

# Thurrock Council **Broad Location Area Sequential Test**

Final Report  
February 2010



Prepared for

## Revision Schedule

### **Thurrock Council- Broad Location Area Sequential Test** February 2010

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# 1 Introduction

## 1.1 Scope

- 1.1.1 Thurrock Borough Council commissioned Scott Wilson to carry out a Planning Policy Statement 25<sup>1</sup> Sequential Test (hereafter called Sequential Test) based on broad location areas within Thurrock. This study will form part of the evidence base for Thurrock Council's Core Strategy and Policies for Control of Development and help to further inform the preparation of the Submission version of this Development Planning Document (DPD) as required to fulfil the tests of soundness set out in Planning Policy Statement 12: Local Spatial Planning (PPS12)<sup>2</sup>.
- 1.1.2 The purpose of this study is to carry out a Sequential Test in accordance with the advice in Annex D of Planning Policy Statement 25: Development and Flood Risk (PPS25) to ensure that the broad areas for regeneration being proposed in the Core Strategy are appropriate in terms of flood risk whilst still meeting local needs for housing, employment, retail and community infrastructure.
- 1.1.3 A site specific Sequential Test will be produced as a separate document to support the detailed Site Development Plan Documents (DPDs).

## 1.2 Background

- 1.2.1 Thurrock is situated within the Thames Gateway, a region identified by the Government as a regeneration area of national importance and a key focus for the Government's Sustainable Communities agenda. Regeneration in this area is recognised in a number of documents, including the Thames Gateway plan (a long standing plan), and the Regional Spatial Strategy for the East of England<sup>3</sup>. Essex Thames Gateway as a sub region expected to accommodate housing and jobs for re-generation and growth. This growth will be led by economic regeneration and housing development.
- 1.2.2 Much of Thurrock has historically contained large areas of industrial and derelict land associated with mineral extraction and the industrial nature of the riverfront areas, including oil, cement works, scrap yards etc. Significant reduction in industry throughout the riverfront areas has lead to a reduction or termination of many works and subsequently brownfield<sup>4</sup> land has become available for development. Remaining industrial and commercial uses are primarily situated around the riverfront either side of the M25, at Tilbury Port and the London Gateway, taking advantage of the river as a means of transporting goods.
- 1.2.3 The position of the area with regard to London and the availability of large areas of brownfield land for development has promoted this area as a growth region. With excellent communication links to London and beyond (M25, Channel Tunnel rail link, London-Tilbury-Southend railway line providing local services to Fenchurch Street, Tilbury Port and the City of London Airport). Indeed, with the proposed Thames Gateway development in the region, Thurrock has the potential to become an international centre for trade and enterprise.

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1 Communities and Local Government (2006). Planning Policy Statement 25: Development and Flood Risk

2 Communities and Local Government (2008). Planning Policy Statement 12: Local Spatial Planning

3 Communities and Local Government (May 2008) East of England Plan The Revision to the Regional Spatial Strategy for the East of England

4 Land once occupied by a permanent structure and now abandoned, idled, vacant, derelict, underused etc industrial or commercial facilities where there is development potential

- 1.2.4 The spatial pattern for development within Thurrock is based on development within existing urban areas, essentially on brownfield land, (greenfield and Greenbelt development should only be considered when all possible brownfield sites are exhausted). All evidence bases agree that it should be possible for a large majority of the development allocations for Thurrock to be situated on brownfield land in line with the requirements of Planning Policy Statement 3: Housing. Most brownfield sites are considered to be developable now, or in the near future, and will provide regeneration in areas of need.

## 1.3 National Planning Policy Context

- 1.3.1 The Government's national policies on different aspects of land use planning in England are presented in the form of Planning Policy Statements (PPS) and Planning Policy Guidance notes (PPG). Their key messages are summarised below (the reader is directed to the individual documents for greater details). These messages are further refined and incorporated into regional and local policy documents that are also summarised below. All of these policies should be read in conjunction with other relevant statements of planning policy and do not replace or override them.

### Planning Policy Statement 25- Development and Flood Risk

- 1.3.2 The aim of Planning Policy Statement 25 is to 'ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and direct development away from areas at highest risk'. Where development is necessary, it must be ensured that it will be safe for its lifetime, without increasing the flood risk elsewhere.

#### The Sequential Test

- 1.3.3 The Sequential Test is the tool employed by the Local Planning Authority when allocating land for development. The test should demonstrate that there are no reasonably available alternative sites for development within the local authority area, classified as a lower probability of flooding when compared to the site in question. The areas under comparison must be appropriate to the types of development or land use proposed in relation to PPS25.
- 1.3.4 When allocating sites for development, preference should be given to sites in Flood Zone 1. If there are '*no reasonably available sites in Flood Zone 1, the flood vulnerability of the proposed development can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3*' sequentially. Within each Flood Zone '*new development should be directed to sites at the lowest probability of flooding from all flood sources*'. This should be informed by a Strategic Flood Risk Assessment.
- 1.3.5 In some situations it may be necessary to situate some form of development on land identified to be at risk of flooding. The Sequential and Exception Tests aim to limit damage resulting from flooding to land, people and property.
- 1.3.6 The Environment Agency has stated that they will not consider any Flood Risk Assessments prepared for individual developments unless the Local Planning Authority can prove application of the Sequential Test and where necessary, justification that the Exception Test will be required.

## The Sequential Approach

- 1.3.7 This should steer development within an area to the regions of lowest flood risk within flood zones. All forms of flooding should be considered.

## Hazard Zones

- 1.3.8 PPS25 states that ‘users of a development must not be placed in danger from flood hazard and should remain safe throughout the lifetime of the plan or proposed development’ paragraph E2. Some areas are more susceptible to flooding and the associated hazards and PPS25 suggests that Local Planning Authorities should take these hazards into consideration when contemplating planning applications and in the creation of Local Development Documents. The Thurrock Council Strategic Flood Risk Assessment (SFRA)<sup>5</sup> identifies flood hazard from residual flood risk of breaches in the tidal flood defences. By producing flood hazard information flood zones can therefore be refined in terms of flood risk.
- 1.3.9 The flood hazard information will be used to inform the Sequential Test, as by refining flood risk within the flood zones using flood hazard, a strategic scale sequential approach within broad development areas can be applied. Flood hazard information also provides information to support part c) of the Exception Test. (For a detailed methodology of hazard derivation the reader is directed to the Thurrock Council SFRA).

## The Exception Test

- 1.3.10 The Site-Specific Sequential Test on the DPD document will be undertaken post completion of the Thurrock Council SFRA. This SFRA will provide additional information on the flood risk to Thurrock to inform part c) of the Exception Test. It is however important that the reader understands the role of the Exception Test and as such a brief explanation is given here.
- 1.3.11 PPS25 makes it clear that the Exception Test should only be applied by decision makers after the Sequential Test has been completed. Where the Sequential Test has identified developments classified as ‘more vulnerable’ and ‘essential infrastructure’ which can not be located in Flood Zones 1 or 2 and developments classified as ‘highly vulnerable’ which can not be located in Flood Zone 1 the Exception Test must be applied. Where the Exception Test has been identified as necessary this should be applied as early in the decision-making process as possible.
- 1.3.12 The Exception Test should not be applied to simply justify the positioning of ‘highly vulnerable’ development in Flood Zone 2, ‘more vulnerable’ or ‘essential infrastructure’ in Flood Zone 3a or ‘essential infrastructure’ in Flood Zone 3b.
- 1.3.13 *‘For the Exception Test to be passed:*
- a) *It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared. If the DPD has reached the ‘submission’ stage – see Figure 4 of PPS12: Local Development Frameworks – the benefits of the development should contribute to the Core Strategy’s Sustainability Appraisal;*

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<sup>5</sup> Scott Wilson (2009) Thurrock Strategic Flood Risk Assessment

- b) *The development should be on developable<sup>6</sup> previously-developed land or, it is not on previously developed land<sup>7</sup>, that there are no reasonable alternative sites on developable previously-developed land; and*
- c) *A Flood Risk Assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.<sup>8</sup>*

1.3.14 In order to pass part a) of the Exception Test, the Sustainability Appraisal is required to provide supporting evidence that the chosen site will provide a positive contribution to sustainability in the region. The Thurrock Council Sustainability Appraisal should also be used to show and prove all alternative sites have been considered and discounted on sustainability grounds.

## 1.4 Structure of this study

1.4.1 The Core Strategy Sequential Test will focus on broad location areas for strategic planning rather than specific site allocations. This document will review the broad location areas with respect to flood risk and the Sequential Test and where necessary will provide evidence for the Exception Test on the broad locations where development is necessary. This will reference the Thurrock Council Sustainability Appraisal and SFRA as evidence for parts a) b) and c) of the Exception Test for the Broad Area.

1.4.2 It will be necessary to sequentially test specific sites as part of the site allocations document, which will be produced as a separate document. The site specific Sequential Test will also include the appropriate application of the Exception Test, to demonstrate that allocated sites are capable of passing this test, with particular relevance to part c). This will involve reference to hazard mapping<sup>9</sup> produced as part of the Thurrock SFRA for present day and climate change scenarios to determine the ability of specific sites to provide safe access and egress. Part c of the Exception Test can not be passed using the SFRA as the sole source of information – a site specific Flood Risk Assessment will also be required to provide more information relating to the safety of the development for its lifetime and submitted as part of the planning application.

1.4.3 The Sequential Test for Thurrock Council has been divided into two parts:

- Part 1 – the aim of this is to build a profile of each broad location, providing information on the Flood Zone classification, local flood defences, uses (existing and proposed) and PPS25 vulnerability under consideration in the Core Strategy.
- Part 2 – the Sequential Test is undertaken for each broad location in light of the information provided in Part 1. Where the Exception Test is required for the broad location parts a) b) and c) are considered. These parts of the Test are considered for broad location areas where development vulnerability and flood risk identifies the requirement for the Exception Test.

<sup>6</sup> Developable sites are defined in Planning Policy Statement 3 (PPS3) *Housing* as those sites which should be in a suitable location for housing development and there should be a reasonable prospect that the site is available for, and could be developed at the point envisaged

<sup>7</sup> Previously-developed land definition (commonly known as Brownfield Land). See Annex B of Planning Policy Statement 3 *Housing*

<sup>8</sup> PPS25, Annex D, paragraph D9 – please note that PPS12 referred to in this quote has now been replaced and Figure 4 is no longer in the document – see Communities and Local Government (2008). *Planning Policy Statement 12: Local Spatial Planning*

<sup>9</sup> Hazard mapping produced as part of the Thurrock SFRA (Scott Wilson, 2009) uses Table 13.1 from the Environment Agency /Defra R&D Technical Report FRA Guidance for New Development FD2320.

- 1.4.4 The Sequential Test for Thurrock is based on a number of source materials, including the Environment Agency Flood Zone Maps and the Thurrock Council Strategic Flood Risk Assessment (SFRA). Thurrock Councils SFRA will be used to inform site-specific Flood Risk Assessments (FRA) that are required to be submitted with individual planning applications in order to provide evidence to demonstrate part c) of the Exception Test.
- 1.4.5 The Exception Test should also be applied on a site specific basis and draw on both the hazard outputs from the SFRA and details of the safety of the development for its lifetime presented within a site-specific FRA. A greater level of detail about the proposed development and site will be required, as well as a thorough assessment of flood risk, including hazard. Subsequent to this document, a site specific Sequential Test will be produced to support the proposed DPD allocations.

## 2 Planning Policy

### 2.1 PPS 1 Delivering Sustainable Development

2.1.1 PPS1: Delivering Sustainable Development (2005)<sup>10</sup> outlines the planning policy for delivering sustainable development. Good planning is vital to shape the environment within which we live, and work. This involves *'protecting and enhancing the natural and historic environment, and conserving the countryside and open spaces'*<sup>11</sup>. Sustainable development practices underpin this aim while safeguarding the environment for the future. PPS1 states that *'Planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by:*

- making suitable land available for development in line with economic, social and environmental objectives to improve people's quality of life;
- contributing to sustainable economic development;
- protecting and enhancing the natural and historic environment, the quality and character of the countryside, and existing communities;
- ensuring high quality development through good and inclusive design, and the efficient use of resources; and,
- ensuring that development supports existing communities and contributes to the creation of safe, sustainable, liveable and mixed communities with good access to jobs and key services for all members of the community'.

2.1.2 PPS1 encourages development on suitable brownfield (previously developed) land; *'Planning should seek actively to bring vacant and underused previously developed land and buildings back into beneficial use'*<sup>12</sup>. However it also recognises the impacts that the environment can have on new development and advocates the application of the sequential approach, stating that new development should be avoided in areas susceptible to the impacts of flooding and sea-level rise. (Para's 20 and 27)

### 2.2 PPG 2 Green Belts

2.2.1 Planning Policy Guidance 2: Green belts<sup>13</sup> discusses the purpose of green belt land and the history of this land type classification. Green belts are and have been an essential element of planning policy. The aim of Green Belt policy is to *'prevent urban sprawl by keeping land permanently open; the most important attribute of Green Belts is their openness.'*<sup>14</sup> The permanent aspect of Green Belt land is very important as protection must be maintained in all but exceptional circumstances. This policy helps to safeguard the countryside and open space surrounding developed areas and links to PPS1 in the delivery of sustainable development.

<sup>10</sup> Office of the Deputy Prime Minister (2005) Planning Policy Statement 1: Delivering Sustainable Development

<sup>11</sup> Page 2 Office of the Deputy Prime Minister (2005) Planning Policy Statement 1: Delivering Sustainable Development

<sup>12</sup> Page 12 Office of the Deputy Prime Minister (2005) Planning Policy Statement 1: Delivering Sustainable Development

<sup>13</sup> Department for Communities and Local Government (1995) Planning Policy Guidance 2: Green Belts

<sup>14</sup> Section 1.4 Department for Communities and Local Government (1995) Planning Policy Guidance 2: Green Belts

## 2.3 PPS 3 Housing

2.3.1 Planning Policy Statement 3: Housing<sup>15</sup> is a supporting document to the Government's plans to improve the affordability, quality and supply of housing to all community groups in all geographical areas. This policy also advocates sustainable development, in support of PPS1 and encourages development on previously developed or brownfield land. This is stated within the document at various locations:

- The priority for development should be previously developed land, in particular vacant and derelict sites and buildings - paragraph 36. Previously developed land includes: vacant and derelict buildings as well as land currently in use with the potential for redevelopment
- A key objective is that Local Planning Authorities should continue to make effective use of land by re-using land that has been previously developed - paragraph 40
- The national annual target is that at least 60 per cent of new housing should be provided on previously developed land - paragraph 41.

2.3.2 In order to deliver sustainable development on previously developed land PPS3 states that Regional Spatial Strategies and Local Development Documents should set targets for brownfield redevelopment.

2.3.3 This document also recognises the need to avoid where possible, development within flood risk areas and to take flood risk into account in order to deliver sustainable development (paragraphs 11 and 13).

## 2.4 PPS 4 Planning for Sustainable Economic Growth

2.4.1 In December 2009, Communities and Local Government issued Planning Policy Statement 4: Sustainable Economic Growth which sets out the Government's comprehensive policy framework for planning sustainable economic development in urban and rural areas. The policies outlined in the PPS should be taken into account by regional planning bodies and local planning authorities in the preparation of local planning documents.

2.4.2 The Government's overarching objective is sustainable economic growth. To help achieve sustainable economic growth, the Government's objectives for planning are to:

- build prosperous communities by improving the economic performance of cities, towns, regions, sub-regions and local areas, both urban and rural;
- reduce the gap in economic growth rates between regions, promoting regeneration and tackling deprivation;
- deliver more sustainable patterns of development, reduce the need to travel, especially by car and respond to climate change;
- promote the vitality and viability of town and other centres as important places for communities;
- raise the quality of life and the environment in rural areas by promoting thriving, inclusive and locally distinctive rural communities whilst continuing to protect the open countryside for the benefit of all.

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<sup>15</sup> Communities and Local Government (2006) Planning Policy Statement 3: Housing



- 2.4.3 The policy urges planning authorities to respond positively to applications to carry out economic development, and make fuller use of land, while having proper regard to social and environmental considerations, especially climate change

## 2.5 PPS 6 Town Centres

- 2.5.1 Planning Policy Statement 6: Planning for Town Centres (2004)<sup>16</sup> outlines and supports Government objectives for the sustainable development of vital and viable town centres. This policy supports development in existing town centres to enhance and diversify centres. This can be achieved by:
- enhancing consumer choice by making provision for a range of shopping, leisure and local services, which allow genuine choice to meet the needs of the entire community, and particularly socially-excluded groups;
  - supporting efficient, competitive and innovative retail, leisure, tourism and other sectors, with improving productivity; and
  - improving accessibility, ensuring that existing or new development is, or will be, accessible and well-served by a choice of means of transport. paragraph 1.4
- 2.5.2 PPS6 applies to a wide variety of town centre uses including retail, leisure and entertainment, offices, arts, housing etc.
- 2.5.3 In order to achieve the enhancement of current town centres development should be prioritised to brownfield land and the conversion and change of use of buildings. The density of development within centres should be increased.

## 2.6 PPS 9 Biodiversity and Geological Conservation

- 2.6.1 Planning Policy Statement 9: Biodiversity and Geological Conservation<sup>17</sup> includes planning policies in support of the protection of biodiversity and geological conservation. Any development should not impact biodiversity and geological and geomorphological sites and where possible development should enhance diversity and natural physical processes. This supports PPS1 and the encouragement of sustainable development '*by ensuring that biological and geological diversity are conserved and enhanced as an integral part of social, environmental and economic development*' page 2 PPS9. Planning should take the key principles within PPS9 into consideration when allocating sites for development to ensure any potential impacts of planning decisions on biodiversity and geology are mitigated for. Regional Spatial Strategies and Local Development Frameworks should have policies in place to reflect and support PPS9.
- 2.6.2 There are a multitude of valuable international and national sites of biodiversity and geological conservation. These should be identified within any area and appropriate protection given. Conservation sites include: International Sites, Sites of Special Scientific Interest (SSSIs), Regional and Local Sites, Ancient Woodland and Other Important Natural Habitats, and Networks of Natural Habitats. Development of previously developed land has a conservation value as it reduces the amount of undeveloped and greenfield land required to meet housing

<sup>16</sup> Office of the Deputy Prime Minister (2005) Planning Policy Statement 6: Planning for Town Centres

<sup>17</sup> Office of the Deputy Prime Minister (2005) Planning Policy Statement 9: Biodiversity and Geological Conservation



targets. Brownfield sites may however have a biodiversity or geological value and should be assessed accordingly.

## 2.7 PPG 15 Historic Environment

- 2.7.1 Planning Policy Guidance 15: Planning and the Historic Environment<sup>18</sup> provides a full statement of Government policies for the identification and protection of historic buildings, conservation areas and other elements of the historic environment. It explains the role played by the planning system in their protection. The protection of the historic environment is a key aspect of wider environmental responsibilities and needs to be taken into account in all levels of planning policy. PPG15 supports the overarching aim of all planning policy statements and guidance for sustainable development to enhance the environment.

## 2.8 PPG 16 Archaeology

- 2.8.1 Planning Policy Guidance 16: Archaeology and planning<sup>19</sup> sets out the Secretary of State's policy on archaeological remains on land, and how they should be preserved or recorded both in an urban setting and in the countryside. The document offers advice on the handling and discoveries of archaeological remains and the weight to be assigned to them in planning decisions. Archaeological remains are very important in terms of gaining an understanding of past human history and once lost are irretrievable. Appropriate management is therefore required to ensure the appropriate management of remains. This is achieved through the planning system.

## 2.9 PPG 17 Sport and Recreation

- 2.9.1 Planning Policy Guidance 17: Planning for open space, sport and recreation<sup>20</sup> sets out the policies needed to be taken into account by regional planning bodies in the preparation of Regional Planning Guidance and by local planning authorities in the preparation of development plans. The policy is founded on the ideal that open space and space for the practice of sport and recreation is important for quality of life. These open, sports and recreation spaces must be well designed and implemented in all geographical areas for all society.

## 2.10 Planning Policy Statement 25

- 2.10.1 The aim of Planning Policy Statement 25 is to 'ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and direct development away from areas at highest risk' Where development is necessary, it must be ensured that it will be safe for its lifetime, without increasing the flood risk elsewhere. The Sequential Approach may be possible, where development is guided to low flood risk and hazard regions within the site under consideration. It is up to Regional and Local Planning Authorities to incorporate flood risk into planning policy to appraise manage and reduce the risk

<sup>18</sup> Department of the Environment, Department of National Heritage (1994) Planning Policy Guidance 15: Planning and the Historic Environment

<sup>19</sup> Department for Communities and Local Government (1990) Planning Policy Guidance 16: Archaeology and planning

<sup>20</sup> Department for Communities and Local Government (2002) Planning Policy Guidance 17: Planning for open Space, Sport and Recreation

from flooding to development. The risk of flooding should be supported by a Strategic Flood Risk Assessment (SFRA).

- 2.10.2 The Thurrock Council SFRA provides an increased understanding of the flood risk affecting Thurrock, which can be complimented by further flood report data and the findings of a site specific Flood Risk Assessment (FRA), which should be undertaken for developments within Flood Zones 2, 3 or Flood Zone 1 if the development is larger than 1ha. The FRA should be carried out at the planning stage of any new development to ensure flood risk issues are addressed early in the project. The findings of the SFRA and a site specific FRA should accompany a planning application.
- 2.10.3 There is the potential to reduce flood risk through the siting and design of a development within a flood risk area. This is a valuable and advisable part of the planning process and should be included in the early stages of the planning process for developments within flood risk areas. There is a wealth of literature that can be consulted (e.g. Defra and Environment Agency, 2007, Communities and Local Government, 2007) in order to design a site with flood resilient and resistant techniques included.

