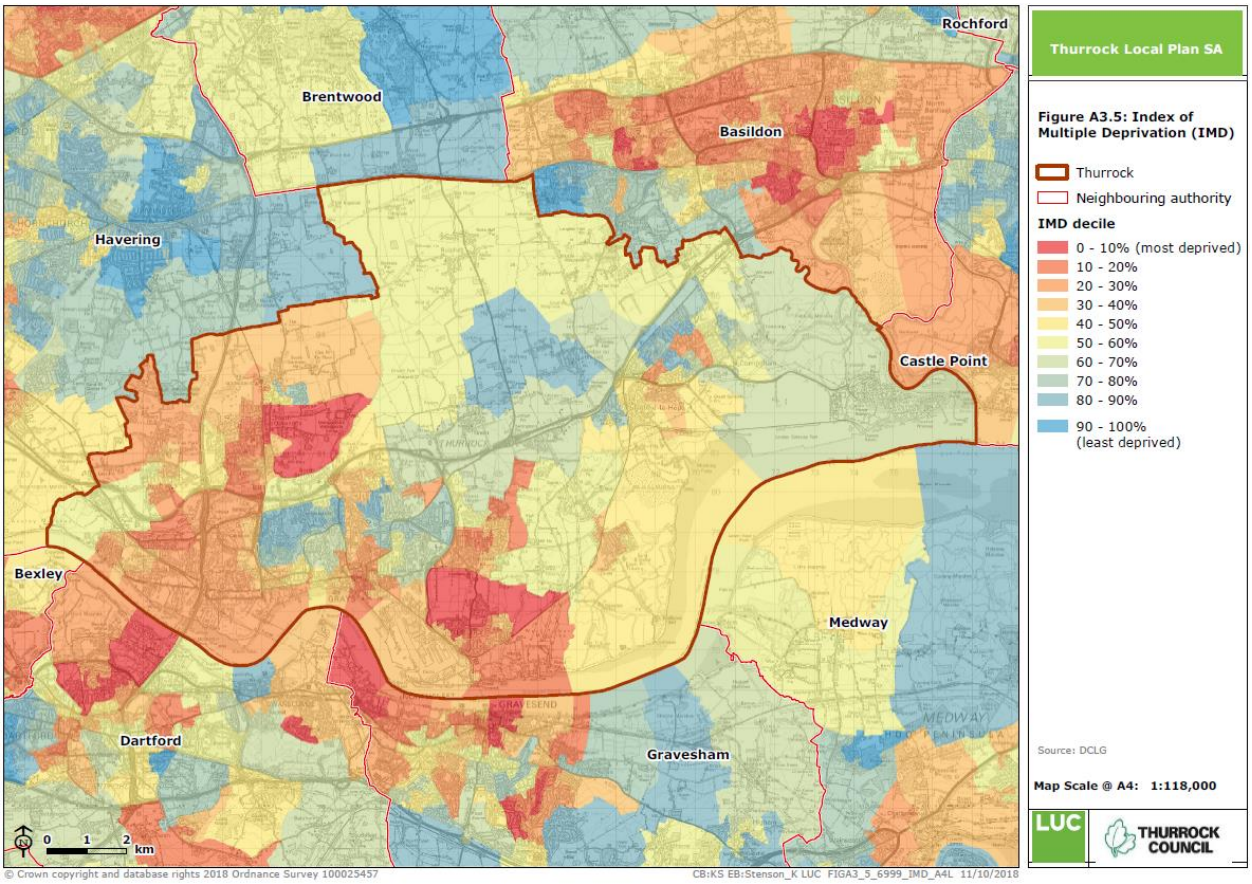
Four of Thurrock's 95 Lower Super Output Areas (LSOA) were ranked among the 10% most deprived in England and Wales in 2010.[103]

An examination of the IMD (2015) at the LSOA level reveals substantial spatial variation in deprivation across Thurrock, with more deprived areas found in the south and the west of the borough and less deprived areas in the north east (**Figure A3.5**).

There is a particular concentration of high deprivation in the vicinity of Tilbury and Chadwell Mary. The most deprived LSOA in the borough is found here and is ranked 1,716th out of 32,844 LSOAs nationally (highlighted in blue in **Figure A3.5**). However, this area ranks higher (less deprived) than in 2010 when it was ranked 1,156th.

The least deprived LSOA in the borough is ranked 29,137th nationally and forms part of a cluster of relatively affluent LSOAs to the north of Grays. This cluster is an exception, as the majority of Thurrock's high ranking LSOAs are located in the north east of the borough.

West Thurrock and South Stifford ward experienced the greatest improvement in ranking of overall deprivation since 2010, possibly as a result of the Lakeside retail park extension.



[102] Indices of Deprivation (2015) Explorer [online] Available at: http://dclgapps.communities.gov.uk/imd/idmap.html

[103] Department for Communities and Local Government Index of Multiple Deprivation (2015) English indices of deprivation 2015 Ministry of Housing, Communities & Local Government (2015) [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/467764/File_1_ID_2015_Index_of_Multiple_Deprivation.xlsx

There are large areas of deprivation in the west of the borough, particularly near the towns of Purley, Aveley and in central Grays. Rural areas in the north west generally experience more deprivation than those to the east.

Projected Baseline

Thurrock's overall deprivation ranking has worsened between 2010 and 2015. Levels of deprivation continue to vary spatially across the borough, with the east generally experiencing less relative deprivation than areas in the west.

West Thurrock and South Stifford have showed significant improvement in the IMD rankings largely as a result of development over the last five years. Whilst this has been good for these areas, if this trend continues it may attract businesses away from central Grays, further worsening levels of deprivation experienced there.

Crime

Introduction

Crime in all its forms can significantly influence the perceived attractiveness of an area and the health and well-being of its population. Areas which have low rates of crime are generally more desirable by both residents and businesses, while the opposite is true for areas with high levels of crime. This can create or worsen levels of deprivation experienced in such areas.

Spatial development has the potential to reduce or exacerbate crime issues. At a local level, design features such as adequate street lighting can help to reduce the risk of crime, whilst at the strategic level, at which the Local Plan is aimed, the location and nature of housing, employment and other services or facilities may help to discourage crime and ease the fear of it. For example, unemployment and low income- two determinants of certain crimes - could potentially be overcome by providing or improving access to employment.

Policy and Legislation

Regional / Local

The Joint Commissioning Strategy for Domestic Abuse (2015) aims to lead consistent and coordinated action, bringing together collective resources to address the issue of Domestic Abuse. It has been developed through a joint partnership between the Essex Domestic Abuse Strategic Board and partner agencies across Essex, Thurrock and Southend.

Thurrock's Community Safety Partnership Strategic Assessment (2017) covers the scale and scope of crime, disorder and community safety issues in Thurrock.

Current Baseline

Recorded crime rates in Thurrock have risen in recent years and are still above the national and county average.[104] Figures for 2010/11 for Thurrock showed a 5% reduction in crime against the previous year, equating to 317 less victims of these offences. However, more recent data shows an increase in recorded crimes.[104] In May 2018 the total crime count for Thurrock was 1,596 compared to the total crime in May 2017 which was 1,479 – an increase of 117 total crime cases.

There is considerable spatial variation in crime rates across Thurrock. Grays Riverside, West Thurrock and South Stifford, Tilbury Riverside and Thurrock Park, Tilbury St. Chads, Stanford-le- Hope West and Ockendon all have crime rates significantly above the Thurrock average. For the period 1st October 2016 to 30th September 2017 the ward with the highest crime count of 2047 was West Thurrock & South Stifford. The ward with the lowest crime count of 213 was The Homestead.

Some of the highest volumes of crimes in Thurrock are burglary, motor vehicle theft, shoplifting and serious violent crimes. The three offence types that have seen the greatest increases across the most recent rolling 12 areas are: Vehicle Interference (121% increase), Robbery of Personal Property (61%) increase and homicide (2 to 3 offences). The three offence types that have seen the greatest

[104] Thurrock Council (2018) Thurrock Community Safety Partnership Strategic Assessment 2017-2018 [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/tcsp-assessment-2018-v01.pdf

reductions are: Theft From the Person (31% decrease), Racially/Religiously Aggravated Offences (20% decrease) and Robbery of Business Property (18% decrease)[105].

There were 271 reported sexual offences in Thurrock for the year ending September 2016, a 10.2% increase e on the previous year. This is in line with the trend seen across the Essex police force. There were 278 reported sexual offences in Thurrock for the year ending September 2017, a 2.6% increase on the previous year.

Hate Crime in Thurrock is decreasing but the borough continues to have the highest number of racial hate crime incidents in Essex. One in five such incidents occurred in Tilbury Riverside, followed by 9% in Tilbury St. Chads and Grays Riverside and 8% in South Ockendon; August being the peak month.[106]

Victim Based Crime	Offences			
Crime Type	2016	2017	# diff.	% diff
Violence Against the Person	3253	3612	359	11.0
Sexual Offences	271	278	7	2.6
Robbery	131	197	66	50.4
Burglary (all types)	1401	1338	-63	-4.5
Vehicle Offences (incl. Interference)	1662	2057	395	23.8
Other Theft	2953	3367	414	14.0
Criminal Damage incl. Arson	1650	1673	23	1.4

The four critical areas for antisocial behaviour in the borough are Tilbury, South Ockendon, Chadwell St. Mary and Grays. In Tilbury over 50% of complaints in the first two quarters of 2014 was hate crime-related. South Ockendon, Chadwell St. Mary and Grays also have high records of domestic abuse, making up 46%, 34% and 27% of antisocial behaviour complaints.[107]

Projected Baseline

Crime rates are influenced by such a large number of variables that it is very difficult to anticipate future trends. Whilst data shows that the number of reported crime incidents in Thurrock grew between 2016 and 2018, this could be due to improvements in the crime reporting process, which would be considered a positive change.

Spatial variation that currently exists in relative crime deprivation across Thurrock is likely to remain for the foreseeable future, and for the most part will continue to mirror overall deprivation trends.

[105] Thurrock Council (2018) Thurrock Community Safety Partnership Strategic Assessment 2017-2018 [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/tcsp-assessment-2018-v01.pdf
[106] Thurrock Council (2015) Joint Strategic Needs Assessment Demographics and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf
[107] Thurrock Council (2015) Thurrock Community Safety Partnership – Strategic Assessment [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/tcsp_assessment_2015.pdf

Equalities

Introduction

The topic of equalities focuses on reducing or eliminating discrimination in all forms based on an individual's age, gender, sexuality, marital status, race, disability or religion. In particular, it aims to identify where the effects of a plan or proposal may be disproportionately experienced by one or more groups who share these 'protected characteristics'.

Policy and Legislation

National

The Equality Act (2010) requires public authorities (under the Public Sector Equality Duty) to take a pro-active approach to eliminating discrimination. Specifically, they must promote equality of opportunity, good relations between groups of people who share protected characteristics, while eliminating unlawful discrimination.

The Act is underpinned by a range of equality- and diversity-related legislation, including the Human Rights Act, Race Relations Act and amendment, Disability Discrimination Act, Gender Recognition Act, Civil Partnerships Act, Employment Equality (Religion or Belief) Regulations and Employment Equality (Sexual Orientation) Regulations.

Local

Thurrock Council has a single equality scheme[108] which aims to ensure the services it provides are fair and equal. The scheme is reviewed each year in consultation with community groups and Council staff. It helps the Council to involve communities in decision-making, oppose all forms of prejudice and discrimination, provide equal access to jobs, promote diversity and tolerance and prevent harassment and victimisation of residents, service users and employees.

The Council reports on its progress against its equality duties each year. The latest report was published in 2016.[109]

Current Baseline

Population Structure

In 2014, the total population of Thurrock was163,270[110], of which 80,424 (49.3%) were male and 82,846 (50.7%) were female[111]. In 2017 the total population of Thurrock was 170,400 of which 84,100 were male and 86,300 were female. 63.7% of the population were males aged 16-64 and 63.2% were females aged 16-64[112].

Whilst Thurrock's age structure is broadly representative of regional and national trends, the borough has a considerably younger population (ages 0-19 years), with a particularly high proportion of 0-4 year olds, and a considerably larger proportion of the population in their 30s and early to mid-40s, than both East of England region and England as a whole. In line with this, Thurrock has a smaller proportion of people in older age groups than the regional and national averages.[113]

[108] Thurrock Council (2012) Single Equality Scheme [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/single_equality_201204.pdf
[109] Thurrock Council (2016) Annual workforce equality data [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/annual-workforce-quality-data-201612-v01.pdf
[110] ONS (2014) Annual Mid-year Population Estimates [online] Available athttp://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/mid-2014/stb---mid-2014-uk-p
[111] Thurrock Council (2015) Joint Strategic Needs Assessment – Demographics and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf
[112] ONS (2017) Labour Market Profile – Thurrock [online] Available at: https://www.nomisweb.co.uk/reports/lmp/la/1946157204/report.aspx#tabrespop
[113] ONS (2011) Age Structure, Table KS102EW [online] Available at: https://www.nomisweb.co.uk/census/2011/ks102ew

Population Change

The annual number of births in Thurrock has steadily increased from 1,852 births in 2001 to 2,359 in 2014. At the same time, the number of deaths per annum has declined from 1,216 in 2001 to 1,147 in 2014.[114] There were 2514 births and 1203 deaths as of June 2016.[115]

The borough's population aged 60 years and above has increased by 16.5% since 2001, with a 47.5% increase in the over 85 population,[116] Life expectancy between 2014 and 2016 was 79.1 years for males, which is similar to the national average of 79.5 and 82.3 years for females, which is worse than the national average of 83.1.[117]

There has been substantial migration of people from London to Thurrock, particularly from geographically close boroughs such as Havering, Barking and Dagenham and Newham. These three London boroughs account for over 50% of total migration into Thurrock.[118]

In terms of international migration into Thurrock, Office for National Statistics estimates show that the annual figure has varied significantly since 2001, from about 500 people a year, rising to a peak of 1,300 in 2006/7, before decreasing to 940 per year in 2013/14.[119]

Population Distribution

Thurrock's population is not evenly distributed across the borough - there are more densely populated areas in the southern and central areas of Thurrock, and less populated areas in the north.

The areas with the highest percentage of under 15s in Thurrock are heavily clustered around the south and south west of the borough, including the wards of Tilbury St Chads, Chafford and North Stifford, South Chafford and West Thurrock, and South Stifford where around 34% of the population falls within this age group.

The highest proportion of the over 65s (22-36%) reside in the north of the borough in areas such as Orsett, Corringham and Fobbing.

Race

Thurrock has a diverse population with nearly a fifth of the population from Black, Asian and Minority Ethnic groups.[120] In 2011, Ethnic minorities made up 14.1% of Thurrock's population, similar to the 14.5% seen across the country as a whole. Black/African/Caribbean/Black British; African were the largest group at 6.2%.

Despite an overall population increase across the borough, the White British and Irish groups have decreased in number from 134,348 residents (93.9% of the resident Thurrock population in 2001) to 128,348 in 2011 (81.6% of the total population). All other ethnicities have seen increases in number and proportion, particularly within the Black and White Other groups which experienced 642.8% and 228.3% increases respectively (**Table A3.8**).[111]

[114] Thurrock Council (2013) Health and Well-being strategy: Part 1 [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/HWB-strategy-2013-pt1.pdf

[115] Thurrock Council (2018) Thurrock Pharmaceutical Needs Assessment 2017/2018 [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/pharmaceutical-needs-201803-v01.pdf

[116] Thurrock Council (2015) Market Position Statement: Adult Social Care in partnership with Health and Housing 2015 – 2018 [online] Available at: http://democracy.thurrock.gov.uk/documents/s3477/Item%2011%20Appendix%201%20Market%20Position%20Statement%20Overview.pdf

[117] Public Health England Local Authority Health Profiles – Thurrock (online) Available at: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/ati/102/are/E06000034

[118] Thurrock Council (2015) Joint Strategic Needs Assessment – Demographics and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf

[119] Thurrock Council (2015) Joint Strategic Needs Assessment – Demographics and Population Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf

[120] Thurrock Council Pharmaceutical Needs Assessment (2014) [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/pharmaceutical_needs_201411.pdf

Table A3.8 Breakdown of Thurrock's Population by Ethnicity

Ethnic Group	2001		2011		2001 - 2011	
	No. of residents	% of population	No. of residents	% of population	Absolute change	Change as a percentage
White British / White Irish	134,348	93.9%	128,348	81.6%	-5,653	-4.5%
White Other	2,051	1.4%	6,734	4.3%	4,683	+228.3%
Mixed	1,319	0.9%	3,099	2.0%	1,780	+135%
Asian	3,405	2.4%	5,927	3.8%	2,522	+74.1%
Black	1,659	1.2%	12,323	7.8%	10,664	+642.8%
Other	346	0.2%	927	0.6%	581	+167.9%
Total	143,128	100.0%	157,705	100.0%	14,577	+10.2%

In total, 6% of the Thurrock population uses a language other than English as their main language, of which the most commonly used language is Polish (1.4%).[121]

Disability

As of 2014, there are estimated to be 2,965 adults aged 18 and over living with a learning disability in Thurrock, ranking the borough fifth in Essex County with Colchester estimated to have the largest number (3,436) and Maldon District (1,175) the smallest.[122]

In the same year, 107 adults in Thurrock were living with severe or complex learning disabilities, 64 adults with Down syndrome and 35 adults with challenging behaviours.[123]

The 2011 census showed 24,550 people (15.5% of the population) to be living with a disability in Thurrock, 7% of whom suffered from day-to-day activities limited a lot and 8% suffered from day-to-day activities limited a little. This is a decrease on the proportion of the population who were living with a limiting long-term illness in the 2001 Census (16.1%). The previous census did not distinguish the extent to which people are limited by their condition.

Religion

In 2011, the largest religious affiliation in Thurrock was to Christianity (63.3% of the population), while the second largest proportion was no faith (26% of the population) (**Figure A3.1**).

[121] Thurrock Council Pharmaceutical Needs Assessment 2017/18 (2018) [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/pharmaceutical-needs-201803-v01.pdf (accessed 28/06/2018)
[122] Essex County Council: Learning Disability Needs Assessment (2015) [online] Available at: http://www.essexinsight.org.uk
[123] Essex County Council: Learning Disability Needs Assessment (2015) [online] Available at: http://www.essexinsight.org.uk

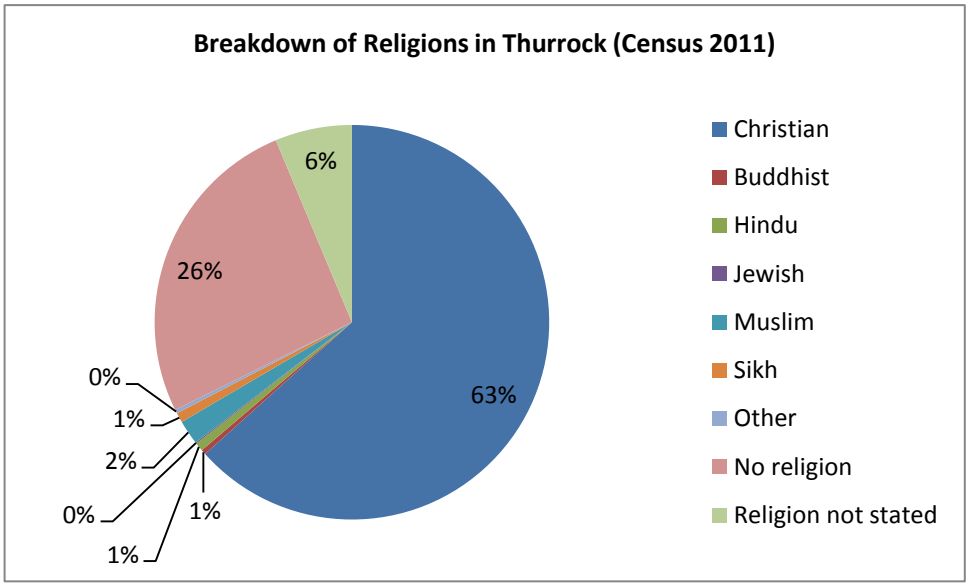


Figure A3.1 Breakdown of Religions in Thurrock (2011)

Between 2002 and 2011 the percentage of Thurrock's population who identified themselves as Christians fell by around 12%, which was similar to the trend seen across the UK. The largest percentage increase between 2001 and 2011 was in the number of people in Thurrock who stated that they had no religion, which increased by 10.5%; slightly higher than the national average of 10.3%.[124]

Gypsy and Traveller Communities

According to the 2011 Census, 308 people living in Thurrock identified themselves as Gypsies and Travellers (0.2% of the total population), compared to 187 people on average across all local authorities in Essex.[125] This figure is likely to be less than the actual figure due to some Gypsies and Travellers not declaring their ethnic status or completing the census.

