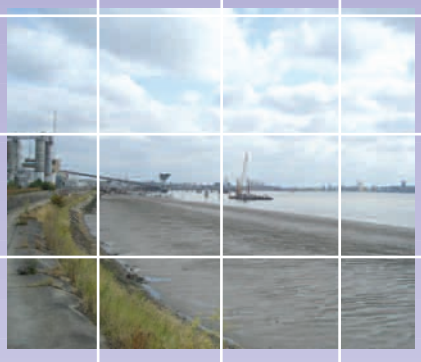
Green Infrastructure Plan for Thurrock 2006 - 2011



Greengrid
Connecting green spaces South Essex

Thurrock Greengrid Strategy

Putting residents first

THURROCK COUNCIL
www.thurrock.gov.uk

Thurrock Green Infrastructure Framework Plan

Prepared for Thurrock Council
by
Land Use Consultants

January 2007

43 Chalton Street
London NW1 1JD
Tel: 020 7383 5784
Fax: 020 7383 4798
luc@london.landuse.co.uk

CONTENTS

FIGURES

APPENDICES

1. EXECUTIVE SUMMARY

1.1. The borough of Thurrock is located in the heart of the Thames Gateway, a national priority area for economic growth and development. The Government's Sustainable Communities Plan proposes that 26,000 additional jobs and 18,500 extra dwellings should be created within Thurrock by 2021. The Plan also sets out the need for new communities to be developed in a sustainable way, balancing economic needs with those of the local community and environment.

1.2. The creation of multi-functional green infrastructure spanning the varied Thurrock landscape will be a key element of delivering the Thames Gateway in a sustainable way. The South Essex Green Grid provides a first step towards this. The Framework Plan builds on the network proposed by the Green Grid by promoting Thurrock's specific priorities and interests based on more detailed analysis.

1.3. The Thurrock Green Infrastructure Framework Plan represents one part of a three-fold approach towards creating more sustainable communities within Thurrock. It has been developed alongside the Thurrock Open Space Strategy and the Thurrock Biodiversity Study, to provide comprehensive knowledge of the existing assets and needs, and potential future assets and needs of the borough. These three documents will be combined to create a Green Grid Strategy for Thurrock, setting out the opportunities and priorities for multi-functional green infrastructure within the borough over the next 15 years. The key purpose of the Framework Plan within the Green Grid context is: "to identify, map and evaluate the existing and potential elements within Thurrock that contribute to a local Green Grid and the broader green infrastructure network of the district in both urban and rural areas, and to complement the proposed open spaces strategy."

1.4. Land Use Consultants were commissioned by Thurrock Council to undertake this work in April 2006. Extensive consultation with key stakeholders representing the social, environmental and developmental interests of the borough was undertaken and reflected in the opportunities identified.

1.5. Much of Thurrock is currently deficient in various types of open space as identified in the Thurrock Open Space Strategy. In addition to this, there are currently a number of barriers limiting access to the existing open spaces, and severing parts of Thurrock from the rest of the borough. Through proper investment and management, these barriers to a fully-functioning green infrastructure network can be overcome. There are a number of sites within Thurrock have great potential to be enhanced and incorporated into a wider green infrastructure network. The historic land use management of the area for mineral extraction has provided a number of sites which offer significant opportunities as strategic green spaces for people and biodiversity. Creation of a green infrastructure network within Thurrock will also have other benefits. Climate change and rising sea levels are likely to have a considerable impact on flood risk in Thurrock. The creation of large areas of semi-natural green space along the Thames could contribute significantly to the amelioration of flood risk in the borough.

1.6. The opportunities identified through this study include proposals for the protection, enhancement and creation of multi-functional green infrastructure within Thurrock, and the responsibility for delivering these changes will lie not only with the Council, but with the statutory bodies, non-statutory organisations and developers operating within Thurrock both now and in the future. Green infrastructure should be created alongside new development in Thurrock and developers should contribute to the green infrastructure network through the provision of funds and appropriate areas for green infrastructure creation.

2. INTRODUCTION

2.1. The Thurrock Green Infrastructure Framework Plan (GIFP) represents one part of a three-fold approach towards creating more sustainable communities within Thurrock. It has been developed alongside the Thurrock Open Space Strategy and the Thurrock Biodiversity Study, to provide comprehensive knowledge of the existing assets and needs, and potential future assets and needs of the borough. These three documents will be combined to create a Green Grid Strategy for Thurrock, setting out the opportunities and priorities for multi-functional green infrastructure within the borough over the next 15 years.

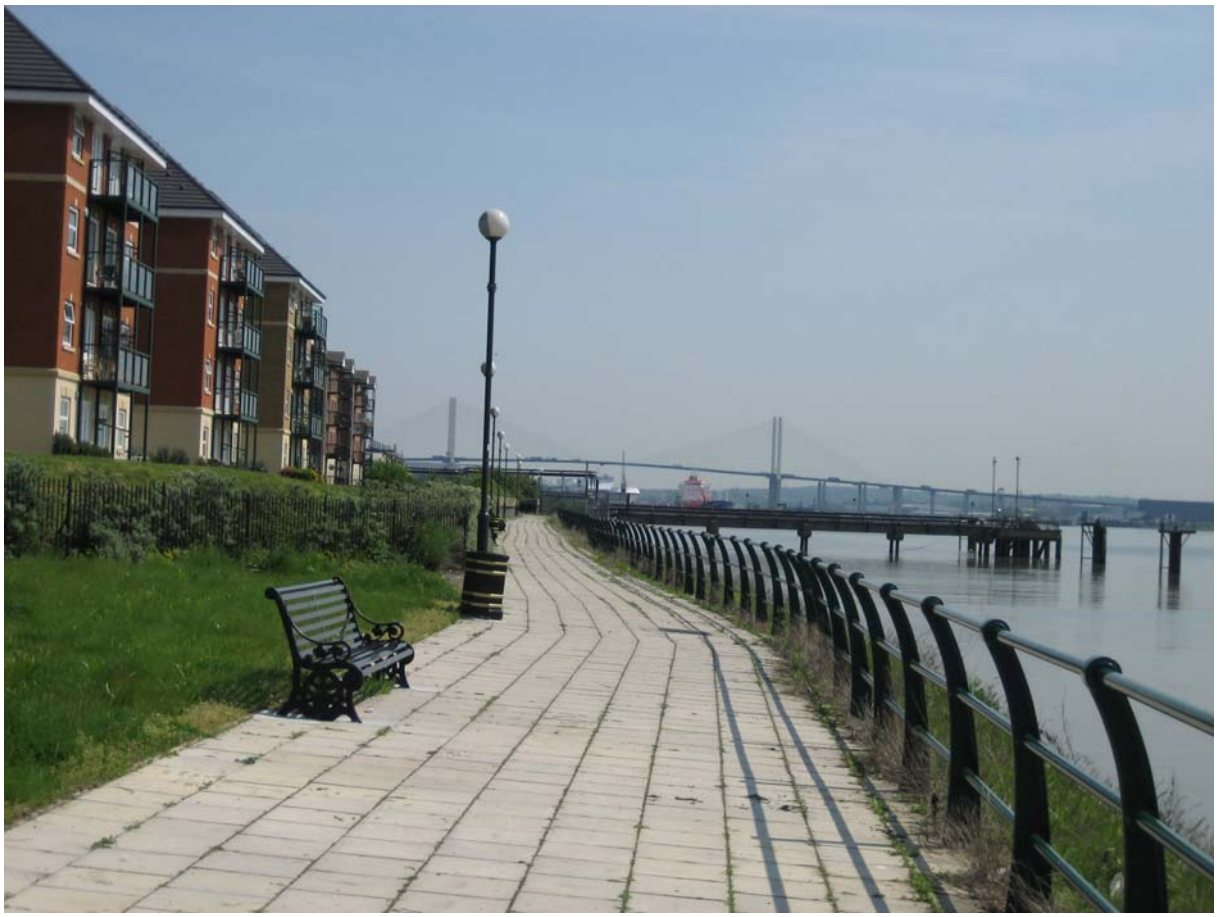
2.2. Thurrock Council commissioned Land Use Consultants to produce this Green Infrastructure Framework Plan. Consultation on the draft Plan was carried out with a range of internal and external stakeholders.