## 2.11 East of England Plan (2008)

- 2.11.1 The East of England Plan<sup>21</sup> identifies the area in Thurrock between Purfleet and Tilbury as a 'Key Centre for Development and Change' (KCDC) in Policy SS3 and ETG2. These Key Centres will drive economic growth in the region. The main focus for development will be located in this area, as identified within the East of England (EoE) Plan. Policy SS5 identifies Essex Thames Gateway as a 'Priority Area for Regeneration'. The EoE Plan Policy SS3 states that by concentrating development and regeneration in this location 'will make the most of existing infrastructure and the potential for improvements or extensions to it'<sup>22</sup>. Policy SS5 states that the Essex Thames Gateway has a generally weak economic performance with significant areas suffering from deprivation. The EoE Plan states that it is the job of 'Local Development Documents and relevant non-statutory policies to set out policies to tackle the problems of economic, social and environmental deprivation in these areas...'<sup>23</sup>
- 2.11.2 The strategy for the sub-region (EoE Plan Policy ETG1) is outlined below:
- Substantially increase the numbers of jobs and homes in line with Policies E1 and H1 to bring about a better alignment of homes and work places while continuing to recognise and make the most of the areas complimentary role in relation to London, especially emerging development/transport nodes in east London at Stratford and elsewhere;
  - Give the area a more positive and attractive image building on its strengths and assets, promoting excellence in the design of buildings and public realm and creating townscapes and landscapes of high quality and distinctiveness;
  - Increase the overall value of the sub-region economy and the economic conditions, living standards, aspirations, and quality of life of its residents;
  - Enhance the education and skills base and improve access to higher education;

<sup>21</sup> Communities and Local Government (May 2008) *East of England Plan The Revision to the Regional Spatial Strategy for the East of England* page 11

<sup>22</sup> Communities and Local Government (May 2008) *East of England Plan The Revision to the Regional Spatial Strategy for the East of England Policy SS3* paragraph 3.13

<sup>23</sup> Communities and Local Government (May 2008) *Policy SS5* page 13

- Protect and enhance the quality of the natural and historic environments, including retaining and making more positive appropriate use of the green belt.
- 2.11.3 The Thurrock KCDC is located in the existing urban area and has been identified in the RSS to focus on land between Purfleet to Tilbury, south of the A13 and primarily brownfield in nature. The EoE Plan does identify the potential for some development to the north of the A13, within current centres like Aveley and Ockendon. Development to the north of the A13 would however be restricted to brownfield sites as the RSS identifies the key focus for regeneration should be within existing centres. There will be no planned release of green belt land for development north of the A13 at Aveley, South Ockendon.
- 2.11.4 The revised policy for Thurrock Key Centre for Development and Change (ETG2) January 2010 suggests there should be:
- an urban renaissance, re-using previously developed land and making the best use of the Thames Riverside to bring about substantial improvements in the quality of the urban environment;
  - The area should also be promoted as a leading centre for logistics, and improvements in the scale and sustainability of its role in that respect should be undertaken;
  - Safeguard wharves and quays where necessary for the strategic functioning of the Port of London;
  - A transformation of the northern part of Lakeside Basin as a town centre;
  - Development of policies for the regeneration of Grays town centre and other urban areas in the Borough.
- 2.11.5 The EoE Plan states that Thurrock urban area should provide 18,500 new residential dwellings from 2001 to 2021. Policy H1<sup>24</sup> indicates that 4,250 dwellings have been constructed from April 2001 to March 2006, with an annual rate of 850 dwellings per year. There are 14,250 new dwellings still to be built before 2021, resulting in an annual average rate of 950 dwellings (*'Figures apply to the part of the district within Essex Thames Gateway, but does not imply a moratorium on housing development outside Thames Gateway through re-use of previously developed land'*). According to the EoE Plan, delivery should be monitored against the target and 35% of housing coming forward should be affordable housing.
- 2.11.6 The EoE sets out regional (Essex Thames Gateway-Thurrock, Basildon, Castle Point, Southend-on-sea, Rochford) job targets of 55,000 for the period 2001-2021 under Policy E1<sup>25</sup>, and under Policy E3<sup>26</sup> the Essex Thames Gateway is recognised as a strategic employment site to accommodate a growth in the number of jobs in the region. Thurrock should provide 26,000 of the job target (Policy ETG5<sup>27</sup>). Job growth should be kept in line with the growth in housing to ensure the sustainability of the region.
- 2.11.7 Jobs should be facilitated through competitive sub-regional business environments. The Thames Gateway container port facility with associated business park and rail freight facilities will support the role of Thurrock as a leading logistics centre. Other employment sites should be promoted, in addition to innovation centres and small/medium enterprises in all economic

<sup>24</sup> Communities and Local Government (May 2008) *Policy H1* page 28

<sup>25</sup> Communities and Local Government (May 2008) *Policy E1* page 20

<sup>26</sup> Communities and Local Government (May 2008) *Policy E3* page 22

<sup>27</sup> Communities and Local Government (May 2008) *Policy ETG5* page 87

sectors. Education facilities should also be improved to raise the skill level at NVQ level. Retail, office and leisure developments should be focused at Basildon, Southend, Lakeside, and other centres where regeneration is necessary.

2.11.8 The EoE Plan suggests the employment base of the Borough should be varied with further comments on the diversification of uses in the Lakeside Basin to provide a high quality, pedestrian friendly environment, with mixed uses linked to complimentary revitalisation strategies for Grays town centre and other urban areas. These regeneration and redevelopment proposals require a strategic planning framework, with partners including Essex County Council, Thurrock Borough Council and Thurrock Thames Gateway Development Corporation.

2.11.9 The revised Policy ETG2 (January 2010) identifies the need for the transformation of the northern part of Lakeside Basin as a Regional Centre in the Borough providing:

- a town centre with a designated primary shopping area;
- a greater mix of uses and services including a significant increase in housing and office accommodation and the provision of convenience retail floor space;
- an indicative scale of floor space for each major town centre use;
- design and public realm enhancements;
- improved accessibility for pedestrians

To safeguard the vitality and viability of adjoining centres the expansion of comparison goods floor space will be limited to 50,000m<sup>2</sup> net by 2019.

2.11.10 The EoE Plan recognises the need for responsible planning and management of water resources in the region, identified to be one of the driest in England and under increasing supply demand. The geography of the region also imposes a flood risk to development, originating from the tidal River Thames and other tidal systems in addition to fluvial, surface water, groundwater and other forms of flood sources. Climate change will only exacerbate the flood risk in the area. Policy WAT 4<sup>28</sup> gives guidance on how Local Development Documents should manage flood risk within the area:

- Strategic Flood Risk Assessments should be used to guide development away from floodplains, other areas at medium or high risk or likely to be at future risk from flooding and areas where development would increase the risk of flooding elsewhere;
- Include policies which identify and protect flood plains and land liable to tidal or coastal flooding from development, based on the Environment Agency's flood maps and Strategic Flood Risk Assessments supplemented by historical and modelled flood risk data, Catchment Flood Management Plans and policies in Shoreline Management Plans and Flood Management Strategies, including 'managed re-alignment' where appropriate;
- Only propose departures from the above principles in exceptional cases where suitable land at lower risk of flooding is not available, the benefits of development outweigh the risks from flooding, and appropriate mitigation measures are incorporated;
- Require that sustainable drainage systems are incorporated in all appropriate developments<sup>39</sup>.

<sup>28</sup> Communities and Local Government (May 2008) *Policy WAT 4* page 68

- 2.11.11 Functional floodplain identified as necessary for flood storage should be identified and development should be limited in these areas. The Thames Estuary 2100 Plan, produced by the Environment Agency, is due to be submitted to Government in the first quarter of 2010 and identifies a long-term flood risk management plan for London and the Thames Estuary into the next century. This will identify areas where defences will need to be improved or maintained and look at other options for floodplain management, including the key role that spatial and emergency planning will play in the delivery of the plan.

## 2.12 Regional Economic Strategy for the East of England (2008-2031)

- 2.12.1 Thurrock is included within the Regional Economic Strategy for the East of England Thames Gateway South Essex Regional Economic Strategy<sup>29</sup>. This document sets out a '*vision of a forward-looking and globally competitive region*'<sup>30</sup> and sets targets for productivity, improvement in skills, employment and resource efficiency. It also aims to reduce carbon emissions and inequality in the region.
- 2.12.2 Of importance the Thurrock, the strategy includes; the development of the London Gateway port with the creation of up to 14,000 jobs; the existing and continued logistics in the region; retail and employment at Lakeside Basin; improve the skills base of the region through employer-led learning and improved education; redevelop town centres; reinvent Lakeside Basin and West Thurrock to include increased leisure and industrial areas, ecological corridors and residential areas; attractive green spaces and waterfront development; promote as an area for the development of environmental technologies and services; develop and promote creative industries.
- 2.12.3 Thurrock is outlined at a '*growth area of national significance attracting major private and public investment. This has been stimulated by our clear regeneration agenda, DP World's London Gateway development and the creation of the Royal Opera House Production Park in Purfleet. Will McKee, Thurrock Thames Gateway Development Corporation*'<sup>31</sup>.

## 2.13 Thames Gateway Delivery Plan

- 2.13.1 The Thames Gateway Delivery Plan<sup>32</sup> provides a framework for using public funding economically as well as efficient use of local ownership, project expertise and private entrepreneurship.
- 2.13.2 The Thames Gateway is an important area when considering the wider UK economy as a strategic location for employment, transport, education, public open spaces and housing. Development in the region has three driving forces: a strong economy, improvements in quality of life for local communities and the development of the area as an eco-region. The region includes a 40 mile stretch from Canary Wharf to Southend; this area includes Thurrock as a priority area and the London Gateway dock.
- 2.13.3 In order to achieve the above development aims, the plan involves: an increase in the number of jobs, increase in economic investment to support projects, increase in skills investment through education and an improvement in infrastructure. This will be supported by an

<sup>29</sup> EEDA (2008) The Regional Economic Strategy for the East of England

<sup>30</sup> Page 2 EEDA (2008) The Regional Economic Strategy for the East of England

<sup>31</sup> Page 136 EEDA (2008) The Regional Economic Strategy for the East of England

<sup>32</sup> Department for Communities and Local Government (2007) Thames Gateway Delivery Plan

improvement of the quality of life of the residents brought about by improving the environment and public service network of the Thames Gateway. There will also be an emphasis on eco-development in the region, through jobs, technologies and environmental improvements to existing buildings to reduce carbon emissions, promote water conservation, reduce waste and protect the community from flood risk.

## 2.14 Thurrock Borough Council Local Development Framework

- 2.14.1 Thurrock began working on the Local Development Framework (LDF) in 2005. The Core Strategy has progressed through the preferred options stage and was issued for consultation in January 2008. The Core Strategy and Policies for Management of Development- Proposed submission draft is due for representation stage in February 2010. There are a number of supporting technical/planning studies including; the Strategic Housing Land Availability Assessment (SHLAA) various employment studies<sup>33</sup> and the Infrastructure study. The SHLAA supersedes the Urban Capacity Study to meet the requirements of PPS3 and will be published at the pre-submission representation stage of the Core Strategy. The SHLAA identifies land to meet a 15 year housing supply required for Thurrock to 2025.
- 2.14.2 A number of issues have been raised since investigating potential sites for development. The most pertinent of which regards the quantity of brownfield space available to accommodate the proposed housing target for this area. In light of this it may be necessary to incorporate some green belt development within the plans in order to satisfy the housing targets for the next 15 years and beyond.
- 2.14.3 Areas within the wider green belt lack major urban centres, access to services and transport links and as such do not comply with the RSS aspirations and are less attractive for development. However, it is likely that some development will have to take place on green belt land, potentially situated to the south of the A13 due to brownfield site shortages throughout the Borough.
- 2.14.4 The majority of potential brownfield development sites are situated within the KCDC (see section 2.10 above). This is a result of the situation of the KCDC within the existing urban area, a large proportion of which is associated with past industrial uses within close proximity to the River Thames. Consequently, a high proportion of potentially developable brownfield sites are situated within the floodplain of the tidal River Thames. Government has set a national target for a minimum 60% of all new housing to be provided on previously developed land and through the conversion of existing buildings by 2008 and Thurrock's Core Strategy has increased this target to 92%<sup>34</sup> in order to meet development targets and reduce the necessity for greenbelt release. It is therefore likely that a large proportion of development within Thurrock will have to take place on land identified to be at risk of flooding if the above policy is to be adhered to.
- 2.14.5 As a consequence of this study, it may be identified that 90% brownfield development is not possible within Thurrock due to the presence of flood risk. Sites within flood zones identified to

<sup>33</sup> Bone Wells Associates (2005) *Thurrock Council Employment Study*

<sup>34</sup> The Thurrock Core Strategy is to locate 92% of new homes on previously developed land to 2025 and reflects the strategy set out in the Preferred Options stage of the Core Strategy. This reflects the policy approach of the adopted Regional Spatial Strategy known as the East of England Plan which is to focus development within the Thurrock Key Centre of Development and Change (KCDC) to 2021. The Green Belt is tightly drawn around settlements in Thurrock and any significant levels of Green field development would require Green Belt release. This would conflict with the East of England Plan which does not identify a Strategic Green Belt review in Thurrock for the Plan Period to 2021.



be unsuitable for certain development types may instead be brought forward for environmental improvements. In order for brownfield sites to be identified as developable, they must conform to part b) of the Exception Test and be 'developable' as defined in PPS3. The presence of significant flood risk to a site may result in the conclusion that some sites are deemed unsuitable for certain types of development and thus un-developable.

### Regeneration Areas and Strategic Economic Hubs

- 2.14.6 The majority of new housing, employment and associated infrastructure will be located within the Thurrock Urban Area Key Centre for Development and Change extending from Purfleet to Tilbury/Chadwell. This will provide approximately up to 10,000 of the additional homes and 15,000 additional jobs and improved community infrastructure sites on previously developed land i.e. brownfield sites. These areas have been aligned in the Thurrock Development Corporation masterplans, and there is therefore a consistent approach in the identification of key areas for regeneration and development within the borough.
- 2.14.7 Thurrock Council have identified five Regeneration Areas and key strategic Economic Hubs, which focuses development on the Thurrock Urban Areas (KCDC) and the London Gateway site for the period to 2021. Smaller scale development is also identified for the outlying settlements.
- 2.14.8 The Key Areas of Regeneration and Growth Locations are:
- Purfleet
  - Lakeside/West Thurrock
  - Grays
  - Tilbury
  - London Gateway (employment only)

The proposed development in these areas are outlined below and summarised in Table 1.

## 2.15 CSSP1- Sustainable Housing and Locations

- 2.15.1 The purpose of policy CSSP1 (Sustainable Housing Locations and Allocations) issued in the Core Strategy (2010) will be to '*set out the scale and broad locations of new housing development to meet the East of England Plan allocation of 18,500 new homes for Thurrock over the period 2001-2021. National Policy guidance PPS3 stipulates that Local Development Documents should set out a strategy for the planned location of new housing, which contributes to the achievement of sustainable development*'.

### Housing Supply

- 2.15.2 Thurrock Council are required to consider a 15 year supply of housing to 2025. The Council's policy is to locate the great majority (at least 92%) of new housing development on previously developed (brownfield) land within the Thurrock Urban Area (KCDC) and Outlying Settlements in general conforming to the RSS East of England Plan and national planning guidance.
- 2.15.3 Thurrock is required to deliver a minimum of 18,500 dwellings between 2001-2021. For the period April 2009 to March 2021 a total of 13,548 dwellings are required to meet this policy objective.

## **Allocations and Phasing**

- 2.15.4 To allocate at least 85% of new housing development between 2009-2014 to previously developed land locations in and around the Thurrock Urban Area.
- 2.15.5 To identify and allocate no more than 20% of new housing development for the release of Green Belt in accordance with Policies CSTP1 and CSSP4 between 2009-2021.

## **Spatial Distribution of Proposed Housing Broad Locations 2009-2021**

- 2.15.6 The majority of housing and associated development will be located in and around the Thurrock Urban Area KCDC including: Purfleet, West Thurrock/Lakeside, Grays, Tilbury and Chadwell St Mary. To provide a total of 10,010 dwellings.
- 2.15.7 Ockendon and Aveley will include a provision for a limited number of dwellings on previously developed land underpinned by the improvement of community infrastructure and services. Approximately 2100 new dwellings are anticipated in this area.
- 2.15.8 East Tilbury and Corringham/ Stanford-le-hope will include provision for approximately 580 new dwellings on previously developed land. In addition there is a limited release of Greenfield proposed at two locations in Stanford-le-hope/Corringham for 330 dwellings.
- 2.15.9 North-east Grays has a limited release of previously developed land in the Greenbelt that will be made available for the relocation of a school and College currently located within the existing North-east Grays urban area. The move will accommodate new homes in the existing urban area and a Sports Hub.
- 2.15.10 Villages and small Greenbelt sites have a potential capacity of 120 dwellings on previously developed land and small green-field Greenbelt land.

## **Indicative 15 year Housing Supply From 2021 to 2025 Inclusive**

- 2.15.11 Thurrock Council considers the appropriate broad locations for the long-term housing supply beyond 2021 is previously developed land within the Thurrock Urban Area and outlying settlements. A potential capacity of 5610 has been identified for the main areas of Lakeside, Tilbury, Grays, West Thurrock and Stanford-le-hope which exceeds the target of 3800 dwellings. This takes into account potential redundancy in the Indicative locations and the rolling forward of the base date for adoption of the Core Strategy.

## **2.16 CSSP2- Sustainable Employment Growth**

### **Key Strategic Economic Hubs**

- 2.16.1 The Key Strategic Economic Hubs will deliver the East of England Plan's indicative target of 26,000 new jobs for Thurrock between 2001-2021. These key sites are located in the same key regeneration areas identified in section 2.14.9. Namely Purfleet, Grays, Lakeside/West Thurrock, Tilbury and London Gateway.
- 2.16.2 These are summarised for each of the broad locations in Table 2.



## 2.17 Sustainability Appraisal

- 2.17.1 The Sustainability Appraisal<sup>35</sup> identifies the sustainability impacts (both positive and negative) associated with the extensive development of Thurrock, and in particular the identified KCDC in relation to the proposed policies and allocations. The outcomes of this study in relation to the Sequential Test are complex and extensive and the two documents should be read in conjunction with each other. The Sustainability Appraisal is a point of reference for part a) of the Exception Test for the broad location areas, where this is necessary.
- 2.17.2 A Sustainability Appraisal of the six broad location areas requiring the Exception Test was completed to support part a) of the Exception Test for each of the broad locations. The approach followed the same methodology and Sustainability Appraisal objectives used for the appraisal of Thurrocks LDF. A summary matrix is provided in Appendix B to support part a) of the Exception Tests where required.
- 2.17.3 The Sustainability Appraisal found that in general development of these broad location areas is likely to result in a range of positive sustainability impacts. With the exception of flood risk, the broad location areas perform fairly well against most sustainability objectives. Development in these areas will be located on brownfield land and therefore it is likely to result in significant positive impacts in relation to delivering sustainable patterns of development and making best use of land in Thurrock. Development will also encourage regeneration of Thurrocks main centres and thus benefit existing and future communities. A range of community facilities and will be provided as part of the new development including educational facilities, a new hospital and health centres and community centres. New open spaces and improved access to the river and existing open space will also be provided.
- 2.17.4 Development in these areas is also likely to contribute to Thurrocks economic growth and diversification and provide employment opportunities for residents. Significant transport and other infrastructure improvements are planned as part of the development of these areas which will also provide significant benefits for example in terms of reducing the use of the car and contributing to improving air quality.

## 2.18 Strategic Housing and Land Availability Assessment

- 2.18.1 The Strategic Housing Land Availability Assessment (SHLAA) Study supersedes the previously completed Urban Capacity Study to meet the requirements of PPS3 and is being published to support the Pre-Submission consultation stage of the Core Strategy. The SHLAA identifies land to meet a 15 year housing supply required for Thurrock to 2025. The initial draft SHLAA included 398 sites that were assessed. 300 sites were considered suitable. The majority of acceptable sites were located on previously developed land, whilst the other sites were rejected due to lack of site suitability, conflict with other uses and being classified as Green Belt sites which are not in accordance with the overarching strategy for the area.
- 2.18.2 The SHLAA sites will be kept under review after the publication of the SHLAA at pre-submission stage and some additional sites have been identified in areas such as Lakeside and Tilbury that contribute to regeneration projects in those areas. The majority of these additional sites would be brought forward in the later stages of the plan period.

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<sup>35</sup> Scott Wilson Group (2007) Thurrock Council Sustainability Appraisal of the Local Development Framework (Preferred Options)

- 2.18.3 Currently 292 sites are identified to carry forward into the pre-submission LDF documents although other sites considered suitable in the SHLAA but not brought forward in policy terms may be included prior to adoption of the Core Strategy and sites DPDs.

## 2.19 Thurrock Employment Land Review

- 2.19.1 The Thurrock Employment Land Review<sup>36</sup> of 2007 surveyed 28 proposal sites as well as key industrial areas. The majority of the existing industrial areas and proposed development sites were included in the Preferred Option stage of the Core Strategy and Site Development Plan Documents. One or two sites however were identified as suitable for residential use. There is an emerging review of the proposed employment allocations and mixed use sites in order to inform the Submission Core Strategy. The review is considering 24 employment sites and 10 mixed use sites, plus 5 sites comprising retail and leisure at Lakeside.

## 2.20 TTGDC Masterplans

- 2.20.1 The Development Corporation have produced an overall strategy for the regeneration of Thurrock, named the Regeneration Framework. This Spatial Plan then outlines both the quantity and broad locations for the situation of the proposed development within the area. At a more local scale, the masterplans offer more specific guidance for development within those areas identified for regeneration. The masterplans differ in status of adoption. Development Briefs and Design Guides then provide details of the designs for specific areas.

## 2.21 Thurrock Local Plan

- 2.21.1 The 'saved' policies are the only policies that have been taken forward from the Thurrock Local Plan. As such many of the policies set out in this document have been revised. Thurrock Local Plan states that 'the availability of large areas of worked out quarries and derelict riverside industrial land for development, particularly in West Thurrock and Grays, has meant that Thurrock is able to provide land for large amounts of house building without taking land from the Green Belt or reverting to over-intensive development in existing urban areas'<sup>37</sup>.

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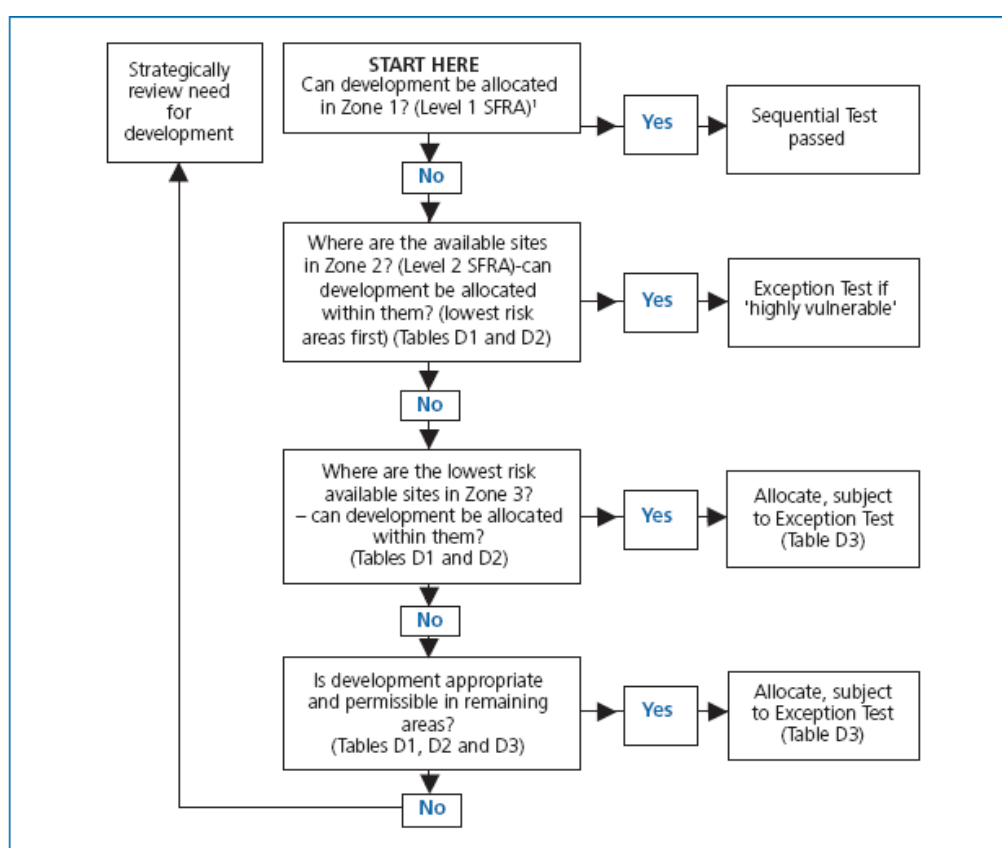
<sup>36</sup> URS Corporation Limited & Knight Frank (2007) *Thurrock Employment Land Review*

<sup>37</sup> Thurrock Borough Council (1997) *Thurrock Borough Local Plan* Page 67

## 3 Methodology

### 3.1 Sequential Test Methodology

3.1.1 The broad regeneration areas identified for the Thurrock Core Strategy are situated across areas where all Flood Zones (1, 2, and 3) are present. The following tests (questions S1-S5) consider the identified broad locations in PPS25 Flood Zone sequence as outlined by PPS25. The below figure, from PPS25 Practice Guide, explains the sequence for undertaking the Sequential Test which is generally followed in the following tables.