The 2018 Gypsy, Traveller and Travelling Showpeople Accommodation Assessment identified the following existing sites in Thurrock:

- 3 public sites
- 4 private sites
- 2 temporary sites
- 5 tolerated sites
- 4 unauthorised sites
- 2 Travelling Showpeople yards
- No transit sites.

Together they contain a combined total of 139 residential pitches.

Thurrock has historically been the base for a significant number of Travelling Showpeople, who have a different cultural identity to Gypsies and Travellers as well as a unique lifestyle. Buckles lane in Thurrock is the largest group of Travelling Showpeople in Europe and contains a mixture or authorised and temporary plots as well as non-Travelling Showpeople (often former workers) living alongside

[124] Thurrock Council (2014) The Changing profile of religion and Belief in Thurrock [online] Available at: http://thurrock.moderngov.co.uk/Data/Standing%20Advisory%20Council%20for%20Religious%20Education/201403191800/Agenda/7848%20-%2020757.pdf

[125] Thurrock Council (2014) Essex gypsy and traveller and travelling show people accommodation assessment on behalf of Essex Planning Officers Association [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_gtta_201407.pdf

Travelling Showpeople. The Travelling Showpeople yards located at Buckles Lane will be the subject of a separate assessment of need given the scale and complexity of development at this location..[126]

Projected Baseline

ONS subnational population projections from 2012 suggest that Thurrock's total population will increase from its current level of 163,270 to 176,500 by 2022 and 192,535 by 2032 (an increase of 8.1% and 19.9% respectively).

The population is predicted to increase for almost all age groups. However, as a proportion of the total population, the largest percentage increases from 2012 to 2022 are predicted to occur in the 5-9, 50-54 and 70-74 years age groups.[127] By 2022, those aged 50-64 are projected to increase by 5,900, an increase of 18%, while those aged 75-84 are projected to increase by 2,139 (26%).[128]

The number of 0-19 year olds in Thurrock is set to increase to 50,500 by 2037.[129] The number of over 85 year olds is set to double by 2033.[130]

Data from recent years suggests the population of White British and Irish groups will continue to decrease as a proportion of total population, while ethnic groups will continue to increase.

The total number of adults with learning disabilities in Essex, Southend-on-Sea and Thurrock is estimated to increase by 7.8% over the next 6 years. In Thurrock, an 11.2% increase in people with learning disabilities is projected by 2020.

The number of people who affiliate with Christianity is likely to continue decreasing in line with national trends, but it will remain the most popular religion in Thurrock in the coming years. Those who report having no religious belief or affiliation will continue to increase in number, in keeping with the national trend.

The latest Gypsy and Traveller needs assessment illustrated that there is a need for 10 additional pitches over the GTAA period to 2033.[131]

Health baseline

Introduction

Health determinants are the factors that produce changes in a population's health and well-being. Thurrock's Local Plan has the potential to affect the following health determinants:

- pollution
- physical activity and obesity
- access to services and facilities
- transport safety

Baseline information relating specifically to each of these determinants is provided below along with an overview of the current and projected baseline from a general health perspective.

Policy and Legislation

There is a large body of plans and strategies at an international, national and local level that focus on health. Whilst some target specific issues or determinants, many cover a range of health issues and explore the relationships between them. For this reason, policy and legislation relevant to the four

[126] Thurrock Council (2018) Gypsy, Traveller and Travelling Showpeople Accommodation Assessment [online] Available at: https://www.uttlesford.gov.uk/CHttpHandler.ashx?id=7737&p=0

[127] Joint Strategic Needs Assessment – Demographics and Population Change (2015) [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-demographics-population-v02.pdf

[128] Thurrock Council (2015) Market Position Statement: Adult Social Care in partnership with Health and Housing 2015 – 2018 [online] Available at: http://democracy.thurrock.gov.uk/documents/s3477/Item%2011%20Appendix%201%20Market%20Position%20Statement%20Overview.pdf

[129] Thurrock Council (2015) Joint Strategic Needs Assessment children and Young People [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/jsna-children-young-people-201602-v01.pdf

[130] Health and Well-being strategy (2013) 1 [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/HWB-strategy-2013-pt1.pdf

[131] Thurrock Gypsy, Traveller and Travelling Showperson Accommodation Assessment (2018) [online] Available at: https://www.uttlesford.gov.uk/CHttpHandler.ashx?id=7737&p=0

health topics considered in the SA has been grouped together within the Policy Review in Appendix B, a summary of which is provided here.

International

'Health 2020' is the new European health policy framework. It aims to support action across government and society to "significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality".

The Human Rights Act makes provision for the protection and improvement of human health.

National

The Health and Social Care Act 2012 creates a duty on the Secretary of State, NHS England and Directors of Public Health to secure continuous improvement in the quality of services provided to individuals for or in connection with 'protection or improvement of public health'. The Act sets out the statutory responsibilities which local authorities have for public health services.

The National Planning Policy Framework (NPPF) supports the role of planning to create healthy, inclusive communities by supporting local strategies to improve health, social and cultural well-being for all and by working with public health leads and health organisations.

Fair Society, Healthy Lives (the Marmot Review) (2010) found that individual health is influenced by wider determinants such as income, education, local environmental quality and employment – what Marmot calls the 'social determinants of health'. The review set out six policy objectives for reducing health inequalities including 'to create and develop healthy and sustainable places and communities'.[132]

Healthy Lives, Healthy People: Our Strategy for Public Health in England (2010) sets out the Government's long-term vision for the future of public health in England. It aims to create a "wellness" service (Public Health England) and to strengthen both national and local leadership.

Revised Environmental Impact Assessment (EIA) Regulations came into effect in 2017, which implemented the 2014 amendments to the European EIA Directive. This includes a requirement for plan-makers to take account of effects on population and human health.

Local

Thurrock's Joint Strategic Needs Assessments (JSNA) outline the current and future health and social care needs of the local community that could be met by local authority, NHS England and Commissioning Groups.

The JSNA: Children and Young People (2017) looks specifically at the needs of children and young people in the borough, providing a comprehensive picture of the health and well-being needs of children and young people now and in the future. There are also specific JSNAs for children and young people's mental health, published in 2018.

JSNA: Demographics and Population Change (2015) looks at the demography of Thurrock's population as a whole and feeds the information into the Health and Well-being Strategy for Thurrock.

There are also JSNAs looking at ways to address whole systems obesity (2017) and adult mental health (2018).

The Thurrock Health and Well-being Strategy (2016) developed by the Thurrock Health and Well-being Board to deliver the 'improve health and well-being' priority set up by Thurrock Community Strategy (2012). The objective for this strategy is to ensure people stay healthy longer, reduce inequalities in health and well-being and enhance healthcare service provision.

[132] The Marmot Review (2010) Fair Society, Healthy Lives [online] Available at: http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review

Current Baseline

All age all-cause mortality rates have decreased in both males and females in Thurrock since 2000, which mirrors the national trend. Although Thurrock has slightly higher rates of all age, all-cause mortality than England in 2012, the rates are not too different to the national average. The mortality rate for males is still larger than for females.

Table A3.9 shows the Standardised Mortality Rates (DSRs), (Which are age-standardised rates per 100,000 populations for males and females in Thurrock and England for 2000 and 2012.

Table A3.9: Change in Directly Standardised Mortality Rates (DSRs) for Males and Females between 2000 and 2012

Area	Males			Females		
	2000	2012	% change	2000	2012	% change
Thurrock	839.94	624.88	-25%	594.8	479.06	-19.40%
England	841.84	614.31	-27.02%	564.5	447.7	-20.69

Early death rates from cancer, heart disease and stroke have fallen, although the former is still worse than the England average. The rate of smoking-related deaths is higher in Thurrock than the national average.[133]

Life expectancy for the period 2014-2016 for both men (79.1 years) and women (82.3 years) is similar to the average for England (79.5 and 83.1 respectively).[134] Rates for early deaths from cardiovascular diseases for the period 2013-2015 was 90.9 per 100,000 population aged under 75 and for cancer it was 153.5 per 100,000 population aged under 75. These two figures are significantly worse than the England averages - 74.6 per year and 138.8 per year respectively.[135]In terms of the health and disability domain of the IMD, Thurrock is among the 30% least deprived areas in England. The most deprived area, which falls within the 30% most deprived category, is in the south east of the borough.[136]

Projected Baseline

There are many potential changes in health determinants that will affect all-cause mortality in Thurrock. One example is climate change. Summers are expected to become hotter and sunnier and this may increase the excess mortality rate for vulnerable groups.[137]

Pollution and Health

Introduction

Pollution has been shown to have negative consequences in terms of human health. Concentrations of particulate matter (PM) and oxides of nitrogen (NO_x) in the air are a primary concern from a health perspective. Studies have shown that there is a direct association between proximity to busy roads (including those used by a large number of heavy vehicles) and respiratory illness.[138] Rates of cardiovascular and respiratory diseases and dementia, amongst others, are influenced by changes in air quality.

Pollution in the form of noise can lead to a range of health effects. This might include declines in communication skills, school performance, sleep and heightened aggression and annoyance. Such effects may generate anxiety and stress, which could lead to increased risk of cardiovascular conditions. In extreme cases, elevated noise levels can result in hearing damage.

[133] Public Health England (2017) Thurrock Health Profile [online] Available at: http://fingertipsreports.phe.org.uk/health-profiles/2017/e06000034.pdf

[134] Public Health England Local Authority Health Profiles Thurrock [online] Available at: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/ati/102/are/E06000034

[135] Public Health England Health Profile (2017) Thurrock [online] Available at: http://fingertipsreports.phe.org.uk/health-profiles/2017/e06000034.pdf

[136] Indices of Deprivation (2015) Explorer [online] Available at: http://dclgapps.communities.gov.uk/imd/idmap.html

[137] Thurrock Council (2010) Local Climate Impacts Profile (NI 188): Planning for Thurrock's Adaptation to Impacts of Climate Change [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/ldf_tech_climate_201010.pdf

[138] Committee on the Medical Effects of Air Pollutants (2010). Long-Term Exposure to Air Pollution: Effect on Mortality [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf

Changes in the water environment, which may include changes in quality or the availability of water resources, can affect drinking water quality and food supplies. Such changes can also affect agriculture, direct recreation facilities (e.g. angling, kayaking, canoeing and other recreational activities that involve water) or wider recreational resources, for example views of water along countryside walks or public bridleways. Such effects have implications for health.

Policy and Legislation

International

Action to manage and improve air quality is largely driven by EU legislation. The most recent EU Ambient Air Quality Directive (2008/50/EC) sets out long-term air quality objectives and introduces new air quality standards. The 2008 directive was made law in England through the Air Quality Standards Regulations 2010, which establishes mandatory standards for air quality and sets limits and guide values for sulphur and nitrogen dioxide, suspended particulates and lead in air. Through this legislation, local authorities are required to review and assess local air quality in a staged process, whereby AQMAs are designated should the assessment indicate that air quality standards will not be met within the required timescales, and AQAPs produced to set out how it intends to improve air quality in these AQMAs.

National

The UK Air Quality Strategy (2007) sets out a way forward for work and planning on air quality issues. It also reiterates the air quality standards and objectives to be achieved and introduces a new policy framework for tackling fine particles. Furthermore, the strategy identifies potential new national policy measures which modelling indicates could give further health benefits and move closer towards meeting the strategy's objectives. The aim of the strategy is to achieve a steady decrease in ambient levels of pollutants towards the objectives over the period of implementation. It is recognised some areas in the UK will find it easier than others to achieve the objectives and conversely, some areas will face different challenges.

Local

The Thurrock Air Quality & Health Strategy November (2016) sets out a strategy to tackle poor air quality and associated poor health within the Borough. The strategy adopts three main aims. These include

- implementing measures for managing air quality throughout the borough to prevent new AQMAs arising.
- implementing measures contained within action plans existing AQMAs
- working with external bodies to reduce background pollution from inside and outside the Borough.

The strategy adopts a number of policies to meet the aims above. These concern themselves with tackling transport emissions, managing Clean Air Zones or Low Emissions Zones, and future development and planning[139].

For more information on international/national and local policy please refer to refer to sections on Air Quality, Geology and Soils, Noise and Water Resources and Quality.

Current and Projected Baseline

In terms of the relationship between air quality and health, there is a correlation between recorded health issues within the borough and presence of AQMAs. AQMAs in areas such as Tilbury Riverside and Thurrock Park Way alongside West Thurrock and South Stifford have above average incidences of lung cancer within their populations. Similarly, West Thurrock, South Stifford, Purfleet, Aveley and Tilbury – all of which include one or more AQMAs - had extremely high emergency admissions for Chronic Obstructive Pulmonary Disorder (COPD).

[139] Thurrock Council (2016). Thurrock Air Quality & Health Strategy. [online] Available at: http://democracy.thurrock.gov.uk/documents/s10765/Appendix%201%20-%20Thurrock%20Air%20Quality%20and%20Health%20Strategy.pdf [Accessed 9 Aug. 2017].

AQMAs within Purfleet, West Thurrock, and Aveley also fall within the 20% most deprived areas in the country for living environment, one of the indicators for which includes air pollution. These examples start to build a picture of the negative relationship between occurrences of AQMAs and above average incidences of poor health and hospital admissions.

A common link with nearly all of these areas is the prevalence of HGVs. The disproportionate level of emissions from HGVs compared to regular motor vehicles means areas with a heavy presence are likely to see exacerbated problems.

There has been gradual reduction in pollutants within recent years which should in turn help to improve health outcomes in areas of poor air quality. However, as stated in the section on Air Quality, there is a possibility that air quality may worsen in the long-term as result of climate change due to a greater likelihood of prolonged periods of still, dry days, and to-date this relationship has been difficult to predict.

For information on the current and projected baseline in Thurrock, please refer to sections on Air Quality, Geology and Soils, Noise and Water Resources and Quality.

Physical Activity and Obesity

Introduction

Access to high quality green and blue space affects both physical and mental well-being. In order to achieve recommended daily activity levels, it is important that adults and children have access to suitable recreational resources and amenity spaces and opportunities for active travel.

In addition, healthy habitats and populations of wildlife can be important aspects of recreation, through direct enjoyment of nature and activities such as bird-watching, cross country walking, camping, boating, angling and canoeing and many others.

Recreation, amenity and levels of physical activity could be affected by the Local Plan through:

- Changes in infrastructure, including alterations to walking, cycling and public transport facilities;
- Alteration of the environment surrounding the recreational facility, including effects on wildlife and natural habitats, as well as effects on visual amenity;
- Changes in the local road network that affect access to recreational and amenity features;
- Effects on light, noise, air and water quality in the vicinity of developments; and
- Disturbance and disruption of people due to noise, visual disturbance and temporary traffic disruption.

Current Baseline

Obesity and over-weight is a significant health problem in Thurrock and nationally. Data from 2015/16 shows 10.5% of reception-aged children in Thurrock are obese.[140] This is above the national average of 9.3%, although not significantly so. For the period 2015/2016 23.8% of children in year 6 (10 and 11 year olds) were classified as obese which was higher than the average for England which stood at 19.8%. [141]

Between 2012 and 2014, around 30% of adults living in Thurrock qualified as obese; compared with the average for the East of England and England which stood at 24%.[142]

The sports participation indicator measures the number of adults (aged 16 and over) participating in at least 30 minutes of sport at moderate intensity at least once a week. The data shows that Thurrock was below the England average every year between 2008 and 2016 (**Table A3.10**).

[140] Thurrock Council (2017) Thurrock Joint Strategic Needs Assessment, Children and Young People

[141] Public Health England (2017) Thurrock Health Profile 2017 [online] Available at: http://fingertipsreports.phe.org.uk/health-profiles/2017/e06000034.pdf Public Health England (2015) Health Profile – Thurrock [online] Available at http://www.apho.org.uk/resource/item.aspx?RID=171774

[142] Public Health England (2016) Local Authority Adult Excess Weight Prevalence Data [online] Available at: http://www.noo.org.uk/visualisation

Table A3.10 Adult Participation in Sport in Thurrock [143]

Adult participation in 30 minutes, moderate intensity sport		
Year	**Thurrock**	**England**
2008/2009	31.8%	36.5%
2009/2010	33.2%	35.6%
2010/2011	34.0%	36.9%
2011/2012	30.7%	36.6%
2012/2013	31.5%	36.1%
2013/14	33.0%	35.8%
2014/15	33.8%	36.1%
2015/16	34.0%	36.1%

In 2016, just 26% of residents were very satisfied with the amount of space for local parks, but only 12% were very satisfied with the quality of that space.[144]

There are currently three parks achieving Green Flag status; Coalhouse Fort and Park, Langdon Country Park and Belhus Woods Country Park. The Grays Beach Riverside Park previously had Green Flag status, but does not currently.

The Open Space Assessment (2017)[145] found no deficiency in open space in terms of catchments, as where once type of open space was not available, KPP considered that other open space typologies constituted sufficient local provision. However, the assessment identified a number of open space sites that are considered to be of low quality or low value.

Analysis of 2011 census data[146] reveals that 40% of Thurrock's resident population travel to work by driving a car or van. This compares to 14% who travel by public transport.

Of a total of 64,202 journeys to work recorded in the 2011 census for Thurrock, 32.3% were less than 5km, which is considered to be a viable distance for using sustainable means of transport. However, walking and cycling accounted for only 5% of all journeys.[147]

Projected Baseline

Given that obesity is a significant problem in Thurrock at all ages, and has been for a number of years, it is likely that the borough will continue to perform poorly relative to regional and national averages unless there is a substantial intervention. At a national level in particular, recent improvements have been seen in the number of children classed as obese. One factor limiting improvement in Thurrock may be a lack of suitable open space, which will need to be addressed if the borough is to reverse the negative trends in adult and child obesity seen in recent years. The Open Space Assessment identified likely future deficiencies in all typologies of open space, as the population grows.