2.3. Thurrock has been identified as a potential area for extensive new development, as a part of the Thames Gateway Growth Area. As such approximately 18,500 new homes and 26,000 new jobs are planned for the borough. The Green Infrastructure Framework Plan has been created in light of these proposals, in order to ensure that green infrastructure is provided alongside urban development.

PURPOSE OF THE PLAN

2.4. The main requirements of the Green Infrastructure Framework Plan were defined in the brief as follows:

- To identify and map the key attributes that contribute to green infrastructure in Thurrock, and that complement the sites identified in Thurrock's emerging Open Space Strategy
- To identify and map potential new and enhanced assets that are required to improve the functionality of the green infrastructure network, including opportunities for landscape and habitat enhancement and provision of new green spaces
- To identify opportunities for flood risk management
- To ensure that the green infrastructure network crosses urban and rural boundaries, existing and proposed communities, addresses quality in the landscape and reflects local character
- To identify a vision and set of overarching principles for the planning, design and management of green infrastructure in Thurrock
- Frame the study in recognition that a future study will be undertaken to produce developer guidelines for green infrastructure.



Riverfront along the Thames at Purfleet

WHAT IS GREEN INFRASTRUCTURE?

2.5. Green infrastructure is best described as a network of multi-functional green spaces, green links and other green areas which link urban areas with the wider countryside. Green infrastructure can provide a range of environmental, social and economic functions, including positive health benefits. The Town and Country Planning Association's 'Biodiversity by Design' Guide[1] outlines the purpose of green infrastructure as follows:

Green infrastructure should provide for multi-functional uses i.e. wildlife, recreational and cultural experience, as well as delivering ecological services, such as flood protection and microclimate control. It should also operate at all spatial scales from urban centres through to open countryside.

2.6. There are several policy drivers for green infrastructure, including the Sustainable Communities Plan which included the following commitment:

We will promote more and better publicly accessible green space in and around our communities, for example through the creation of new country parks and networks of green spaces within towns and cities.

Role of Green Infrastructure

2.7. The role of green infrastructure within the surrounding context is summarised well in **'Creating Sustainable Communities: Greening the Gateway'**[2].

"*We wish to encourage a holistic approach to the greenspace network in order to provide a modern, functional and cohesive green infrastructure which will enhance the new built development and moderate the immediate impact of the construction process on existing communities".*

2.8. More insight into the many functions and benefits of green infrastructure are listed in the **Thames Gateway Green Infrastructure Guidance**[3] as recently produced by the Countryside Agency and other statutory bodies (see below).

[1] Biodiversity by Design: A guide for sustainable communities, Town and Country Planning Association (2004)
[2] Creating Sustainable Communities: Greening the Gateway. A greenspace strategy for the Thames Gateway, DEFRA (2004).
[3] Taken from: Thames Gateway Green Infrastructure Guidance, (Greening the Gateway Partnership/ LUC, 2006)

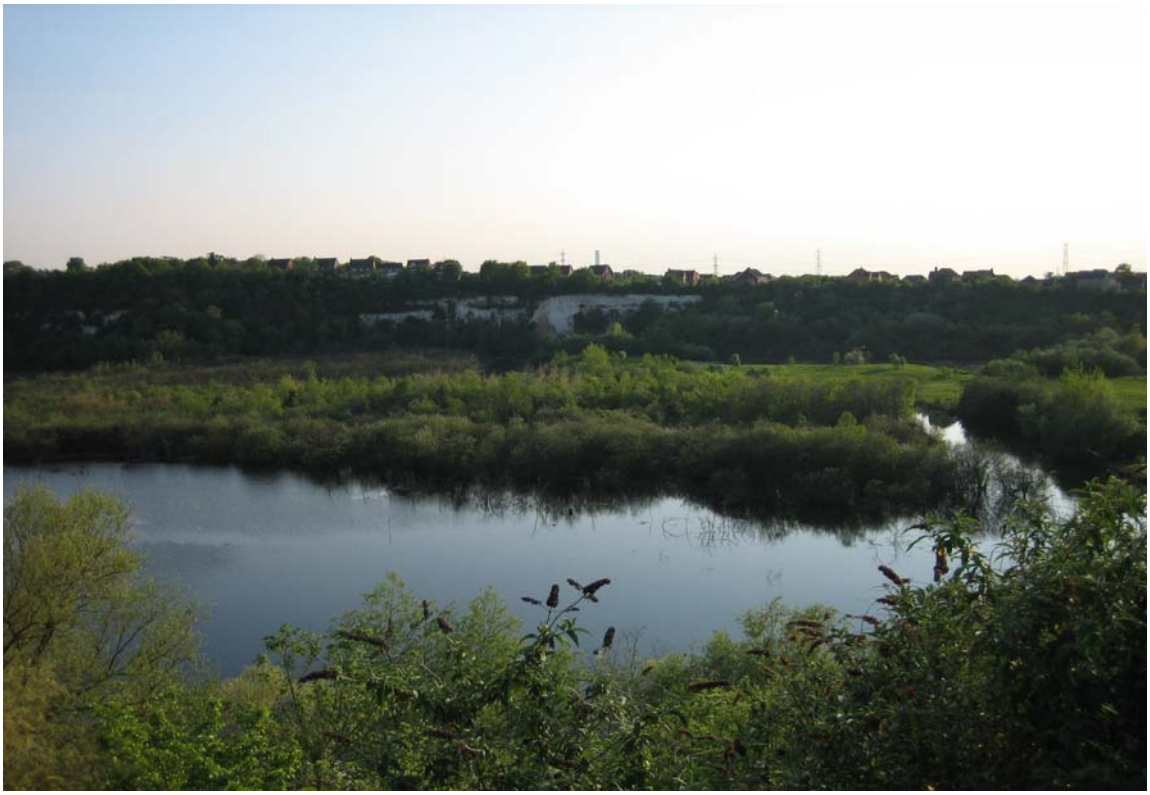
Green Infrastructure Functions

- Active recreation
- Passive recreation
- Quiet enjoyment
- Sustainable transport and public rights of way
- Networks, links and gateways
- Social venue/meeting place
- Cultural/event venue
- Education and training
- Heritage preservation
- Landscape and townscape structure
- Wildlife habitat and biodiversity
- Sustainable water and flood risk management
- Sustainable energy use and production
- Sustainable waste management
- Green produce and food production
- Integration of new and existing communities
- Shared experience of green space creation

Green Infrastructure Benefits

- Health (physical and psychological)
- Social inclusion (accessible and welcoming)
- Community capacity building
- Integration between existing and new communities
- Visual amenity (local image)
- Sense of place
- Access to nature and/or rivers and increased awareness
- Education and learning
- Micro-climate adjustment
- Ecological restoration
- Adaptation to climate change
- Air quality
- Economic contribution/ encouragement
- Employment

Taken from: Thames Gateway Green Infrastructure Guidance, (Greening the Gateway Partnership/ LUC, 2006)



View of Chafford Gorge from Chafford Hundred

STRUCTURE OF THE DOCUMENT

2.9. The remainder of the Green Infrastructure Framework Plan is set out as follows:

Section 2: Introduction

2.10. The remainder of this section provides a brief summary of the Thurrock context, and the need and demand for green infrastructure in the borough. A description of the area covered by this study and the way in which the work has been focussed is also provided here.