**Note**

<sup>1</sup> Other sources of flooding need to be considered in Flood Zone 1

**Figure 3.1** Application of the Sequential Test at the Local level for LDD preparation (PPS25 Practice Guide)

### Sequential Test Interpretation of Hazard Zones

3.1.2 The Environment Agency Flood Zones do not show how flood risk can vary across a flood zone. This variation of flood risk across a flood zone can be illustrated by producing flood hazard information which further refines the flood zone into areas of low, medium, high and extreme hazard (For a detailed methodology of hazard derivation, similar to that advised in

DEFRA FD2320<sup>38</sup>, the reader is directed to the Thurrock SFRA). In essence, the flood hazard is derived by looking at the combined effects of the velocity of floodwaters at a particular location, the maximum depth of floodwaters that will be achieved and a debris factor. These two factors are affected by the proximity to the flooding source and also local topography. Therefore, the maximum flood hazard at a particular location within the flood cell may be experienced at any stage of the flood. In a flood event caused by a breach in the defences, those areas closest to the breach location will experience the highest hazards because it is here that the velocity of floodwaters will be highest. Further away from the breach location, the maximum hazard will depend on local factors affecting both the depth of the floodwaters and velocities at each instant. On the periphery of the flood extent, maximum flood hazard occurs nearer the peak water depth towards the end of the simulation.

- 3.1.3 Paragraph E2 of PPS25 states that *'users of a development must not be placed in danger from flood hazard and should remain safe throughout the lifetime of the plan or proposed development'*. The Thurrock SFRA has therefore produced flood hazard outputs which allow for a sequential approach to site allocation to be implemented within flood zones and broad development areas by guiding the more sensitive development types<sup>39</sup> to the lowest available flood hazard zones. Flood hazard information also provides information to support part c) of the Exception Test<sup>40</sup> and can be used to determine safe access/egress routes.

## 3.2 Exception Test Methodology

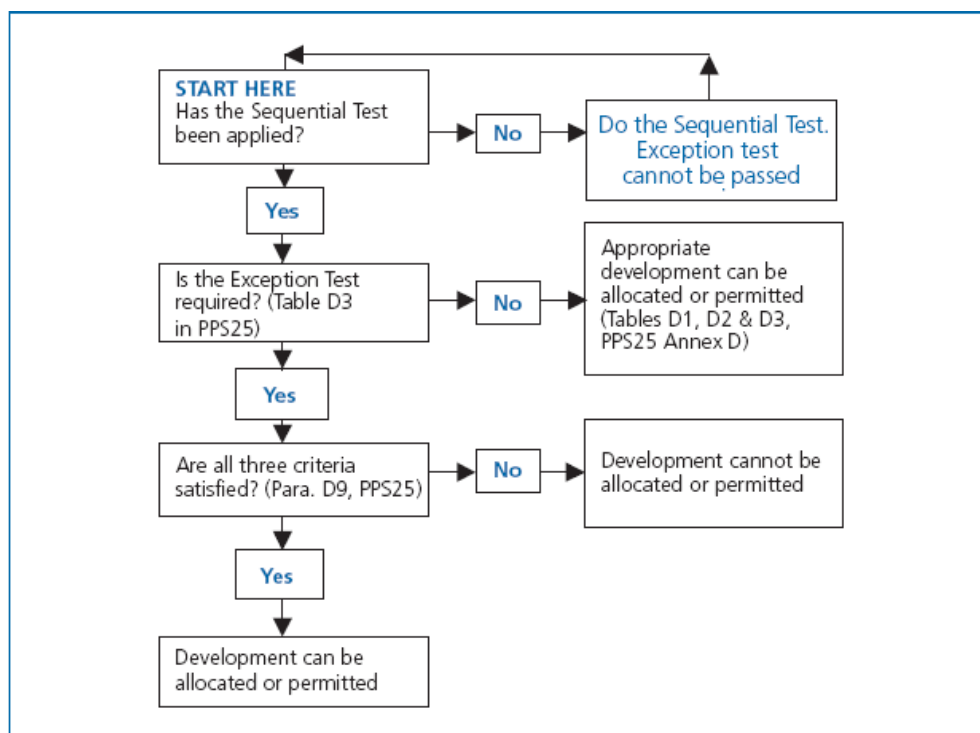
- 3.2.1 Questions E1 to E4 below are taken from the Exception Test guidance in PPS25. Question S5 has been included to assist in directing the council development control officer to an appropriate conclusion for parts a) and b) of the Exception Test for the broad regeneration areas. The below figure from PPS25 Practice Guide<sup>41</sup> explains the sequence for undertaking the Exception Test. This sequence of steps is generally followed in the following tables.

<sup>38</sup> DEFRA/Environment Agency (2005) Flood Risk Assessment Guidance for New Development: Phase 2, R&D Technical Report FD2320/TR2

<sup>39</sup> Sensitive development types are classified as more and highly vulnerable in Table D.2: Flood Risk Vulnerability Classification in PPS25.

<sup>40</sup> Communities and Local Government (2006). *Planning Policy Statement 25: Development and Flood Risk*

<sup>41</sup> Communities and Local Government (2008) Planning Policy Statement 25: Development and Flood Risk Practice Guide



**Figure 3.2:** Application of the Exception Test

### Exception Test Interpretation of Hazard Zones

- 3.2.2 In addition to guiding development according to the sequential approach, hazard information also provides information to support part c) of the Exception Test and determine safe access/egress routes.
- 3.2.3 The hazard associated with the 1 in 1000 year probability event should also be considered for part c) of the Exception Test, as this will allow Emergency Services and Emergency Planners to consider the suitability of the route, in line with PPS25. If potential evacuation routes are likely to become inundated so that safe access/egress would not be possible, then the proposed development should ideally be relocated to a lower hazard area.
- 3.2.4 The requirements for access/egress, as defined by FD2320/TR2<sup>42</sup>, are presented below in decreasing order of preference:
- Safe, dry route for people and vehicles;
  - Safe, dry route for people;
  - If a dry route for people is not possible, a route for people where the flood hazard (in terms of depth and velocity of flooding) is low for the 1 in 100 year event for fluvial flooding and 1 in 200 year event for tidal flooding should be achieved, and should not cause a risk to people;
  - If a dry route for vehicles is not possible, a route for people where the flood hazard (in terms of depth and velocity of flooding) is low to permit access for emergency vehicles.

<sup>42</sup> DEFRA/Environment Agency (2005) Flood Risk Assessment Guidance for New Development: Phase 2, R&D Technical Report FD2320/TR2

- 3.2.5 The Thurrock SFRA will be used to inform part c) of the Exception Test in relation to specific areas for development, within the broad regeneration areas. A site specific Flood Risk Assessment will be required for all developments that are within Flood Zones 2 or 3, larger than 1ha within Flood Zone 1 or identified to be at risk from other forms of flooding. This document should assess flood risk and in particular flood hazard and the safety of the site, and access/egress routes.
- 3.2.6 The Exceptions Test should be applied within the identified broad regeneration areas and more importantly, specific sites.
- 3.2.7 Table 1 presents the housing capacity that contributes to the housing targets within each broad regeneration area (2009-2025). The table also shows the percentage of land allocated for residential development within each flood zone. The potential number of houses within each flood zone has then been calculated to give the reader a rough appreciation of the possible residential allocations within each broad regeneration area.

**Table 1** Housing targets in relation to land availability within each flood zone

Settlement	Housing Capacity	% in FZ1	% in FZ2	% in FZ3	No. houses FZ1	No. houses FZ2	No. houses FZ3
Aveley	570	100	0	0	570	0	0
NE Grays	460	100	0	0	460	0	0
Chadwell	400	100	0	0	400	0	0
Village	10	100	0	0	10	0	0
S Ockendon	1600	100	0	0	1600	0	0
Stanford & Corringham	940	90	0	10	846	0	94
Grays	4540	60	2	38	2724	91	1725
W Thurrock	6240	41	1	58	2558	62	3620
Purfleet	3180	36	0	64	1144	0	2036
E Tilbury	240	33	5	62	80	10	150
Tilbury	1010	2	0	98	20	0	990
Greenbelt	100	100	0	0	100	0	0
London Gateway	N/A						
<b>TOTAL</b>	<b>19,290</b>				<b>10,512</b>	<b>163</b>	<b>8615</b>

Table 1 shows there is not sufficient capacity on land available within Flood Zone 1 to accommodate all proposed residential development within Thurrock.

## 4 Part 1 - Broad Location Area Information

- 4.1.1 Flood Zones have been identified in relation to the broad regeneration areas outlined within Thurrock seen in Figures A1-A6 in Appendix A. Flood Zones have been derived from the Environment Agency Flood Zone maps. Information regarding flood defences has been obtained from Thurrock Council.
- 4.1.2 Flood risk in the Borough originates from several sources, including:
- Tidal flooding - the River Thames is the main source of tidal flooding. Flood defences protect the area of Thurrock for the present day 1 in 200 and 1 in 1000 year extreme events. Further climate change considerations will be identified in the revised Thurrock SFRA. Tidal flood risk is therefore considered at present to be residual, as a result of a potential failure in the flood defences. This flood source is dominated by storm surges that result in raised sea levels through pressure differentials and the action of the wind to create waves.
  - Fluvial flood sources include the Mar Dyke in western extents of the District. It discharges into the River Thames through sluice gates. A second source of fluvial flooding is Mucking Creek which runs through Stanford-le-Hope in the east of the Borough.
  - Other flood sources investigated in the Strategic Flood Risk Assessment for Thurrock include: surface water, groundwater, and sewer flooding.
- 4.1.3 Table 2 presents a compilation of policy, use and flood risk for each of the identified broad locations for development within Thurrock. The tables should be used in association with Figures A1-A6 to build up a picture of each area; to identify the location of each area (Figure A1 & A5), relevant policy, present and proposed uses of each area, environmental constraints to development in the form of flood risk (Figures A2 & A3) and other restrictions such as the presence of important environmental sites (A4).

**Table 2** Broad Location Areas

Area Information		Policy		Uses		Flooding Information		
Ref. No.	Broad Location	Reference	Details of Policy	Existing	Proposed	Proposed Use Vulnerability (Table D.2 PPS25)	Flood Zone(s)	Existing Flood Defence and Protection
1.	Purfleet Urban Area	Core Strategy	<p>Core Strategy (2010) Key Area Statements for Purfleet.</p> <p><i>I.Regeneration founded on development of a mix of dwellings, employment and community facilities focused around a new centre adjoining the railway station and riverside.</i></p> <p><i>II.New Neighbourhood Area at Botany Way adjoining the station, with a Community Hub Centre, a Health Centre, school and shopping facilities.</i></p> <p><i>III.Approximately 3180 new homes provided through a variety of new dwelling types around the rail station and along the riverside. A Neighbourhood Renewal project for the Garrison Estate and surrounding area and wider Purfleet PRIDE strategy.</i></p> <p><i>IV.High quality mixed-use and small business employment at Botany Way and west of the station.</i></p> <p><i>V.Cultural industries, including Royal Opera House project, located on a site at High House Farm.</i></p> <p><i>VI.Additional employment sites at northern and eastern end of Purfleet. Total 2800 jobs.</i></p> <p><i>VII.Improved public access to and along the riverfront and new urban open spaces as part of Green grid network.</i></p> <p><i>VIII.New road link through Botany Way site to improve access and traffic flow.</i></p>	Industry, Residential, Transport	Mixed use sustainability centre	Less vulnerable	1, 2, 3	Some defended
		Masterplan	The Masterplan (Development Corporation) outlines the provision of new homes and employment, with a new 'heart' focused on the Railway Station, with the creation of cultural industries. Purfleet PRIDE strategy and the Purfleet regeneration framework.		Community focused development (Royal Opera House)	Less Vulnerable		
2.	Aveley Urban Area	Core Strategy	Aveley will be a focus for regeneration including the provision of 567 additional homes and jobs underpinned by enhancement of community infrastructure and services. There is some Green Belt release proposed at the Aveley By-pass that has been subject to planning permission.	Residential, Green Belt	Residential	More vulnerable	1	N/A
		Masterplan	The Aveley and South Ockendon Masterplan (Development Corporation) outlines the proposal for new homes on the Aveley Bypass.		Employment	Less vulnerable		
3.	South Ockendon Urban Area	Core Strategy	South Ockendon will be a focus for regeneration including the provision of a number of approximately 1600 additional homes and jobs underpinned by enhancement of community infrastructure and services. There is no planned Green Belt release (Core Strategy pp 50).	Land fill, Minerals Industry, Residential, Green Belt	Enhancement of community infrastructure & services	Less vulnerable	1, (2, 3 – minimal)	Un-defended
		Masterplan	South Ockendon Masterplan (Development Corporation) outlines the proposal for a new community on the Arisdale Industrial Estate, South Ockendon, with enhancement to the centre and employment provision along A13.		Residential	More vulnerable		
4.	West Thurrock Urban Area		Lakeside is identified in the EoE Plan (2010) as a Regional Centre for development of retail, residential, office and leisure facilities.	Industry, Retail, Residential	Lakeside Basin: Retail, Employment Residential	Less vulnerable Less vulnerable More Vulnerable	1, 2, 3	Some defended



Area Information		Policy		Uses		Flooding Information		
Ref. No.	Broad Location	Reference	Details of Policy	Existing	Proposed	Proposed Use Vulnerability (Table D.2 PPS25)	Flood Zone(s)	Existing Flood Defence and Protection
	West Thurrock Urban Area	Core Strategy	Core Strategy (2010): Key Area Statements for Lakeside/West Thurrock. <i>I.Provision of a mix of 6,200 dwellings located to south and east of Lakeside including 3000 dwellings as part of the Lakeside Regional Centre;;</i> <i>II.New Neighbourhood Areas at West Thurrock and South Stifford including community and health facilities, primary schools and shopping facilities.</i> <i>III.Diversification of the Lakeside economy with leisure and office development and limited expansion of retail floor-space to serve local needs and 7 – 9,000 jobs.</i> <i>IV.Redesigned and improved transport network including East facing slip roads to Lakeside from the A13, a relocated bus station and environmental improvements within Lakeside, including road and parking alterations.</i> <i>V.A new railway station at West Thurrock and the introduction of the South Essex Rapid Transit to Lakeside.</i> <i>VI.Improved Pedestrian access throughout Lakeside basin including North-South access from the river through Lakeside and West Thurrock to the Green Belt and beyond to Ockendon.</i> <i>VII.Improved public access to and along the riverfront at Wouldham Works and West Thurrock and new urban open spaces as part of Green grid network.</i> <i>VIII.50,000sqm net of comparison floor space by 2019</i>					
		Masterplan <sup>43</sup>	The Lakeside Masterplan (Development Corporation) aims to promote the Lakeside Basin as a shopping destination with major leisure and activity attractions, and new opportunities created for housing, industry and logistics. At the heart of the scheme will be the redevelopment of the community, environment and sustainability issues, with the upgrade of pedestrian and cycle routes and the introduction of ULTre PRT system which will provide on demand travel around the site in driverless pods able to carry four people.  The South Stifford Masterplan (Development Corporation) proposes a mix of homes, a local centre for South Stifford with new community uses and shops, the enhancement of existing and the provision of new open space with walking and cycle links. The Riverside will be opened for residents.  The accessibility to the nature reserve will be improved and the economic and employment zones will be developed to produce an increase in jobs. The introduction of wind turbines and ground source heat pumps etc for energy generation will be developed.					
5.	Grays Urban Area	Core Strategy	Core Strategy (2010) Key Area Statements for Grays. <i>I.Modernise and regenerate Grays as the key civic, cultural and education centre in the Borough.</i> <i>II.Provision of approximately 4,500 dwellings of different types and 1600 jobs including commercial offices in and around Grays.</i> <i>III.A new commercial and residential quarter to the south of the railway.</i> <i>IV.Focus of education with location of HE/FE campus in the town centre and new schools around town centre.</i> <i>V.New key health and community facilities located in the northern part of the town centre area.</i> <i>VI.Improvement of cultural facilities including the Thameside Theatre and refurbishment of the State Cinema.</i> <i>VII.Retain and improve the shopping facilities including redevelopment and refurbishment of certain sites.</i> <i>VIII.A new Transport Zone developed around the station including improved railway crossing.</i> <i>IX.Improved pedestrian environment including better links between north of the railway line and the south and the riverfront.</i> <i>X.New housing-led development in Titan Pit area with community facilities.</i> <i>XI.Development of a Sports Hub area in North East Grays (including Blackshots and land to the east and north.)</i> 1600 additional jobs by enhancing the role of this area as a Civic, cultural, health and education centre Flagship Development – Thurrock Learning Campus	Industrial, Residential	Regeneration of existing centre, Cultural Learning campus  New Generation Community Hospital  Residential  Retail  Marina  Recreation and sports facilities	Less vulnerable  More vulnerable  More vulnerable/Highly vulnerable –  More vulnerable  Less vulnerable  Water compatible  Less vulnerable	1 (majority), 2, 3	Defended

<sup>43</sup> The Shape of things to come – Transforming and revitalising Lakeside Basin/West Thurrock (2008) Thurrock Thames Gateway Development Corporation

Area Information		Policy		Uses		Flooding Information		
Ref. No.	Broad Location	Reference	Details of Policy	Existing	Proposed	Proposed Use Vulnerability (Table D.2 PPS25)	Flood Zone(s)	Existing Flood Defence and Protection
		Masterplan	<p>The Masterplan for Grays (Development Corporation) states that Grays has an ideal situation within Thurrock as the area is bordered by the River Thames and benefits from good transport networks. The position of Grays as the administrative centre for Thurrock could be strengthened.</p> <p>There are a number of areas within Grays where Masterplans have been created. At Titan Works it is proposed to develop a mixed use community, linked to the town centre by pedestrian routes and a new road and a New Generation Community Hospital with diagnostic treatment centre and day surgery. It is proposed to develop a mixed use scheme at Western Link and the Gas Works with housing, pedestrian and cycle links. Station Square will potentially be redeveloped to include an improved station, new hotel, offices and shops, boulevard underpass, rail/bus/taxi interchange and enhanced pedestrian/cycle routes and public areas. The town centre will be refurbished with improved public areas, pedestrian links, housing, refurbishment of the cinema and a private health and fitness centre. There will be improved links to playing fields at Elm Road Open Space, housing provision, the development of Thurrock Learning campus increasing the learning opportunities for local people within the East Grays area. Finally, there is the potential for a 300 berth Marina (this Marina development is not supported by Thurrock Council in the LDF), with associated waterfront business park, new cultural centre with theatre, restaurants, riverside attractions, relocation and improvement of Grays Beach, new pedestrian crossing, Thames footpath, new business park with office space, cafes, bars and shops in Riverside.</p>					
5a.	North East Grays	Core Strategy	<p>This school is being relocated onto a greenfield site within the Greenbelt for relocation of the school.</p> <p>The flagship development in this area will be the Sports Hub in North East Grays</p>	Green Belt, Residential	Residential Recreation and sports facilities	More vulnerable Less vulnerable	1	N/A
6.	Tilbury Urban Area	Core Strategy	<p>Core Strategy (2010) Key Area Statements for Tilbury.</p> <p><i>I.Key regeneration and employment area in the borough providing 1600-3800 additional jobs in logistics, port and riverside industries.</i></p> <p><i>II.Approximately 1000 new dwellings together with improved community facilities in Tilbury town centre Eco Quarter.</i></p> <p><i>III.New school (Gateway College) and Health Centre facilities in the town centre area.</i></p> <p><i>IV.Promotion of flagship mixed-use riverside development alongside cruise terminal</i></p> <p><i>V.Further development of cultural facilities and industry based upon the riverside development and cultural heritage of the riverside.</i></p> <p><i>VI.Continue to improve public access and informal recreation along the riverside.</i></p> <p>The development focus in this area is for regeneration and growth in the Town Centre. There may be some Green Belt land release for employment north of Tilbury . The port and related development has been identified to provide 500-1500 additional jobs, including the flagship marina/riverside development.</p>	Industry, Residential, Green Belt	Residential Eco-quarter Industry	More vulnerable Water compatible More vulnerable Less vulnerable	3	Defended
		Masterplan <sup>44</sup>	<p>The Tilbury South East Thurrock Masterplan (Development Corporation) promotes sustainable neighbourhoods to encourage environmental sustainability for new developments. The plan also promotes the improvement of facilities in Tilbury. Important historical/environmental assets such as Coalhouse Fort, West Tilbury Conservation Area, and the former Bata Shoe factory should be preserved. Conservation projects such as the tidal retreat project and the creation of a Country Park at Mucking Marshes should be encouraged. Pedestrian and cycle routes will be improved to perfect links between Tilbury and Grays.</p> <p>Specific areas identified in the Masterplan (Development Corporation) include: Tilbury Centre where proposals include the redevelopment of the rail station as a mixed use scheme with shops, public realm improvements, Civic Centre reinstated as community heart, leisure centre for community and leisure uses, homes on brownfield land, and new pedestrian and cycle links. The Tilbury riverfront will be developed to include homes, shops, leisure facilities and a public park. The Thurrock Parkway will be developed to include land for jobs, improvement to open space and a landscape buffer. Tilbury Marshes will be retained and enhanced as open space. The redevelopment of Broadway Housing Estate is proposed to include neighbourhood renewal and the enhancement of the public realm. St Chad School site will be redeveloped as homes with a frontage onto Marshes. Bata village will be developed on the former Bata shoe factory site and will include homes and live-work units and the reintroduction of leisure facilities. Chadwell St Mary Centre will comprise of a library, health centre, and adult and outreach learning facilities and nursery facilities. Thurrock Council submitted an expression of interesting response to Eco-Town prospectus to attract funding to transform Tilbury and develop an Eco-Quarter. The development of Fiddlers Reach as a residential and mixed use scheme along the Riverfront is also proposed.</p>					
7.	Chadwell St Mary Urban Area		Any development (residential and associated supporting community facilities) in this area will be limited to brownfield sites within the developed area	Residential, Green Belt	Residential Community facilities	More vulnerable Less vulnerable	1	N/A