Access to Services and Facilities

Introduction

This topic considers the ways in which the ability of residents to access and use services and facilities can be affected by development. Services and facilities include hospitals and GPs, recreational resources, food retailers, employment and education centres, and other aspects of social infrastructure such as community centres and places of worship. Good and equitable accessibility and the provision

[143] Sport England (2016) The Active People Survey [online] Available at:https://www.sportengland.org/media/11342/weekly_table_aps10q4_16plus_local.xls
[144] Audit Commission (2009) Comprehensive Area Assessment, Culture Service Assessment for Thurrock [online] Available at: http://cpa.auditcommission.gov.uk
[145] Knight Kavanagh & Page Ltd (2017) Thurrock Council Open Space Assessment
[146] ONS (2011) Census Data: Method of travel to work (2001 specification) , local authorities in England and Wales
[147] NOMIS (2011) WP7701EW - Method of travel to work (2001 specification) by distance travelled to work (Workplace population) [online] Available at: http://www.nomisweb.co.uk/census/2011/WP7701EW/view/1946157204?rows=transport_powpew11&cols=aggdtwpew11_powpew11

of sufficient community facilities is a vital part of development's role in improving the health and well-being of a community.

Development which alters access to services and facilities can affect health and well-being in a number of ways. It can have direct links in terms of providing access to healthcare facilities, it can encourage walking or cycling, which may help to prevent or reduce obesity and the risk of cardiovascular disease, or it can restrict accessibility by non-car modes of transport, which may be particularly detrimental for certain social groups. Having suitable access to employment, education, places of worship and community centres is also important for well-being.

Current Baseline

There is generally good accessibility by public transport and walking to many services across Thurrock, though there are particular restrictions in terms of access to further education facilities and hospitals.

Key services include centres of employment, primary and secondary schools, further education institutions, GPs, hospitals, food stores and town centres.

In 2016, the average journey time taken to reach the nearest key services in Thurrock by car was 10.3 minutes, less than both the regional average for East of England (11.4 minutes) and the national average for England (10.6 minutes).[148]

The average journey time by public transport was 16 minutes; again less than the regional average for East of England (19 minutes) and the national average (17 minutes).

The same pattern exists for cycling, where the average of 12.8 minutes was significantly lower than for the East of England (15.9 minutes) and for England as a whole (13.7 minutes).

These results suggest that access to key services and facilities is an area in which Thurrock demonstrates strong performance compared to regional and national averages.

Projected Baseline

Existing issues in accessing education facilities and hospitals could become a major challenge for the borough in the coming years as the population continues to grow and age. It could also continue to restrict skills development and thus have implications for the Thurrock economy.

Many of the new jobs created in the borough over the next few years will be at London Gateway, which is located away from the main urban areas and so is less accessible by active transport. This may also limit employment opportunities for certain social groups.

Transport Safety

Introduction

Changes in traffic volumes and patterns (including vehicle types) can alter the risk of road traffic accidents and affect journey times. Increases in journey times can result in heightened stress and anxiety for travellers, reducing well-being and increasing the risk of diseases, such as cardiovascular conditions.

Studies have shown that as traffic increases, people modify their behaviours.[149] This means that social networks may also be at risk because of reduced connectivity and 'road dominance' (i.e. the dominance of roads over other transport options) in or near to residential areas. This can affect people's sense of community and inhibit healthy social interaction, which may lead to negative effects on mental health and well-being.

Current Baseline

A number of key road transport links pass through the borough. These include: M25 London Orbital; and A13 London to Southend trunk road, which connects with the M25 just north of the Dartford Tunnel and the Queen Elizabeth Bridge.

There are signs that the developments in Thurrock since 2007 are putting pressure on the road network. The 726 million vehicle miles travelled on major roads in Thurrock in 2014 is the highest

Department for Transport (2018) Statistical data set - Journey times to key services [online] Available at: https://www.gov.uk/government/statistical-data-sets/journey-times-to-key-services-jts01

[149] Cave B, Coutts A. (2002) Health Evidence base for the Mayor's draft Cultural Strategy. London: South East London Strategic Health Authority and East London & the City Health Action Zone

figure on record since 2000. The majority of this was accounted for by cars, but van (LGV) traffic saw the largest percentage increase from 2000-2014, and accounted for almost half (48.2%) of the overall increase in vehicle miles on major roads during this period; reflecting growth in transport and logistics-related activity in the local economy.[150]

As a result of these increases, the average speed on 'A' roads in Thurrock during the weekday morning peak is decreasing. This is particularly marked when looking specifically at the A13 where there has been a significant decline in average vehicle speeds for westbound traffic in recent years.

Significant improvements in highway capacity will be required by 2021 as well as extensive road improvements to improve journey times and safety. Or alternatively, improvements could be made in freight, public transport and cycling infrastructure,

Transport infrastructure is vital in Thurrock, particularly for sectors such as retail and ports and logistics. It is also vital for the resident population to travel and commute. Data for 2011 shows over 34% of residents commute to London on a daily basis and at present a majority do so by car.[150]

In terms of road safety, Thurrock's performance has declined since 2009 in terms of average number of road accidents resulting in death or serious injury (**Table A3.11**).[151]

Table A3.11 Road Traffic Accidents in Thurrock (2009-2014)

Year	No. of People killed or seriously injured in Road Traffic Accidents
2009/10	67.0
2010/11	62.0
2011/12	65.0
2012/13	68.3
2013/14	70.0

Projected Baseline

Proposed developments in Thurrock, including expansion to the London Gateway, the borough's ongoing urban regeneration programme and major transport projects such as Lower Thames Crossing could significantly alter the transport network. While some development may help to ease congestion and improve safety on the roads, others will increase traffic volumes; particularly the number of HGVs on the road. This could have implications for safety, both for drivers and for non-motorised users who rely on the network.

The effects of a changing climate are predicted to result in increased disruption to transport infrastructure and services in the future. Possible impacts include the significant deterioration of road surfaces, impacting local transport networks and businesses, and reduced capacity of rail network due to hot track conditions.[152] These changes could carry risks from a health perspective.

[150] Thurrock Council (2016) Thurrock Economic Growth Strategy 2016-2021: Final Draft – Approved by Cabinet on 9th February 2016
[151] Shaping Thurrock (2012) Thurrock Joint Strategic Needs Assessment Strategic Refresh [online] Available at: https://www.thurrock.gov.uk/sites/default/files/assets/documents/JSNA-2012-pt0.pdf
[152] Thurrock Council (2010) Planning for Thurrock's Adaptation to Impacts of Climate Change [online] available at: http://www.thurrock.gov.uk/planning/strategic/pdf/ldf_tech_climate_201010.pdf

Appendix 4
Site appraisal methodology and assumptions applied during the SA of Site Options

Where **Table A4.1** refers to the site being within a certain distance of a feature, or within a designation, this should apply to a substantial part of the site, i.e. 25% or more of the site's area. It is assumed that any negative impacts shown by **Table A4.1** as being significant, but that apply to less than 25% of the site, could be avoided or mitigated, therefore such effects will be assessed as minor negative (-). Where major positive impacts apply to less than 25% of the site, effects will be assessed as minor positive (+).

The larger an individual new housing allocation is, the less likely that it can be accommodated within the boundary of an existing settlement where it is likely to be closer to existing services and facilities. In general, the SA does not make any assumptions about new services and facilities that will be required as part of large new housing developments, with the following exceptions:

- Allocated housing sites with a capacity of at least 700 new dwellings are assumed to incorporate a new primary school and a bus stop.
- Allocated housing sites with a capacity of at least 3,000 new dwellings are assumed to incorporate at least one new primary school, a new secondary school, a bus stop, plus an appropriate level of community facilities.

It has been assumed that developers would be required to divert any existing public rights of way that might otherwise be lost to development. Information was not available at this stage of the plan making process to determine whether site allocations would result in any new or improved public rights of way being provided by new developments. These aspects were not, therefore, assessed in the SA of sites.

Table A4.1: Site Appraisal Methodology for the Thurrock Local Plan

#	Effect rating: SA Topic	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
#	SA Topic	Major negative effect that would significantly detract from achievement of the objective and could only be mitigated at significant cost	Negative effect that would slightly detract from achievement of the objective or major negative effect that could be mitigated at no/minor cost	No effect or neutral effect	Positive effect that would slightly help to achieve the objective	Major positive effect that would greatly help to achieve the objective	
1	Air Quality	Development within an AQMA	Development <500m from AQMA OR Development clearly linked to an AQMA via the strategic road network	All other sites	Change of land use leading to traffic reduction outside of AQMA	Change of land use leading to traffic reduction within an AQMA	GIS data: AQMA boundaries and road network.
2	Biodiversity, Flora and Fauna	The site is within the relevant SSSI Impact Risk Zones of an international designation and could therefore have a negative impact. OR within a national or local designation	The site is within 400m (or within relevant SSSI Impact Risk Zones) to a national or local designation and could therefore have a negative impact OR Development would lead to net loss of GI	N/A	The site is not within an international, national or local environmental designation or within its buffer OR Site would lead to creation of new habitat OR Development would lead to net gain of GI	Site would lead to expansion/ restoration of designated site and support protected or notable species	GIS data: Designations: SPAs, SACs, Ramsar sites, SSSIs and impact risk zones, LNRs, LWS' GI: amenity green space, semi natural green space, parks and gardens, cemeteries, allotments, OS green space layers, country parks, common land, CRoW access land.

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
3	Climate Change and Energy	Development would lead to loss of public or non-motorised transport infrastructure OR Site is further than 20 minutes' walk from the bus and rail network with frequent[153] services OR Site is further than 10 minutes' walk from the bus and rail network with less frequent services	Site is 10-20 minutes' walk from the bus and rail network with a minimum frequency of 4 services an hour, Wednesday 8am to 9am OR Site is within 5 to 10 minutes' walk from the bus and rail network with less frequent[154] services OR Development would increase the distance materials are transported	N/A	Development would reduce the need to travel OR Site is within a 5 – 10 minute walk of the bus or rail network with frequent services OR Site is within a 5 minute walk of the bus or rail network with less frequent services OR Development would reduce the distance materials are transported	Development would create new public or non-motorised user transport infrastructure OR Site is within 5 minutes' walk of the bus or rail network with frequent services	GIS data: Non-motorised transport infrastructure (Public Rights of Way) Accessibility mapping: Walking for 'the bus and rail network with a minimum frequency of 4 services an hour'; walking for 'the bus and rail network with a minimum frequency of 1 service an hour'.
4	Historic Environment	Site given 'red' score in historic environment review, i.e. development would have a significant adverse effect that would be difficult to mitigate	Site given 'amber' score in historic environment review, i.e. development would have moderate to major impacts, but can be overcome by design	Site given 'green' score in historic environment review, i.e. sites that present no concerns (although mitigation may still be required)	Development would improve the setting of a conservation area, Grade II Listed Building or Registered Park or Garden OR Development would enhance an undesignated heritage feature	Development would lead to removal of feature from 'at risk' register, or improve the setting of a Scheduled Monument, Grade I or II* Listed Building or Registered Park or Garden	GIS data: Listed buildings, heritage at risk, registered parks and gardens, conservation areas, Scheduled Monuments, archaeological sites.

[153] Defined by Thurrock Council as a minimum frequency of 4 services an hour, Wednesday 8am to 9am

[154] Defined by Thurrock Council as fewer than 4 services an hour, Wednesday 8am to 9am but minimum of 1 service per hour

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
5	Flood Risk	Site or all site access routes fall within flood risk zone 3a (uncertainty to be added if this benefits from flood defences) OR Site at high risk of surface water flooding[155]	Site or all site access routes fall within flood risk zone 2 (uncertainty to be added if this benefits from flood defences)	All other sites	Development would contribute to existing flood risk management	Development would alleviate existing flood risk, e.g. increased flood storage	GIS data: Environment Agency Flood Zones and surface water flood risk data. Areas benefitting from flood defences
6	Geology and Soils	The site is within the buffer of a designated geological SSSI and could therefore have a negative impact OR The majority of the site is located on an historic landfill site OR Loss of ALC grade 1 or 2 soils	Part of the site (less than half) is located on an historic landfill site OR Loss of ALC grade 3	All other sites	Development would remediate existing contaminated land OR Site consists mainly of previously developed land	N/A	GIS data: Environment Agency historic landfill data, SSSIs, Agricultural Land Classification.
7	Landscape, Townscape and Visual Impacts	Development within landscape character area with high or moderate-high sensitivity to relevant type of development	Development within landscape character area with moderate or low-moderate sensitivity to relevant type of development	N/A	Development would improve landscape/townscape character OR Development within landscape character area with low sensitivity to relevant type of development	Development would improve a high sensitivity landscape character area, e.g. redevelopment of brownfield site	LUC landscape sensitivity assessment

[155] High risk is considered to be areas with at least a 3.3% annual chance of flooding.

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
8	Materials and Waste	Within or adjacent to designated mineral site or waste facility	Within 250m of designated mineral site or waste facility	All other sites	Development would reduce amount of waste produced per capita OR Development would lead to re-use of land, buildings and materials	Development will provide additional waste management facilities	GIS data: Mineral sites and waste facilities.
9	Noise	9(a) Development will increase noise within 50m of sensitive receptors (e.g. schools, hospitals, residential properties)	9(a) Development will increase noise within 50m of less sensitive receptors (e.g. commercial properties)	All other sites	Development will reduce noise within 50m of less sensitive receptors (e.g. schools, hospitals, residential properties)	Development will reduce noise within 50m of sensitive receptors (e.g. schools, hospitals, residential properties)	GIS data: Receptors: Schools, hospitals, employment sites (No mapped data so drawn from aerial photography/OS maps). Residential properties to be identified through OS maps and aerial photography.
		9(b) Development will result in new sensitive receptors (e.g. schools, hospitals, residential properties) with Lnight 50.0-54.9 dB, or Laeq,16 55.0-59.9 dB OR Development will result in new, less sensitive receptors (e.g. commercial properties) with Lnight >=55.0 dB, or Laeq,16 >= 60.0 dB	9(b) Development will result in new, less sensitive receptors (e.g. commercial properties) with Lnight 50.0-54.9 dB, or Laeq,16 55.0-59.9 dB	All other sites	N/A	N/A	GIS data: Strategic noise maps for average night-time noise from road and rail

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
10	Water Resources and Quality	Allocation falls within SPZ1	Development within 200m of any water body OR Allocation falls within SPZ2	All other sites	Development would restore or improve the quality of a water body	N/A	GIS data: Environment Agency Source Protection Zones and water bodies (e.g. rivers and lakes)
11	Economy and Employment	Development would lead to net loss of employment or employment land OR Housing allocation is further than a 30 minute walk or 45 minute public transport time to an existing employment site.	Housing allocation is further than a 30 minute walk of existing employment site but an existing employment site is within 30-45 minutes travel by public transport.	N/A	Development would lead to net gain of employment or employment land OR Housing allocation is within 15 - 30 minutes' walk or within 30 minutes public transport travel time of existing employment site	Development would lead to net gain of key source of local employment or employment land OR Housing allocation is within 15 minute walk of existing employment site	GIS data: Accessibility mapping: Walking for 'Employment' and public transport for 'employment'
12	Education and Skills	Development would lead to loss of an education facility OR Site is further than a 20 minute walk from a primary school AND Site is further than a 30 minute walk or public transport time from a secondary school	Site is further than a 20 minute walk from a primary school OR Site is further than a 30 minute walk or public transport time from a secondary school	N/A	Site is within a 20 minute walk of a primary school AND within a 30 minute walk or public transport time of a secondary school	Development would create additional education facilities OR Site is within a 10 minute walk of a primary school AND within a 15 minute walk of a secondary school	GIS data: State primary schools, state secondary schools Accessibility mapping: walking for 'primary schools', walking for 'secondary schools' and public transport for 'secondary schools'
13	Housing	Would lead to net loss of housing in an area with high barriers to housing according to	Would lead to net loss of housing in an area with low barriers to housing according to	N/A	Development would provide net increase in housing in an area with low barriers to housing	Development would provide housing, including affordable housing in an area with	GIS data: IMD barriers to housing domain.

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
		the IMD (less than 40%)	the IMD (40-100%)		according to the IMD (40-100%)	high barriers to housing according to the IMD (less than 40%)	
14	Crime and safety	N/A	N/A	N/A	Development would result in a mix of land uses and/or provision of affordable housing	N/A	N/A
15	Equalities	N/A	N/A	N/A	N/A	N/A	N/A
16	Health and wellbeing	Loss of existing recreational resource, e.g. green/open space, GI, leisure centre or NMU infrastructure OR Loss of healthcare facility	Development would result in substantial air, water or noise pollution, or land contamination OR Degradation or loss of capacity of existing recreational resource, e.g. green/ open space or NMU provision OR Site is further than 1.2km from an area of public greenspace, GI, recreation facility or foot/cycle path OR Site is further than 10 minutes public transport time of GP or health centre	N/A	Development would reduce air, water or noise pollution or result in some remediation of land contamination OR Improvement of existing recreational resource, e.g. green/open space or NMU infrastructure, or would encourage active transport OR Site is within 1.2km of an area of public greenspace, GI, recreation facility or foot/cycle path OR Site is not within 10 minutes' walk but is within 10 minutes public transport time of GP or health centre	Creation of new recreational resource, e.g. green/open space or new NMU infrastructure, or would greatly encourage active transport OR Site is within 400m of an area of greenspace, GI, recreation facility or foot/cycle path OR Site is within a 10 minute walk of a GP or health centre.	GIS data: GI: amenity green space, semi natural green space, parks and gardens, cemeteries, allotments, OS green space layers, country parks, common land, CRoW access land. Non-motorised transport infrastructure (Public Rights of Way), Leisure centres/indoor sports facilities, GP surgeries, hospitals. Accessibility mapping: walking for 'GPs or health centres' and 'fruit and vegetable retailers', public transport for 'GPs or health centres' and 'fruit and vegetable retailers'.

	Effect rating:	Significant negative (--)	Minor negative (-)	Negligible / no effect (0)	Minor positive (+)	Significant positive (++)	Data to inform assessments
					OR Site is within a 10 minute walk or public transport time of a fruit and vegetable retailer OR Development would encourage more connected neighbourhoods, with mixed land uses		
17	Access to Services and Facilities	Would lead to loss of service or facility	Would or reduce access to services and facilities OR Development is further than a 10 minute walk or public transport time to a local centre	N/A	Would improve access to key services and facilities OR Development in an area further than a 10 minute walk but within 10 minutes public transport time to a local centre	Would improve access to key services and facilities in an area of poor accessibility, e.g. as measured by IMD OR Development in an area within a 10 minute walk to a local centre	GIS data: Accessibility mapping: walking for 'local centres', public transport for 'local centres'.

Appendix 5

Questions presented in the Issues and Options (Stage 2) document and options assessed

Table A5.1: List of Questions in the Issues and Options document, showing which Options have been subject to SA and why

Question		Has the Option been subject to SA?	Comment
1	What information will be used to inform the Local Plan?	No.	This is an open ended question with no specific options.
2	How will the Local Plan relate to the Plans of neighbouring authorities?	No.	This question is seeking opinion on the issues identified.
3	Are these key issues the right ones or are there any key issues that you think have been missed?	No.	This question is seeking opinion on the issues identified.
4	Have we got the Local Plan vision right? Are there any changes you would like us to consider?	Yes.	The draft vision has been assessed, as this sets the overall direction for the plan.
5	Are the objectives the right ones? Are there any objectives that you think we have missed?	Yes.	The draft strategic objectives have been assessed, as these will inform the detail of the plan.
6	Do you agree that these are the right policy principles? Are there any policy principles that you think have been missed?	Yes.	The policy principles have been assessed as these will inform the range of policies included in the plan.
7	To ensure that enough homes are provided in Thurrock over the plan period, which approach should the Plan look to adopt? Are there any other options that should be considered?	Yes.	The proposal to meet the OAN has been assessed, along with the alternative to this, which is to set a higher housing target to support increased economic growth in the Borough.
8	To help maximise the amount of affordable housing delivered over the	Yes.	The options for approaching delivery of affordable housing have been

	plan period, which approach to setting an affordable housing target should the Plan look to adopt? Are there other options that should be considered?		assessed, as these are clearly set out as different options in the document.
9	What approach should the Council take to addressing the need for the various tenures of affordable housing? Are there other options that should be considered?	Yes	The options for affordable housing tenures have been assessed, as these are clearly set out as different options in the document.
10	Should the Council seek to increase the supply of affordable housing in the Borough by borrowing more money to build new homes? What other approaches could the Council take to increase direct provision of affordable housing in the Borough?	Yes	The approach to increasing provision of affordable housing will inform policies in the emerging Local Plan.
11	Should the Council seek to adopt the Nationally Described Space Standard in the emerging Local Plan?	Yes.	Whether or not the Council adopts the Nationally Described Space Standard will inform policies in the emerging Local Plan.
12	To help better plan for the needs of older people and those with specialist needs which approach/es should the Council look to adopt?	Yes.	The document sets out four possible approaches in relation to this question. All three were assessed as these will inform policies in the emerging Local Plan.
13	To meet the demand for serviced plots of land for self-build or custom build housing, which approach should the Council look to adopt?	Yes.	The options for meeting demand for self-build or custom build housing have been assessed, as these are clearly set out as different options in the document.