Section 3: Context for the study

2.11. Section 3 describes the Thurrock context, outlines key policies and documents which have been considered, and defines the purpose and functions of Green Infrastructure.

Section 4: Approach to the study

2.12. This section provides a summary of the existing environmental assets within the borough, and the method to prepare the Green Infrastructure Framework Plan.

Section 5: The Green Infrastructure Framework Plan

2.13. The Framework Plan itself is set out in Section 5. It includes the following key elements:

- Green Infrastructure Opportunities, which are identified on a Plan;
- Prioritisation of Opportunities;
- Green Infrastructure Principles.

3. CONTEXT FOR THE STUDY

INTRODUCTION

3.1. This section describes the context for the study. It summarises the physical context of Thurrock, and the need for green infrastructure within the borough. The policy context section provides a summary of the key national, sub-regional and local plans and policies that have helped to shape the GIFP.

THE THURROCK CONTEXT

3.2. The borough of Thurrock is located on the northern bank of the River Thames where it expands into an estuary (See **Figures 2.1 and 2.2**). Historically part of the county of Essex, Thurrock has been a Unitary Authority since 1998, and is bordered by Havering to the west, Basildon and Brentwood to the north and Castle Point to the east. Thurrock is generally a low-lying area with a ridge running though from Langdon Hills Country Park on the Basildon boundary, through Horndon on the Hill and Grays to Aveley and Kennington Park in the west of the borough (See **Figure 2.3**). There are two main rivers associated with the borough, the Thames which flows along the southern side, and the Mar Dyke which flows through the west of the borough from north to south, meeting the Thames at Purfleet. This position adjacent to the Thames estuary means that a large part of Thurrock is within Flood Risk Zone 3, the nationally determined zone where the risk of flooding is highest (See **Figure 2.4**).

3.3. As the focal point of the Thames Gateway Growth Area, Thurrock currently represents the key area for development and regeneration in the East of England. The borough of Thurrock incorporates a diverse and ever-changing landscape. The Thurrock of today comprises several different types of landscape, ranging from the post-industrial and industrial landscapes along the river Thames, to the suburban settlements of Chadwell St Mary and South Ockendon, to the rural nature of the small agricultural settlements and surrounding arable land in the north of the borough.

3.4. Recent influences on the landscape include the commercial development at Lakeside, and extensive residential development at Chafford Hundred. With major development proposed in the Thurrock Thames Gateway Development Corporation (TTGDC) Spatial Plan[4], a new container port proposed at Shellhaven, and new infrastructure development the landscape of Thurrock is set to continue evolving into the future.

Need and Demand for Green Infrastructure in Thurrock

3.5. No site surveys or public consultation has been undertaken specifically in regard to the need for green infrastructure in Thurrock. However, Thurrock Council recently undertook a comprehensive survey of the open spaces of Thurrock, in line with the approach outlined in Policy Planning Guidance Note 17: Planning for Open Space,

[4] Thurrock Spatial Plan Preferred Option, Thurrock Thames Gateway Development Corporation (March 2006)

Sport and Recreation. This covers the current extent of open space within Thurrock, and identifies areas which are deficient in open space. In addition, a Public Rights of Way Improvement Plan is currently being researched and compiled by the council's Strategic transport department.

Study Area

3.6. Whilst the entire borough was covered by the data collection and analysis work, the opportunities identified focus on the urban areas and urban fringe and rural areas close to the urban areas. This reflects the existing inhabited areas of the borough and also the key likely growth areas within the district as identified by the TTGDC Spatial Plan[2]. This is based on the best practice approach that green infrastructure can fulfil more functions and benefits when located close to the populations. In addition to the detailed research carried out within the borough, consideration was given to key features, open spaces and links within close proximity to Thurrock. These promote cross-boundary links and contribute to a wider sub-regional network of green spaces and links as promoted by the South Essex Green Grid.

POLICY CONTEXT

3.7. A number of key strategic plans have created a need for a borough-level green infrastructure plan for Thurrock. The key documents and the principles they have defined in regard to green infrastructure in Thurrock, are set out below. A summary of points from other relevant local and national policies and plans are provided in the table in **Appendix 1.**

NATIONAL AND REGIONAL PLANS

Sustainable Communities Plan

3.8. The Sustainable Communities Plan[5] was published by the government in 2003, and sets out the government approach to providing necessary additional housing and jobs in the growth areas in a sustainable way. The document highlights the importance of the local environment and asserts that to ensure communities are sustainable 'a safe and healthy local environment with **well-designed public and green space**' is required. The document makes the following specific comments in relation to green spaces:

We will promote more and better publicly accessible green space in and around our communities, for example through the creation of new country parks and networks of green spaces within towns and cities.

3.9. Suggested ways to achieve this aim, particularly within the growth areas, include the replication of the approach taken by the 12 regional community forests (such as the Thames Chase Community Forest which includes part of the Thurrock), which provide accessible greenspace, protect the countryside and boost economic confidence in the area.

[5] Sustainable Communities: Building for the Future, ODPM (2003)

Creating Sustainable Communities: Greening the Gateway

3.10. 'Creating Sustainable Communities: Greening the Gateway' highlights the importance of combining economic growth with environmental regeneration and enhancement to create a network of varied and well-managed green spaces. The document calls for the countryside to be perceived as **'functional green infrastructure**' which fulfils the following key functions: "to create a positive sense of place, provide environmental protection for local communities and enhance the quality of life of those who live and work here". The document highlights the **Green Grid approach as an important operational tool** which promotes multi-functional networks of green space.

3.11. The Greening the Gateway Partnership formed to implement the Greening the Gateway vision released guidance on green infrastructure within the Thames Gateway. The resulting *Thames Gateway Green Infrastructure Guidance* (2005) identifies the wide range of functions of green infrastructure and the benefits provided by those functions, and provides guidance on key points of reference for further information on the planning, design, management and funding of green infrastructure in the Gateway.

Draft East of England Plan

3.12. The Draft East of England Plan highlights the Green Grid approach as one of the key initiatives in place within the region to 'oversee positive urban fringe management'. The Plan promotes the ongoing implementation of the Green Grid and extension of this initiative to cover surrounding areas. The Plan promotes the coordinated management of the region's greenspaces and green belt. This is particularly relevant to Thurrock in light of the possibility of green belt boundary review in south Essex. Policy TG/SE4 promotes the creation of "a 'Green Grid' of high quality, linked and publicly accessible open spaces across the sub-region, which enhances the biodiversity of undeveloped areas where appropriate". The Plan states that such Green Grids should be developed by local authorities in partnership with other key organisations in the area, and should consider cross-boundary issues.