<sup>44</sup> South East Thurrock Master Plan – Preferred Option Questionnaire (2008) Thurrock Thames Gateway Development Corporation, South East Thurrock Master Plan – Issues and Options Public Consultation (2008) Thurrock Thames Gateway Development Corporation

Area Information		Policy		Uses		Flooding Information		
Ref. No.	Broad Location	Reference	Details of Policy	Existing	Proposed	Proposed Use Vulnerability (Table D.2 PPS25)	Flood Zone(s)	Existing Flood Defence and Protection
8.	East Tilbury	Core Strategy	It is proposed to regenerate the area with the provision of a limited number of houses and jobs with associated supporting community infrastructure and services.	Residential, Green Belt, Industry	Residential Employment Community facilities	More vulnerable Less vulnerable Less vulnerable	1, 2, 3	Defended
9.	Villages		There will be some minor residential development within the villages.	Residential, Green Belt	Residential	More vulnerable	1	N/A
10.	Stanford-le-Hope & Corringham Urban Area	Core Strategy	Core Strategy (2010): Stanford Le Hope/ Corringham Area <i>I.Development of ancillary, associated and spin-off employment activities on the wider employment site.</i> <i>II.Provision of potential scope for large-scale high quality campus style relocation or inward-investment business developments.</i> <i>III.Provision of new homes on Previously Developed Land (Brownfield) at Corringham and Stanford –le– Hope.</i> <i>IV.Possible provision of a limited release of up to 300 new homes on Green Belt land at North-East Corringham/Stanford and a relocated secondary school, hospice and community facilities.</i> <i>V.Provision of enhanced community facilities and open space.</i> <i>VI.Improvements to Stanford- le -Hope Town Centre.</i> It is proposed to regenerate the area with the provision of a limited number of houses and jobs with associated supporting community infrastructure and services. A School may be relocated onto Green Belt land. Local sale of Green Belt land release for housing to the north east of Corringham/Stanford linked to a new secondary school	Residential	Residential Employment Community facilities Education	More vulnerable Less vulnerable Less vulnerable More vulnerable	1 (majority), 2, 3	Some defended
10b	London Gateway	Core Strategy	Core Strategy (2010) Key Area Statements for London Gateway: <i>A major logistics, import-export based employment development at London Gateway with 12-13,000 jobs to secure the long-term future of the industry in Thurrock.</i> London gateway is the main employment hub within Thurrock with 12-13,000 additional jobs created at the Port and associated employment land, where the Logistics Academy is the Flagship Development.	Greenfield	Employment	Less vulnerable	3	Some defended
		Masterplan <sup>45</sup>	The London Gateway/Stanford-le-Hope and Corringham Masterplan (Development Corporation) outlines the need to revitalise Stanford-le-Hope town centre with the introduction of new shops, improved open space, new homes, employment creation at the London Gateway Port, a new sixth form college linked to partial re-development of land at Gable Hall School, improved cycle and walking routes as well as bus/rail station interchange, and an expanded health care centre.					



indicate broad regeneration areas situated within the Key Centre for Development and Change in the EoE Plan (2008).

indicate key development areas within Thurrock identified as such in the Thurrock Borough Council Local Development Framework

<sup>45</sup> East Thurrock Masterplan – Preferred Option (2008) Thurrock Thames Gateway Development Corporation

## 5 Part 2- Sequential Test

### BROAD LOCATION AREA

### AVELEY URBAN AREA (FIGURE A1)

SEQUENTIAL TEST	
Step 1	Justification of broad location area for development
Reason	Source
Development within urban area on previously developed land	PPS 1, PPS 3, East of England Plan
Development of affordable, high quality housing	PPS 3
Development with town to improve centre	PPS 6, PPG 15, PPS4
Development within Thames Gateway (inc. Thurrock)	East of England Plan
	Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zone 1	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
No Hazard	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
N/A	N/A

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan
Employment	Less Vulnerable	Sustainable economic development	Thames Gateway Delivery Plan PPS4
Enhancement of community infrastructure and services	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Green Belt release - there will be some planned release of green belt land for development south at the Aveley by-pass as a result of planning permission.	PPG 2 East of England Plan (Figure A5)

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Environmentally designated sites	PPS 9, PPS 17, (Figure A4)
Preservation of the historic environment	PPG 15, PPG 16

#### Summary

Development is necessary within the Aveley urban area in order to preserve the historic urban landscape and protect the surrounding greenbelt and environmentally designated sites from development and degeneration. Development would be situated within the urban zone on predominantly brownfield land.

The Sequential Test is passed for this broad location area which is located within Flood Zone 1 therefore all development types are considered appropriate in this location in relation to PPS25.

The Exception Test is not required for this broad location area.

**BROAD LOCATION AREA**

**NORTH EAST GRAYS (FIGURE A1)**

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Development of affordable, high quality housing	PPS 1, PPS 3, East of England Plan
Development within Thames Gateway	East of England Plan Thames Gateway Delivery Plan
Development outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zone 1	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
No Hazard	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
N/A	N/A

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan Thames Gateway Delivery Plan
Education (school relocation)	More Vulnerable	Enhance education and skills base and improve access to higher education. School may be re-located onto green belt land to support green belt release	East of England Plan PPS 4
Recreation and sports facilities	Less Vulnerable	Open space for sport and leisure contributes to a good quality of life	PPG 17

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Green Belt release	PPG 2 East of England Plan (Figure A5)
Protecting the natural environment, including	PPS 1, PPS 9, PPG 15, PPG 16

biodiversity and geological conservation and the historic environment	
Conserving open space for sport and recreation	PPG 17
Environmentally designated sites	PPS 9 (Figure A4)

### Summary

Development may be necessary within North East Grays in order to provide for the relocation of the school. The school will be relocated to a Greenfield location within the Green Belt in this area. The existing school site together with the site of a college that is being relocated will potentially become available for residential development. The relocated school could be combined with the proposed Sports Hub development in this broad location.

The Sequential Test is passed for this broad location area which is located within Flood Zone 1 therefore all development types are considered appropriate in this location in relation to PPS25.

The Exception Test is not required for this broad location area.



**BROAD LOCATION AREA**

**CHADWELL ST MARY URBAN AREA (FIGURE A1)**

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Development within urban area on previously developed land	PPS 1, PPS 3, East of England Plan
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPG 15, PPS 4
Development within Thames Gateway	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zone 1	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
No Hazard	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
N/A	N/A

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan Thames Gateway Delivery Plan
Community Facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses including open space for recreation, environment and sport	PPS 6 PPG 17 PPS 9

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Green Belt release	PPG 2 (Figure A5)
Protecting and enhancing the natural environment, including: biodiversity and	PPS 1, PPS9, PPG 15, PPG 16



geological conservation and the historic environment	
Conserving open space for sport and recreation	PPG 17
Environmentally designated sites	PPS 9 (Figure A4)
Preservation of the historic environment	PPG 15

### Summary

Development is necessary within Chadwell St Mary urban area in order to preserve the historic urban landscape and protect the surrounding greenbelt and environmentally designated sites from development and degeneration. Development would be situated within the urban zone on predominantly brownfield land.

The Sequential Test is passed for this broad location area which is located within Flood Zone 1 therefore all development types are considered appropriate in this location in relation to PPS25.

The Exception Test is not required for this broad location area.

## BROAD LOCATION AREA

## VILLAGES (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPG 15, PPS 4
Development within Thames Gateway (inc. Thurrock)	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zone 1	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
No Hazard	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
N/A	N/A

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan Thames Gateway Delivery Plan

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Green Belt release - there will be no planned release of green belt land for development north of the A13	PPS 2, East of England Plan (Figure A5)
Preservation of the historic environment	PPG 15
Protecting and enhancing the natural environment	PPS 1
Protecting biodiversity and geological conservation	PPS 9
Conserving open space for sport and recreation	PPG 17

Environmentally designated sites	PPS 9 (Figure A4)
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### Summary

Development is necessary within the Villages in order to preserve the historic urban landscape and protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration. Development would be situated within the urban zone on predominantly brownfield land.

The Sequential Test is passed for this broad location area of 'Villages' which are located within Flood Zone 1 therefore all development types are considered appropriate in this location in relation to PPS25.

The Exception Test is not required for this broad location area.

**BROAD LOCATION AREA**

**SOUTH OCKENDON URBAN AREA (FIGURE A1)**

<b>SEQUENTIAL TEST</b>	
<b>Step 1 Justification of broad location area for development</b>	
<b>Reason</b>	<b>Source</b>
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan, PPS 4
Provision of employment	Thurrock Employment Land Review
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPS4
Development within Thames Gateway	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

<b>Step 2 Flood Risk Classification</b>	
<b>Flood Zones (Figures A2 &amp; A3)</b>	<b>Source</b>
Flood Zone 1 and 2	Thurrock SFRA (Scott Wilson, 2009)
Majority Flood Zone 1	Thurrock SFRA (Scott Wilson, 2009)
<b>Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))</b>	<b>Source</b>
Very small amount of Significant Hazard in Flood Zone 2.	Thurrock SFRA (Scott Wilson, 2009)
<b>Defence Status</b>	<b>Source</b>
Undefended	Thurrock SFRA (Scott Wilson, 2009)

<b>Step 3 Development requirements within broad location area</b>			
<b>Development</b>	<b>Vulnerability</b>	<b>Justification for development in broad regeneration area</b>	<b>Source</b>
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan Thames Gateway Delivery Plan
Community facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Green Belt release - There will be no planned release of green belt land for development north of the A13	PPG 2, East of England Plan (Figure A5)
Brownfield development	PPS 3, East of England Plan
Development of sustainable communities and development	PPS 1, PPS 4 Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9 (Figure A4)

Summary
<p>Development is necessary within South Ockendon Urban Area in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.</p> <p>A small amount of this broad location area is Flood Zone 2, however all proposed development should be steered to Flood Zone 1. The Sequential Test is passed for the broad location area for development located within Flood Zone 1 therefore all development types are considered appropriate in this location in relation to PPS25.</p> <p>If any sites located outside Flood Zone 1 come forward in the future, the Exception Test may be required for certain development types within certain flood zones in accordance with PPS25. However the overall broad location area falls within Flood Zone 1 and therefore does not require the Exception Test.</p>

**BROAD LOCATION AREA**

**STANFORD LE HOPE AND CORRINGHAM  
(FIGURE A1)**

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan
Provision of employment	Thurrock Employment Land Review, PPS4
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPG 15, PPS4
Development within Thames Gateway	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2, 3a and 3b	Thurrock SFRA (Scott Wilson, 2009)
Flood Zones 2 and 3 associated with Stanford Brook. Majority of area is Flood Zone 1. Some areas of Flood Zone 3b located along river banks of the Stanford Brook.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Very small areas of Low, Moderate, Significant and Extreme Hazard associated with Flood Zones 2 and 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Partially defended	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1 PPS 3 East of England Plan Thames Gateway Delivery Plan

Employment	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan, PPS 4
Education	More Vulnerable	Enhance education and skills base and improve access to higher education. School may be re-located onto green belt land to support green belt release	East of England Plan
Community facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
Brownfield development	PPS 3, East of England Plan
Development of sustainable communities and development	PPS 1, Sustainability Appraisal, PPS 4
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS 4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces, e.g. improving public access to the River Thames and throughout Thurrock through the Green grid network	PPS 1, PPS 6, Sustainability Appraisal, PPS4
Environmentally designated sites	PPS 9 (Figure A4)

Summary
<p>Development is necessary within Stanford le Hope and Corringham in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.</p> <p>The SHLAA and SFRA confirm that there is an opportunity to locate some development including vulnerable uses to areas of low flood risk demonstrating a sequential approach within the broad location area.</p> <p>Some minor greenbelt release is proposed on the outskirts of the existing urban settlement area.</p>



These areas include Flood Zone 1, 2, 3a and 3b along the Stanford Brook corridor. A sequential approach would be required for the development of these areas to steer development out of Flood Zone 3b and into the areas at lower risk of flooding. Development proposed in Flood Zone 3a may be subject to the Exception Test and will be examined in more detail in a the Site-Specific allocations Sequential Test.

The Sequential Test is passed for the majority of the broad location area which is located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25.

In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

If any sites located outside Flood Zone 1 come forward in the future, the Exception Test may be required for certain development types within certain flood zones in accordance with PPS25. However the majority of the broad location area falls within Flood Zone 1 and therefore does not require the Exception Test.

#### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

## BROAD LOCATION AREA

## GRAYS URBAN AREA (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan
Provision of employment	Thurrock Employment Land Review, PPS4
Regeneration of Thames Riverside	East of England Plan, PPS 9, PPG 17
Development within urban area on previously developed land	PPS 1, East of England Plan
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPG 15, PPS4
Development within Thames Gateway Key Centre for Development and Change	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2 and 3	Thurrock SFRA (Scott Wilson, 2009)
Majority of Flood Zone 1, some Flood Zones 2 and 3 in urban area towards River Thames-defended floodplain.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Significant and Extreme Hazard across the majority of Flood Zones 2 and 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
New Generation Community Hospital	More/Highly Vulnerable	Ensuring development supports existing communities and promotes an improvement in quality of life	PPS 1, East of England Plan
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1, PPS 3, East of England Plan, Thames Gateway Delivery Plan
Learning campus	More Vulnerable	Widening the diversity of land uses	PPS 1, PPS 6

and Cultural facilities	Less Vulnerable	within town centres and developed areas and providing a mixed community	
Recreation and sports facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6
Regeneration of existing centre	Less Vulnerable	Sustainable development of town centres	PPS 6
Retail	Less Vulnerable	Enhancing consumer choice to meet needs of entire community and encouraging competitive and innovative retail	PPS 6
Community Hospital	More/Highly Vulnerable	Ensuring development supports existing communities and promotes an improvement in quality of life	PPS 1, East of England Plan

#### Step 4 Constraints and/or factors overriding flood risk

Constraint/Factor	Source
No Green Belt release	PPG 2, East of England Plan, (Figure A5)
Brownfield development	PPS 3, East of England Plan
Development of sustainable communities and development	PPS 1 Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces e.g. improving public access to the River Thames and throughout Thurrock through the Green grid network	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9 (Figure A4)

#### Summary

Development is necessary within Grays Urban Area in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.

Grays is identified as one of the key regeneration areas in the Council LDF and TTGDC masterplans. Grays town is identified as a key location for new cultural, education and public services. A new

learning campus is proposed in Grays South and a new Community Hospital in the north of the town centre. There will be further commercial redevelopment in the town centre and the addition of further residential development in the fringes of the town centre area.

The Sequential Test is passed for the majority of the broad location area which is located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The broad location area sited in Flood Zone 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

### Exception Test

The riverfront area of Grays broad location area is located in Flood Zones 2 and 3. Therefore in accordance with PPS25 this part of the broad location area may require demonstration of the Exception Test.

<p><b>Part a) Sustainability (Appendix B- sustainability matrix for broad location areas)</b></p>	<p>This broad location area generally performs well in sustainability terms with the exception of flood risk. Development in this area will be located on brownfield land and therefore it is likely to result in significant positive impacts in relation to delivering sustainable patterns of development and making best use of land in Thurrock. Development will also encourage regeneration of the area and thus benefit existing and future communities. Important community facilities will be provided as part of the development of the area including educational facilities and a new hospital. This provision will have a positive impact on access to services in an area that has pockets of significant deprivation. Importantly, the new hospital development should reduce health inequalities in the borough. If biodiversity enhancements are provided as part of the new development, this will also have a positive impact. Development in this area should be phased according to improvements to existing infrastructure, particularly in relation to water resources.</p>
<p><b>Part b) Brownfield Land</b></p>	<p>Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.</p>
<p><b>Part c) Flood Risk and 'Safe'</b></p>	<p>To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.</p>

## BROAD LOCATION AREA

## EAST TILBURY (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan
Provision of employment	Thurrock Employment Land Review, PPS 4
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development with town to improve centre	PPS 6, PPS4
Development within Thames Gateway (inc. Thurrock)	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2 and 3	Thurrock SFRA (Scott Wilson, 2009)
Largely Flood Zones 1 and 3, small amounts of Flood Zone 2.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Moderate and Significant Hazard across the majority of Flood Zones 2 and 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1, PPS 3, East of England Plan, Thames Gateway Delivery Plan
Employment	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan, PPS 4
Community facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
No Green Belt release	PPG 2, East of England Plan, (Figure A5)
Brownfield development	PPS3, East of England Plan
Development of sustainable communities and development	PPS 1, Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9, (Figure A4)

### Summary

Development is necessary within East Tilbury in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.

The Sequential Test is passed for those parts of the broad location area which are located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The broad location area sited in Flood Zone 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

### Exception Test

A large portion of the East Tilbury broad location area is located in Flood Zones 2 and 3. Therefore in

accordance with PPS25 this part of the broad location area may require demonstration of the Exception Test.

<p><b>Part a) Sustainability</b>  (Appendix B-sustainability matrix for broad location areas)</p>	<p>Development of this broad location area should result in positive sustainability impacts with the exception of flood risk. Development in this area will be on brownfield land and thus it is likely to provide significant positive benefits in terms of sustainable patterns of development and land use. Regeneration of the town centre and provision of new housing and employment will provide economic and social benefits for the borough as a whole and the current and future population of this area. In order to maximize the positive sustainability impacts, it will be important to ensure that development is accompanied by improvements to the existing infrastructure. Enhancements to the borough's biodiversity and open spaces should also be provided as part of new development.</p>
<p><b>Part b) Brownfield Land</b></p>	<p>Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.</p>
<p><b>Part c) Flood Risk and 'Safe'</b></p>	<p>To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.</p>



## BROAD LOCATION AREA

## PURFLEET (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan , PPS 4
Provision of employment	Thurrock Employment Land Review
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development with town to improve centre	PPS 6, PPS4
Development within Thames Gateway Key Centre for Development and Change	East of England Plan Thames Gateway Delivery Plan
Regeneration of Thames Riverside	East of England Plan, PPS 9, PPG 17
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2 and 3	Thurrock SFRA (Scott Wilson, 2009)
Largely Flood Zones 1 and 3, small amounts of Flood Zone 2.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Significant and Extreme Hazard across the majority of Flood Zones 2 and 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended- tidal Partially Defended- fluvial	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1, PPS 3, East of England Plan, Thames Gateway Delivery Plan
Community focused development (Royal Opera)	Less Vulnerable	Widening the diversity of land uses within town centres and developed areas and providing a mixed community	PPS 1, PPS 6

House)			
Employment	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan, PPS 4
Educational Facility	More Vulnerable	Ensuring development supports existing communities and promotes an improvement in quality of life. Enhance education and skills base and improve access to higher education.	PPS 1, East of England Plan
Mixed use sustainability centre	Less Vulnerable	Ensuring development supports existing communities in sustainable manner	PPS 1

#### Step 4 Constraints and/or factors overriding flood risk

Constraint/Factor	Source
No Green Belt release	PPG 2, East of England Plan, (Figure A5)
Brownfield development	PPS3, East of England Plan
Development of sustainable communities and development	PPS 1, Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS 4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9 (Figure A4)

#### Summary

Development is necessary within Purfleet in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.

Purfleet is identified as one of the key regeneration areas in the Council LDF and TTGDC masterplans. Purfleet is identified as a main residential-led regeneration area with focus on new community and public services around the railway station.

The Sequential Test is passed for those areas in the broad location area which are located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East

of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The broad location area sited in Flood Zone 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

#### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

#### Exception Test

A large portion of the Purfleet broad location area is located in Flood Zones 2 and 3. Therefore in accordance with PPS25 this part of the broad location area may require demonstration of the Exception Test.

<p><b>Part a) Sustainability</b>  (Appendix B-sustainability matrix for broad location areas)</p>	<p>Development of this key regeneration area will result in positive sustainability impacts for Thurrock with the exception of flood risk. Development in this area would occur on brownfield land and therefore will provide significant benefits in terms of sustainable patterns of development and land use. Development in this area will be accompanied by large scale regeneration and provision of important community facilities including a community hub, health centre and educational facilities. There will also be an emphasis on culture and the arts, including the Royal Opera House project. Therefore development should result in positive impacts in relation to providing social benefits, including improving access to services, ensuring a more equitable sharing of benefits and reducing health inequalities. Development is also likely to result in positive economic impacts and contribute to the diversification of Thurrock's economy. Improvements to the transport network will also be provided and are likely to result in a reduction in the use of cars which will contribute to various aspects of sustainability including air quality. Open space and biodiversity enhancements will provide additional sustainability benefits</p>
<p><b>Part b) Brownfield Land</b></p>	<p>Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.</p>
<p><b>Part c) Flood Risk and 'Safe'</b></p>	<p>To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.</p>

## BROAD LOCATION AREA

## LAKESIDE/ WEST THURROCK (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan, PPS 4
Provision of employment	Thurrock Employment Land Review
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPS 4
Regeneration of Thames Riverside	East of England Plan, PPS 9, PPG 17
Development within Thames Gateway (inc. Thurrock)	East of England Plan Thames Gateway Delivery Plan
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2 and 3	Thurrock SFRA (Scott Wilson, 2009)
Largely Flood Zone 3, with Flood Zone 1 in the north of the area and small amounts of Flood Zone 2.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Significant and Extreme Hazard across the majority of Flood Zones 2 and 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended- tidal Partially Defended- fluvial	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1, PPS 3, East of England Plan, Thames Gateway Delivery Plan
Community facilities	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6

Employment	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan, PPS 4
Retail	Less Vulnerable	Enhancing consumer choice to meet needs of entire community and encouraging competitive and innovative retail	PPS 6

#### Step 4 Constraints and/or factors overriding flood risk

Constraint/Factor	Source
No Green Belt release	PPG 2, East of England Plan, (Figure A5)
Brownfield development	PPS3, East of England Plan
Development of sustainable communities and developments	PPS1 Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS 4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9 (Figure A4)

#### Summary

Development is necessary within Lakeside/West Thurrock in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.

Lakeside/West Thurrock is identified as one of the key regeneration areas in the Council LDF and TTGDC masterplans. The proposals for this area include major new commercial, retail and leisure proposals focused in the Lakeside area. Lakeside is subject to a Single Issue Policy Review of the RSS and may be identified as a new regional centre/town centre. Commercial and industrial development is to be focused along the riverfront with new residential and community uses in South Stifford, West Thurrock and in longer term in Lakeside basin.

The Sequential Test is passed for those areas in the broad location area which are located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The broad location area sited in Flood Zones 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

#### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

#### Exception Test

A large portion of the Lakeside/West Thurrock broad location area is located in Flood Zones 2 and 3. Therefore in accordance with PPS25 this part of the broad location area may require demonstration of the Exception Test.