14	Option 1: Urban Intensification. Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
15	Option 2: Duty to Co-operate Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
16	Option 3: Green Belt Development New Settlement Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
17	Major Urban Extensions Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
18	Small Urban Extensions Note, this option sets out open-ended sub-questions (a, b and c), which were	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.

	not subject to SA but the spatial option was assessed.		
19	Village Expansions Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
20	Isolated Site Allocations Note, this option sets out open-ended sub-questions (a, b and c), which were not subject to SA but the spatial option was assessed.	Yes.	This is one of a range of spatial options for development, the approach to which will be included in the Local Plan.
21	a) When considering how land should be allocated for employment sites, which policy options above do you think are the most appropriate for Thurrock and why?	Yes.	This question is accompanied by five options for allocating employment land. These five options were assessed, as the approach to allocating employment land will inform policies and allocations in the emerging Local Plan.
	b) Are there any alternative options that you think are appropriate that have not been considered? If so, what are they?	No.	This is an open-ended question with no specific options.
	c) Should sites be specifically allocated for non-B8 uses to help diversify the Boroughs economic base? If so, where?	Yes.	Allocating sites specifically for non-B8 uses is assessed as one of the options under sub-question (a).
	d) Are there any specific sites or broad locations which should be identified for new employment uses? If so, where and why?	No.	This is an open-ended question with no specific options.

	e) What additional transport or other infrastructure improvements are needed in Thurrock to support future economic growth?	No.	This is an open-ended question with no specific options.
	f) Is there a need for additional lorry parks to serve business and industry in Thurrock? If so, where should they be located?	No.	This question is seeking views on need for additional lorry parks, rather than proposing an approach to this.
22	a) What kind of protection should the Local Plan give to existing employment areas?	No.	This is an open-ended question with no specific options.
	b) Should the Local Plan seek to restrict the range of uses and activities in existing employment areas to B1, B2 or B8 uses, or designate selected employment areas in whole, or in part, for non-business class users?	Yes.	The approach to existing employment areas will inform policies in the emerging Local Plan.
23	a) What policy approaches should the Local Plan develop to deal with the problems caused by bad-neighbour uses in residential areas?	No.	This is an open-ended question with no specific options.
	b) Should the Council develop a programme for 'lifting and shifting' bad-neighbour uses to alternative locations? If so, what interventions are required for the successful delivery of this policy objective?	Yes.	The approach to managing bad-neighbour uses will inform policies in the emerging Local Plan.
24	a) What is the scope and nature of the planning policy support required to facilitate the roll out of high quality digital communications infrastructure in Thurrock?	No.	This is an open-ended question with no specific options.

	b) What interventions or policy approaches does the Local Plan need to identify to assist in its delivery?	No.	This is an open-ended question with no specific options.
	c) Should future planning policy require the direct provision of full fibre connections to all new residential and business developments and should Section 106 or CIL contributions collected from all forms of new development be targeted at supporting the provision of enhanced digital infrastructure in Thurrock?	Yes.	The approach to provision of digital infrastructure will inform policies in the emerging Local Plan.
25	a) Based on the findings and conclusions set out in the South Essex Retail and Leisure Study, do you agree that Lakeside should continue to be the principal focus for new comparison shopping and leisure floorspace in Thurrock over the Plan period to 2037? If not, why not?	Yes.	The approach to future development at Lakeside will inform policies in the emerging Local Plan.
	b) In the absence of a strong quantitative need for additional convenience floorspace provision in Thurrock over the plan period to 2037, what steps should the Council take to seek a better alignment of current/future provision, in order to meet the shopping needs of the proposed housing growth areas and/or the regeneration of existing centres?	No.	This is an open-ended question with no specific options.
26	a) Should the new Local Plan set out any pre-conditions limiting the future scale, nature, location and timing of additional retail development at Lakeside?	Yes.	The approach to future development at Lakeside will inform policies in the emerging Local Plan.

	b) With the addition of a wider range of uses and activities in recent years, including the provision of new leisure, hotel and food and drink uses, and with new residential development in the pipeline, should the northern part of the Lakeside Basin now be regarded as a fully-fledged town centre?	Yes.	The approach to future development at Lakeside will inform policies in the emerging Local Plan.
27	a) How should the Town Centre Boundary at Lakeside be defined?	No.	This is an open-ended question with no specific options.
	b) How should the Primary and Secondary Shopping Areas at Lakeside be defined?	No.	This is an open-ended question with no specific options.
28	a) Do you think that the Local Plan should plan positively for additional comparison or convenience shopping floorspace in Grays Town Centre through the specific allocation of additional sites for development or should the focus be on strengthening and consolidating retail activity around the Grays Shopping Centre and adjoining areas?	Yes.	The approach to Grays Town Centre will inform policies in the emerging Local Plan.
	b) Should the Council amend the current approach to managing the mix of permitted uses in Grays Primary and Secondary shopping frontages to provide more flexibility to accommodate non–retail uses?	Yes.	The approach to managing the mix of permitted uses in Grays Primary and Secondary shopping frontages will inform policies in the emerging Local Plan.
	c) If further flexibility is required, what approach should be adopted to maintain an appropriate balance between retail and non-retail activity in the primary and secondary shopping areas?	No.	This is an open-ended question with no specific options.

29	a) Should the retail hierarchy for town centres and other shopping locations within Thurrock be revised to take into account both historical and future changes in their role including the need to plan for future housing growth?	Yes.	Question was assessed as it implies two approaches of either maintaining or revising the retail hierarchy.
	b) Are there any other centres that should be included or should any be omitted?	No.	Question b was not assessed as it is an open-ended question with no specific options.
30	a) What are your experiences of shopping in Thurrock? What centres do you visit and do they offer a good range of shops and services? Are there any deficiencies?	No.	This question is asking for accounts of personal experience and opinion, with no specific options.
	b) Should any of the retail allocations and town centre boundaries identified in the adopted Core Strategy be amended in order to include areas/sites that would enable the centres to grow and accommodate retail or other town centre uses, including housing, or exclude areas that are no longer appropriate?	Yes.	The approach to retail allocations and town centre boundaries will inform policies in the emerging Local Plan.
	c) Should any new retail areas be identified for centres without such a designation?	No.	This is an opinion-seeking question. Respondents may identify specific retail areas but no options are listed so these cannot be assessed at this stage.
31	a) Are there any other facilities/ activities which should be promoted or accommodated in particular town centres?	No.	This is an open-ended question with no specific options.
32	a) Do you have concerns about non-retail uses in shopping frontages or the	No.	This question is asking for personal opinions, with no specific options.

	over concentration of particular uses in those centres that you visit?		
33	a) Should there be restrictions on the number and distribution of hot food takeaways in town/shopping centres to avoid over-concentration and clustering?	Yes.	This question sets out an approach that could inform policies in the emerging Local Plan.
	b) Should there be restrictions on hot food takeaways near to schools, youth facilities and parks?	Yes.	This question sets out an approach that could inform policies in the emerging Local Plan.
34	a) Are there any traffic management measures or public realm works that are needed in particular town centres?	No.	This is an open-ended question with no specific options.
	b) Are there any pedestrian or cycle routes that are needed in particular town centres?	No.	This is an open-ended question with no specific options.
35	a) Where could car parking be reduced?	No.	This is an open-ended question with no specific options.
	b) Is there a need for additional car parking provision in any locations? If yes, please specify if it would be for shoppers, visitors or workers.	No.	This is an open-ended question with no specific options.
	c) Where could long stay car parking spaces be transferred to short stay?	No.	This is an open-ended question with no specific options.
36	a) What should be the priority locations for new or improved open space and sporting or leisure development?	No.	This is an open-ended question with no specific options.
	b) How can the Local Plan support the future viability, development and success of Thurrock's sports clubs at all levels through the development of new or	No.	This is an open-ended question with no specific options.

	improved facilities?		
	c) What opportunities exist for cross-boundary collaboration in the development or delivery of new open space, sporting or leisure opportunities?	No.	This is an open-ended question with no specific options.
37	Should the Council seek to embed Sport England's Active Design Principles in the emerging Local Plan?	Yes.	The approach to embedding Active Design Principles will inform policies in the emerging Local Plan.
38	Should the Council seek to require a Health Impact Assessment to be submitted as part of large and/or sensitive planning applications?	Yes.	The approach to Health Impact Assessment will inform policies in the emerging Local Plan.
39	Are there any local green spaces in your area that you feel are special to your community?	No.	This is an open-ended question with no specific options.
40	Are there any local buildings or features in your area that you feel are of architectural, historical and/or social significance?	No.	This is an open-ended question with no specific options.

Appendix 6
SA matrices for the housing growth options

Option 1: Urban Intensification

SA objective	Score	Justification
1: Air quality	+?/-?	Existing air quality is likely to be worse in urban areas, and almost all AQMAs in Thurrock are within the urban area of Grays. This option has potential to exacerbate poor air quality, as it will result in a greater number of residents and therefore a greater number of vehicle movements within urban areas. Alternatively, focusing housing in urban areas means that residents are more likely to live within close proximity to existing services and facilities and public transport hubs, therefore reducing the need to travel by car and the associated emissions of air pollutants. Relocation of employment land could help to reduce congestion in urban areas, by reducing the need for vehicles associated with employment and industry to travel through the urban area.
2: Biodiversity, flora & fauna	+?/-	Rural areas are generally more biodiverse than urban areas, therefore urban intensification could help protect wildlife in the rural areas of Thurrock. However, there are a number of designated biodiversity sites within and close to the urban areas of Thurrock, including SSSIs and Local Wildlife Sites. This includes a number of brownfield Local Wildlife Sites, some of which are in urban areas and could be lost to development under this option. In addition, the Thames Estuary & Marshes European sites are relatively close to the urban areas of Thurrock. Urban intensification could therefore lead to development in close proximity of these sites, leading to disturbance and damage to them. Loss of urban green space also has potential for negative effects on biodiversity. In addition, relocation of employment land could result in loss of green space elsewhere, resulting in mixed minor positive and minor negative effects. The positive effects are uncertain, as these depend on the exact location of development.
3: Climate change & energy	+	Focusing housing in urban areas means that residents are more likely to live within close proximity to existing services and facilities and public transport hubs, therefore reducing the need to travel by car and the associated greenhouse gas emissions. As such, minor positive effects are expected.
4: Historic environment	+?/-?	This option could lead to a change in townscape character. By encouraging urban regeneration, this option could have a minor positive effect on the settings of historic features. However, increased densities and loss of greenspace could have adverse effects on the character of an area and lead to minor negative effects on the settings of historic assets. These effects are uncertain as they are strongly dependent on the location and design of development.

SA objective	Score	Justification
5: Flood risk	-?	Some urban areas within Thurrock lie within Flood Zones 2 and 3. Most of these areas benefit from existing flood defences, but the risk may increase with the effects of climate change, therefore the negative score has been identified as minor but uncertain.
6: Geology & soils	+/-?	Urban intensification could lead to more efficient use of land and a reduced need to develop land that may be of value agriculturally. However, this is uncertain due to the possibility that employment sites may be relocated to areas of best and most versatile agricultural land. There are geological SSSIs within the urban area of Grays. It has been assumed that these would not be subject to development, due to the protection afforded to them as SSSIs, but they could be affected by development adjacent to the designated sites. As such, mixed minor positive and minor negative uncertain effects are identified.
7: Landscape, townscape & visual	+?/-?	This option could lead to a change in townscape character, leading to minor positive effects. By encouraging urban regeneration, this option could improve local townscape. However, increased densities and loss of greenspace could have minor negative effects on the character of an area. These effects are uncertain as they are strongly dependent on the location and design of development.
8: Materials & waste	+?	This option is likely to promote re-use of land and may also promote re-use of buildings and materials on this land, therefore minor positive effects are expected for this SA objective. However there is some uncertainty around this as it is not known if and where employment sites may be relocated.

SA objective	Score	Justification
9: Noise	+/--?	Urban intensification may lead to a reduction in noise if it results in 'bad-neighbour' employment uses being moved away from sensitive receptors, including housing. Whilst urban intensification may lead to increases in noise associated with traffic and day to day activities, such an increase is expected to be negligible. However, increases in noise are expected to occur in the short term, due to construction. In addition, this option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). These levels of noise disturbance are associated with the railway line and strategic road network. There is a railway line running through South Ockendon that could be a source of noise disturbance to residents of any development in proximity to this line. As such, there is potential for minor positive effects but also significant negative effects. The significant negative effects are uncertain as these would only occur where urban intensification occurs very close to the railway line.
10: Water resources & quality	-	Some of the urban areas of Thurrock lie within Source Protection Zone 2. In addition, many urban areas are within proximity of the Thames or waterbodies that flow into the Thames. The quality of these water resources could be reduced by development through contaminated runoff. However, this effect may be lessened as development would be within existing urban areas and therefore are unlikely to result in increased runoff. As such, minor negative effects are likely.
11: Economy & employment	++?/-?	Focusing housing in urban areas means that residents are more likely to live within close proximity to existing employment opportunities. Increasing housing in urban areas could also result in higher footfall in town and local centres, therefore enhancing the vitality and viability of these centres. These factors could have a significant positive effect on this objective. However, this option may involve relocation of employment uses to sites that are less easily accessible, leading to an adverse impact on economic growth, therefore the significant positive effects identified are likely to be mixed with minor negative effects. These effects are uncertain as they depend on the exact location of development.
12: Education & skills	+?	Focusing housing in urban areas means that residents are more likely to live within close proximity to existing schools and other education facilities. However, this may put pressure on existing facilities if they do not have capacity to accept new students or capacity to expand. As such, likely effects are considered to be minor positive uncertain.

SA objective	Score	Justification
13: Housing	+?	Whilst this option would contribute to meeting Thurrock's housing target, the Issues and Options (Stage 2) document suggests that the amount of development that could be brought forward in this way is limited. Some urban areas currently have high barriers to housing according to the IMD, such as west Grays and Purfleet, therefore this option could contribute to improving access to housing in these areas. As such, likely effects are considered to be minor positive, although these are uncertain as effects depend on the exact location of development.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+	Focusing housing in urban areas is likely to be located closer to services and facilities, including public transport links, therefore could make it easier for less mobile people, including elderly and disabled people, to get around. It is also likely to enable people to more easily access community facilities, which may provide support groups or faith services, therefore minor positive effects are expected.
16: Health & wellbeing	+?/--	Focusing housing in urban areas means that residents are more likely to live within close proximity to existing health facilities, such as GP surgeries. However, this may put pressure on existing facilities if they do not have capacity to accept new patients, resulting in a minor positive, but uncertain, effect. This is mixed with a potential significant negative effect, as this option could involve the redevelopment of urban greenspace, therefore reducing amenity and opportunities for recreation and socialising for residents. This option may also result in negative health impacts by focusing development in areas with high volumes of traffic and air and noise pollution (see assessment of SA objectives 1 and 9).
17: Access to services & facilities	++?	Focusing housing in urban areas means that residents are more likely to live within close proximity to services and facilities, including local centres, where services and facilities are likely to be concentrated, resulting in significant positive effects. However, this depends on the exact location of development, therefore the significant positive effect identified is uncertain. Uncertainty is also identified as this option would not lead to development of a scale that could support wider investment in community facilities and infrastructure.

Option 2: Duty to Cooperate

SA objective	Score	Justification
1: Air quality	-?	Meeting some of Thurrock's housing need in a neighbouring authority area could result in more people commuting into Thurrock to work by car. This could increase traffic, congestion and emissions of associated air pollutants, including within AQMAs, therefore minor negative effects have been identified. However, this is uncertain as it depends where development takes place, for example whether development is in proximity employment sites near to the boundary of Thurrock or within close proximity to convenient transport links.
2: Biodiversity, flora & fauna	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from the most sensitive areas in terms of biodiversity, and is likely to minimise loss of GI. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts on biodiversity cannot be predicted.
3: Climate change & energy	-?	Meeting some of Thurrock's housing need in a neighbouring authority area could result in more people commuting into Thurrock to work by car. This could increase traffic, congestion and associated greenhouse gas emissions, therefore minor negative effects have been identified. However, this is uncertain as it depends where development takes place, for example whether development is in proximity employment sites near to the boundary of Thurrock or within close proximity to convenient transport links.
4: Historic environment	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from the most sensitive areas in terms of the historic environment. However, effects are assessed as uncertain, as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts on the historic environment cannot be predicted.
5: Flood risk	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from areas at the greatest risk of flooding. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards to flooding cannot be predicted.

SA objective	Score	Justification
6: Geology & soils	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from areas of best and most versatile agricultural land and/or contaminated land. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards to geology and soils cannot be predicted.
7: Landscape, townscape & visual	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from the most sensitive areas in terms of landscape. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards to landscape cannot be predicted.
8: Materials & waste	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from minerals sites and waste facilities. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards materials and waste cannot be predicted.
9: Noise	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from areas with high levels of noise disturbance. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards to noise cannot be predicted.
10: Water resources & quality	?	This option would reduce the quantum of development in Thurrock. This could increase the choice of development locations in Thurrock, therefore allowing development to be directed away from source protection zones and water bodies. However, effects are assessed as uncertain as it is unknown where Thurrock's development needs would be met outside of the borough and therefore impacts with regards to water resources and quality cannot be predicted.
11: Economy & employment	-?	This option could lead to a disconnect in where people live and employment opportunities, as these may not be planned in an holistic way, if some of Thurrock's housing requirement is met elsewhere, leading to minor negative effects. However, this is uncertain as it depends where development takes place, for example whether development is in proximity employment sites near to the boundary of Thurrock or within close proximity to convenient transport links.

SA objective	Score	Justification
12: Education & skills	?	This option could lead to difficulties in accessing educational opportunities, as it is unknown whether surrounding authorities have capacity in the education system to accommodate additional pupils, who would have otherwise attended school in Thurrock. Alternatively, this option could relieve some pressure on schools in Thurrock that have limited capacity to accept additional pupils. In general, it is anticipated that the Local Education Authority would ensure there are sufficient school places for a growing population. However, it remains uncertain as to whether such capacity would be provided in the most accessible locations with regards to new housing development. As such, uncertain effects have been recorded.
13: Housing	++?	This option may help to ensure that Thurrock's full OAN is met, therefore significant positive effects are expected. However, these effects are uncertain as part of the housing requirement would be met away from the area where the demand has arisen, which may make it less attractive to potential occupiers.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	0	Equalities issues are more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
16: Health & wellbeing	-?	This option would lead to part of the housing requirement being met away from the area where the demand has arisen. This may mean that people are not able to find housing in the area they want to live, which could increase stress and have negative implications for mental wellbeing. This is expected to result in minor negative effects, although these are uncertain as effects depend on the location of development.