South Essex Green Grid

3.13. The South Essex Green Grid Strategy[6] is promoted by the Green Grid Partnership which comprises local councils including Thurrock Council, government environment bodies, wildlife organisations and other non-governmental partnerships and the East of England Development Agency. The document outlines a vision for the Green Grid in the Thames Gateway South Essex region and **proposes a range of green infrastructure elements for Thurrock** and the wider sub- region, many of which are reflected in the Thurrock Green Infrastructure Framework Plan. These proposals are framed within a wider strategic framework covering the whole sub-region, and this promotes cross-boundary links between Thurrock and the surrounding boroughs. These links have been reflected in the Thurrock GIFP.

[6] South Essex Green Grid Strategy, Thames Gateway South Essex Partnership (2005)

LOCAL POLICY AND PLANS

3.14. A number of statutory and non-statutory local plans were considered in the development of the Green Infrastructure Framework Plan. The policy context for the work is set out in the current Thurrock Local Plan and the Essex Structure Plan, whilst a number of subject-specific documents provide input on particular issues.

Aspire: Thurrock Community Strategy

3.15. Thurrock's Community Strategy, known as 'Aspire', was developed in 2003 by 'Shaping Thurrock', the Local Strategic Partnership. The aim of Shaping Thurrock is to ensure that social, economic and environmental priorities are considered alongside each other in determining Thurrock's future, and that community needs are recognised and taken in to account. The document sets out a vision for the next 20 years, focussing on several main themes: aspiration, safety, prosperity, inclusion, regeneration, energy and health. Aspire's vision for the future of Thurrock is as follows:

"Thurrock will be a place for enterprise and skills which builds on the heritage and prosperity of the River Thames and welcomes new opportunities for trade. It will be a place where people feel included and where our diverse communities can build a safe, healthy, vibrant area in which they are proud to live work and play."

3.16. The document outlines the broad state of Thurrock in environmental, social and economic terms, and proposes targets for the future, all of which should be met by the end of 2006. The broad themes of Aspire which are particularly relevant to the GIFP are:

3.17. Prosperous Thurrock: The implementation of the GIFP will support the increased prosperity of Thurrock, by making Thurrock a more attractive borough in which to live and invest. This should result in more businesses moving to Thurrock and a more robust and diverse economy. Attractive surroundings encourage businesses to relocate in a region, and a recent study showed that over 35% of businesses relocating to the South West region quoted environmental attractiveness as the key reason for their move[7].

3.18. Regenerated Thurrock: The successful regeneration of Thurrock will be reliant on an attractive environmental setting for new development. The presence of visually appealing and well managed parks, public spaces and green links, many of which are also local heritage assets, not only improves the overall living environment, but also increases an area's attractiveness to new companies which in turn provide employment opportunities and attract customers[8].

3.19. Energetic and healthier Thurrock: Green infrastructure can support healthy living in the local population by providing safe, easily accessible green routes for walking and cycling, opportunities for active and passive outdoor exercise and green meeting places. Access to good quality open space is linked to better physical and mental health problems through opportunities for physical activity the enjoyment of open

[7] The South West Economy: Trends and Prospects, Plymouth Business School, 1996
[8] Does Money grow on Trees? CABE Space, 2005.

space and nature. This can result in fewer working days lost due to ill health[9]. In boroughs such as Thurrock which have pockets of significant social deprivation, this is an essential asset for the community.

3.20. Relevant to the GIFP is that currently 40 per cent of local people use sport and leisure facilities and **68 per cent of local people use parks**. Thurrock GIFP will seek to increase both the percentage of local people using such facilities and parks, and the quality of the parks which they visit.

Thurrock Spatial Plan

3.21. The Thurrock Spatial Plan is being developed by the Thurrock Thames Gateway Development Corporation (TTGDC) to guide future decisions about the way in which Thurrock is developed. TTGDC was created by parliament in order to drive Thurrock's regeneration and ensure the appropriate balance between environment, society and economic growth. One of TTGDC's aims is to **improve the quality of the environment and public realm**. The importance of functional green infrastructure in achieving this aim is clear. Green infrastructure provides a network of green spaces within which sustainable communities can be created. Thurrock GIFP should be seen as a tool for the improvement of the environment and public realm. The Spatial Plan promotes the following principles which the Green Infrastructure Framework Plan can help to implement:

- **Reinforcing local community identities:** local community identities are largely influenced by the surrounding environment and key features of the area. The enhancement and creation of parks and landscapes will enhance the 'sense of place' within the borough, and provide the local community with an environment in which they can take pride.

- **Supporting the delivery of education, health and other community facilities as a priority:** green spaces can function as classrooms and as 'green gyms' to support improved health and education within the local population. Access to good quality open space has a link to reduced physical and mental health problems through increasing levels of physical activity and enabling the enjoyment of open space and nature. This can result in fewer working days lost due to ill health[9] and is particularly important for children in deprived urban communities.

- **Achieving a level of investment in Thurrock that secures a major increase in social and economic prosperity:** the presence of visually appealing and well managed parks, public spaces and green links, many of which are also local heritage assets, increases an area's attractiveness to new companies which in turn provide employment opportunities and attract customers[10].

- **Using the riverside and rural environment to improve quality of life and investment confidence:** promotion of the Thames Riverside as a focus for informal recreation is a key element of the Green Infrastructure Framework

[9] The value of Public Space. CABE Space, 2003.
[10] Does Money grow on Trees? CABE Space, 2005.

Plan. Linking the urban communities to the riverside and rural environment are intrinsic to the aims of the Green Grid and the Framework Plan.

3.22. The Spatial Plan has a number of different stages, which combine to provide information on all levels of development. Currently the Regeneration Framework, which sets out the objectives of TTGDC, and the Spatial Plan, which broadly guides where development should occur across Thurrock, are complete. The key elements of the 'Preferred Option Spatial Plan are set out below. The master-planning stage is currently underway, which sets out more detailed proposals for those areas where regeneration and development will be targeted. Currently, master plans have been adopted for Purfleet, and developed in draft for West Thurrock and Grays. The draft masterplans provide an opportunity for the GIFP to influence the Spatial Plan, as do the Development Briefs and Design Guidelines which represent the final element of the Spatial Plan suite.

3.23. The Preferred Option of the Spatial Plan outlines the following housing provision figures.

- 2,200 new homes in Purfleet;
- 4,500 new homes in Lakeside/West Thurrock (2,300 of these are within Grays/South Stifford)
- 5,000 new homes in Grays and South Stifford
- 2,450 new homes in outlying Communities including Aveley, South Ockendon, Chadwell St Mary, Tilbury, East Tilbury, Stanford Le Hope and Corringham
- The Plan recognises that in order to meet these targets, some land which is currently Green Belt must be developed.

3.24. Other proposed infrastructure relevant to the GIFP include transport proposals and key development opportunity sites. Opportunities to implement elements of the GIFP within the development of these transport proposals and development sites should be considered.

Thurrock Open Space Strategy

3.25. The Thurrock Open Space Strategy was compiled in 2006 in line with Planning Policy Guidance Note (PPG) 17: Open Space, Sport and Recreation. The vision of the Thurrock Open Space Strategy is:

To create a network of high quality open spaces that will serve the whole community now and in the future.