<p><b>Part a) Sustainability</b></p> <p><b>(Appendix B-sustainability matrix for broad location areas)</b></p>	<p>Development in this broad location area will result in generally positive sustainability impacts for Thurrock with the exception of flood risk. The development will result in significant positive economic and employment impacts that are likely to provide borough wide benefits. Residential and employment development will also be accompanied by a range of new community facilities including education and health facilities. Therefore the development is likely to result in sustainability benefits for the local community and future residents by ensuring better access to services and reduce inequalities, including health inequalities. The development will be accompanied of significant transport improvements which are likely to result in a reduction in car use which will have sustainability benefits including on air quality. The provision of new open space and contributions to the Green grid will provide additional sustainability benefits.</p>
<p><b>Part b) Brownfield Land</b></p>	<p>Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.</p>
<p><b>Part c) Flood Risk and 'Safe'</b></p>	<p>To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.</p>

## BROAD LOCATION AREA

## LONDON GATEWAY (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan (2008) SS5
Improve economy	East of England Plan (2008) ETG1, PPS 4
Provision of employment	Thurrock Employment Land Review (2007)
Development within Thames Gateway (inc. Thurrock)	East of England Plan Thames Gateway Delivery Plan

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2 and 3	Thurrock SFRA (Scott Wilson, 2009)
Largely Flood Zone 3, with small amounts of Flood Zones 1 and 2.	Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Significant Hazard across the majority of Flood Zone 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended- tidal Partially Defended- fluvial	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Employment	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan, PPS 4

Step 4 Constraints and/or factors overriding flood risk	
Constraint/Factor	Source
No Green Belt release	PPG 2, East of England Plan, (Figure A5)
Sustainable development	PPS 1 Sustainability Appraisal
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and	Sustainability Appraisal, Thames Gateway Delivery Plan



sustainable design features	
Diversification of employment	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS 4
Environmentally designated sites	PPS 9 (Figure A4)

### Summary

Development is necessary within London Gateway in order to promote the development of environmental technologies, sustainable design and diversify employment. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration.

Employment of the scale proposed at London Gateway can not be located within other broad location areas as there is not suitable land available. This development must be situated on a large plot of land with access to the River Thames.

The Sequential Test is passed for those areas in the broad location area which are located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development is likely to be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The Port and transport infrastructure has consent under transport and works act and employment land has outline planning permission. Detailed applications will need to refer to this sequential approach and may be required to demonstrate the Exception Test.

The broad location area sited in Flood Zones 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25.

### Exception Test

A large portion of the London Gateway broad location area is located in Flood Zones 3. Therefore in accordance with PPS25 this part of the broad location area may require demonstration of the Exception Test.

#### Part a) Sustainability (Appendix B- sustainability matrix for broad location areas)

The large scale economic regeneration proposed for this broad location area will result in positive impacts in terms of increasing economic growth and diversity, encouraging new skills and encouraging investment. These positive impacts should benefit the borough as a whole. Employment in this area should also benefit from the wider Thames Gateway location and development will occur in previously developed land. It will also be beneficial in terms of achieving sustainable patterns of development and land use. The key sustainability issue associated with this site relates to the risk of flooding.

<b>Part b) Brownfield Land</b>	Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.
<b>Part c) Flood Risk and 'Safe'</b>	To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.

## BROAD LOCATION AREA

## TILBURY (FIGURE A1)

SEQUENTIAL TEST	
Step 1 Justification of broad location area for development	
Reason	Source
Reducing deprivation	East of England Plan
Improve education, economy, landscape, living standards	East of England Plan
Provision of employment	Thurrock Employment Land Review, PPS 4
Development within urban area on previously developed land	PPS 1
Development of affordable, high quality housing	PPS 3
Development within town to improve centre	PPS 6, PPS 4
Development within Thames Gateway Key Centre for Development and Change	East of England Plan Thames Gateway Delivery Plan
Regeneration of Thames Riverside	East of England Plan, PPS 9, PPG 17
Development within currently developed area on previously developed land outside flood risk area	Sustainability Appraisal

Step 2 Flood Risk Classification	
Flood Zones (Figures A2 & A3)	Source
Flood Zones 1, 2, 3a and 3b Urban area is largely Flood Zone 3a, with small amounts of Flood Zones 1 and 2. Area of Flood Zone 3b (functional floodplain) associated with Tilbury Marshes to the north of the town.	Thurrock SFRA (Scott Wilson, 2009) Thurrock SFRA (Scott Wilson, 2009)
Hazard 1 in 1000 year 2009 (Figure B3 (1 in 1000 year 2109))	Source
Significant Hazard and Extreme Hazard across the majority of Flood Zone 3.	Thurrock SFRA (Scott Wilson, 2009)
Defence Status	Source
Defended	Thurrock SFRA (Scott Wilson, 2009)

Step 3 Development requirements within broad location area			
Development	Vulnerability	Justification for development in broad regeneration area	Source
Residential	More Vulnerable	Improve affordability, quality and supply of housing to all community groups in all areas	PPS 1, PPS 3, East of England Plan, Thames Gateway Delivery Plan
Marina	Water Compatible	Sustainable development on previously developed land making	PPS 1

		efficient use of resources	
Industry	Less Vulnerable	Sustainable economic development, increase in number of jobs	PPS 1, East of England Plan
Retail	Less Vulnerable	Enhancing consumer choice to meet needs of entire community and encouraging competitive and innovative retail	PPS 6
Leisure	Less Vulnerable	Sustainable development of vital and viable town centres. Offer wide variety of uses	PPS 6
Educational Facilities	More Vulnerable	Enhance education and skills base and improve access to higher education.	East of England Plan
Health Centre	More Vulnerable	Ensuring development supports existing communities and promotes an improvement in quality of life	PPS 1, East of England Plan

#### Step 4 Constraints and/or factors overriding flood risk

Constraint/Factor	Source
Brownfield development	PPS3, East of England Plan
Development of sustainable communities and development	PPS 1 Sustainability Appraisal, PPS 4
Protection of natural and historic environments	PPS 9, PPG 15, East of England Plan, Sustainability Appraisal
Use and development of environmental technologies, renewable energy generation and sustainable design features	Sustainability Appraisal, Thames Gateway Delivery Plan
Diversification of employment and public services	PPS 1, Sustainability Appraisal, Thames Gateway Delivery Plan, PPS 4
Provision of community facilities such as educational, cultural, arts, sport, and medical facilities and natural spaces e.g. Improving the public access to the river front along the entire River Thames within Thurrock and throughout Thurrock through the Green grid network	PPS 1, PPS 6, Sustainability Appraisal
Environmentally designated sites	PPS 9 (Figure A4)

#### Summary

Development is necessary within Tilbury in order to preserve the historic urban landscape, support sustainable communities through the provision of facilities, promote the development of environmental technologies and sustainable design, diversify employment and develop currently disused brownfield sites. Development should also protect the surrounding greenbelt, open space and environmentally designated sites from development and degeneration through the situation of possible development sites on predominantly brownfield land within the urban zone and encouragement of community guardianship/responsibility.

Tilbury is one of the most deprived areas in the East of England and has been identified as a key regeneration area in the council's LDF and TTGDC masterplan. The key proposals are a new

commercial and port related development including some green belt release North of the Port. This greenbelt release is directly linked to the operations of the port and cannot be located elsewhere in the borough. Thurrock Council and TTGDC are also proposing a major project for redevelopment of Tilbury town centre.

The Sequential Test is passed for the areas in the broad location area which are located within Flood Zone 1 therefore all development types in this area are considered appropriate in this location in relation to PPS25. In order to satisfy other planning policy, such as the recommendations of the East of England Plan (2008), some development may be necessary within flood risk areas on brownfield land. The Exception Test may subsequently be required for certain development types within certain flood zones within the area in accordance with PPS25.

The broad location area sited in Flood Zones 2 and 3 may require demonstration of the Exception Test for certain development types within certain flood zones in accordance with PPS25.

#### Sequential Approach within the Broad Location Area

Where possible 'more' and 'highly vulnerable' uses should be directed to Flood Zone 1. Where these uses have to be located in Flood Zone 3 these should be directed where possible to lower hazard areas, demonstration of the Exception Test may be required in accordance with PPS25. Only water compatible development should be considered within Flood Zone 3b, or essential infrastructure where the Exception Test can be demonstrated.

#### Exception Test

A large portion of the Tilbury broad location area is located in Flood Zones 3. Therefore in accordance with PPS25 this part of the broad location area is likely to require demonstration of the Exception Test.

<b>Part a) Sustainability</b>  <b>(Appendix B- sustainability matrix for broad location areas)</b>	<p>Development in this broad location area will result in a range of positive sustainability impacts. The key sustainability issue in relation to the area is flood risk. Development will be mostly employment focussed with some housing and improvements in access to the river and communities and health facilities. This will result in positive sustainability impacts in relation to employment and economic growth and encouraging investment. It should also contribute to social sustainability including improving access to services and community facilities and improving access to the river.</p>
<b>Part b) Brownfield Land</b>	<p>Thurrock Council has a strategic policy of 92% target for the development of brownfield land based on the availability identified in the SHLAA study. Therefore to address this policy brownfield land should be developed in preference.</p>
<b>Part c) Flood Risk and 'Safe'</b>	<p>To address 'safety' of this location area Thurrock Council are producing a borough wide emergency plan in partnership with major stakeholders, further details regarding flood risk will be explored in the Site-Specific Sequential Test document and as part of a detailed Flood Risk Assessment at application stage.</p> <p>Due to the extensive Flood Zone 3 inundation area, sufficient safe refuge is needed in this broad location area to facilitate 'safe' development.</p>

A small number of dwellings are proposed in the broad location area of Tilbury to ensure its sustainability as a settlement and existing urban area. The remaining residential aspects in Tilbury are anticipated as part of the proposed Tilbury Town Centre Eco-Quarter. Therefore this housing element is only anticipated to go ahead IF the Tilbury Eco-Quarter goes forward, which will be produced in discussion with the Environment Agency to ensure there is sufficient refuge incorporated to facilitate flood risk management and 'safe' egress access arrangements for the proposed settlement.

**Table 3-** Broad Location Areas and Flood Zones.

The Flood Zones and Flood Hazard percentages are derived from the Thurrock SFRA (2009) which should be used as a reference document to support the Sequential Test.

Broad Location Area	Total Area (km <sup>2</sup> )	Figure Ref.	Flood Zones 2009 Scenarios (% of area)								
			FZ1	FZ2	FZ3	Figure Ref:	No Flood Risk	Low	Moderate	Significant	Extreme
Aveley	1.16	A3	100	0	0	B2	100	-	-	-	-
North East Grays	2.40	A3	100	0	0	B3	100	-	-	-	-
Chadwell St. Mary	1.71	A3	100	0	0	B4	100	-	-	-	-
Villages	0.86	A3	100	0	0	B5	100	-	-	-	-
South Ockendon	3.36	A3	100	0	0	B6	78	0	0	22	0
Stanford le Hope and Corringham	5.05	A3	93	1	6	B7	91	1	0	5	3
Grays	10.48	A3	82	1	17	B8	60	3	3	22	12
East Tilbury	0.82	A3	54	5	41	B9	81	4	4	11	0
Purfleet	4.27	A3	37	5	59	B10	31	3	2	15	49
West Thurrock/Lakeside	5.76	A3	26	1	73	B11	44	4	4	23	26
London Gateway	3.18	A3	1	0	99	B12	6	4	4	83	3
Tilbury	6.80	A3	7	1	92	B13	13	11	5	48	23

\* These figures are based on the broad location area boundaries shown in Appendix A1. A high percentage of Flood Zone 1 is not necessarily developable in accordance with RSS and PPG/PPS policies.

## 6 Conclusions and Next Steps

### 6.1 Conclusions

- 6.1.1 The East of England Plan has identified the KCDC area in Thurrock between Purfleet and Tilbury, south of the A13 where regeneration should be focused around existing urban centres. Any development proposed north of the A13 would need to be restricted to brownfield sites. There is a limited supply of brownfield sites available in Flood Zone 1 across the Thurrock area. Many brownfield sites within Thurrock and the KCDC regeneration area, are located within Flood Zones 2 and 3, which have been identified through the SHLAA. This limits the potential for 'alternative sites in lower flood risk areas' as advocated by the PPS25 Sequential Test. Therefore using the sequential approach within the broad location areas during the production of site specific allocations, the most vulnerable developments should be steered towards the lower flood risk areas. The use of the Exception Test is also a likely requirement for many sites within the KCDC areas.
- 6.1.2 The following table presents a summary of the Sequential Test for the broad location areas in Thurrock. It should be noted that **all** broad locations are acceptable as there are no alternative development areas within Thurrock. Within the broad locations, the sequential approach must be applied to direct development to areas of lowest flood risk (with respect to flood zone and flood hazard).
- 6.1.3 Where Flood Zones 2 and 3 exist in significant areas of the broad location area and development is likely to be located in these areas, the Exception Test has also been applied to the broad location area using the Sustainability Appraisal for part a), the SHLAA for part b) and the SFRA for part c) which should be supported in further detail by site specific Flood Risk Assessments. Due to the demand for development and regeneration in Thurrock, location of brownfield land along the riverfront and areas of floodplain across the borough, there is sufficient justification for all of the broad location areas to pass the Exception Test.

### 6.2 Next Steps

- 6.2.1 This document sets out the Thurrock Broad Locations Area Sequential Test. This test is supported by a thorough assessment of current policy within Thurrock and the wider area and is based on the guidance presented in Planning Policy Statement 25. This Sequential Test is also reinforced by available Flood Zone information provided by the Environment Agency and updated hazard mapping produced as part of the Thurrock Council Strategic Flood Risk Assessment (SFRA) (Scott Wilson, 2009).

#### Other sources of flooding

In accordance with PPS25 all sources of flooding should be considered for site specific Flood Risk Assessments. Other sources of flooding are identified in the Thurrock Council SFRA and will be reviewed in greater detail for the site specific DPD Sequential Test.

- 6.2.2 Following the completion of the Thurrock SFRA, the site-specific Exception Test, as described in PPS25<sup>Error! Bookmark not defined.</sup>, should be used to inform the site-specific Sequential Test to support site DPD documents. The Thurrock SFRA should also be used to inform site-specific



applications and Flood Risk Assessments with respect to demonstrating part c) of the Exception Test.

- 6.2.3 The completion of the Broad Location Area Sequential Test and Exception Test provides Thurrock Council with a robust evidence base to inform the planning process and Core Strategy with regard to flood risk. This is informed by several technical studies including the SFRA, Sustainability Appraisal and SHLAA.

**Table 4-** Broad Location Sequential Test Summary

Broad Location Area	Flood Zone 1	Flood Zone 2	Flood Zone 3
Aveley	SEQUENTIAL TEST PASSED FOR ALL DEVELOPMENT	<p>NOT APPLICABLE FOR BROAD LOCATION AREA. DEVELOPMENT SHOULD BE DIRECTED TO EXISTING URBAN SETTLEMENT AREA IN FLOOD ZONE 1.</p> <p>SEQUENTIAL TEST PASSED FOR BROAD LOCATION AREA.</p> <p>WINDFALL APPLICATIONS LOCATED OUTSIDE THE BROAD LOCATION AREA WOULD REQUIRE A SEQUENTIAL TEST AT APPLICATION STAGE.</p>	
North East Grays			
Chadwell			
Villages			
South Ockendon			
Stanford-le Hope and Corringham		<p>IF DEVELOPMENT CANNOT BE LOCATED IN FLOOD ZONE 1 IN THESE AREAS SITE SPECIFIC DEMONSTRATION OF THE EXCEPTION TEST MAY BE REQUIRED.</p>	
Grays			
East Tilbury		<p>SEQUENTIAL TEST PASSED FOR BROAD LOCATION AREA.</p> <p>EXCEPTION TEST PASSED FOR BROAD LOCATION AREA. SITE SPECIFIC SEQUENTIAL TEST SHOULD BE REFERRED TO FOR DPD DOCUMENTS TO SUPPORT SITE ALLOCATION SEQUENTIAL TEST AND EXCEPTION TEST.</p> <p>FURTHER DETAILS FOR PART C) OF THE EXCEPTION TEST REQUIRED AT APPLICATION STAGE AS PART OF FLOOD RISK ASSESSMENT.</p>	
Purfleet			
Lakeside/West Thurrock			
London Gateway			
Tilbury			

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Better Days for Grays The Masterplan – Preferred Option Questionnaire and Public Exhibition (2007) Thurrock Thames Gateway Development Corporation

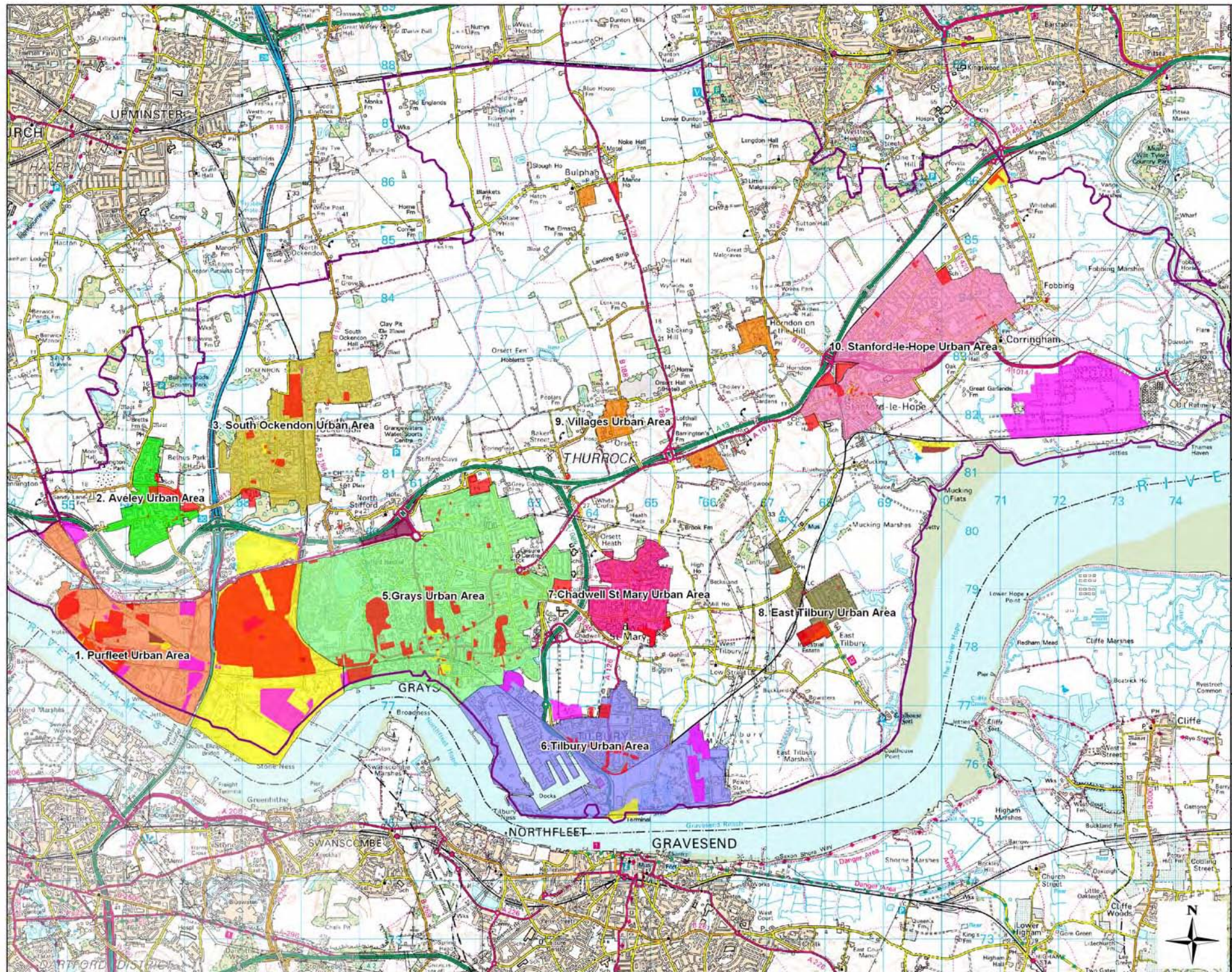
## Appendix A - Figures

- A1 – Broad location areas
- A2 – Flood Zones with defences and associated flood risk information
- A3 – Broad location areas and Flood Zones
- A4 – Brownfield sites
- A5 – ‘Green Spaces’
- A6 – Composite Map

### **Broad Location Area Maps**

- B1 –Thurrock Hazard Map
- B2 – Aveley Hazard Map
- B3 – North East Grays Hazard Map
- B4 – Chadwell St. Mary Hazard Map
- B5 – Villages Hazard Map
- B6 – South Ockendon Hazard Map
- B7 – Stanford le Hope and Corringham Hazard Map
- B8 – Grays Hazard Map
- B9 – East Tilbury Hazard Map
- B10 – Purfleet Hazard Map
- B11 – Lakeside/West Thurrock Hazard Map
- B12 – London Gateway Hazard Map
- B13 – Tilbury Hazard Map





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Notes

- Council Boundary
- Broad Regeneration Areas
- LDF Preferred Options Housing
- LDF Preferred Options Mixed Use
- LDF Preferred Options New Primary Employment
- LDF Preferred Options New Secondary Employment

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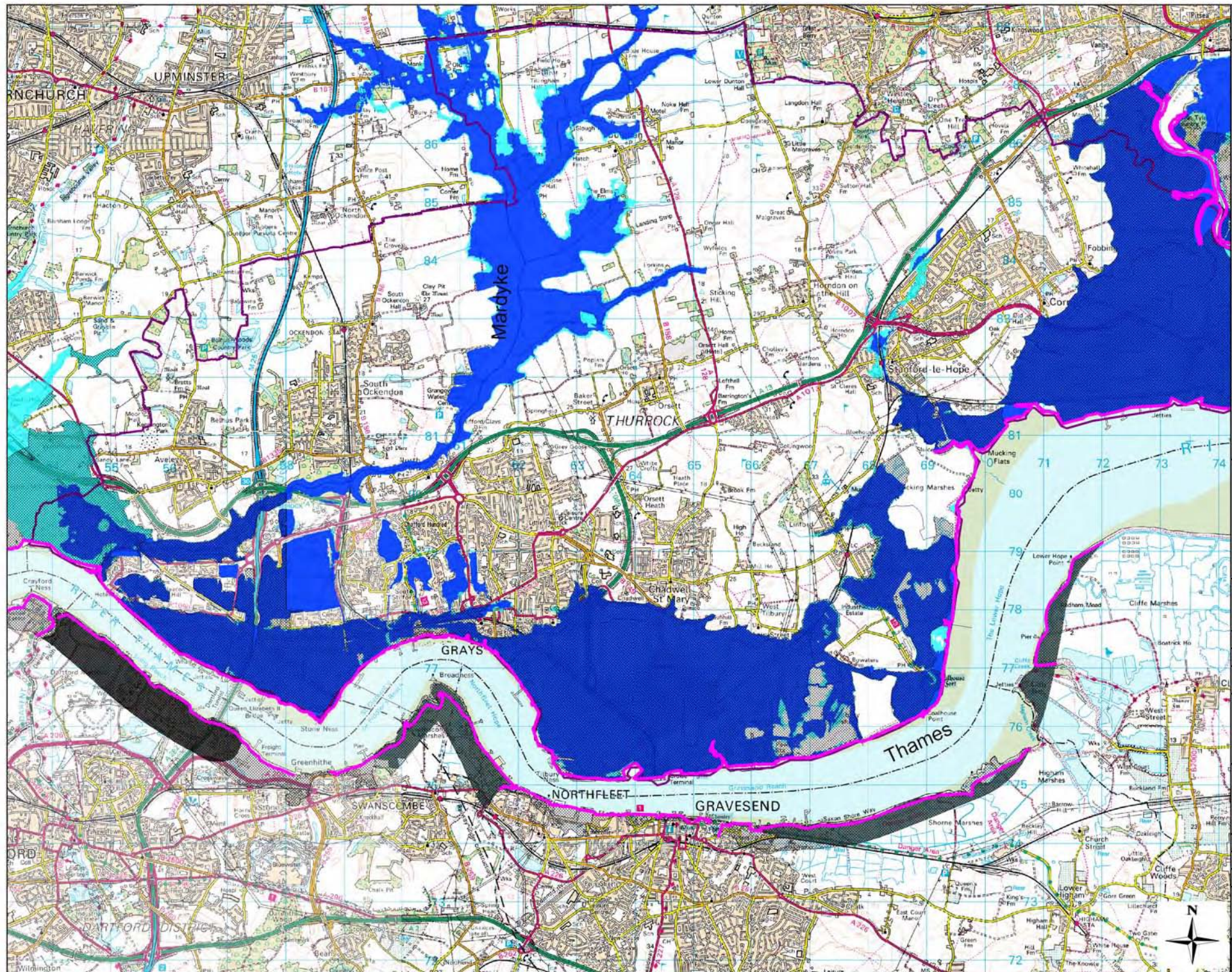
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Figure A1