SA objective	Score	Justification
17: Access to services & facilities	?	This option could lead to difficulties in accessing services and facilities, as it is unknown whether services and facilities in surrounding authorities have capacity to accommodate additional residents. Alternatively, this option could relieve some pressure on services and facilities in Thurrock that have limited capacity. In general, it is anticipated that development would help to ensure that key services and facilities have sufficient capacity (e.g. through developer contributions) for a growing population. However, it remains uncertain as to whether such capacity would be provided in the most accessible locations with regards to new housing development, resulting in overall uncertain effects.

Option 3: Green Belt Development New Settlement

SA objective	Score	Justification
1: Air quality	-?	Development at West Horndon is not expected to substantially increase traffic in any AQMA. However, it could lead to increased north-south commuting to access employment (see assessment of SA objective 3), therefore minor negative uncertain effects have been recorded.
2: Biodiversity, flora & fauna	-?	The potential location identified at West Horndon is not within proximity to any designated biodiversity sites. However, development of this scale, particularly in a rural area, is likely to result in some loss of biodiversity. As such, minor negative uncertain effects have been recorded. However, this is uncertain, as rural areas, particularly areas of arable farmland, which make up most of the area considered in this option, can have limited biodiversity value. Effects will also depend on the layout and design of development.
3: Climate change & energy	++/-	West Horndon has a railway station served by relatively frequent services, which is expected to be within a 5 or 10 minute walk of part of the potential new settlement. This option is also expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects. However, many residents of the new settlement may still need to commute by car, particularly as many employment areas in Thurrock are located in the south of the borough, therefore the significant positive effects identified are likely to be mixed with minor negative effects.
4: Historic environment	-?	There are a small number of Grade II listed buildings in the potential location identified at West Horndon, which could be negatively affected, particularly in terms of setting, by development. However, this depends on the contribution of setting to the significance of these assets, therefore minor negative uncertain effects are expected. There are also a small number of Essex Heritage Conservation Records, primarily relating to cropmarks, which could be lost to development, although the significance of these is uncertain.

5: Flood risk	--	The potential location identified at West Horndon includes areas within Flood Zones 2 and 3. Development of a new settlement is likely to exacerbate this flood risk due to the introduction of impermeable surfaces, therefore significant negative effects are expected.
6: Geology & soils	-	Development at the potential location identified at West Horndon would result in loss of large areas of Grade 3 agricultural land (which could be best and most versatile), resulting in minor negative effects.
7: Landscape, townscape & visual	--	The potential location identified at West Horndon is within Landscape Character Area A1: Bulphan Fenland. This LCA is of high sensitivity to large and very large housing development, as this would affect the open and rural character of this area, resulting in significant negative effects.
8: Materials & waste	0	The potential location identified at West Horndon is not within 250m of a designated mineral site or waste facility, therefore negligible effects are recorded.
9: Noise	--?	This scale of development in a rural area will inevitably introduce noise disturbance to an area that was previously relatively tranquil. Due to the presence of the railway line, any new development is expected to be further than 50m from existing residential properties at West Horndon, although there is some uncertainty regarding this. In addition, this option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is level of noise disturbance is associated with the railway line and the A128, therefore potential significant effects have been identified but this is uncertain as this would only relate to development very close to these.
10: Water resources & quality	-	There are a number of small watercourses within the potential location identified at West Horndon, which could be adversely affected by development, either through culverting or degradation from contaminated surface water runoff. As such, minor negative effects are expected.

11: Economy & employment	+?/-	The majority of the potential location identified at West Horndon is within 45 minutes public transport and/or walking time to an employment area. The northern parts of the site are closer to existing employment opportunities, therefore effects depend on the exact location and layout of development. In addition, a new settlement could provide some new employment opportunities, although these may be limited to work in local shops and schools if no land is allocated specifically for employment uses, although this is unknown at this stage. As such, mixed minor positive uncertain and minor negative effects are expected.
12: Education & skills	++	This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school and a secondary school, leading to significant positive effects.
13: Housing	++	The potential location identified at West Horndon is currently in the 10% most deprived areas in terms of barriers to housing and services. This option would provide substantial housing growth, and is also expected to include some community facilities, which could help reduce such barriers in this area, therefore leading to significant positive effects. It should be noted that the barriers to housing and services are likely to be largely due to the rural nature of the area.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+/-	The potential location identified at West Horndon is within close proximity to a railway station and is of a scale that is expected to provide one or more new bus stops, as well as local community facilities. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. Provision of community facilities may also support faith groups or offer other support groups for those with protected characteristics. However, many residents of the new settlement may still need to commute by car, particularly as many employment areas in Thurrock are located in the south of the borough, which may be harder for those less able to drive. As such, mixed minor positive and minor negative effects are expected.

16: Health & wellbeing	++/-	The potential location identified at West Horndon is crossed by three north-south public footpaths, which it is assumed will be retained or re-routed. These may offer walking opportunities for residents across the countryside or to other areas for outdoor recreation. The area is also adjacent to Dunton Hills Family Golf Centre and public green space at West Horndon and Bulphan. Furthermore, development would be expected to provide some additional green space to serve new residents, resulting in significant positive effects. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Depending on the exact location and layout of development, properties in the northern part of the site may be within a 10 minute walk or pubic transport time of Branch Surgery. This area is also likely to be within a 10 minute walk of a fresh food seller, although residents would have to cross the railway line to access these services. As the majority of new residents will not be within walking distance of these services and facilities and those that are will need to cross the railway line, the significant positive effect identified above is likely to be mixed with a minor negative effect.
17: Access to services & facilities	++	This location is in an area with poor existing access to services and facilities, as it is further than 10 minutes public transport time to a local centre. However, development of this scale is expected to provide new community facilities, which may improve access to services and facilities in this area, which is currently in the 10% most deprived in terms of barriers to housing and services, therefore a significant positive effect has been identified.

Major Urban Extensions[156]

SA objective	Score	Justification
1: Air quality	-?	Potential locations for major urban extensions in the western part of Thurrock (e.g. North Grays, Lakeside, Aveley and South Ockendon) could result in increased traffic in the AQMAs in and around Grays and Purfleet, therefore exacerbating existing air pollution issues. Additionally, all sites are of such a scale that they are likely to substantially increase air pollution due to increased traffic movements. As such, minor negative effects have been identified, although this is uncertain as it depends on the exact location and design of development.
2: Biodiversity, flora & fauna	--	Potential locations for major urban extensions are all within proximity to designated biodiversity assets. Local Wildlife Sites fall within or are adjacent to all potential locations. All potential locations are located within SSSI Impact Risk Zones for residential applications. The potential location at East Tilbury extends to the edge of the Thames Estuary and Marshes SPA and Ramsar site, which are the only internationally designated sites in the borough. It may be possible for other Major Urban Extensions to have effects on these internationally designated sites too, which will be considered through the HRA if this option is taken forward. Development at all locations has potential for significant adverse effects on biodiversity, through either direct or indirect damage to designated sites. Overall, significant negative effects are likely.
3: Climate change & energy	++	The potential locations for major urban extensions at North Grays, East Tilbury and Chadwell St Mary are generally further than 20 minutes' walk from the bus and rail network with frequent services, although these areas are served to varying extents by less frequent bus and/or rail services. A substantial part of all other potential locations are at least partly served by existing frequent bus and rail services and even larger parts of the area are served when taking less frequent services into account. In addition, development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.

[156] The Issues and Options 2 provides further detail on areas being considered for Major Urban Extensions. These are assessed in **Appendix 6**.

SA objective	Score	Justification
4: Historic environment	--?	Most of the potential locations for major urban extensions include historic assets, mostly in terms of Grade II and II* listed buildings and Essex Heritage Conservation Records. Lakeside is notably less sensitive in terms of historic environment, as it includes a limited number of Essex Heritage Conservation Records and no designated historic assets and the nature of the area, in being modern, built up industrial and commercial buildings mean that it is anticipated development at this location will not affect historic assets further afield. Similarly, the area earmarked at Corringham has no designated historic assets present, and a small number of Essex Heritage Conservation Records. The potential development locations at North Grays and East Tilbury include, or are adjacent to, scheduled monuments at risk (Crop mark complex, Orsett and Coalhouse Fort respectively). It is anticipated that this option could result in significant negative effects on the historic environment, although this is uncertain as effects are dependent on the exact location and design of development.
5: Flood risk	--?	Potential locations for major urban extensions at Lakeside, South Ockendon, Chadwell St Mary and East Tilbury all lie, at least in part, within Flood Zone 3, which is at high risk of flooding, although almost the entirety of this area benefits from flood defences. In addition, there are parts of the area identified at Corringham with high risk of surface water flooding. It is anticipated that this option would lead to development on land that is primarily greenfield, therefore development would increase the area of impermeable surfacing, therefore increasing flood risk. As such, significant negative uncertain effects have been identified.
6: Geology & soils	--	All potential locations for major urban extensions except Lakeside, contain land consisting of Grades 1, 2 or 3 agricultural land (Corringham does not contain any Grade 1 or 2 agricultural land). In addition, all potential development locations except North Grays and Corringham contain historic landfill sites, which could pose a risk to new residents in these areas. Overall, significant negative effects could occur as a result of this option.
7: Landscape, townscape & visual	--	All options are at least partly located within landscape character types with moderate to high or high sensitivity to the scales of development proposed, therefore significant negative effects are considered likely.

SA objective	Score	Justification
8: Materials & waste	-?	Many potential major urban extensions are not expected to affect or be affected by minerals and waste sites. However, East Tilbury includes active waste sites and Chadwell St Mary and Aveley are in proximity to a minerals extraction site (being worked prior to use as an agricultural reservoir) and a closed landfill site respectively. Overall, minor negative effects are expected but these are uncertain as it depends on the location of development.
9: Noise	--?	The potential locations for development at East Tilbury and Corringham may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the railway line and would only apply to properties within the immediate vicinity of the railway. There is a railway line running through South Ockendon that could be a source of noise disturbance to residents of any development to the north or south, but noise levels of Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more have not been recorded along this line. All other options would inevitably increase noise disturbance in the short term, due to construction and associated traffic movements, but are not expected to have significant effects on noise disturbance in the long term. As such, there is potential for overall significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	-?	All potential major urban extension options, except North Grays, are either partly within SPZ 2 or are within 200m of a waterbody. As such, a minor negative effect is expected, although this is uncertain depending on the exact location and layout of development.
11: Economy & employment	+	All potential major urban extension options are within 30 minutes walking or public transport time to existing employment sites. In addition, all are of a scale that would provide new bus services, which may help residents to access employment opportunities. Major urban extensions would also all be of a scale expected to provide a new primary school and some may also provide additional services and facilities, all of which may contribute, although to a limited extent, to provision of new employment opportunities.

SA objective	Score	Justification
12: Education & skills	++	Major urban extensions are likely to be of a scale that provides new education facilities, therefore significant positive effects are expected.
13: Housing	++	Major Urban Extensions would make a substantial contribution to meeting Thurrock's housing requirement. All potential development locations, except Aveley and North Grays, would provide new housing in areas with high barriers to housing and services. Overall, significant positive effects are expected.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+	Major Urban Extensions would be of a scale that would provide community facilities and/or public transport infrastructure, which may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around, and the provision of community facilities and faith facilities, may benefit some people with protected characteristics. As such, minor positive effects are expected.
16: Health & wellbeing	++/--	Larger Major Urban Extensions are likely to provide new green space, and may provide new health facilities, to serve residents. In addition, all options are within proximity to existing footpaths or green space. However, the majority of potential development locations are further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer and contain green spaces that could be lost to development. In addition, this option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive uncertain and significant negative uncertain effects are expected.

SA objective	Score	Justification
17: Access to services & facilities	++?	All Larger Major Urban Extensions are expected to provide new bus services and larger Major Urban Extensions are likely to provide new community facilities. As such, Major Urban Extensions are expected to have good accessibility to services and facilities. Overall, significant positive effects are expected, but these are uncertain as effects depend on the level of service provision at the sites coming forward.

Small Urban Extensions

SA objective	Score	Justification
1: Air quality	-?	This option could lead to increased traffic within AQMAs, particularly for potential urban extensions around Grays and Aveley, therefore minor negative effects have been identified. Such effects are uncertain as these depend on the location and layout of development and subsequent behaviours.
2: Biodiversity, flora & fauna	--?	There are a number of Local Wildlife Sites around the edge of the urban areas in Thurrock, therefore this option could result in development adjacent to these (although it is considered that this option will lead to development of a small enough scale to avoid the need to develop within the boundaries of LWS'). This option may also lead to development in the relevant SSSI Impact Risk Zones, including residential development, for a number of SSSIs. In particular, any urban extensions at Stanford-le-Hope and East Tilbury have potential for adverse impacts on the Thames Estuary and Marshes SPA and Ramsar site (and their underlying SSSIs). As such, significant adverse effects have been identified, but these are uncertain as they depend on the exact location of development.
3: Climate change & energy	++?	Given that this option would result in smaller scale developments around existing urban areas, most, if not all development under this option is likely to be within 20 minutes' walk of less frequent public transport services. In addition, the majority of potential development locations under this option are likely to be within 20 minutes' walk to a frequent bus service, with the exception of Chadwell St Mary. In addition, some developments under this option may be of such a scale as to require provision of new public transport services, although this is uncertain. As such, significant positive uncertain effects are expected.
4: Historic environment	-?	Most of the potential locations for small urban extensions include, or are in close proximity to, historic assets, mostly in terms of Grade II and II* listed buildings. There are also a number of Essex Heritage Conservation Records in and around the potential locations for small urban extensions, although there is a lower concentration of these at Corringham, Tilbury, north Lakeside, west Aveley and West Horndon. Due to the smaller scale of development under this option, it is expected that significant negative effects can be avoided, therefore minor negative uncertain effects are expected.

SA objective	Score	Justification
5: Flood risk	-?	From the map provided in the Issues and Options document, it is expected that most development under this option is likely to avoid Flood Zones 2 and 3. There are some potential development locations on the edge of urban areas with high risk of surface water flooding, such as at Stanford-le-Hope and Corringham, but the areas at risk of flooding are very limited, therefore the negative effects identified are considered minor and uncertain, as effects depend on the exact location and design of development.
6: Geology & soils	--	Most potential locations for small urban extensions contain land consisting of Grades 1 or 2 agricultural land. In addition, some potential development locations include historic landfill sites, particularly those around South Ockendon. Overall, significant negative effects could occur as a result of this option.
7: Landscape, townscape & visual	--?	The landscape sensitivity ratings for the areas around urban areas that may be subject to development under this option range from high, particularly for larger residential developments, to moderate-high and sometimes moderate for smaller residential developments. As such, significant negative effects could occur as a result of this option, but this depends on the exact location and scale of development.
8: Materials & waste	-?	There are a small number of potential development locations for small urban extensions that could be within 250m of a mineral site or waste facility. In particular, development could occur near to a landfill site north of South Ockendon, a permitted mineral/transhipment site to the east of Chadwell St Mary and a permitted mineral/transhipment and landfill site to the southeast of East Tilbury. As such, there is potential for minor negative effects, but this is uncertain as it depends on the exact location of development.

SA objective	Score	Justification
9: Noise	--?	The potential locations for development to the west of South Ockendon, at Aveley, Grays, East Tilbury and Corringham may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is primarily associated with the railway line and major roads, including the M25 and A13. There is a railway line running through South Ockendon that could be a source of noise disturbance to residents of any development to the north, but noise levels of Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more have not been recorded along this line. All other potential development locations would inevitably increase noise disturbance in the short term, due to construction and associated traffic movements, but are not expected to have significant effects on noise disturbance in the long term. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	-?	Small urban extensions at East Tilbury, Chadwell St Mary, Grays, South Ockendon and Aveley could coincide with SPZ1 or 2. Given the smaller size of development under this option, it has been assumed that development in SPZ1 could be avoided, therefore minor negative uncertain effects have been recorded.
11: Economy & employment	+	Given that this option would lead to smaller scale development on the urban fringe, it is likely that development would be within 30 minutes' walk or public transport time to an existing employment site, resulting in minor positive effects. In addition, some small urban extensions (over 700 homes) may be of sufficient scale to provide a new primary school, which could provide a very limited number of new employment opportunities.
12: Education & skills	++?	Given that this option would lead to smaller scale development on the urban fringe, it is likely that development would be within at least a 20 minute walking time of a primary school and 30 minute walking or public transport time of a secondary school. In addition, some small urban extensions (over 700 homes) would be expected to provide a new primary school, therefore significant positive uncertain effects are recorded.

SA objective	Score	Justification
13: Housing	++?	This option has potential to provide housing in areas with high barriers to housing, particularly at West Hornden, to the east of South Ockendon and Chadwell St Mary. As such, significant positive effects have been recorded, but these are uncertain as it depends on the exact location and scale of development.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+	Given that this option would lead to smaller scale development on the urban fringe, it is likely to be well-location in relation to public transport and local services and facilities. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. Local services and facilities may include community facilities and faith facilities, which may benefit some people with protected characteristics. As such, minor positive effects are expected.
16: Health & wellbeing	+/-	Given that this option would lead to development on the urban fringe, most development is likely to be within 1.2km of an existing recreational resource, including open/green space within the urban area and footpaths into the countryside. Some potential development areas may be within a 10 minute walk or public transport time of a GP or health centre, but as these tend to be concentrated in the existing urban area (and not on the edge of this), this is uncertain. Many, but not all, potential development areas are also within a 10 minute walk or public transport time of a fresh food seller. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed minor positive and minor negative effects are expected.

SA objective	Score	Justification
17: Access to services & facilities	-?	As local centres tend to be in inner urban areas, small urban extensions are generally unlikely to be within a 10 minute walk or public transport time of these, resulting in minor negative effects. However, these are uncertain as it depends on the exact location of development.

Village Expansions

SA objective	Score	Justification
1: Air quality	-	Development at Bulphan, Horndon on the Hill or Orsett could increase traffic on the strategic road network, including that which passes through an AQMA, notably the A13. As such, minor negative effects are expected.
2: Biodiversity, flora & fauna	-?	Areas around Orsett and Horndon on the Hill are within SSSI IRZs for all planning applications for development outside existing urban areas, therefore minor negative effects are expected as a result of expanding these villages. In addition, development could lead to loss of GI, although this depends on the exact location and design of development. Overall, minor negative uncertain effects are expected.
3: Climate change & energy	++	Bulphan is further than 20 minutes' walk to a frequent bus service. Only the very southern part of Horndon on the Hill is within 20 minutes' walk of a frequent bus service, although Orsett has slightly better connections. Bulphan and Orsett and the areas surrounding these villages are mostly within 20 minutes' walk of less frequent bus services, but for Horndon on the Hill only the very southern area falls within this. However, expansion of Bulphan and Horndon on the Hill is likely to be of a scale that would provide new public transport services, therefore overall significant positive effects are expected.
4: Historic environment	--?	There are limited historic environment assets (including Essex Heritage Conservation Records) in and around Bulphan, although this does include the Grade II* listed Old Plough House. Horndon on the Hill and Orsett include conservation areas, with most listed buildings in the villages associated with these. There is a cropmark and a number of Heritage Conservation Records within Horndon on the Hill, including historic monuments and Medieval vessels and coins, although these are mostly within the existing built up area. There are also cropmarks and a number of Essex Heritage Conservation Records, within and around Orsett (particularly to the north). Additionally, there are two scheduled monuments adjacent to Orsett (Bishop Bonner's Palace and Springfield style enclosure and Iron Age enclosures south of Hill House). Therefore expansion of this village has greatest potential for harm to the historic environment. As such, expansion of smaller villages has potential for significant negative effects, but these are uncertain as it depends on the location and design of development.