3.26. The document recognises the overlap of Thurrock's open spaces with sub-borough and cross-borough green infrastructure networks such as South Essex Green Grid, Thames Chase and the Green Arc. The types of open space which are covered by the open space strategy are outlined below.

Types of space covered by the Open Space Strategy:	Types of space NOT covered by the Open Space Strategy:
• Parks and gardens • Amenity greenspace • Provision for children and young people • Outdoor sports facilities • Natural and semi-natural greenspace • Allotments • Churchyards and cemeteries	• Water-based greenspace • Common land • Civic spaces • Green corridors

3.27. The aim of the Thurrock GIFP is to complement the open space strategy by considering the links between existing open spaces, and the potential for additional open spaces and links to meet the needs of the existing and future communities in Thurrock.

Other relevant documents reviewed

3.28. A number of other relevant documents at a local and regional level were also reviewed. They are listed below and further details can be found in the summary table in **Appendix 1**.

- National Planning Policy
- Creating Sustainable Communities: Greening the Gateway, ODPM (2005)
- Thames Gateway Green Infrastructure Guidance, Greening the Gateway Partnership/LUC (2005)
- Thames Gateway South Essex Green Grid Strategy, Thames Gateway South Essex Partnership (2005)
- Thurrock Public Rights of Way Improvement Plan (GIS layers), Thurrock Council (2005)
- Thurrock Biodiversity Action Plan, Thurrock Biodiversity Action Group (TBAG) (2006 – 2012)
- Thurrock Landscape Capacity Study, Thurrock Council/CBA (2005)
- Thurrock Borough Local Plan, Thurrock Council (1997)

- Countryside in and around towns, Countryside Agency and Groundwork (2004)
- Thames Strategy East Consultation Draft, Thames Estuary Partnership (2005)
- The Thames Chase Plan 2000, Thames Chase (2000).

4. APPROACH TO THE STUDY

4.1. This section provides a summary of the approach used to undertake the various stages of the study. The method used to research and prioritise green infrastructure opportunities within Thurrock incorporated a plan review, GIS mapping, landscape condition assessment, telephone consultation with local green infrastructure experts and a consultation workshop with stakeholders from across Thurrock.

4.2. The later part of this section outlines the existing environment within Thurrock, in order to provide a baseline for the opportunities identified in Section 5 (The Green Infrastructure Framework Plan). The environmental elements that have been considered and reflected in the formulation of the GIFP are summarised below.

METHOD

4.3. The five main elements to the approach used in this study are outlined in the following paragraphs. The approach incorporated a range of tools for the identification of relevant issues and potential opportunities including:

- plan review;
- GIS mapping;
- landscape condition assessment;
- telephone consultation;
- consultation workshop.

Plan review

4.4. Key local and regional plans covering green infrastructure and open space in Thurrock were methodically reviewed in order to identify any opportunities or proposals relevant to the GIFP. These plans are listed above in Section 3, where the summarised issues from the key documents are provided. The key documents relevant to the GIFP are the Thurrock Open Space Strategy, the TTGDC Spatial Plan (Preferred Option), and the Thurrock Community Strategy, 'Aspire'. These documents and others were reviewed against a list of categories, prompting the identification of relevant policies, principles and proposals. The full results of this exercise can be found in **Appendix 1.**

GIS mapping

4.5. The use of GIS mapping was key to identifying the spatial nature of GI opportunities within Thurrock. GIS information layers were provided by Thurrock Council included information on open space provision public rights of way (PRoW), cycle paths and designated biodiversity features. These information layers were then overlaid on a 1:25000 scale Ordnance Survey map of Thurrock, in order to provide information on relationship of sites to each other and to other land uses in the borough, and also to identify gaps in links between such sites. A full list of the datasets considered in the analysis is provided as **Appendix 2.**

Landscape Condition Assessment

4.6. The approach to assessing landscape condition was based on principles and guidelines in the document '*Landscape Character Assessment Guidance for England and Scotland*'[11]. The guidelines state that landscape quality (or condition):

'Is based on judgements about the physical state of the landscape, and about its intactness, from visual, functional and ecological perspectives It also reflects the state of repair of individual features and elements which make up character in any one place.'

4.7. Using these guidelines, fieldwork was undertaken to assess landscape condition. There were two main aims to the fieldwork:

- to assess the quality/condition of the key characteristics as set out in the Thurrock Landscape Capacity Study;
- to assess the presence of features within the landscape which could potentially be enhanced or conserved and the potential for features which could be created within the landscape.

4.8. As a landscape character assessment of Thurrock Borough[12] had already been completed which picked out the key characteristics and sensitivities of the Borough, the pre-defined character areas were mapped. The character areas formed a useful means of separating the study area into manageable areas for fieldwork; the character areas sharing common landscape features. The character areas and their key characteristics formed an important layer of information to the study, but it was decided that other layers of information could result in a more complete assessment. Information regarding key sites of heritage, biodiversity, access and recreation was mapped for information before going into the field.

4.9. A fieldwork form was used to ensure that the study was comprehensive and consistent. Information from the Countryside Agency Guidelines, and study of other green infrastructure methodologies informed the design of the fieldwork form shown in **Appendix 3**.

4.10. Fieldwork assessment of landscape condition helped inform decisions about opportunities for enhancing the landscape and developing a green infrastructure network. The fieldwork findings also informed the development of broad landscape management areas, based on the existing landscape character areas. More details about the development and purpose of the landscape management areas is detailed in paragraph 4.4.

Telephone consultation

4.11. Drawing on key strategies identified through the plan review above, a number of key organisations and existing initiatives that could play a part in promoting green infrastructure development in the borough. Telephone consultation was undertaken with representatives of these groups in order to identify their geographical and objective remit, how they operate, what they are seeking to achieve, where they are focussing their efforts, and how

[11] 'Landscape Character Assessment Guidance for England and Scotland' prepared on behalf of The Countryside Agency and Scottish Natural Heritage by Carys Swanwick, (2002).
[12] Thurrock Landscape Capacity Study (March 2005) Produced by Chris Blandford Associates on behalf of Thurrock Borough Council.

they may be involved in delivering Green Infrastructure in the future. Whilst the aims and objectives of these organisations were incorporated wherever possible, the priority remained focussed on the needs and aspirations of Thurrock.

4.12. In addition to contact with key stakeholders, initial contact was made with the Planning Policy, Leisure and Recreation, and Countryside Services representatives in neighbouring authorities and Thames Gateway Green Grids. This was to ensure that all other approaches to green infrastructure planning are identified and considered within the plan for Thurrock, and allow joined-up planning for Green Infrastructure across the region.

Consultation workshop

4.13. LUC and Thurrock Council organised a workshop with the relevant Council Officers and key stakeholders could be used to test (and reality check) the emerging proposals for a green infrastructure network, identify any additional GI opportunities, and to provide an opportunity for identifying possible next steps. This workshop was held in July 2006 at Thurrock Council's offices in Grays, and 24 attendees from within the council and external bodies were present. The approach taken on the day is set out in below. A full summary of the workshop findings is attached as **Appendix 4.**

CONSULTATION FINDINGS

4.14. The consultation workshop produced some very useful feedback on the opportunities identified, and on the possible implementation and delivery mechanisms which could be applied. There was general support for the Green Infrastructure work and the Green Grid approach from all attendees, and key comments included:

- suggested amendments to the identified green links to incorporate new links and to consider a hierarchy of links (e.g. local links and strategic links);
- suggested additions to the identified sites with potential as open space;
- identification of potential conflicts, such as the conflict between biodiversity and recreation at Thames Estuary and Marshes SPA (at Mucking Flats);
- the need to incorporate more of the findings from the Landscape condition assessment into the identified opportunities;
- a number of suggested options for delivery and implementation of the Green Grid were made, and these will be considered in more detail through the forth-coming Green Grid document.