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Notes

- Council Boundary
- EA Flood Zone 3
- EA Flood Zone 2
- Areas benefiting from defences
- Defence line
- Historic Flood Extent

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Amend	01/09	01/09	01/09

Drawing Status

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THURROCK COUNCIL  
SEQUENTIAL TEST

Environment Agency  
FLOOD ZONES &  
DEFENCE INFORMATION

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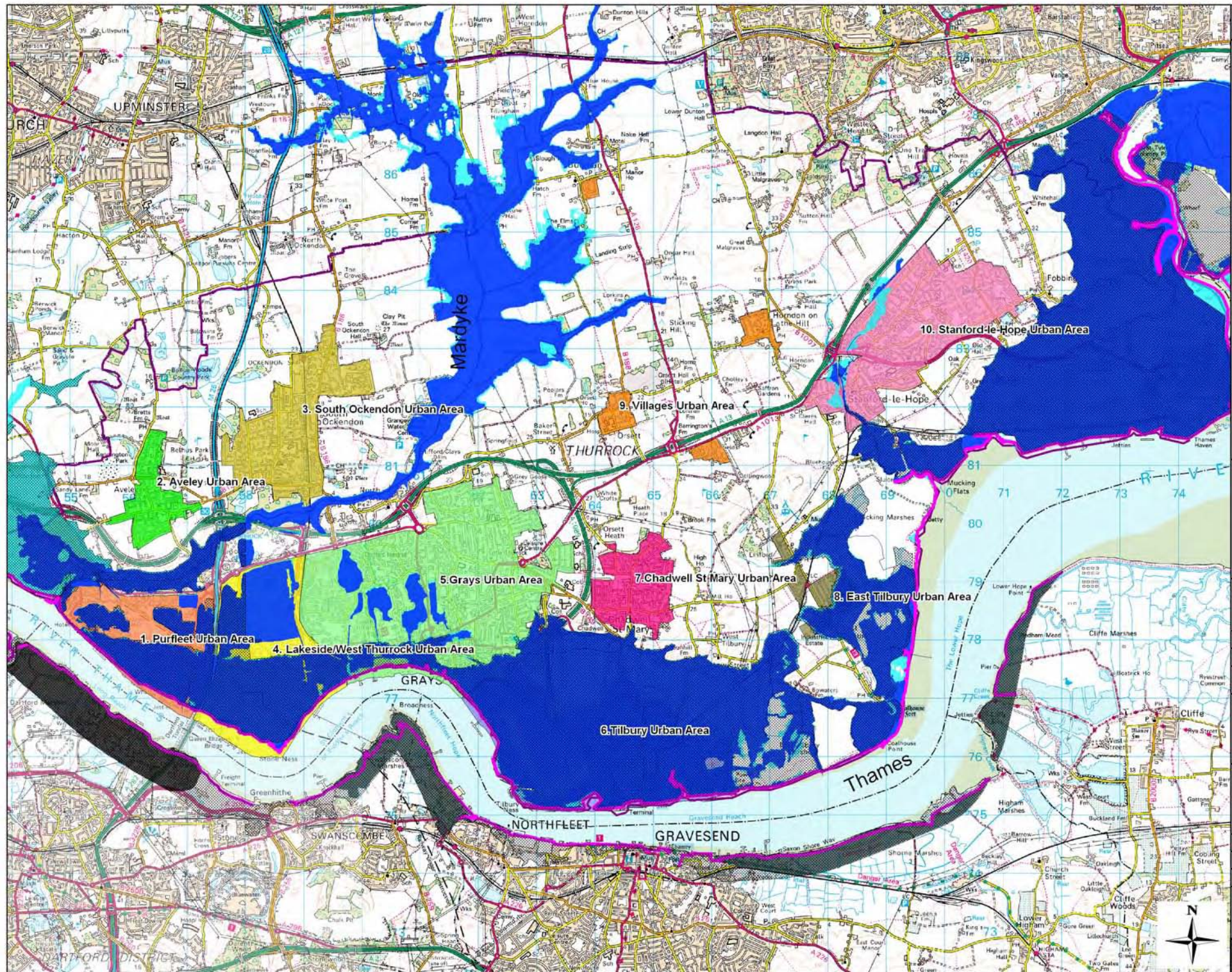
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FIGURE A2





#### Notes

- Council Boundary
- Broad Regeneration Areas
- EA Flood Zone 3
- EA Flood Zone 2
- Areas benefiting from defences
- Defence line
- Historic Flood Extent

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SEQUENTIAL TEST

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FLOOD ZONES & BROAD  
DEVELOPMENT AREAS

Scale at A3: 1:60,000

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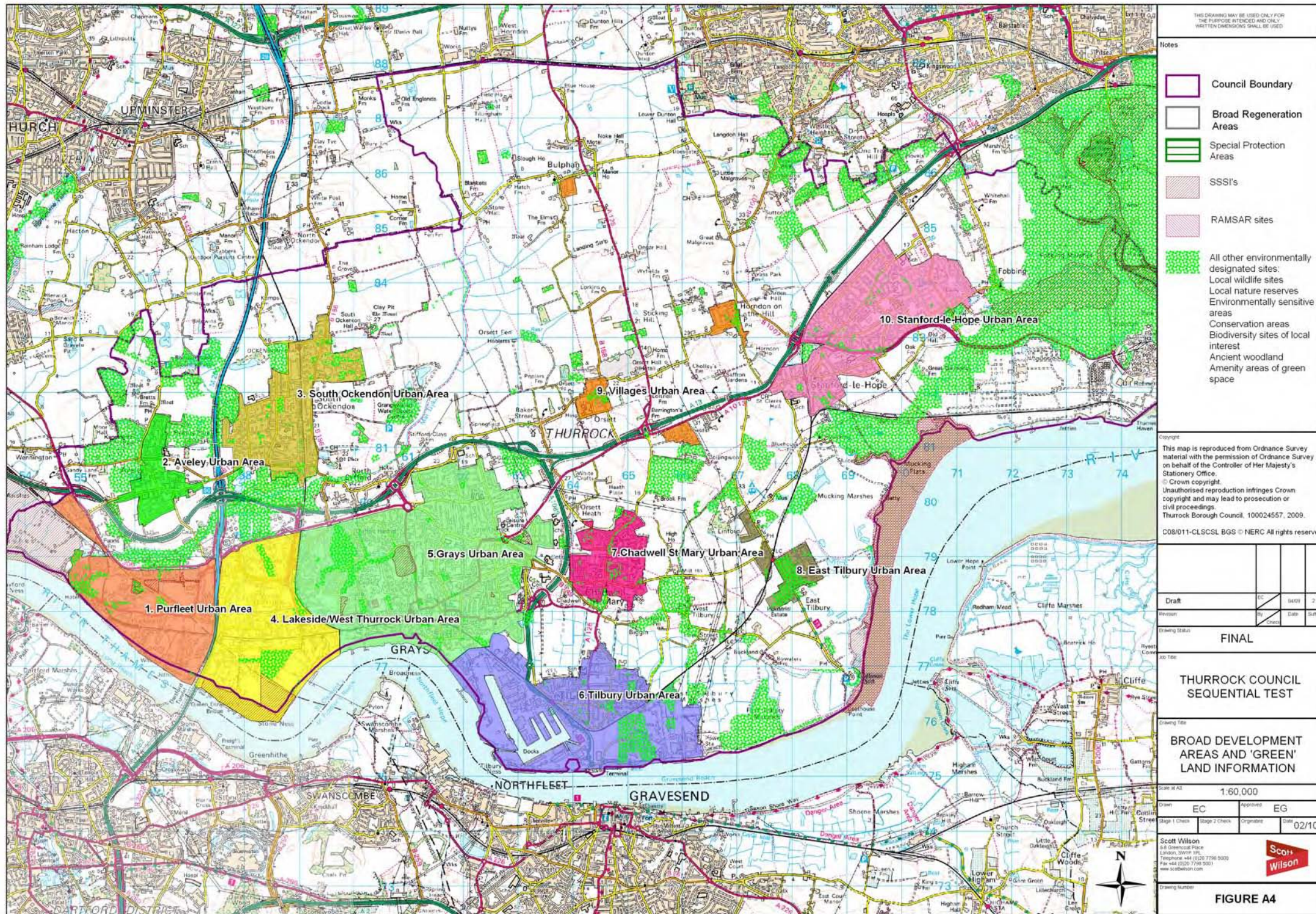
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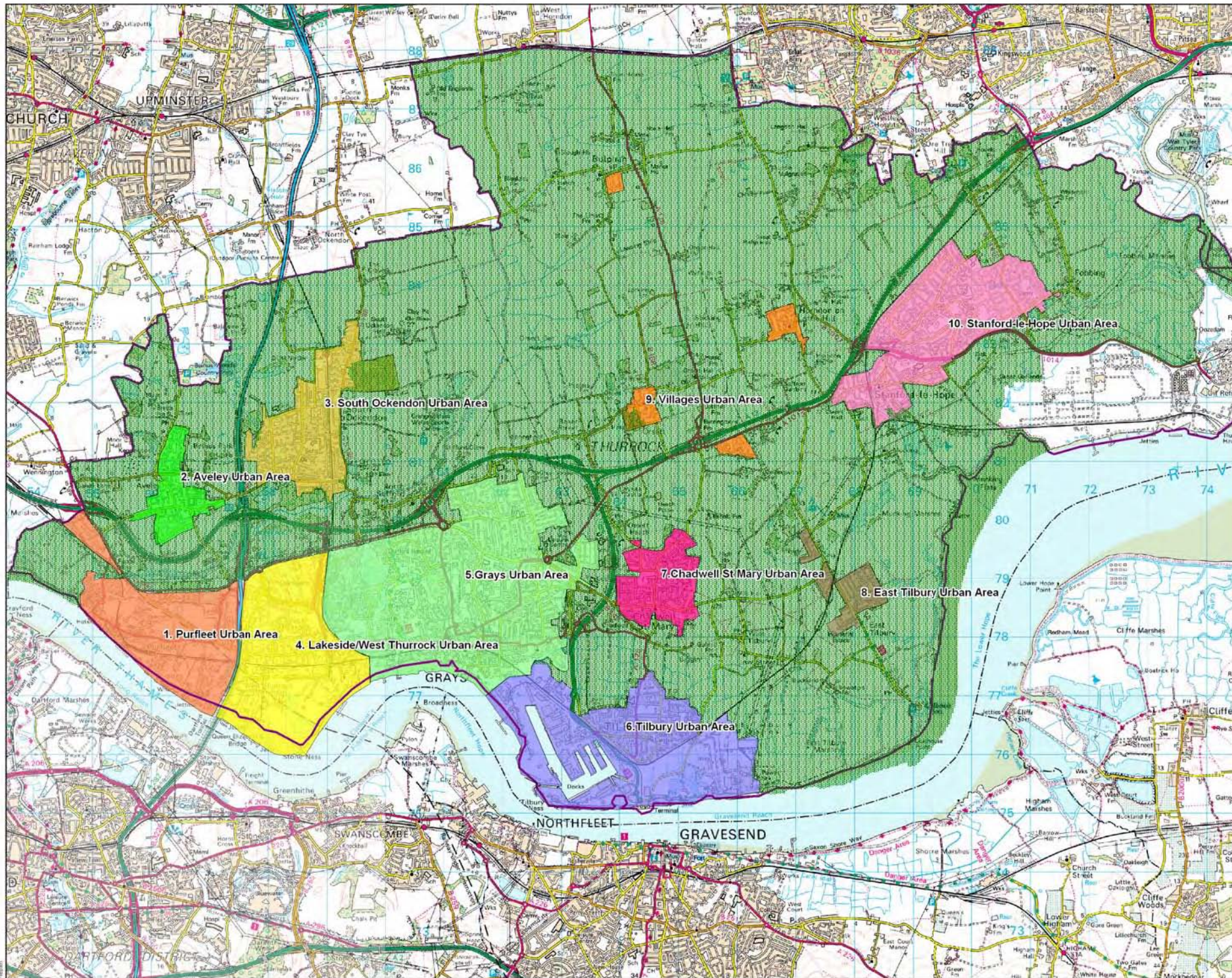
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FIGURE A3









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**Notes**

- Council Boundary
- Broad Regeneration Areas
- Green Belt

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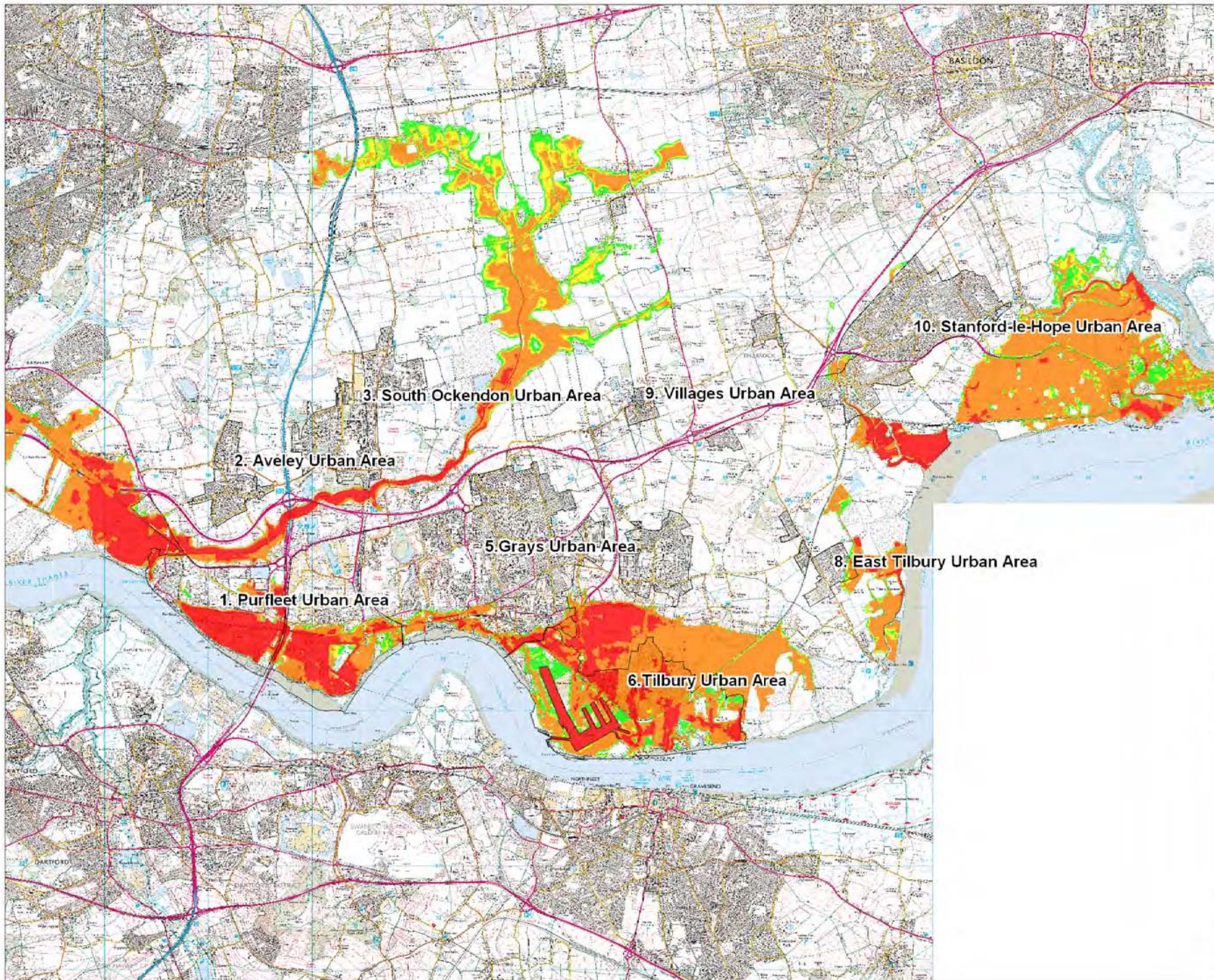
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Scale	1:60,000		
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<b>FIGURE A5</b>			









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Broad area location

Hazard Legend

Extreme Hazard  
 Significant Hazard  
 Moderate Hazard  
 Low Hazard

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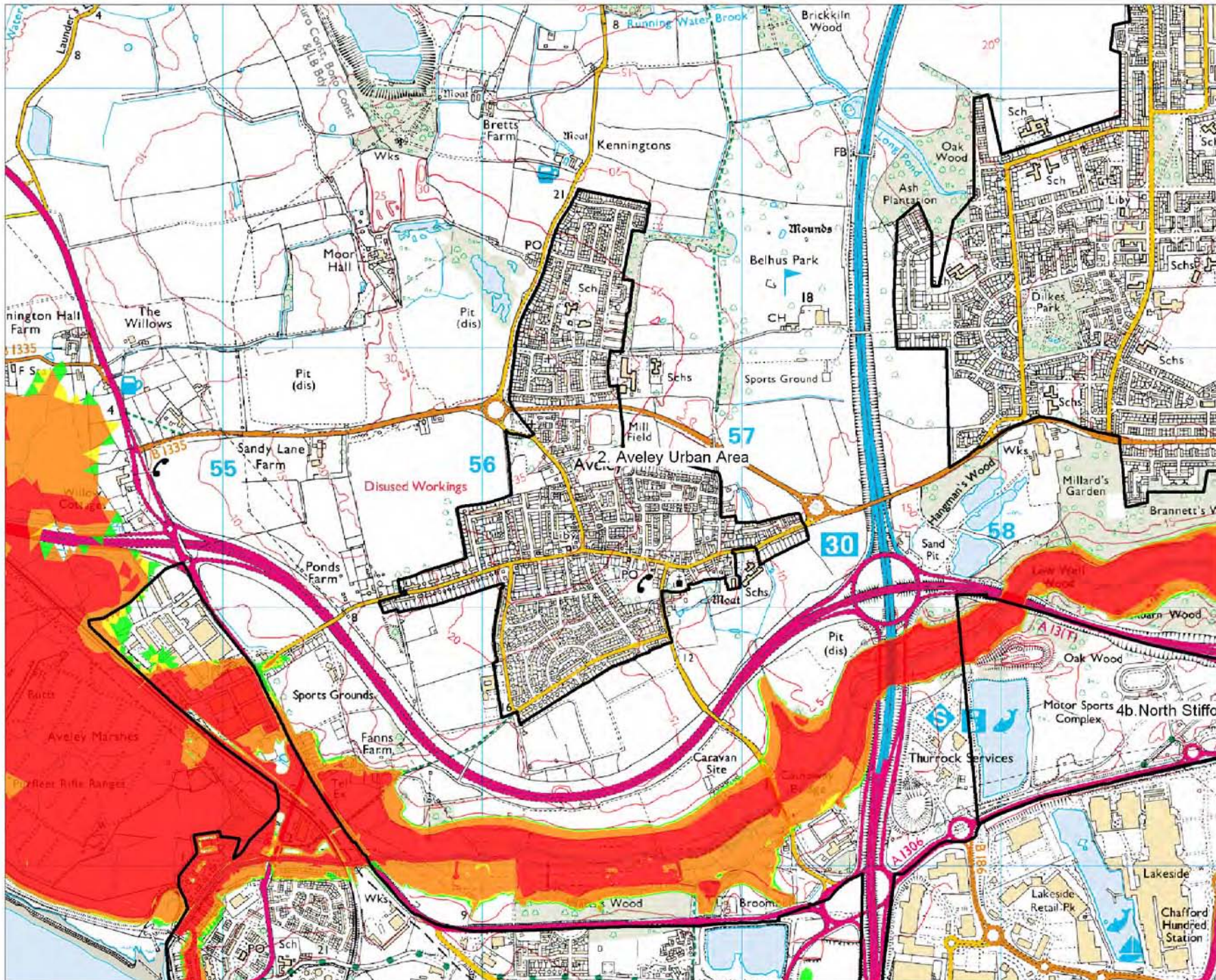


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#### Hazard Legend

■ Extreme Hazard  
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■ Low Hazard