SA objective	Score	Justification
5: Flood risk	-	There is an area of land within Flood Zone 2 in the south of Bulphan and another north of the existing village. There are small areas at high risk of surface water flooding to the northeast and south of Horndon on the Hill, but due to the small scale of these areas, the risks are unlikely to be significant. As such, minor negative effects are expected.
6: Geology & soils	--?	There are areas of Grade 2 agricultural land around Orsett and to the south of Horndon on the Hill. The land around Bulphan and to the north of Orsett and Horndon of the Hill is classed as Grade 3 agricultural land. As such, significant negative effects have been recorded, although these are uncertain as actual effects depend on the exact location of development.
7: Landscape, townscape & visual	--	The villages with potential for expansion lie within landscape character types A1 and H2. A1, Bulphan Fenland, which encompasses Bulphan and north of Orsett, is of high sensitivity to the scale of development expected to come forward under this option. Similarly, Horndon on the Hill and Orsett lie within landscape character type H2, Orsett and Horndon on the Hill Open Undulating Farmland, which is of high / moderate-high sensitivity to the scale of development expected to come forward under this option, therefore significant negative effects are expected.
8: Materials & waste	0	Development is unlikely to be within 250m of a designated waste or minerals site or facility under this option. There is an operational landfill site and permitted primary mineral and transhipment site to the south of Orsett, but only a very small area north of the A13 lies within 250m of this, therefore it is not expected that development would take place within 250m of the waste/minerals site, resulting in negligible effects.
9: Noise	--?	New development around all three potential locations for development could lead to development in proximity to existing noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more), depending on where development is located. This noise disturbance is associated with the A13 and the A128. All development would inevitably increase noise disturbance in the short term, due to construction and associated traffic movements, but are not expected to have significant effects on noise disturbance in the long term. Overall, significant negative uncertain effects are recorded.

SA objective	Score	Justification
10: Water resources & quality	-?	None of the potential areas for expansion are within SPZ1 or 2. There are a number of small waterbodies north of Bulphan. It is possible that this option could lead to development within 200m of a waterbody if it results in expansion of Bulphan, but this is dependent on the exact location of development. As such, minor negative uncertain effects are expected.
11: Economy & employment	+	The area to the south of Horndon on the Hill is within a 30 minute walk of an existing employment site. Whilst this is not the case for Bulphan and Orsett, these villages and their surrounds are within a 30 minute public transport time of employment sites. The south eastern part of Horndon on the Hill is within 30 minutes public transport time to an employment site but the northern and western parts are 30 to 45 minutes public transport time from an employment site. Overall, this option is expected to have minor positive effects with regards to accessing employment. In addition, potential development at Bulphan and Orsett under this option would be expected to be of sufficient scale to provide a new primary school, which would provide some additional employment opportunities, although these would be very limited in number.
12: Education & skills	++/-	Potential development at Bulphan and Orsett under this option would be expected to be of sufficient scale to provide a new primary school. Whilst this is not the case for Horndon on the Hill, the village and surrounds are within a 20 minute walk of a primary school. However, only an area to the south of Horndon on the Hill is within 30 minutes' walk or public transport time of a secondary school. The majority of Orsett is within 30 minutes' walk or public transport time of a secondary school but access to secondary schools is more limited from Bulphan. Overall, mixed significant positive and minor negative effects are expected.
13: Housing	++	This option would provide housing in an area with high barriers to housing and services, particularly at Bulphan. Whilst Orsett and Horndon on the Hill have low levels of deprivation with regards to barriers to housing and services, some of the surrounding areas have high barriers. As all potential village expansions would be expected to provide affordable housing, overall significant positive effects have been identified.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.

SA objective	Score	Justification
15: Equalities	+	This option may lead to provision of additional services, facilities and public transport links to the village. This could benefit a range of groups, particularly less mobile groups, such as the elderly, disabled and expectant mothers. Local services and facilities may include community facilities and faith facilities, which may benefit some people with protected characteristics. Therefore minor positive effects are expected.
16: Health & wellbeing	++/-	All three villages have existing open space and recreation facilities, which are likely to be within 400m of new development sites coming forward under this option. In addition, new development is also expected to be within 400m of at least one public right of way. Any new development at Orsett and Horndon on the Hill is expected to be within a 10 minute walk or public transport time to a GP or health centre. However, health facilities are less accessible from Bulphan. Similarly, development at Orsett and Horndon on the Hill is likely to be within a 10 minute walk or public transport time to a fresh food seller, but fresh food retailers are less accessible from Bulphan. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive and minor negative effects are expected.
17: Access to services & facilities	-?	This option is likely to lead to development that is remote from existing local centres, either by walking or public transport. Whether development may lead to provision of some new services and facilities, either through direct development of these or improved public transport services, is unknown. As such, minor negative uncertain effects are expected.

Isolated Site Allocations

SA objective	Score	Justification
1: Air quality	-	This option is likely to lead to isolated developments that are not within proximity of local services and facilities or within proximity to sustainable transport links. As such, it is expected to result in dependence on car travel, leading to increases in associated emissions of air pollutants and resulting in minor negative effects.
2: Biodiversity, flora & fauna	--?	This option could lead to development adjacent to, or within close proximity to designated biodiversity assets, including Local Nature Reserves and within relevant SSSI IRZs, including those for European sites, where all planning applications outside of existing settlements could be a potential risk. In addition, development could lead to loss of GI, although this depends on the exact location and design of development. Significant negative effects could occur as a result of this option, although this is uncertain as it depends on the location and design of development.
3: Climate change & energy	--?	This option is likely to lead to isolated developments that are not within proximity of local services and facilities or within proximity to sustainable transport links. As such, it is expected to result in dependence on car travel, leading to increases in associated emissions of air pollutants, leading to significant negative effects. However, this is uncertain as it depends on the exact location of development.
4: Historic environment	--?	This option could result in development adjacent to or in close proximity to heritage assets, including listed buildings, conservation areas and scheduled monuments. Development could also occur in areas that include Essex Heritage Conservation Records, although these are more dispersed in the northern part of the borough. There is potential for significant negative effects to occur, but these are uncertain as they are dependent on the exact location of development.
5: Flood risk	--?	This option could lead to development in areas within Flood Zones 2 or 3, or in areas at high risk of surface water flooding, leading to significant negative effects. However, these effects are uncertain as they depend on the exact location of development, and whether areas of Flood Zone 3 benefit from existing flood defences.

SA objective	Score	Justification
6: Geology & soils	+/--?	The Issues and Options (Stage 2) document suggests that this option could promote reuse of previously developed land in the Green Belt. This would reduce the need for development that sterilises soil resources. However, this option could also lead to loss of best and most versatile agricultural land. As such, this option is assessed as having minor positive effects, mixed with significant negative uncertain effects.
7: Landscape, townscape & visual	--?	Most landscape character types in the borough, including those areas identified as having potential development come forward under this option, is of high to moderate-high sensitivity to residential development of the scale that may come forward under this option. As a precaution, the 'Substantial Housing Area' category of 300 to 499 homes in the Landscape Sensitivity Evaluation was used to come to this conclusion, although for most landscape types, development of smaller numbers of housing are also expected to be of high or moderate-high sensitivity. As such, significant negative effects are expected, although this is uncertain as it depends on the exact location and scale of development.
8: Materials & waste	+/--?	The Issues and Options (Stage 2) document suggests that this option could promote reuse of previously developed land in the Green Belt. This would reduce the need for development that sterilises mineral resources. This option could lead to development adjacent to or within 250m of a minerals or waste facility. In particular, the Issues and Options (Stage 2) document identifies areas around Orsett Golf Course and to the east of Linford as broad locations where this type of development may come forward, both of which are within proximity to operational landfill sites and permitted primary mineral and transhipment sites. As such, mixed minor positive and significant negative uncertain effects are identified.
9: Noise	--?	All development would inevitably increase noise disturbance in the short term, due to construction and associated traffic movements, but are not expected to have significant effects on noise disturbance in the long term. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the railway line and strategic roads, including the M25 and A13, therefore effects depends on the exact location of development. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.

SA objective	Score	Justification
10: Water resources & quality	-?	This option could result in development within 200m of a waterbody. In addition, the area to the east of Linford, identified in the Issues and Options (Stage 2) document as a broad location where this type of development may come forward, includes areas within SPZ2. As such, minor negative effects are recorded, although this is uncertain as it depends on the exact location of development.
11: Economy & employment	+?/--?	The majority of the borough is within 30 minutes public transport time of an existing employment area. One exception to this is the area around Langdon Hills Golf Country Club and Hotel, which is identified in the Issues and Options (Stage 2) document as a broad location where this type of development may come forward. This includes areas that are further than 30 minutes walking time and 45 minutes public transport time from employment opportunities. As such, mixed minor positive uncertain and significant negative uncertain effects are identified.
12: Education & skills	+?/--?	Much of the borough, particularly south of the A13, is within 30 minutes' walk or public transport time of a secondary school, including many broad locations identified in the Issues and Options (Stage 2) document where this type of development may come forward. A few areas are also within 20 minutes' walk to a primary school. However, potential broad locations for development in the northern part of the borough are generally less well connected for accessing education facilities, therefore mixed minor positive uncertain, significant negative uncertain effects are identified.
13: Housing	++?	The Issues and Options (Stage 2) document states that further work is required to identify the scale of new housing that could be delivered through this option. However, it may help contribute to housing provision in rural areas where there are currently high barriers to housing and services, according to the IMD, therefore significant positive uncertain effects are identified.
14: Crime & safety	0	Effects with regards to crime and safety are expected to be negligible.

SA objective	Score	Justification
15: Equalities	-	This option is likely to lead to isolated developments that are not within proximity of local services and facilities or within proximity to sustainable transport links to these. This may mean that housing provision under this option is not suitable for the less mobile, which may include some elderly people, expectant mothers and disabled people, therefore minor negative effects are expected.
16: Health & wellbeing	+/-	This option is likely to lead to isolated developments that are not generally within proximity of healthcare services or a fruit and vegetable retailer or within proximity to sustainable transport links to these. However, residents at these rural locations may have access to public rights of way across the countryside, which could provide a recreational resource, as well as rural recreation opportunities, such as country parks and semi-natural greenspace. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed minor positive and minor negative effects are expected.
17: Access to services & facilities	-	This option is likely to lead to isolated developments that are not within proximity of local services and facilities or within proximity to public transport links to these.

Appendix 7
SA matrices for the major urban extension options

Note that whilst the maps presented in the Issues and Options (Stage 2) document encompass existing urban areas and the surrounding land, existing urban areas have been excluded from the appraisals below. This is because these options are for urban extensions, rather than regeneration or intensification of development in urban areas (which is considered under Option 1 in **Appendix 5**).

South Ockendon

SA objective	Score	Justification
1: Air quality	-?	A major urban extension at South Ockendon could result in substantial increased traffic due to the size of development, including within the AQMAs in and around Grays, particularly at North Stifford, and Purfleet, therefore exacerbating existing air pollution issues. Therefore, minor negative effects have been identified, although these are uncertain as effects depend on the location and layout of development and subsequent behaviours.
2: Biodiversity, flora & fauna	--	There are a number of Local Wildlife Sites surrounding South Ockendon which could be lost to development directly or degraded through urban edge effects. Much of the area around South Ockendon lies within impact risk zones for all applications, including residential, for the Grays Thurrock Chalk Pit SSSI. As such, significant negative effects have been identified.
3: Climate change & energy	++	The majority of the area around South Ockendon is within a 20 minute walk of a low frequency bus or rail service and more frequent bus or rail services, although small areas to the east and west lie outside of this. Development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.
4: Historic environment	--?	There are a number of historic assets within the area around South Ockendon, including a number of Grade II listed buildings. Cropmarks have also been identified in this area, as well as historic monuments, archaeological finds including weapons, pottery, coins and prehistoric remains of settlements. In addition, the Grade I listed Church of St Nicholas and the Gatehouse and moat of South Ockendon Old Hall, a scheduled monument, lie on the north eastern edge of South Ockendon. The Grade II listed Belhus Park registered park and garden lies to the west of South Ockendon. These features have potential to be affected either directly or indirectly by development around South Ockendon. It is anticipated that this option could result in significant negative effects on the historic environment, although this is dependent on the exact location and design of development.

SA objective	Score	Justification
5: Flood risk	--?	Part of this area lies within Flood Zone 3, leading to significant negative effects, although these are uncertain as the area benefits from flood defences. There are also areas at high risk of surface water flooding but this relates to very small areas and therefore can be considered negligible. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk.
6: Geology & soils	--	The land around South Ockendon includes areas of Grade 1 and 2 agricultural land, which could be lost to development. Therefore, significant negative effects are considered likely. The potential area for development also includes a historic landfill site next to the lakes at Grangewaters Watersports Centre, although this is such a small part of the area it is likely to be possible to avoid development that would experience any adverse effects from this.
7: Landscape, townscape & visual	--	This area lies predominantly within LCA C1: Belhus Farmed River Terrace Gravels and partially within LCA B1: Lower Mar Dyke River Valley, which are both of high sensitivity to very large housing development, therefore significant negative effects are recorded.
8: Materials & waste	0	There are no known mineral sites or waste facilities in the area. As such, negligible effects have been identified.

SA objective	Score	Justification
9: Noise	--?	This scale of development in a rural area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to many homes and some schools. However, given that these are already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the M25 and A13 and would predominantly apply to properties to the south and west of South Ockendon. There is a railway line running through South Ockendon that could be a source of noise disturbance to residents of any development to the north or south, but noise levels of Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more have not been recorded along this line. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	-?	The southern part of the potential development area lies within Source Protection Zones 1, 2 and 3. There are also a number of waterbodies within and adjacent to the potential development location. As only a very small proportion of the development location falls within SPZ1, a minor negative effect has been identified. This is uncertain as effects depend on the exact location and layout of development.
11: Economy & employment	+	The majority of the potential development area is within 30 minutes walking time to an existing employment site. In addition, this option is expected to be of a scale that would provide new schools and community facilities, which may generate new jobs, although these are likely to be limited in number, therefore minor positive effects are expected.
12: Education & skills	++	The majority of the area is further than a 20 minute walk to a primary school. However, the majority of the area is within 30 minutes walking or public transport time to a secondary school. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school and a secondary school, leading to significant positive effects.

SA objective	Score	Justification
13: Housing	++	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The eastern part of the potential development area has high barriers to housing and services, including areas within the 10% and 20% most deprived categories. As such, significant positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops, as well as local community facilities. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. Local services and facilities may include community facilities and faith facilities, which may benefit some people with protected characteristics. As such, this option could have minor positive effects for equalities.
16: Health & wellbeing	++/--?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The areas with best access to these are around South Stifford and along the B186 to the north. There are a number of public rights of way in the eastern part of the potential development area, including links to the Mardyke Valley, which could offer recreational walking opportunities for residents. There are a number of green spaces and recreational opportunities that could be lost to development, including the Mardyke Valley Golf Club, Brannetts Wood, Davy Down and Belhus Park. Alternatively, if these are retained, they could provide recreation opportunities for residents of any new development. Development of this scale would be expected to provide some additional green space to serve new residents, resulting in significant positive effects. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive, and significant negative uncertain effects are recorded.

SA objective	Score	Justification
17: Access to services & facilities	++	None of the potential development area is within a 10 minute walk from a local centre and only a very small area in the southwest is within 10 minutes public transport journey time to a local centre. However, development of this scale is expected to provide new community facilities, which may improve access to services and facilities in this area, including the eastern area, which is in the 10% most deprived in terms of barriers to housing and services.

Lakeside

SA objective	Score	Justification
1: Air quality	-	A major urban extension at Lakeside could result in substantial increased traffic due to the size of development, including within the AQMAs along the A1306, particularly at North Stifford, Junction 31 of the M25 and Thurrock Hotel Ship Lane, therefore exacerbating existing air pollution issues. Therefore, minor negative effects have been identified.
2: Biodiversity, flora & fauna	--	Arena Essex Local Wildlife Site at Lakeside and a number of Local Wildlife Site surrounding Lakeside could be lost to development directly or degraded through urban edge effects. The majority of the area does not lie within an impact risk zone for residential development, however the southernmost part of the area lies within impact risk zones for all applications, including residential, for the West Thurrock Lagoon & Marshes SSSI. As such, significant negative effects have been identified.
3: Climate change & energy	++	The area is within a 20 minute walk of a low frequency bus or rail service and more frequent bus or rail services. Development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.
4: Historic environment	-?	The area contains a small number of archaeological finds, including Iron Age tools, a destroyed pillbox and a destroyed road barrier. A WWII heavy anti-aircraft gun site is also located within the northwest of the site. These have the potential to be affected either directly or indirectly by further development in this area. It is anticipated that this option could result in minor negative effects on the historic environment, although this is dependent on the exact location and design of development.
5: Flood risk	--?	Part of this area lies within Flood Zone 3, leading to significant negative effects, although these are uncertain as the area benefits from flood defences. There are also notable areas at high risk of surface water flooding.

SA objective	Score	Justification
6: Geology & soils	-	This area contains non-agricultural land, however it contains some areas of historic landfill sites, predominantly next to the northern lake and along the A136. Development within these areas could experience adverse effects from these. As such, minor negative effects have been identified.
7: Landscape, townscape & visual	--?	This area lies predominantly within LCA E1: West Thurrock, Lakeside & Purfleet, which is of low-moderate sensitivity to large housing development, and partially within LCA B1: Lower Mar Dyke River Valley, which is of high sensitivity to large housing development. Therefore uncertain significant negative effects are recorded.
8: Materials & waste	0	There are no known mineral sites or waste facilities in the area therefore negligible effects are recorded.
9: Noise	--?	This scale of development in this area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to predominantly commercial properties. However, given that these are already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the A13, A126, A282 and the A1306. There is a railway line running along the east of the area that could be a source of noise disturbance to residents of any development, but noise levels of Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more have not been recorded along this line. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	-?	The northeast of the area lies within Source Protection Zone 2. Two lakes are also located within this area, which could be adversely affected by development. As such, a minor negative effect has been identified, but this is uncertain as effects depend on the exact location and layout of development.

SA objective	Score	Justification
11: Economy & employment	+	The majority of the potential development area is within 30 minutes walking or public transport time to an existing employment site. In addition, this option is expected to be of a scale that would provide a new primary school, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects have been identified.
12: Education & skills	++	The majority of the area is located further than a 20 minute walk to a primary school. However, the majority of the area is located within 30 minutes public transport time to a secondary school. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school, leading to significant positive effects.
13: Housing	++	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The whole of the potential development area has high barriers to housing and services, including areas within the 20% and 30% most deprived categories. As such, significant positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++?/ --?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The areas with best access to these are at the lakeside shopping areas. The area is in proximity to public rights of way and green spaces, including Brannetts Wood and Davy Down, which could offer recreational opportunities for residents. Arena Essex Local Wildlife Site is within the potential development area and could be lost to development. Alternatively, if this was retained, it could provide recreation opportunities for residents of any new development. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive uncertain, and significant negative uncertain effects are recorded.
17: Access to services & facilities	+	The majority of the potential development area is further than 10 minutes walking or public transport time to a local centre. However, development of this scale is expected to provide at least one new bus stop, which may improve access to services and facilities in this area, including areas within the 20% and 30% most deprived in terms of barriers to housing and services, therefore a minor positive effect has been identified.