EXISTING ENVIRONMENT

4.15. The following environmental elements were all considered in the formulation of the GIFP. An explanation of the why they were considered and how they are reflected in the green infrastructure opportunities identified is provided below.

- Open Space
- Access and Public Rights of Way

- Landscape
- Biodiversity Assets
- Heritage Assets
- Flood risk
- Land Use

Open Space

4.16. Information on existing open space was largely gathered from the Thurrock Open Space Strategy (**Figure 4.1**). For the purpose of this study, country parks within Thurrock have also been identified in addition to the Open Space categories, although they did not form part of the Open Space Strategy (Thurrock Council, 2006).

4.17. The Open Space Strategy identifies deficiencies in several types of open spaces. The study shows that all of the borough is deficient in some form of parks (either satellite parks, local parks or community parks). The majority of the Borough, with the exception of land surrounding Mucking Flats and Fobbing Marshes is deficient in 'natural and semi-natural greenspace'. More detailed information about the location and quality of the open spaces are available in the Open Space Strategy.

4.18. Mapping of the existing open spaces was important both to identify areas deficient in open space, and also to identify existing open spaces with the opportunity for enhancement. Being able to see all of Thurrock's open spaces also allowed opportunities to be identified for potential connections and linkages between them.

Access and Public Rights of Way

4.19. Study of the Public Rights of Way (PRoW), cycle routes and train links shows that Thurrock has numerous routes, there being a dense network of footpaths throughout the borough (**Figure 4.2**). The footpaths are however often short routes connecting rural roads and villages, or are segregated by the route of large, busy roads e.g. the A13 which cuts east-west across the borough. The Public Rights of Way Improvement Plan provides an outline of which footpaths Thurrock Council have prioritised for improvement, and also identifies where there may be a need for new footpaths.

4.20. The footpath network in Thurrock has suffered from a certain amount of severance due to transport infrastructure and industrial development, and this is an issue the Greengrid will seek to overcome. One initiative already in place to link existing rights of way is the Forest Circle network, led by Thames Chase. The Forest Circle is a long-term vision for a network of inter-linking paths, greenways and quiet roads, which will combine to provide access to Thames Chase for the boroughs of Thurrock, Havering and Brentwood. A comfortable environment for walkers, cyclists and horseriders will be a priority of the Forest Circle, and within the Thurrock context, links between the urban areas of Aveley, Purfleet, and South Ockendon will be considerably enhanced. The Forest Circle will be implemented where opportunities arise and the vision also aims to secure connecting routes between the Forest Circle path and the surrounding residential areas.

4.21. Thurrock's cycle network consists of local routes identified by the council and National Cycle Route (NCN 13) that is progressed by Sustrans. There is a dense network of cycle paths within Grays, particularly around Chafford Hundred. Although less comprehensive outside Grays, there are a number of cycle routes which radiate out from Grays, connecting the settlement to Stanford-le-Hope, South Ockendon, the Thames and surrounding marshes and to the fenland surrounding Bulphan to the north. The routes radiating out from Grays are fairly long and consistent routes, connecting settlements and areas of interest e.g. the marshes, which makes them a useful resource.

4.22. Two train routes cross the Borough, the south and east of the Borough being particularly well connected. The C2C line connects the south west corner of the Borough (Purfleet) to the north-east of the Borough (Stanford-le-Hope). A second railway route branches off from Grays northwards to Ockendon. In addition to the two passenger routes, a goods line branches off eastwards from Stanford-le-Hope towards Shellhaven.

4.23. Mapping existing accessibility of the landscape is essential for highlighting the areas which are inaccessible and cannot benefit from connectivity with the rest of the Borough and its facilities. It was particularly necessary within the Thurrock landscape which is so heavily dominated by road networks which segregate the landscape. By understanding the existing conditions it is possible to enhance/create networks to provide safe, attractive continuous routes for pedestrians and cyclists, linking strategic points, communities and green spaces.

Landscape

4.24. A Landscape Capacity Study of Thurrock was completed in 2005[9]. (**Figure 4.3**). This provided analysis of the physical and cultural influences that have shaped the Thurrock landscape. A list of key characteristics of each character area was produced for the Landscape Capacity Study. An assessment of the condition of key characteristics was made during fieldwork assessments. The findings were used by LUC to make an assessment of the potential of certain landscape elements for enhancement, and to categorise the landscape under broad landscape management objectives. Further details about the key characteristics and sensitivity of each character area can be found in the Thurrock Landscape Capacity Study. Findings of the fieldwork assessment of condition and opportunities of each character area can be found in **Appendix 5.**

4.25. By mapping landscape character areas and having an understanding of the key characteristics of each area it is possible to ensure that new development is designed to enhance or recreate the established landscape character. It provides guidance on style and form of buildings and materials, land uses to be promoted and vegetation types to be replanted or enhanced.

Biodiversity and Geology

4.26. There are a number of nationally and internationally important biodiversity sites within Thurrock. Many of the key biodiversity assets are relating to the water environment, including the internationally designated Mucking Flats SPA and RAMSAR site. Many of the SSSIs in Thurrock are also designated for wetland habitats, and reflect the lowland marshland character that characterises the lowland areas of the borough. The range of County Wildlife Sites across the borough are a testament to the extensive wildlife assets which exist outside the nationally-designated sites, and the Thurrock Biodiversity Action

Plan (BAP) identifies a number of priority habitats ranging from 'coastal grazing marsh' and reedbeds to lowland heath, calcareous grassland and urban habitats, proving the Thurrock also supports a wide-range of habitats beyond the water environment. Brownfield sites have become one of Thurrock's most species-rich habitats, and this valuable resource should be recognised and protected in the allocation of land for future development.

4.27. The geological resource has not been separately evaluated and mapped. The importance of the resource in Thurrock is recognised, however, for its intrinsic value, its importance for study and in conjunction with some of the biodiversity assets. Thurrock will work with the local RIGS (Regionally Important Geological and Geomorphological sites) group to identify and map the resource as a separate study. It is a principle of the Green Infrastructure study that the conservation, enhancement, study and management of the resource will be sought wherever possible.

4.28. The following biodiversity designations of national or significant regional importance were mapped (**Figure 4.4**):

- Special Protection Areas (SPAs);
- Ramsar sites;
- Sites of Special Scientific Interest (SSSIs);
- Ancient Woodland;
- County Wildlife Sites (CWSs).

4.29. Thuroock's Local Wildlife Sites (LWS) have recently been reviewed following an extensive ecological survey of the borough as part of the Thurrock Greengrid. The new list of Local Wildlife Sites is provided in the Thurrock Biodiversity Study (2006).

4.30. Identification of sites of biodiversity importance has influenced the GIFP in a number of ways. Within the context of the GIFP, the sites designated for biodiversity value should be managed primarily for the natural habitats and species for which they were designated. Any green infrastructure proposal in the proximity of these sites should be assessed in terms of the potential impact on the key features of the designated site. Where appropriate, physical links should be made with these sites to provide ecological corridors for the dispersal of flora and fauna. This will increase the biodiversity potential of the wider borough. Creation of semi-natural greenspace adjoining protected areas should also be encouraged in order to provide a natural buffer between the protected site and development or damaging land uses.