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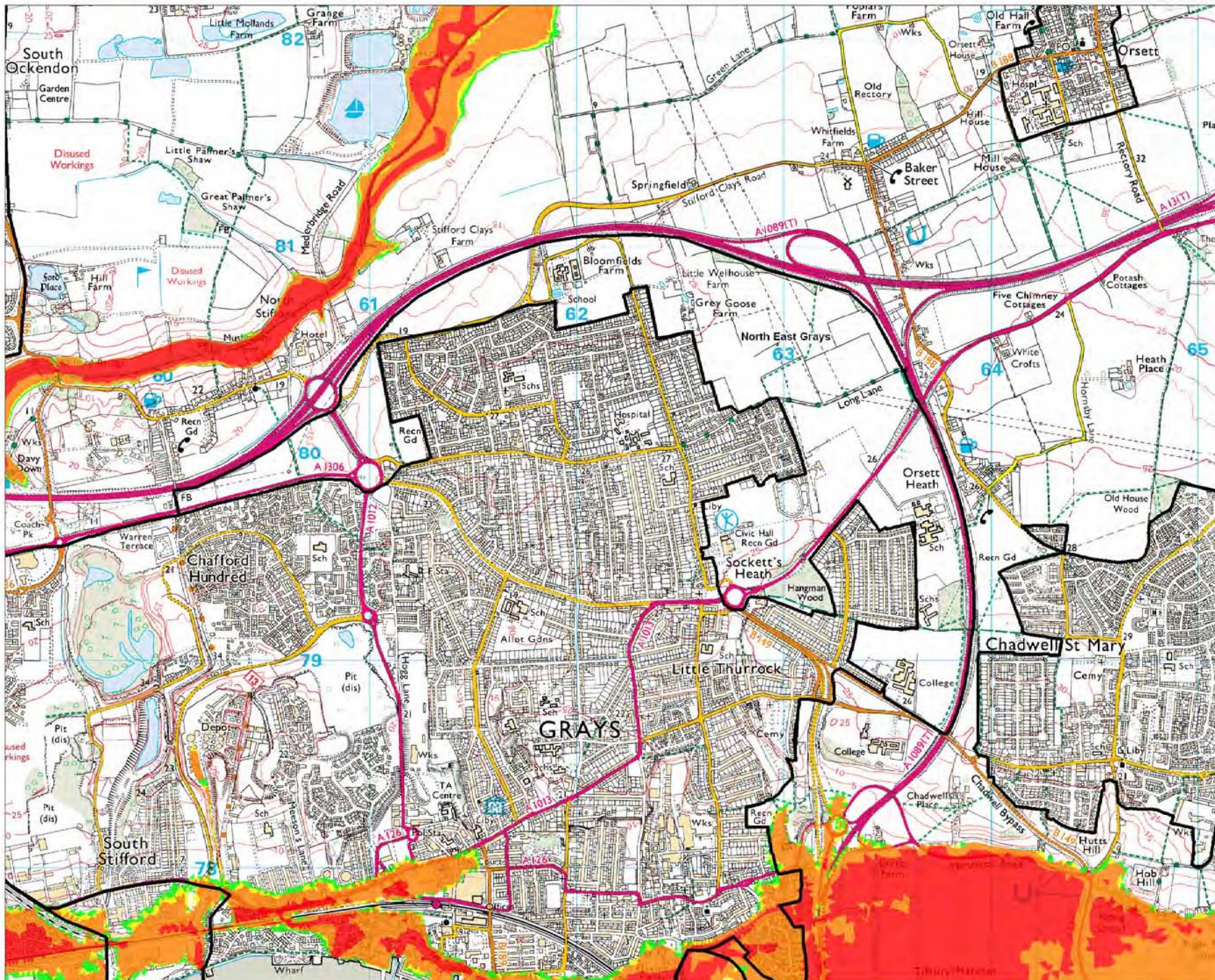
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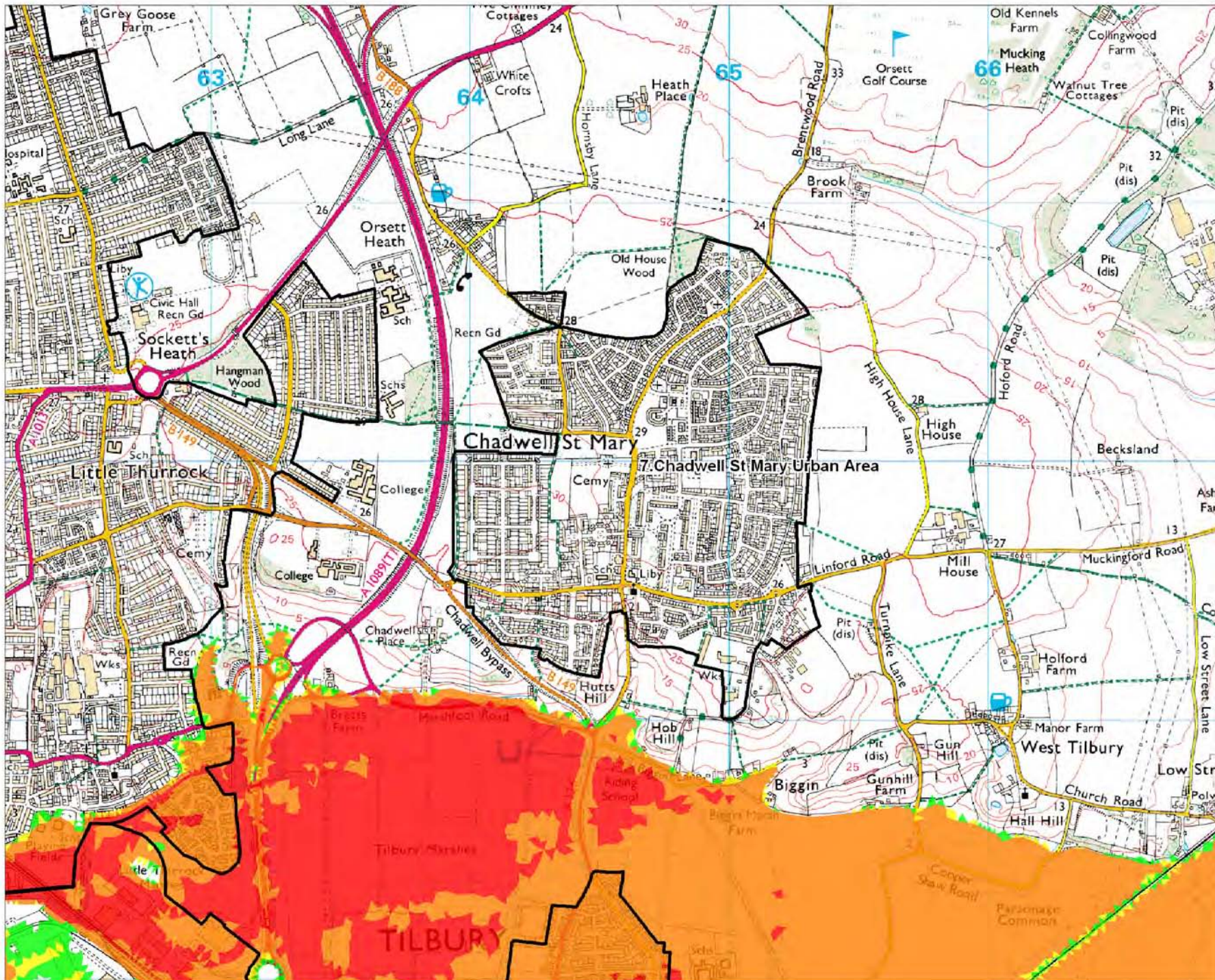
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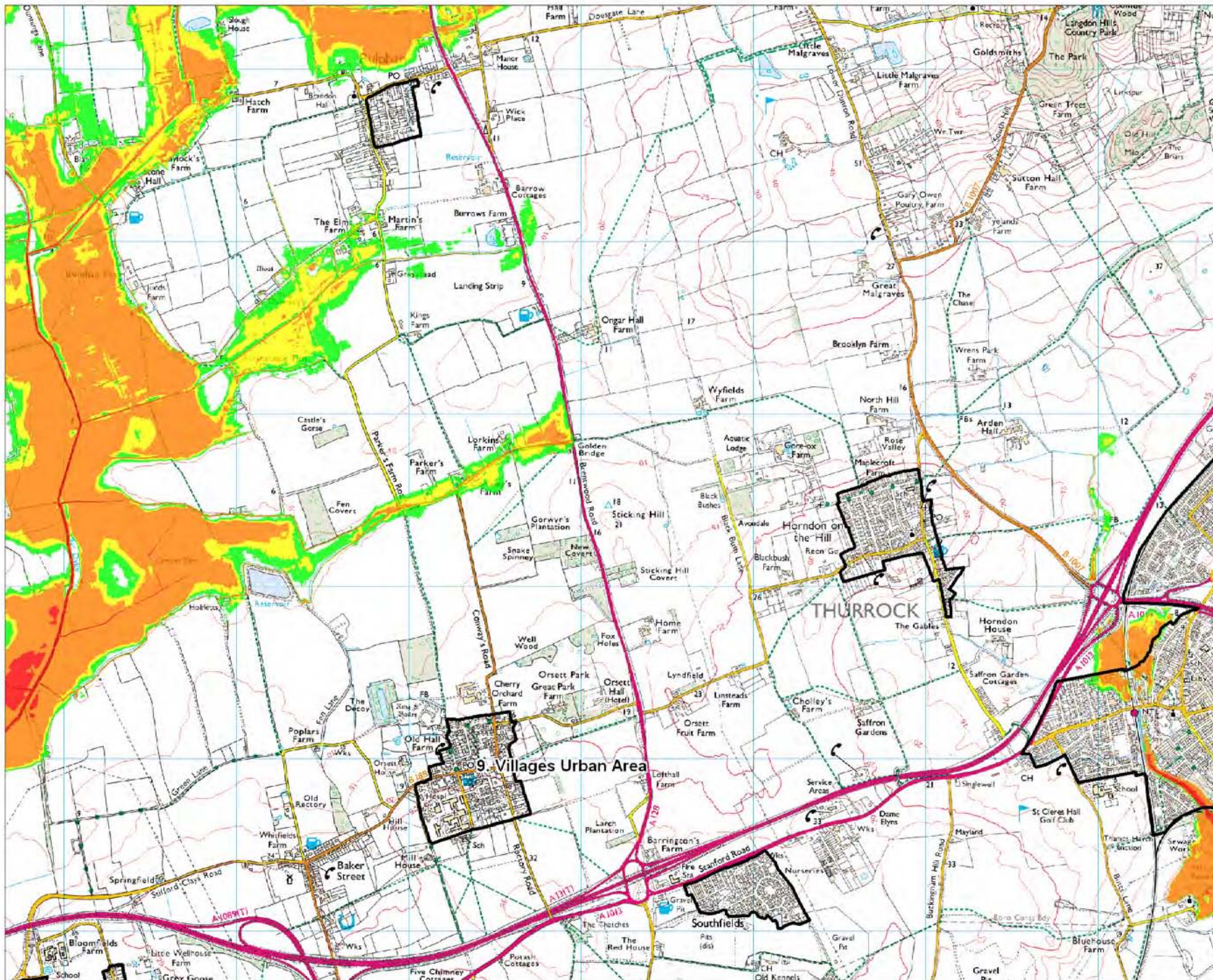
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Drawing Title	North East Grays Modelled Hazard
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Drawing Title	Chadwell st Mary Modelled Hazard
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Drawing Title	Chadwell Hazard





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#### Legend

□ Broad area location

#### Hazard Legend

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 Significant Hazard  
 Moderate Hazard  
 Low Hazard

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Thurrock Council  
Sequential Test

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Villages  
Modelled Hazard

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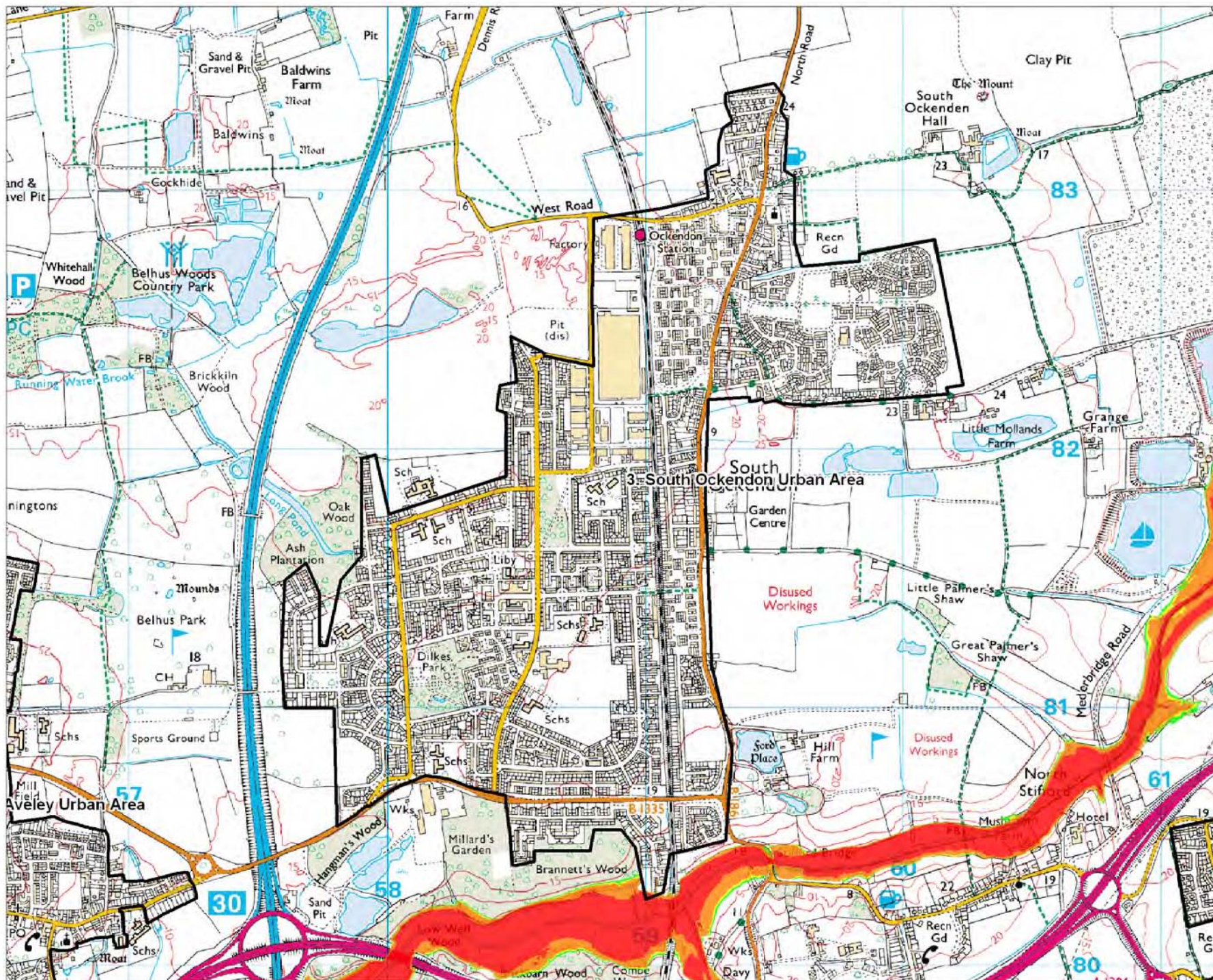
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Villages Hazard





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#### Legend

□ Broad area location

#### Hazard Legend

Extreme Hazard  
Significant Hazard  
Moderate Hazard  
Low Hazard

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Thurrock Council  
Sequential Test

Drawing Title  
South Ockendon  
Modelled Hazard

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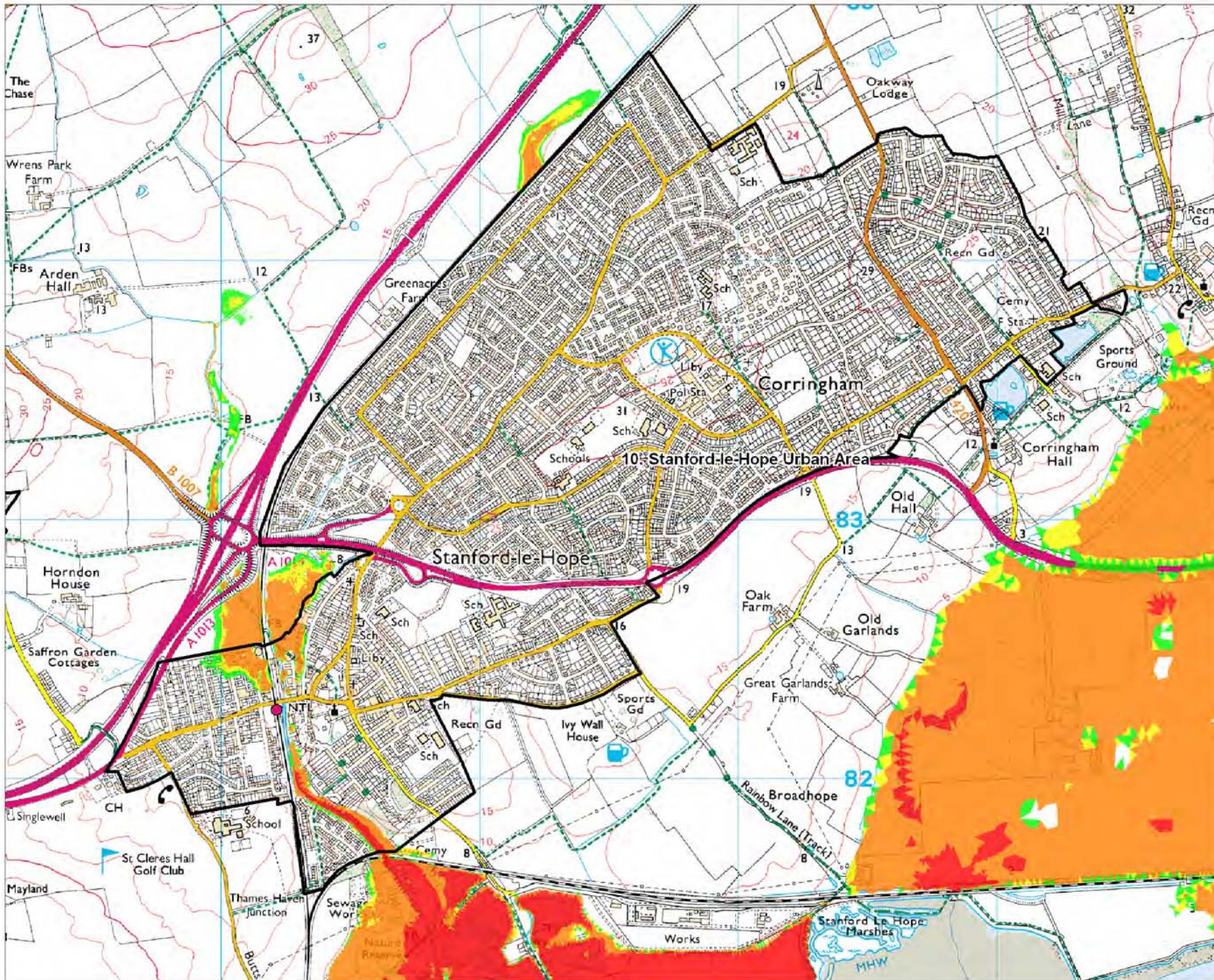
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Drawing Title  
South Ockendon Hazard





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#### Legend

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#### Hazard Legend

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#### Job Title

Thurrock Council  
Sequential Test

#### Drawing Title

Stanford le Hope &  
Corringham  
Modelled Hazard

Scale at A4 1:20000

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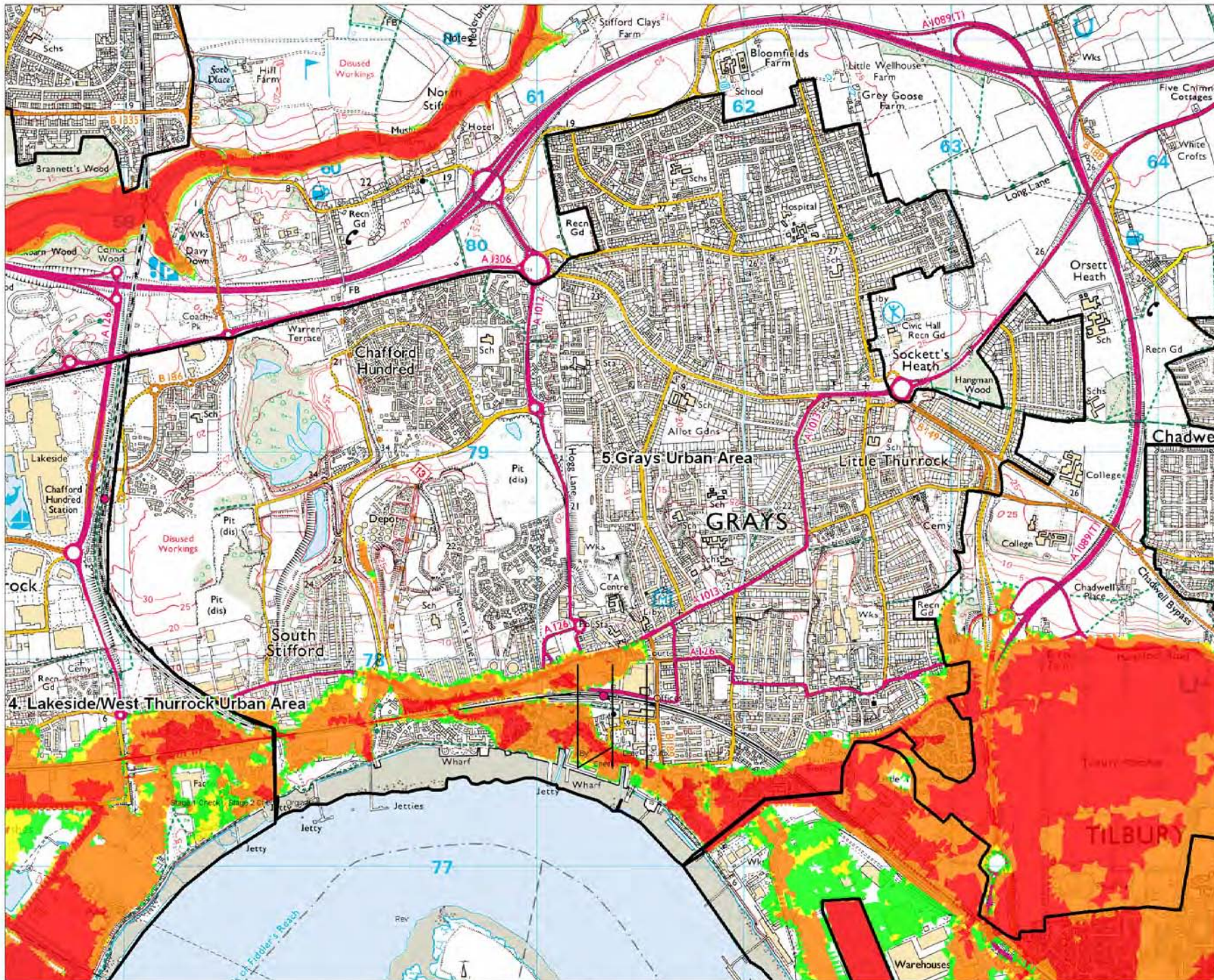
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B7

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Stanford & Corringham  
Hazard