Aveley

SA objective	Score	Justification
1: Air quality	-?	A major urban extension at Aveley could result in substantial increased traffic due to the size of development, including within the AQMA in Aveley and along the A13 at North Stifford, therefore exacerbating existing air pollution issues. Therefore, minor negative effects have been identified, although these are uncertain as effects depend on the exact location and layout of development and subsequent behaviours.
2: Biodiversity, flora & fauna	--	Purfleet Road SSSI and Jill's Field Local Wildlife Site adjacent to the existing built area of Aveley, as well as a number of Local Wildlife Sites surrounding Aveley, could be lost to development directly or degraded through urban edge effects. Much of the area around Aveley lies within impact risk zones for all applications, including residential, for the Purfleet Road SSSI and the Inner Thames Marshes SSSI. As such, significant negative effects have been identified.
3: Climate change & energy	++	The whole of the area around Aveley is within a 20 minute walk of a low frequency bus service and more frequent bus services. However, development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.
4: Historic environment	--?	There are a number of historic assets within the area around Aveley, including a number of Grade II listed buildings. The area also contains a post medieval windmill site and stench pipe, the remains of some older churches, chapels and timber framed houses, and some archaeological finds including fossils, weapons, pottery and vessels. In addition, the Grade II listed Registered Park and Garden Belhus Park is located adjacent to the northeast of Aveley, the Grade II* listed Kenningtons and Bretts Farmhouse are located to the northwest of Aveley, the Grade I listed Church of St Michael lies on the south eastern edge of Aveley and the site of moated manor house is located to the east of this. These features have potential to be affected either directly or indirectly by development around Aveley. It is anticipated that this option could result in significant negative effects on the historic environment, although this is dependent on the exact location and design of development.

SA objective	Score	Justification
5: Flood risk	0?	None of the area lies within Flood Zones 2 or 3. There are areas at high risk of surface water flooding but this relates to very small areas and therefore can be considered negligible. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk, therefore the negligible effects identified are uncertain.
6: Geology & soils	--	The land around Aveley includes areas of Grade 1 agricultural land, which could be lost to development. Therefore, significant negative effects are considered likely. The potential area for development also includes historic landfill sites to the east and west of Aveley and development within these areas could experience adverse effects from these.
7: Landscape, townscape & visual	--	This area lies within LCA C1: Belhus Farmed River Terrace Gravels, which is of moderate-high sensitivity to large housing development, therefore significant negative effects are recorded.
8: Materials & waste	-?	Aveley Landfill is located to the northwest of Aveley, however this has been recently closed and restored / ceased for alternative use. As such uncertain minor negative effects are recorded.
9: Noise	--?	This scale of development in a rural area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to many homes and some schools. However, given that these, with the exception of a few individual residential properties, are already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This urban extension may also lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the M25 and A13. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.

SA objective	Score	Justification
10: Water resources & quality	-?	A single waterbody is located to the northwest of Aveley, which could be affected by development. As such, a minor negative effect has been identified, but this is uncertain as effects depend on the exact location and layout of development.
11: Economy & employment	+	The potential development area is within 30 minutes walking time to an existing employment site. In addition, this option is expected to be of a scale that would provide a new primary school, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects have been identified.
12: Education & skills	++	The majority of this area is within a 20 minute walk to a primary school and within 30 minutes walking or public transport time to a secondary school. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school, leading to significant positive effects.
13: Housing	+	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The majority of the area has low barriers to housing and services, being and area within the 50% least deprived and 50% most deprived categories. A small part of the area, to the southeast of Aveley, has high barriers to housing, being an area within the 10% most deprived category. As such, minor positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++?/ --?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The area with best access to healthcare services is to the southeast of Aveley and the areas with best access to a fruit and vegetable retailer are the areas closest to the existing urban edge of Aveley. There are several public rights of way in the north and one in the southwest of the potential development area, including links to Belhus Woods Country Park, which could offer recreational walking opportunities for residents. There are a number of green spaces and recreational opportunities within the potential development area that could be lost to development, including Belhus Park and Kenningtons Park. Alternatively, if these are retained, they could provide recreation opportunities for residents of any new development. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive uncertain, and significant negative uncertain effects are recorded.
17: Access to services & facilities	+	A very small area in the proposed development area is within a 10 minute walk from a local centre or within 10 minutes public transport journey time to a local centre. However, development of this scale is expected to provide at least one new bus stop, which may improve access to services and facilities in this area, therefore a minor positive effect has been identified.

Chadwell St Mary

SA objective	Score	Justification
1: Air quality	-?	A major urban extension at Chadwell St Mary could result in substantial increased traffic due to the size of development, including within the nearby AQMAs, including those at Tilbury and at Grays Town Centre and London Road Grays, therefore exacerbating existing air pollution issues. Therefore, minor negative effects have been identified, although these are uncertain as effects depend on the exact location and layout of development and subsequent behaviours.
2: Biodiversity, flora & fauna	--	Hangman's Wood & Deneholes SSSI and a number of Local Wildlife Sites surrounding Chadwell St Mary could be lost to development directly or degraded through urban edge effects. Much of the area around Chadwell St Mary lies within impact risk zones for all applications, including residential, for Hangman's Wood & Deneholes SSSI. As such, significant negative effects have been identified.
3: Climate change & energy	++	The majority of the area is located more than a 10 minute walk from a low frequency bus service and more than a 20 minute walk from a more frequent bus service. However, development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.
4: Historic environment	--?	There are a number of historic assets within the area around Chadwell St Mary, including a number of Grade II listed buildings, historic monuments and archaeological finds, including weapons, pottery, vessels, coins and Roman flooring. In addition, dene holes in Hangman's Wood, a scheduled monument, is located in the northwest of the area and the Grade I listed Church of St Mary is located on the southern edge of Chadwell St Mary. West Tilbury Conservation Area is located in the southeast of the potential area for development and contains the Grade II* listed Marshall's Cottages and Church of St James, as well as the earthworks scheduled monument near the church. These features have potential to be affected either directly or indirectly by development around Chadwell St Mary. It is anticipated that this option could result in significant negative effects on the historic environment, although this is dependent on the exact location and design of development.

SA objective	Score	Justification
5: Flood risk	--?	The southern part of this area lies within Flood Zone 3, leading to significant negative effects, although these are uncertain as the area benefits from flood defences. There are also notable areas at high risk of surface water flooding. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk.
6: Geology & soils	--	The land around Chadwell St Mary includes areas of Grade 2 agricultural land, which could be lost to development, therefore significant negative effects are considered likely. The potential area for development also includes historic landfill sites to the east and west of Chadwell St Mary, although as these are small parts of the area it is likely to be possible to avoid development that would experience any adverse effects from this.
7: Landscape, townscape & visual	--	This area lies predominantly within LCA H1: East & West Tilbury Open Undulating Farmland and partially within LCA F1: Aveley Marshes, which are both of high sensitivity to very large housing development, therefore significant negative effects are recorded.
8: Materials & waste	-?	The Mill House Farm minerals extraction site (being worked prior to use as an agricultural reservoir) is located within the potential area for development to the east of Chadwell St Mary. As such minor negative uncertain effects are recorded.
9: Noise	--?	This scale of development in a rural area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to many homes and some schools. However, given the majority of these are already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the A1089 and St Chads Road and would predominantly apply to properties to the south and west of Chadwell St Mary. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.

SA objective	Score	Justification
10: Water resources & quality	-?	A waterway is located in the southwest of the potential area for development, which could be adversely affected by development. As such, a minor negative effect has been identified, but this is uncertain as effects depend on the exact location and layout of development.
11: Economy & employment	+	The majority of the potential development area is within 30 minutes public transport time to an existing employment site. In addition, this option is expected to be of a scale that would provide new schools and community facilities, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects have been identified.
12: Education & skills	++	The majority of the area is further than a 20 minute walk to a primary school. However, the majority of the area is within 45 minutes walking or 30 minutes public transport time to a secondary school. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school and a secondary school, leading to significant positive effects.
13: Housing	++	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The eastern and southern parts of the potential development area have high barriers to housing and services, including areas within the 30% and 40% most deprived categories. As such, significant positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops, as well as local community facilities. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. Local services and facilities may include community facilities and faith facilities, which may benefit some people with protected characteristics. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++/--?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The areas with best access to these are those that surround the existing built up areas of Chadwell St Mary, Orsett Heath, Little Thurrock, West Tilbury and Tilbury. There are a number of public rights of way in the eastern, northern and western parts of the potential development area, which could offer recreational walking opportunities for residents. There are a number of green spaces and recreational opportunities that could be lost to development, including Orsett Heath and Walton and Tilbury Fort Commons. Alternatively, if these are retained, they could provide recreation opportunities for residents of any new development. Additionally, development of this scale would be expected to provide some additional green space to serve new residents, resulting in significant positive effects. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive, and significant negative uncertain effects are recorded.
17: Access to services & facilities	++	None of the potential development area is within 10 minutes' walk from a local centre and only a very small area in the west, along Chadwell Road and River View, is within 10 minutes public transport journey time to a local centre. However, development of this scale is expected to provide new community facilities, which may improve access to services and facilities in this area, including the eastern area that is in the 30-40% most deprived in terms of barriers to housing and services.

East Tilbury

SA objective	Score	Justification
1: Air quality	-?	A major urban extension at East Tilbury is likely to result in substantial increased traffic due to the size of development, although it is unlikely to result in increased traffic within an existing AQMA. As such, an uncertain minor negative effect is identified.
2: Biodiversity, flora & fauna	--	Gobions Lake Local Wildlife Site and Linford Wood Local Nature Reserve and Local Wildlife Site are located within the potential area for development. Additionally, a number of Local Wildlife sites are located around the area, as well as the Mucking Flats and Marshes SSSI and the Thames Estuary & Marshes Ramsar site and SPA. These features could be lost to development directly or degraded through urban edge effects and increased recreational pressure. The area also lies within impact risk zones for all applications, including residential, for the Mucking Flats and Marshes SSSI, which underlines the Thames Estuary & Marshes Ramsar site and SPA. As such, significant negative effects have been identified.
3: Climate change & energy	++	The majority of the area is located more than a 10 minute walk from a low frequency bus or rail service and more than a 20 minute walk from a more frequent bus or rail service. However, development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.

SA objective	Score	Justification
4: Historic environment	--?	There are a number of historic assets within the area around East Tilbury, including several Grade II listed buildings and a number of prehistoric remains including arrowheads, blades, flakes, scrapers, polishers, hammerstones and vessels. Cropmarks and coins have also been found in the area, as well as evidence of a possible Bronze Age enclosure. Additionally, the Grade II* listed Church of St John the Baptist is located to the north of the potential area of development and the Grade I Church of St Katherine is located to the south of the area. Two scheduled monuments, East Tilbury Battery and the Second World War anti-aircraft battery at Bowaters Farm, are located in the south of the area and the scheduled monument Coalhouse Fort battery and artillery defences, which is identified as being at risk, is located to the southeast of the area. East Tilbury Conservation Area is located in East Tilbury in the centre of the area, which is also identified as being at risk. These features have potential to be affected either directly or indirectly by development around East Tilbury. It is anticipated that this option could result in significant negative effects on the historic environment, although this is dependent on the exact location and design of development.
5: Flood risk	--?	Part of the area lies within Flood Zone 3, leading to significant negative effects, although these are uncertain as the area benefits from flood defences. There are also notable areas at high risk of surface water flooding. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk.
6: Geology & soils	--	The land around East Tilbury includes areas of Grade 2 agricultural land, which could be lost to development. Therefore, significant negative effects are considered likely. The potential area for development also includes historic landfill sites in the south of the area and development within these areas could experience adverse effects from these.
7: Landscape, townscape & visual	--	This area lies within LCA H1: East & West Tilbury Open Undulating Farmland and LCA F3: Mucking Marshes, which are of high sensitivity to very large housing development, therefore significant negative effects are recorded.

SA objective	Score	Justification
8: Materials & waste	--	Several minerals and waste sites are located within and around the proposed area of development. The operational East Tilbury Quarry occupies much of the southeast of the area, the operational Former Tilbury Ash Disposal landfill site is located to the southwest of the area, restored and operational parts of Orsett Quarry are located to the northeast of the area, the recently closed and restored / ceased for alternative use Goshem's Farm landfill site is located to the south of the area, and the restored Mucking Landfill Site occupies the northeast of the area. Additionally Orsett Quarry - Stanford le Hope and East Tilbury Quarry Permitted Primary Minerals and Transhipment Sites are located to the north and east of the area respectively. As such significant negative effects are recorded.
9: Noise	--?	This scale of development in a rural area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to many homes and some schools. However, given the majority of these are already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the railway line and would predominantly apply to properties in close proximity to this. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	-?	The eastern part of the potential development area lies within Source Protection Zones 1 and 2. There are also a number of waterbodies within and adjacent to the potential development location. As only a very small proportion of the development location falls within SPZ1, a minor negative effect has been identified. This is uncertain as effects depend on the exact location and layout of development.
11: Economy & employment	+	The majority of the potential development area is within 30 minutes walking or public transport time to an existing employment site. In addition, this option is expected to be of a scale that would provide new schools and community facilities, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects are identified.

SA objective	Score	Justification
12: Education & skills	++	The majority of the area is further than a 20 minute walk to a primary school and further than 30 minutes walking or public transport time to a secondary school. However, the option is expected to be of a scale that would result in provision of new educational facilities including a primary school and a secondary school, leading to significant positive effects.
13: Housing	++	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The western part of the potential development area has high barriers to housing and services, including areas within the 40% most deprived category. As such, significant positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops, as well as local community facilities. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. Local services and facilities may include community facilities and faith facilities, which may benefit some people with protected characteristics. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++/--?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The areas with best access to these are those closest to the existing urban areas of East Tilbury and Linford. There are several public rights of way in the potential development area, including links to the River Thames, which could offer recreational walking opportunities for residents. There are a number of green spaces and recreational opportunities that could be lost to development, including Heronry Shaw, Linford Wood and Gobions Park. Alternatively, if these are retained, they could provide recreation opportunities for residents of any new development. Additionally, development of this scale would be expected to provide some additional green space to serve new residents, resulting in significant positive effects. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed significant positive and significant negative uncertain effects are recorded.
17: Access to services & facilities	++	None of the potential development area is within 10 minutes' walk from a local centre or within 10 minutes public transport journey time to a local centre. However, development of this scale is expected to provide new community facilities, which may improve access to services and facilities in this area, including the western area that is in the 40% most deprived in terms of barriers to housing and services.

Corringham

SA objective	Score	Justification
1: Air quality	-?	A major urban extension at Corringham is likely to result in substantial increased traffic due to the size of development, although it is unlikely to result in increased traffic within an existing AQMA. As such, an uncertain minor negative effect is identified.
2: Biodiversity, flora & fauna	-	There are several Local Wildlife Sites surrounding the potential development area, which could be lost to development directly or degraded through urban edge effects. Green infrastructure located within the area, such as amenity green space, could also be lost to development. It is also noted that parts of the area lie within impact risk zones for planning applications, including residential, for the Langdon Ridge SSSI and Holehaven Creek SSSI. Overall, minor negative effects are considered likely.
3: Climate change & energy	++	The majority of the potential development area is within a 20 minute walk of low frequency bus services and more frequent bus services, although an area to the northeast lies outside of this. Additionally, development is expected to be of a scale that would result in new public transport infrastructure, leading to significant positive effects.
4: Historic environment	-?	The area contains some archaeological finds, namely Early to Late Bronze Age tools, some Roman vessels and a destroyed pillbox. Additionally, several Grade II listed buildings and sites of archaeological interest surround the potential area of development. Fobbing and Corringham Conservation Areas, and the listed buildings within these, are located to the south and southeast of the potential area of development. These features have the potential to be affected either directly or indirectly by development in the area, however this is dependent on the role of the potential development area on the setting of these assets. It is therefore anticipated that this option could result in minor negative effects on the historic environment, although this is dependent on the exact location and design of development.

SA objective	Score	Justification
5: Flood risk	--?	None of the area lies within Flood Zones 2 or 3. There are however notable areas at high risk of surface water flooding. Therefore significant negative effects are recorded but are uncertain dependent on the exact location and layout of development. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk.
6: Geology & soils	-	The land within the potential development area includes areas of Grade 3 agricultural land, which could be lost to development. Therefore, minor negative effects are considered likely.
7: Landscape, townscape & visual	--	This area lies within LCA J1: Lower Hill Slopes, which is of high sensitivity to large housing development, therefore significant negative effects are recorded.
8: Materials & waste	0	The area is lot located in proximity to a designated mineral site or waste facility. As such, negligible effects have been identified.
9: Noise	--?	This scale of development in a rural area will inevitably increase noise disturbance in the area, especially during the construction phase. The area earmarked for development is in proximity to many homes and some schools. However, given that these are predominantly already within an urban area, and because it is assumed development will consist primarily of housing, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the railway line and the A13 and would predominantly apply to properties to the northwest of the potential area for development. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.

SA objective	Score	Justification
10: Water resources & quality	-?	With the exception of the northernmost part of the area that is in proximity to a waterway, the potential development area is not located in close proximity to any water body. Additionally, the area is located outside of a Source Protection Zone. As such, uncertain minor negative effects have been identified.
11: Economy & employment	+	The southern part of the area is within 30 minutes walking time and the majority of the area, with the exception of the northeast of the area, is within 30 minutes public transport time, to an existing employment site. In addition, this option is expected to be of a scale that would provide a new primary school, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects have been identified.
12: Education & skills	++	The majority of the area is located further than a 20 minute walk to a primary school. However, the majority of the area is located within 30 minutes walking or public transport time to a secondary school. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school, leading to significant positive effects.
13: Housing	++	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The eastern part of the potential development area has high barriers to housing and services, including areas within the 30% and 40% most deprived categories. As such, significant positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is of a scale that is expected to provide one or more new bus stops. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++?/ -?	The majority of the potential development area is further than a 10 minute walk or public transport time to a healthcare facility and a fruit and vegetable retailer. The areas with best access to these are along the B1420. The area is connected by public rights of way to assets in close proximity such as Northlands Wood / Langdon Hills Country Park, which could offer recreational walking opportunities for residents. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed uncertain significant positive and uncertain minor negative uncertain effects are recorded.
17: Access to services & facilities	+	None of the proposed development area is within a 10 minute walk from a local centre and a very small area in the proposed development area is within 10 minutes public transport journey time to a local centre. However, development of this scale is expected to provide at least one new bus stop, which may improve access to services and facilities in this area, including the eastern area that is in the 30 and 40% most deprived in terms of barriers to housing and services, therefore a minor positive effect has been identified.

North Grays

SA objective	Score	Justification
1: Air quality	-	A major urban extension north of Grays is likely to result in substantial increased traffic due to the size of development, including within the AQMAs in and around Grays, particularly at North Stifford, Chafford Hundred and Hogg Lane Grays, therefore exacerbating existing air pollution issues. Therefore, minor negative effects have been identified.
2: Biodiversity, flora & fauna	--	Blackshots Nature Area Local Wildlife Site is located within the potential area for development, and Cats Mede Local Wildlife Site is located to the northwest of the area. These features could be lost to development directly or degraded through urban edge effects. The area also lies within impact risk zones for all applications, including residential, for the Hangman's Wood & Deneholes SSSI and Grays Thurrock Chalk Pit SSSI. As such, significant negative effects have been identified.
3: Climate change & energy	++	This potential development area is further than a 20 minute walk from a more frequent bus service, although the majority of the area is within a 10 minute walk to a low frequency bus service. However, development is expected to be of a scale that would provide new public transport links, therefore a significant positive effect is recorded.
4: Historic environment	--?	This area includes two Grade II listed buildings: Greygoose Farmhouse and Little Wellhouse, as well as a limited number of archaeological finds, including pottery, vessels and coins. The area also includes the crop mark complex and Orsett scheduled monument, which is identified as being at risk. It is anticipated that development could result in significant negative effects on the historic environment, although this is dependent on the exact location and design of development.
5: Flood risk	0?	None of the area lies within Flood Zones 2 or 3. There are areas at high risk of surface water flooding but this relates to very small areas and therefore can be considered negligible. It is also noted that the potential development area comprises large areas of greenfield land, the development of which could increase flood risk, therefore the negligible effects identified are uncertain.