4.31. The Thurrock Biodiversity Study (Thurrock Council, 2006) provides a detailed summary of the existing biodiversity value of sites within Thurrock, and priorities for future enhancement and management.

Flood risk

4.32. **Figure 2.4** shows the flood risk zones within Thurrock. Large amounts of Thurrock's urban area lie within Flood Risk Zone 3, and this should be a key consideration in planning both future development and green infrastrcturue for the borough. The mapping demonstrates that the area alongside the Thames and Mar Dyke rivers is in Flood Risk

Zone 3, the highest flood risk category. The high flood risk in these areas is directly related to the low-lying land along the two river valleys. Flood management is particularly important in Thurrock, in light of the extensive additional development proposed for the borough, which will significantly increase the urban area of Thurrock and could have associated significant impacts on flood risk within the area.

4.33. The flood risk data has influenced the design of the GIFP in a number of ways. Many of the proposed semi-natural greenspace is located along the two rivers. This maximises the potential for green spaces to perform flood defence functions. The types of habitat which will be created along these riverside areas are wetland habitats which have the best ability to act as natural flood barriers. Flood management functions which will be performed by green infrastructure in these and other areas include providing a permeable surface which acts as a natural sponge for rainwater run-off, filtering run off to remove sediment and pollution, and acting as flood storage areas.

Heritage Assets

4.34. Thurrock has an interesting and diverse heritage reflecting its location along the Thames Estuary which was a key landing point for the Roman, Normans and Saxons over the ages. There is evidence that human occupation of Thurrock stretches back over 500,000 years. Also related to its location, are Thurrock's numerous fortifications and military landmarks, such as the forts at Coalhouse and Tilbury and the pillboxes along the waterfront. Tilbury served as the location where Queen Elizabeth I rallied the troops to fight against the attempted invasion of the British Isles by the Spanish Armada. There are scattered ancient woodlands around Langdon Hills and Belhus Woods Country Park, that have long been an important part of the borough in providing fuel and building materials to the communities. The marshes also have historical significance and played an essential role in providing food for inhabitants of the area over many centuries.

4.35. Thurrock's more recent history has been as an industrial centre and network of mineral extraction sites, and these influences have also heavily influenced the landscape we see in the borough today. More recently still, parts of Thurrock have acted as a giant waste bin for London and surrounding urban areas, and the landfill site at Mucking alone takes up to a fifth of London's waste. The challenge for the Greengrid will be to incorporate these features into the Greengrid and enhance them in ways most beneficial to the community and environment of the borough.

4.36. Information regarding Thurrock's heritage and key historical features of the borough was gathered from Thames Gateway Historic Environment Characterisation Study[13] and the English Heritage Sites and Monuments Records (**Figure 4.5**). Scheduled Ancient Monuments from the Sites and Monuments Record (SMR) were mapped alongside historic landscape sensitivity (taken from the Thames Gateway Historic Environment Characterisation Study[14]).

4.37. In addition, the following information from the Historic Environment Characterisation Study was considered during design of the Green Infrastructure Framework Plan:

- commons with an open margin;

[13] Thames Gateway Historic Environment Characterisation Study, English Heritage, Essex County Council and Kent County Council (2004)

- mineral extraction/disused mineral extraction;
- allotments;
- water reservoir;
- informal Medieval Parkland;
- 20th Century leisure;
- Ancient Woodland.

4.38. Mapping of the historical assets of Thurrock ensures that the features are protected, enhanced and promoted in the management and enhancement of the green infrastructure network. The regional importance of many of Thurrock's currently undesignated historic features has been highlighted through mapping the historic environment, and these features should be incorporated into Thurrock's green infrastructure where possible. Many features of Thurrock's cultural heritage have the potential to be incorporated into green infrastructure, including historic areas of common land, landscaped gardens, industrial sites and wartime buildings.

Land Use

4.39. Information on 'previously developed land' was gathered from the National Land Use Database (NLUD, 2004). This identified the location and extent of previously developed land that had not (in 2004) been identified as a site for development (**Figure 4.6**). This information was used to identify sites that may currently be unused and may therefore hold potential as areas where open space creation could be considered. This data was used in combination with the Open Space Deficiency data derived from the Open Space Study to determine areas where open space creation is necessary and land may be available.

4.40. Assessment of the biodiversity value of Brownfield land in Thurrock has been carried out as part of the Thurrock Biodiversity Study (2006) and mapped accordingly. This information, including data from the 'All of a Buzz in the Gateway' project and the recent Thurrock Local Wildlife Sites Review should be used in future work to identify brownfield land for inclusion in the Greengrid.

4.41. Information on the agricultural classification of land within Thurrock was collated from the DEFRA database. This data provided some insight into the quality of existing agricultural land, and its corresponding value. High quality agricultural land was identified as sites within Grades 1 and 2, and within these categories change of use was not considered. There may be some specific locations where converting this type of land for to a greenspace function is appropriate, however, it is not possible to identify such sites at a borough-wide level. Areas of a lower agricultural grade were considered to have potential for other uses where appropriate, and the potential uses identified included production of biomass crops, and management for semi-natural open space and informal recreation areas.

5. THE GREEN INFRASTRUCTURE FRAMEWORK PLAN

5.1. This section summarises the key opportunities for the enhancement and creation of green infrastructure as identified through the study. It also provides some suggested criteria for the prioritisation of opportunities, and principles which should guide the planning design and management of all green infrastructure in Thurrock.

GREEN INFRASTRUCTURE OPPORTUNITIES

5.2. The terms used to describe opportunities on the South Essex Green Grid have been adopted where appropriate, in order to provide vertical integration between the plans. In addition, several additional categories of green infrastructure proposals have been used which incorporate additional green infrastructure functions not covered in the South Essex Green Grid. The purpose of each category is described in detail below, and **Figure 4.8 (the 'Green Infrastructure Plan')** identifies the spatial location of all the strategic proposals. **These further details of the specific strategic proposals are provided in Appendix 6.**

5.3. In addition, local level opportunities have been identified for the creation and enhancement of green links and open spaces to add a local layer to the Framework Plan. The local level opportunities focus on the urban centres of the borough, as those areas most in need of enhanced green infrastructure networks. There are four local level maps covering the key urban centres as shown in **Figure 4.10** and **Figures 4.11 – 4.14.**

Types of green infrastructure opportunity in Thurrock

- Strategic Green Links
- Riverways
- Parkways
- Strategic Open Space
- Strategic Semi-natural Greenspace
- Strategic Bridging Points
- Strategic Heritage Assets
- Strategic Biodiversity Assets
- Strategic Views
- Flood Management Opportunities
- Natural Systems Opportunities
- Landscape Management Areas
- Potential for Multi-functional Open Space
- Local Green Links

Strategic Views

5.4. The Thurrock GIFP proposes additional views to those identified through the SEGG. These additional views have been added as a result of strategic viewpoints identified through field survey work. Where strategic views are identified it denotes an opportunity to promote, enhance and protect the existing views, to facilitate appreciation of these views by the existing and future populations of the area. This approach is based on the theory that attractive and accessible views of the local area contribute to enhanced appreciation of the local area and sense of place.