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**Legend**

□ Broad area location

**Hazard Legend**

Extreme Hazard  
Significant Hazard  
Moderate Hazard  
Low Hazard

**Source:**

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**Drawing Status** Final

**Job Title** Thurrock Council Sequential Test

**Drawing Title** Grays Modelled Hazard

**Scale at A4** 1:25000

**Drawn EC** **Rev 1**

**Date** 02 Feb 2010

**Scott Wilson**

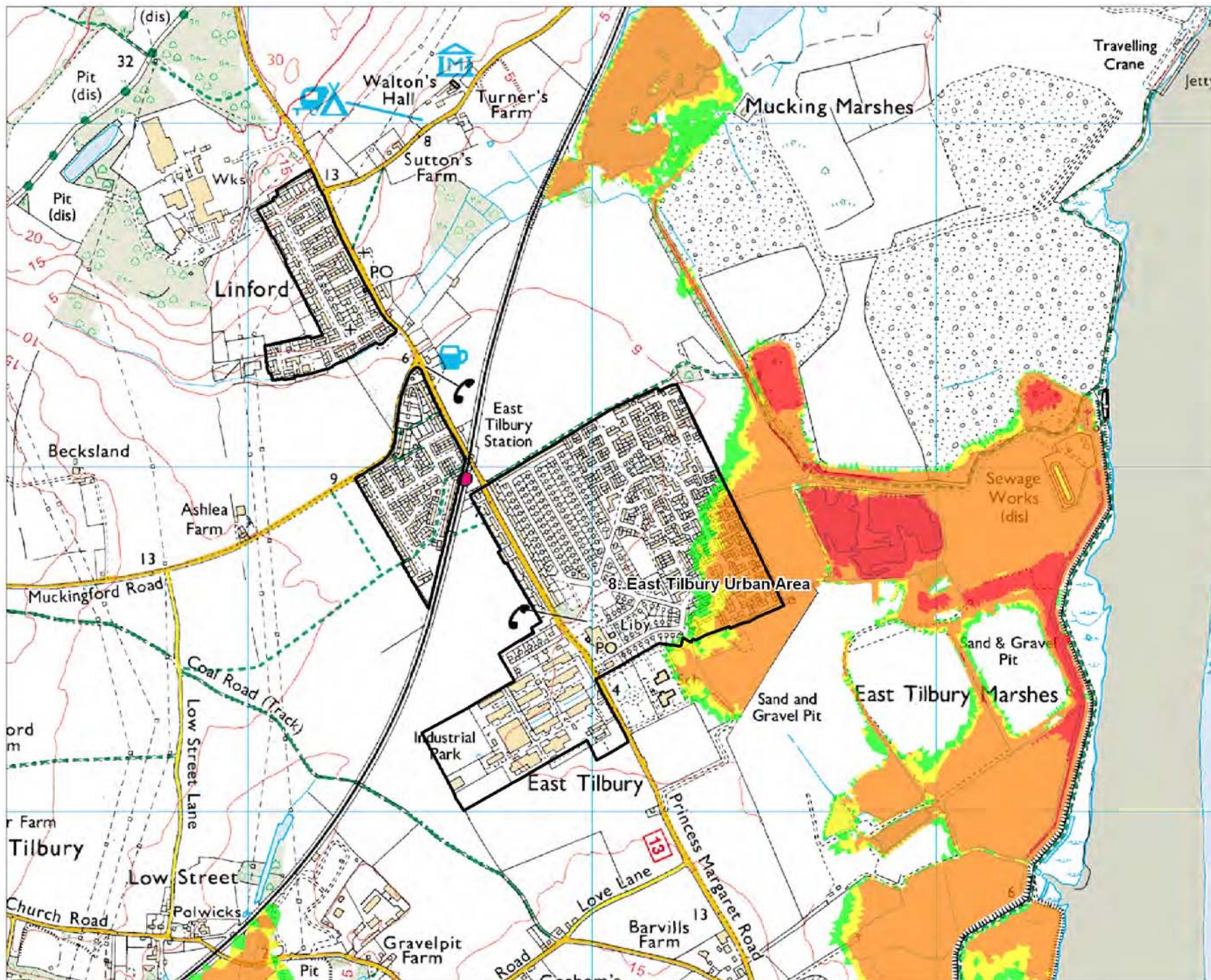
6-8 Greencoast Place  
London, SW1P 1PL  
Telephone +44 (0)20 7798 5000  
Fax +44 (0)20 7798 5001  
www.scottwilson.com

**Scott Wilson**

**Drawing Number** B8

**Drawing Title** Grays Hazard





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#### Legend

□ Broad area location

#### Hazard Legend

Extreme Hazard  
 Significant Hazard  
 Moderate Hazard  
 Low Hazard

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#### Drawing Status

Final

#### Job Title

Thurrock Council  
Sequential Test

#### Drawing Title

East Tilbury  
Modelled Hazard

Scale at A4 1:15000

Drw EC

Rev 1

Date 0 Feb 2010

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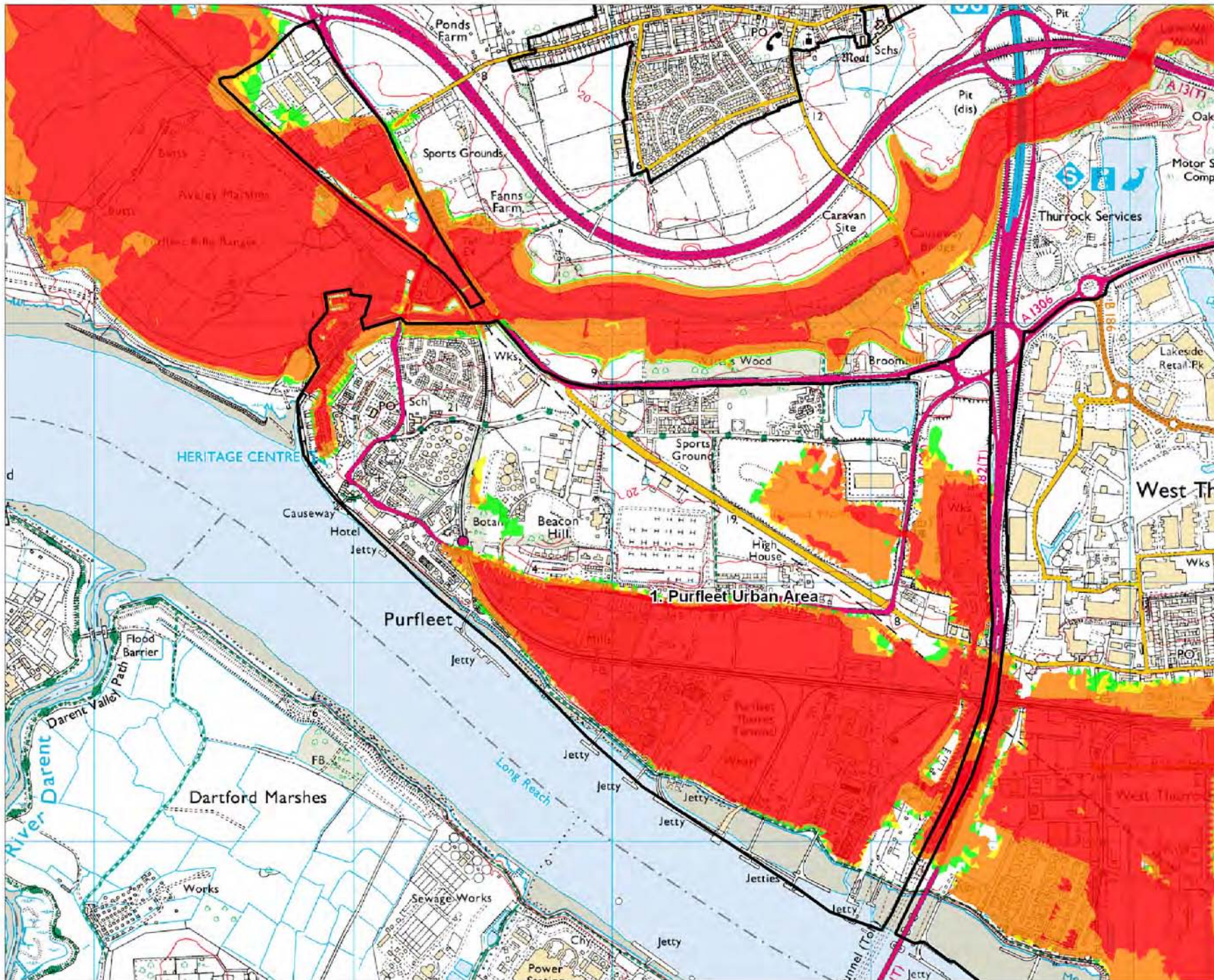
#### Drawing Number

B9

#### Drawing Title

East Tilbury Hazard





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Legend

□ Broad area location

Hazard Legend

- Extreme Hazard
- Significant Hazard
- Moderate Hazard
- Low Hazard

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Drawing Status: Final

Job Title: Thurrock Council Sequential Test

Drawing Title: Purfleet Modelled Hazard

Scale at A4: 1:20000

Drw: EC Rev: 1

Date: 0 Feb 2010

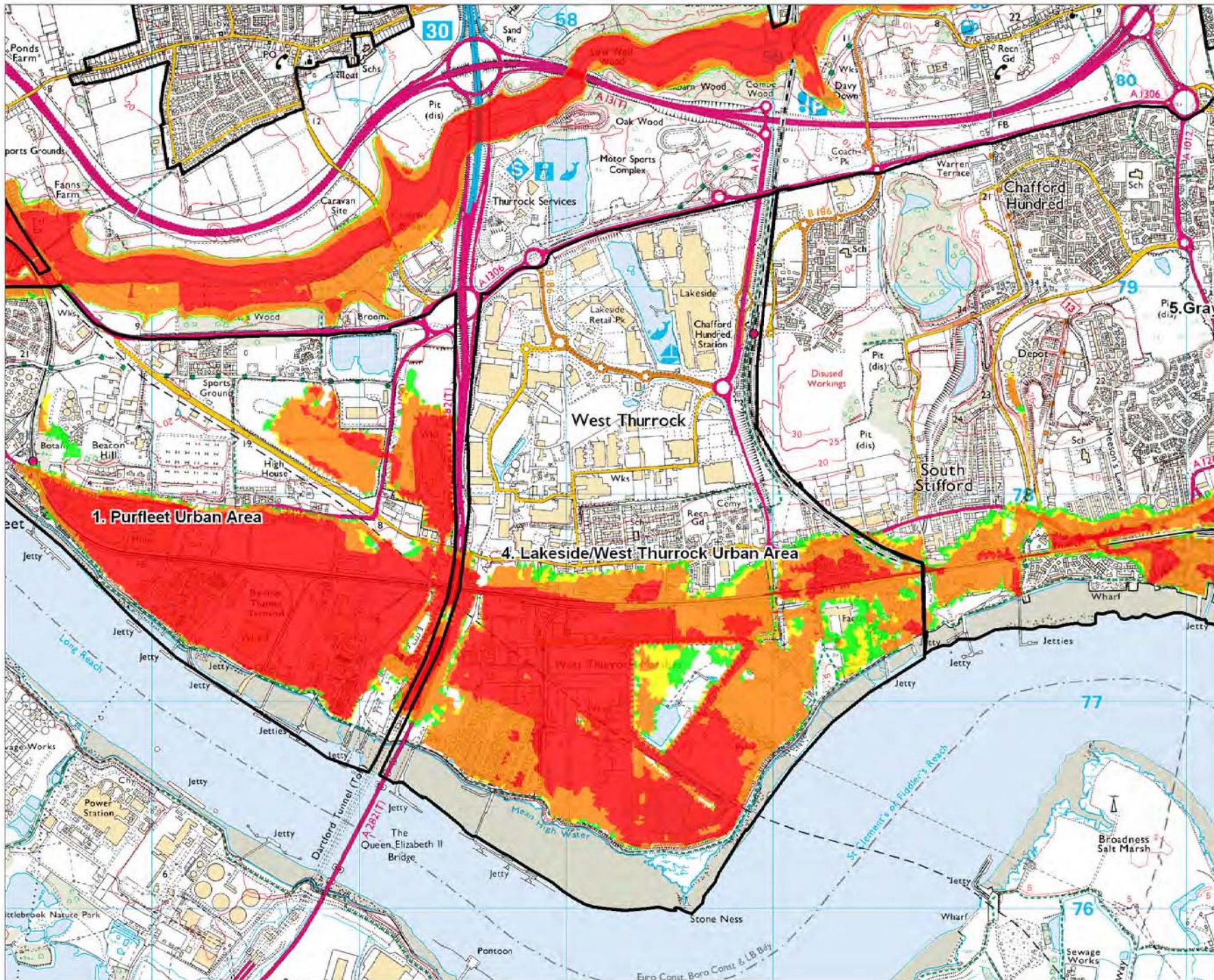
Scott Wilson

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Drawing Number: B10

Drawing Title: Purfleet Hazard





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Legend

□ Broad area location

Hazard Legend

- Extreme Hazard
- Significant Hazard
- Moderate Hazard
- Low Hazard

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Drawing Status: Final

Job Title: Thurrock Council Sequential Test

Drawing Title: Lakeside/West Thurrock Modelled Hazard

Scale at A4: 1:25000

Drw. EC: Rev. 1

Date: 0 Feb 2010

Scott Wilson

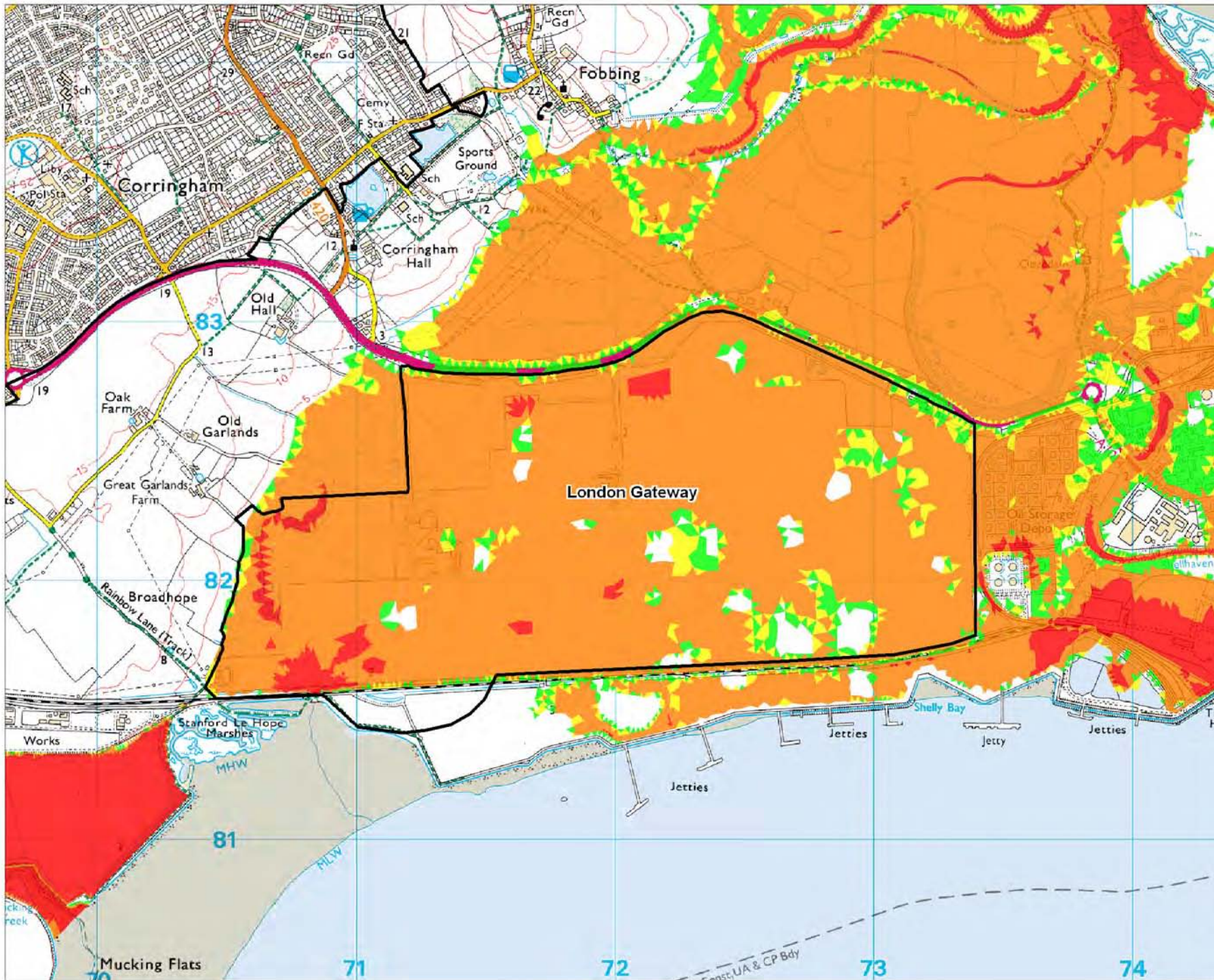
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Scott Wilson

Drawing Number: B11

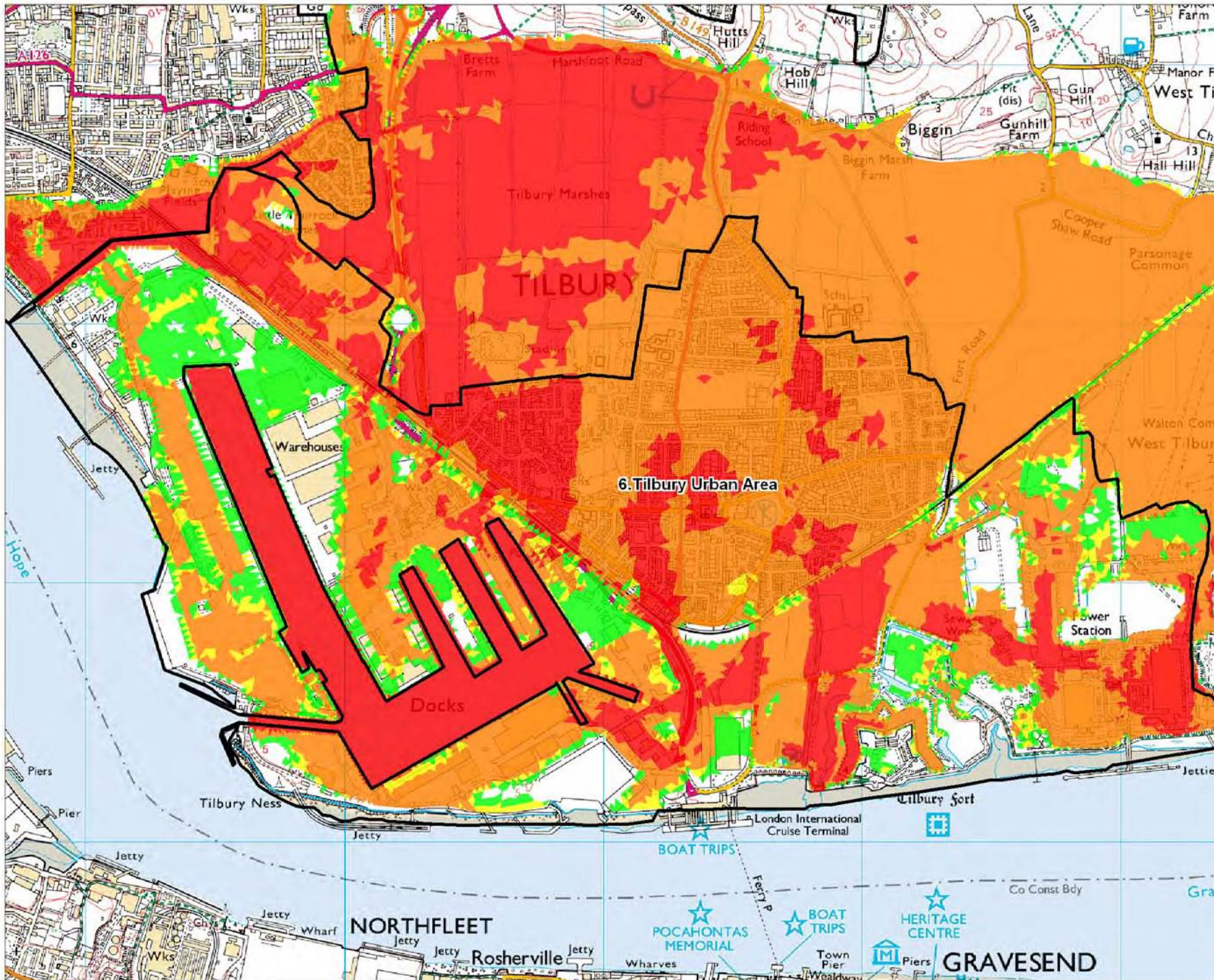
Drawing Title: Lakeside/West Thurrock Hazard





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<b>Legend</b> <div> <div></div> Broad area location </div> <b>Hazard Legend</b> <div> <div>Extreme Hazard</div> <div>Significant Hazard</div> <div>Moderate Hazard</div> <div>Low Hazard</div> </div>	
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Drawing Status	Final
Job Title	Thurrock Council Sequential Test
Drawing Title	London Gateway Modelled Hazard
Scale at A4	1:20000
Drw: EC	Rev: 1
Date: 0Feb 2010	
<b>Scott Wilson</b> 6-8 Greencroft Place London, SW1P 1PL Telephone +44 (0)20 7798 5000 Fax +44 (0)20 7798 5001 <a href="http://www.scottwilson.com">www.scottwilson.com</a>	
Drawing Number	B12
Drawing Title	London Gateway Hazard





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<b>Legend</b> <div> <div></div> Broad area location </div> <b>Hazard Legend</b> <div> <div></div> Extreme Hazard  <div></div> Significant Hazard  <div></div> Moderate Hazard  <div></div> Low Hazard </div>	
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Drawing Status	Final
Job Title	Thurrock Council Sequential Test
Drawing Title	Tilbury Modelled Hazard
Scale at A4	1:20000
Drw. EC	Rev. 1
Date: 0Feb 2010	
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Drawing Number	B13
Drawing Title	Tilbury Hazard



## Appendix B- Sustainability Matrix

BROAD REGENERATION AREAS						
SA Objectives	Grays	East Tilbury	Purfleet	Lakeside/ West Thurrock	London Gateway	Tilbury
1. To attain sustainable levels of prosperity and economic growth.	+	+	+	++	++	+
2. To increase economic diversity and increase the proportion of skills represented.	+	+	++	+	+	+
3. To encourage investment and to ensure that current and future residents want to live and work within the borough.	+	+	+	+	+	+
4a.To deliver sustainable patterns of location of development including employment and housing	++	++	++	++	++	++
4b Minimise risk of flooding taking account of climate change?	X	X	X	X	XX	XX
5. To make the best use of land in the borough, including reuse of previously developed land.	++	++	++	++	++	++
6. To protect and enhance Thurrock's biodiversity and geodiversity, including all designated sites.	?	?	+	+	0	?
7. To protect and enhance the environment through reducing the emissions of pollutants.	0	0	0	0	0	0
8. Protect and enhance landscape character, local distinctiveness and historic built heritage	+	+	+	+	+	+
9. Ensure that water consumption and water sources can accommodate future development.	?	?	?	?	0	?
10. To reduce consumption of non-renewable energy sources and to use the available natural resources in the most efficient and sustainable manner.	+	+	+	+	0	0
11. To achieve a more equitable sharing of the benefits of prosperity across all sectors of society.	+	+	+	+	0	0
12. Ensure fairer access to services, focusing on the most deprived areas.	+	+	+	+	0	+
13. To provide housing to all to all those in the borough in need.	+	+	+	+	0	0
14. To reduce crime and the fear of crime.	+	+	+	+	0	0
15. To reduce inequalities in health and ensure all current and future residents have access to health facilities.	++	0	+	0	0	0
16. To reduce the amount of waste produced and the amount of waste being imported.	0	0	0	0	0	0

KEY	
++	Significant positive benefit
+	Some positive benefit
0	No significant effect
X	Some adverse effect
XX	Significant adverse effect
?	Uncertain or insufficient information on which to determine