SA objective	Score	Justification
6: Geology & soils	--	The potential area for development includes areas of Grade 2 agricultural land, which could be lost to development, therefore, significant negative effects are considered likely.
7: Landscape, townscape & visual	--	This area contains landscape character types H1: East & West Tilbury Open Undulating Farmland, and H2: Orsett & Horndon on the Hill Open Undulating Farmland. Landscape character types H1 and H2 are of high and moderate-high sensitivity to large housing development respectively. As such, significant negative effects are recorded.
8: Materials & waste	0	There are no known mineral sites or waste facilities in the area. As such, negligible effects have been identified.
9: Noise	--?	This scale of development will inevitably increase noise, particularly during the construction phase. The area earmarked for development is in proximity to many homes and William Edwards School. However, given that these are already within an urban area and lie close to the A13 and A1089, effects of the development once operational are unlikely to be significant. This option may lead to development in proximity to noise disturbance (Lnight 50-54.9 dB or more and Laeq,16 55-59.9 dB or more). This is associated with the A13, A1012, A1013 and A1089. As such, there is potential for significant effects, but these are uncertain as this depends on the exact location, layout and design of development.
10: Water resources & quality	0	The potential development area is not located in close proximity to any water body. Additionally, the area is located outside of a Source Protection Zone.

SA objective	Score	Justification
11: Economy & employment	+	The majority of the area is within 30 minutes walking time and public transport time to an existing employment site. In addition, this option is expected to be of a scale that would provide a new primary school, which may generate new jobs, although these are likely to be limited in number. As such, minor positive effects are expected.
12: Education & skills	++	Part of this area is within a 20 minute walk of a primary school, although some parts to the northeast are further than this. Much of the area is also within 30 minutes public transport time or less of a secondary school, although again an area to the northeast lies beyond this. This option is also expected to be of a scale that would result in provision of new educational facilities including a primary school, leading to significant positive effects.
13: Housing	+	This option has potential to make a substantial contribution to meeting housing need in Thurrock. The majority of the area has low barriers to housing and services. A small part of the area to the southeast has high barriers to housing, being an area within the 40% most deprived category. As such, minor positive effects are likely.
14: Crime & safety	0	Crime and safety is more likely to be influenced by the design and layout of development, therefore negligible effects have been identified.
15: Equalities	+?	The potential development area is also of a scale that is expected to provide one or more new bus stops. As such, it may provide opportunities to help the elderly, disabled, possibly expectant mothers, and others with limited mobility to get around. As such, this option could have minor positive effects for equalities.

SA objective	Score	Justification
16: Health & wellbeing	++?/ --?	Most of the area is further than a 10 minute walk or public transport time to a health centre and a fruit and vegetable retailer. The areas with best access are those closest to the existing urban edge of Grays. The area is in proximity to public rights of way and green spaces, including Blackshots Recreation Ground and amenity green space, which could offer recreational opportunities for residents. There are a number of green spaces and recreational opportunities within the potential development area that could be lost to development, including the Ron Evans Memorial Field and part of Blackshots Recreation Ground. Alternatively, if these are retained, they could provide recreation opportunities for residents of any new development. This option could lead to development within proximity of existing sources of noise pollution, which could negatively affect health through loss of amenity and other effects of noise, such as sleep disturbance. Overall, mixed uncertain significant positive and uncertain significant negative effects are recorded.
17: Access to services & facilities	+	Development in this area is likely to be further than a 10 minute walk or public transport time to a local centre. However, development of this scale is expected to provide at least one new bus stop, which may improve access to services and facilities in this area, therefore a minor positive effect has been identified.

Appendix 8
SA matrices for the employment allocation options

Option 1 - Allocate sites specifically for strategic distribution and warehousing needs

SA objective	Score	Justification
1: Air quality	-	Allocating sites specifically for distribution and warehousing is likely to increase this industry in the Borough, which is likely to increase air pollution associated with vehicle movements and congestion, resulting in negative effects. However, these are likely to be minor as the text states that these sites would be close to the strategic road network and with direct access to inter-modal facilities, which may help to minimise any increases in congestion and the emissions of air pollutants associated with lorry transport. As there is an existing overprovision of employment land in Thurrock, much of which is similar in use, this option could result in an increase in people commuting into Thurrock to work, further exacerbating congestion and air quality issues.
2: Biodiversity, flora & fauna	-?	This option is likely to result in development of large, out of town sites, which could be near designated wildlife sites or lead to loss of large areas of greenfield land with biodiversity value. As such, minor negative effects are expected, although these are uncertain as effects depend on the location of development.
3: Climate change & energy	-	Allocating sites specifically for distribution and warehousing is likely to increase this industry in the Borough, which is likely to increase greenhouse gas emissions associated with vehicle movements and congestion, resulting in negative effects. However, these are expected to be minor as the text states that these sites would be close to the strategic road network and with direct access to inter-modal facilities, which may help to minimise any increases in congestion and the emissions of greenhouse gases associated with lorry transport. As there is an existing overprovision of employment land in Thurrock, much of which is similar in use, this option could result in an increase in people commuting into Thurrock to work, further exacerbating congestion and associated greenhouse gas emissions.
4: Historic environment	?	Effects on the historic environment are dependent on the location, layout and design of development, therefore uncertain effects are recorded.
5: Flood risk	0?	This option is likely to result in development of large, out of town sites, which could result in loss of large areas of greenfield land and therefore reducing surface water infiltration and increasing surface water runoff. As such, negligible, but uncertain effects are recorded.

SA objective	Score	Justification
6: Geology & soils	?	Effects on geology and soils are dependent on the location of development, therefore uncertain effects are recorded.
7: Landscape, townscape & visual	--	This option is likely to result in development of large, out of town sites, which have potential to be prominent in the landscape, depending on their location and design. Most non-urban landscape character types in Thurrock are assessed as having 'high' sensitivity to major warehouse / industry development, therefore development under this option is expected to have significant negative effects.
8: Materials & waste	?	Effects on materials and waste are dependent on the nature and location of development, therefore uncertain effects are recorded.
9: Noise	-?	This option is likely to increase noise pollution through on-site operations as well as due to increased traffic movements. It is assumed that such development would be unlikely to take place next to sensitive receptors, therefore minor negative effects are recorded, but these are uncertain as effects depend on the location and design of development.
10: Water resources & quality	?	Effects on water resources and quality are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
11: Economy & employment	+/-?	This option would provide new employment land, building on Thurrock's existing distribution industry. This could have positive effects for the local economy and in terms of job provision. However, this is unlikely to promote diversity in the employment offer of Thurrock, as much of the existing employment land is related to distribution, therefore minor positive effects are identified. These effects are likely to be mixed with minor negative uncertain effects, as this option is likely to result in development of large, out of town sites, which may not be accessible by sustainable modes of transport.

SA objective	Score	Justification
12: Education & skills	0	Whilst there is a link between employment provision and education and skills, this option is unlikely to play a big role in increasing the variety of jobs and skills within the Borough, as much existing employment land is related to distribution. As such, negligible effects are expected.
13: Housing	0	This option is not expected to have any effects on this SA objective.
14: Crime & safety	0	This option is not expected to have any effects on this SA objective.
15: Equalities	-	This option is unlikely to play a substantial role in increasing the variety of jobs and skills within the Borough, as much existing employment land is related to distribution. This may limit the variety of employment opportunities in the Borough, which could in turn limit the ability of some residents to access suitable employment opportunities, resulting in minor negative effects.
16: Health & wellbeing	0	This option is expected to have negligible effects on health and wellbeing.
17: Access to services & facilities	0	This option is expected to have negligible effects on health and wellbeing.

Option 2 - Allocate sites to encourage geographical clusters of specialist employment uses

SA objective	Score	Justification
1: Air quality	+?	This option could help to minimise traffic movements, and therefore minimise associated emissions of air pollutants, as similar employment uses in one area could mean that these businesses can share resources (e.g. co-ordination of deliveries and services) and clients and customers may need to visit only one area, therefore minor positive effects are identified. These effects are uncertain as they depend on the nature and location of development.
2: Biodiversity, flora & fauna	?	Effects on biodiversity are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
3: Climate change & energy	+?	This option could help to minimise traffic movements, and therefore minimise associated greenhouse gas emissions, as similar employment uses in one area could mean that these businesses can share resources (e.g. co-ordination of deliveries and services) and clients and customers may need to visit only one area, therefore minor positive effects are identified. These effects are uncertain as they depend on the nature and location of development.
4: Historic environment	?	Effects on the historic environment are uncertain as these depend on the location, nature and design of development coming forward under this option.
5: Flood risk	?	Effects on flood risk are largely dependent on the nature and location of development, therefore uncertain effects are recorded.

SA objective	Score	Justification
6: Geology & soils	?	Effects on geology and soils are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
7: Landscape, townscape & visual	?	Landscape, townscape and visual impacts are dependent on the location, design and layout of development therefore uncertain effects are recorded.
8: Materials & waste	?	Effects on materials and waste are dependent on the nature and location of development, therefore uncertain effects are recorded.
9: Noise	+?/-?	This option could help to minimise traffic movements, and therefore minimise associated noise, as similar employment uses in one area could mean that these businesses can share resources (e.g. co-ordination of deliveries and services) and clients and customers may need to visit only one area, therefore minor positive effects are identified. Alternatively, this option could lead to increases in noise pollution directly from business and industrial operations These effects are uncertain as they depend on the exact nature and location of development.
10: Water resources & quality	?	Effects on water resources and quality are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
11: Economy & employment	++?	This option would provide new employment land in the Borough and new employment opportunities. The text states that sites could be provided for emerging sectors or start-ups, which would support smaller companies and may attract new business to Thurrock, therefore diversifying the local economy. Overall, significant positive effects are expected.

SA objective	Score	Justification
12: Education & skills	+?	In encouraging specialist employment uses, this option may stimulate demand for more specialist training and skills in the Borough. However, this option is likely to primarily create space for younger and smaller businesses, therefore it is uncertain whether these would be able to offer or support learning opportunities. As such, minor positive uncertain effects are identified.
13: Housing	0	This option is not expected to have any effects on this SA objective.
14: Crime & safety	0	This option is not expected to have any effects on this SA objective.
15: Equalities	+	In diversifying the employment offer in the Borough, this option may enhance access for residents to suitable job opportunities. As such, minor positive effects are expected.
16: Health & wellbeing	+	In encouraging specialist employment uses, this option may encourage 'up-skilling' of the Borough's population. This could result in a greater choice of jobs in the Borough. These factors could lead to better pay and job satisfaction, therefore having minor positive effects on health.
17: Access to services & facilities	0	This option is expected to have negligible effects on this SA objective.

Option 3 - Allocate all new sites for the range of B classes uses (business, general industry and warehousing)

SA objective	Score	Justification
1: Air quality	-?	This option is expected to lead to allocation of larger sites and could include an element of additional industrial and warehousing units. This could result in increases in air pollution, either directly from industrial uses, or from transport to and from the site and associated increases in congestion, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
2: Biodiversity, flora & fauna	?	Effects on biodiversity are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
3: Climate change & energy	-?	This option is expected to lead to allocation of larger sites and could include an element of additional industrial and warehousing units. This could result in increases in greenhouse gas emissions, either directly from industrial uses, or from transport to and from the site and associated increases in congestion, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
4: Historic environment	?	Effects on this historic environment are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
5: Flood risk	?	Effects on flood risk are largely dependent on the nature and location of development, therefore uncertain effects are recorded.

SA objective	Score	Justification
6: Geology & soils	?	Effects on geology and soils are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
7: Landscape, townscape & visual	?	Landscape, townscape and visual impacts are largely dependent on the location, design and layout of development, therefore uncertain effects are recorded.
8: Materials & waste	?	Effects on materials and waste are dependent on the nature and location of development, therefore uncertain effects are recorded.
9: Noise	-?	This option could lead to increases in noise pollution, either directly from business and industrial operations or due to increased traffic movements to and from employment sites, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
10: Water resources & quality	?	Effects on water resources and quality are dependent on the nature and location of development, therefore uncertain effects are recorded.
11: Economy & employment	++	This option would provide a variety of new employment land in the Borough and new employment opportunities. The text states that part of each site or area would be reserved for SMA and smaller start-up business, which would support smaller companies and may attract new business to Thurrock, therefore diversifying the local economy. As such, significant positive effects are expected.

SA objective	Score	Justification
12: Education & skills	+?	In providing for a range of employment uses, this option may stimulate demand for a greater variety of training and skills in the Borough, although this depends on the nature of employment opportunities coming forward in the borough. As such, minor positive uncertain effects are identified.
13: Housing	0	This option is not expected to have any effects on this SA objective.
14: Crime & safety	0	This option is not expected to have any effects on this SA objective.
15: Equalities	+	In diversifying the employment offer in the Borough, this option may enhance access for residents to suitable job opportunities. As such, minor positive effects are expected.
16: Health & wellbeing	+	In providing for a variety of different types of employment land in the Borough, this option could result in a greater choice of jobs in the Borough. These factors could lead to better pay and job satisfaction, therefore having minor positive effects on health.
17: Access to services & facilities	0	This option is expected to have negligible effects on this SA objective.

Option 4 - Allocate employment sites specifically for non-B8 uses

SA objective	Score	Justification
1: Air quality	-?	This option would minimise further development for B8 uses, which include distribution and therefore could help to minimise increased traffic movements from distribution uses. However, this option includes sites for general industry (B2) and could include development of large employment sites. This could result in increases in air pollution, either directly from industrial uses, or from transport to and from the site and associated increases in congestion, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
2: Biodiversity, flora & fauna	?	Effects on biodiversity are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
3: Climate change & energy	-?	This option would minimise further development for B8 uses, which include distribution and therefore could help to minimise increased traffic movements from distribution uses. However, this option includes sites for general industry (B2) and could include development of large employment sites. This could result in increases in air pollution, either directly from industrial uses, or from transport to and from the site and associated increases in congestion, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
4: Historic environment	?	Effects on this historic environment are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
5: Flood risk	?	Effects on flood risk are largely dependent on the nature and location of development, therefore uncertain effects are recorded.

SA objective	Score	Justification
6: Geology & soils	?	Effects on geology and soils are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
7: Landscape, townscape & visual	?	Landscape, townscape and visual impacts are largely dependent on the location, design and layout of development, therefore uncertain effects are recorded.
8: Materials & waste	?	Effects on materials and waste are dependent on the nature and location of development, therefore uncertain effects are recorded.
9: Noise	-?	This option could lead to increases in noise pollution, either directly from business and industrial operations or due to increased traffic movements to and from employment sites, resulting in minor negative effects. These effects are uncertain as they depend on the exact nature and location of development.
10: Water resources & quality	?	Effects on water resources and quality are dependent on the nature and location of development, therefore uncertain effects are recorded.
11: Economy & employment	++	This option would provide a variety of new employment opportunities in the Borough. As such, significant positive effects are expected.

SA objective	Score	Justification
12: Education & skills	+?	In providing for a range of employment uses, this option may stimulate demand for a greater variety of training and skills in the Borough, although this depends on the nature of employment opportunities coming forward in the borough. As such, minor positive uncertain effects are identified.
13: Housing	0	This option is not expected to have any effects on this SA objective.
14: Crime & safety	0	This option is not expected to have any effects on this SA objective.
15: Equalities	+	In diversifying the employment offer in the Borough, this option may enhance access for residents to suitable job opportunities. As such, minor positive effects are expected.
16: Health & wellbeing	+	In providing for a variety of different types of employment land in the Borough, this option could result in a greater choice of jobs in the Borough. These factors could lead to better pay and job satisfaction, therefore having minor positive effects on health.
17: Access to services & facilities	0	This option is expected to have negligible effects on this SA objective.

Option 5 – Identify additional town centre mixed use development sites

SA objective	Score	Justification
1: Air quality	+	Allocating employment land in town centres could minimise the need to travel, as employment land would be located close to other services and facilities that residents need to access. In addition, town centres are generally well served by sustainable modes of transport. As such, this option may reduce the need to travel by car, therefore minimising emissions of air pollutants associated with vehicular transport, resulting in minor positive effects.
2: Biodiversity, flora & fauna	0	This option is likely to have negligible effects on biodiversity, as it is expected to lead to allocation of smaller sites within the urban area, which are less likely to be near to a designated biodiversity site and are less likely to be of high biodiversity value.
3: Climate change & energy	+	Allocating employment land in town centres could minimise the need to travel, as employment land would be located close to other services and facilities that residents need to access. In addition, town centres are generally well served by sustainable modes of transport. As such, this option may reduce the need to travel by car, therefore minimising emissions of greenhouse gases associated with vehicular transport, resulting in minor positive effects.
4: Historic environment	?	Effects on the historic environment are uncertain as these depend on the location, nature and design of development coming forward under this option.
5: Flood risk	--?	A large part of Thurrock, including Tilbury town centre and part of Grays town centre, is within Flood Zone 3, although these areas generally benefit from existing flood defences. This option is likely to be within the areas of high flood risk that coincide with these settlements. Therefore significant negative, but uncertain, effects are recorded.

SA objective	Score	Justification
6: Geology & soils	+	The text states that this option would include re-use of previously developed land in town centres, therefore minor positive effects are expected.
7: Landscape, townscape & visual	+	The text states that this option would contribute towards regeneration of brownfield sites. Regeneration can help improve the townscape and visual amenity of an area, therefore minor positive effects are expected.
8: Materials & waste	+	The text states that this option would include re-use of previously developed land in town centres, therefore minor positive effects are expected.
9: Noise	0?	As this option would result in development of town centre sites, which is likely to be mainly office use, increases in noise disturbance are likely to be minimal. Effects are considered negligible, although this depends on the nature and location of development, including previous land use.
10: Water resources & quality	?	Effects on water resources and quality are largely dependent on the nature and location of development, therefore uncertain effects are recorded.
11: Economy & employment	+	This option would provide new employment land in the borough and new employment opportunities, leading to positive effects. These effects are expected to be minor as the text suggests this option would be focused on provision of office uses, for which demand in the borough is limited. In addition, as this option is likely to lead to development of sites in the urban area, sites are likely to be accessible by sustainable modes of transport.

SA objective	Score	Justification
12: Education & skills	0	Whilst there is a link between employment provision and education and skills, this option is unlikely to play a substantial role in increasing the variety of jobs and skills within the Borough, as there is limited demand for office space. As such, negligible effects are expected.
13: Housing	0	This option is not expected to have any effects on this SA objective.
14: Crime & safety	0	This option is not expected to have any effects on this SA objective.
15: Equalities	+	Town centres tend to have good access to sustainable modes of transport. As such, this may enhance the accessibility of job opportunities for the less mobile. As such, minor positive effects are expected.
16: Health & wellbeing	0	This option is expected to have negligible effects on this SA objective.
17: Access to services & facilities	0	This option is expected to have negligible effects on this SA objective.