Strategic Multi-functional Greenspace

5.5. The Strategic Multi-functional Greenspace is a term adapted from the South Essex Green Grid, which refers to Strategic Parks. The Strategic Parks identified in the SEGG have been incorporated into this category, and in addition new sites have been identified. Strategic Multi-functional Greenspace refers to sites which should be enhanced or created to provide recreation facilities for the Thurrock community and beyond. The main reason for inclusion of these sites is that they have been proposed by strategic initiatives such as the South Essex Green Grid, or promoted by Thurrock Council as likely strategic sites.

5.6. This category has been divided into two sub-categories; 'sites to enhance' and 'sites to create'. Whilst no size threshold is identified for the Strategic Parks in the SEGG, the document does identify size thresholds in relation to parks. For the purpose of the Thurrock GIFP, those parks identified as Strategic Multi-functional Greenspace have not been determined in terms of size, as the amount of land available for open space is unclear. However, all potential Strategic Multi-functional Greenspaces are located in urban fringe or rural agricultural areas, and in that sense they have the potential to cover a significant area.

Proposed Strategic Semi-natural Greenspace

5.7. This category was designed to highlight sites which should be managed as semi-natural greenspace due to their potential to provide informal recreation and biodiversity benefits. Identification of these sites as priorities for semi-natural greenspace was based on a number of considerations, and the sites identified on the Plan fulfil most or all of the criteria. The criteria used are as follows:

- Currently undeveloped: The sites selected are all currently unmanaged or under agricultural use.

- Adjacent to strategic biodiversity assets: Almost all of the sites identified (except Tilbury Marshes) are local adjacent to existing biodiversity assets. This is a positive consideration as the creation of semi-natural greenspace at these sites can provide a buffer area to protect the existing biodiversity assets, and also because the newly created semi-natural greenspace can become colonised by desirable species of flora and fauna more quickly when adjoining other semi-natural sites. In addition, creating a network of semi-natural greenspaces offers greater informal recreation benefits than small individual sites. Public access to areas where sensitive habitats and species populations exist will be determined in consultation with Natural England, to ensure no damage is caused to these important assets.

- Priorities of local wildlife organisations: Several of these sites have also been prioritised for management by leading local wildlife organisations. The leading wildlife organisations in Thurrock are the Essex Wildlife Trust and the RSPB. Orsett Fen was historically a grazed common, now managed as arable land, and its restoration to open grazed marshland is supported by the Historic Environment branch at Essex County Council.

- Environmental features of the site mean that BAP habitats could be created or restored: Most of the sites identified under this category were historically marshland areas which have recently been managed as arable land. 'Coastal grazing marsh' is a priority habitat in the Thurrock BAP, and restoration of these sites through re-introduction of traditional management offers an opportunity to increase the extent of marshland within the borough.

Strategic Bridging Points

5.8. This category reflects the strategic bridging points identified in the SEGG. The category is based around the need to overcome barriers to movement in the borough, particularly the main transport routes through the area, such as the A13 and the M25. The A number of bridging points have been broadly proposed, although it should be noted that these are broad locations and that detailed feasibility studies will be required to determine the most appropriate location and type of bridging point across these barriers.

Parkways

5.9. The term 'Parkways' has been adopted from the SEGG and denotes main transport routes through Thurrock which are likely to be subject to improvement and widening works as part of the Growth Area development. Within the GIFP, these 'parkways are identified due to the potential to secure environmental enhancements related to the likely infrastructure enhancements. Where 'parkways' are identified there should be significant environmental investment to secure greener and more sustainable corridors incorporating landscape and environmental improvements. The SEGG identifies a number of objectives for 'parkways' which should be applied wherever feasible in Thurrock (see text box below). Within these parkways the managed 'wildlife verges' should be enhanced for biodiversity as priority, incorporating footpaths only where necessary. Other urban verges should be modified to incorporate off-road footpaths and cycle paths where desirable (See local and strategic green links opportunities).

Parkways vision:

- To realise the full potential of widened, improved capacity roads through consideration of increased land take to create a more sustainable strategically significant corridor which will:
- Link to other strategic corridors;
- Create a compelling visual experience of movement through the landscape and sense of arrival at towns through the design of a sequence of views and landmarks;
- Incorporate segregated cycle paths;
- Create attractive bridging and crossing points in strategically important locations;
- Reflect local diversity in planting and built features (e.g. bridges);
- Create landmarks to help give a sense of place;
- Maximise habitat creation opportunities;
- Integrate surface water run-off with opportunities to create new wetlands and link with network of Sustainable Drainage Systems.

Taken from the South Essex Green Grid (2005)

Strategic Green Links

5.10. The Thurrock GIFP takes the concept of Strategic Green Links from the SEGG's 'Greenways', and proposes this approach for additional routes across the borough. The Strategic Green Links represent key routes along both existing and desired footpaths/bridleways which are seen as important at a borough or sub-regional level to link communities to Strategic Multi-functional Greenspaces and other strategic assets. These routes are independent of roads, railways and rivers, and are designed for informal recreation and sustainable transport use for walking, cycling and horse riding. The Strategic Green Links are designed to provide links both between settlements and through dense urban areas, in order to provide attractive routes in all areas of the borough. Investment in PRoW should be prioritised through the Thurrock PRoW Improvement Plan. In addition, detailed routes of public access links should be determined through appropriate survey, community consultation and feasibility studies.

Riverways

5.11. It is envisaged that Riverways will perform a similar informal recreation and alternative transport role to the Strategic Green Links, but there are also management issues and opportunities to be considered in these areas. SEGG sets out the key issues and opportunities for the two Riverways within Thurrock; the Mar Dyke and the River Thames, and these should be considered in any management within the respective river corridors. Both these Riverways are grouped under the Thames catchment, and the key considerations are set out in the box below. The Thurrock GIFP recognises the broader role of the Mar Dyke River Valley as both a strategic green link, and a strategic semi-

natural open space, and these important functions should be recognised and reflected in future planning, design and management.

Thames Catchment Vision

To restore, enhance and promote the rivers as multi- functional systems based on Strategic Flood Risk Assessments that enhance the existing attributes of the rivers and the Thames Estuary, and are managed for access, wildlife and education by:

- preparing a development framework for each river based on flood risk and water management, sustainable drainage systems and multi-functional use
- promotion for leisure and tourism including ferry services
- sensitively designed improvement of connectivity from urban areas to and through the ecologically diverse marshland and foreshore habitats
- enhancing the educational, skills and learning opportunities of the estuary and the marshes; and
- enhancement of destinations through the creation of parks and visitor/interpretation centres which promote the national and local archaeological, historical and cultural value of the estuary in:
- military defence
- industry and commerce
- leisure and tourism; and
- ecology and natural processes by:
- establishing physical and visual connections between urban communities and the riverside
- creating continuous riverside journey; and
- promoting the land uses close to the river which maximise access.

Taken from South Essex Green Grid (2005)

Potential for Local Green Links

5.12. In addition to the strategic green links, a network of local green links has also been identified (**Figures 4.10 – 4.14**). This category is divided into two sub-categories, 'Green Links with existing route', where there is already some sort of right of way along the link (e.g. and existing footpath or cycle route) and 'Desired Green Links', where there is not currently a specific footpath, but where it would be desirable to promote one using signage or to create one when planning for new development. These links are separate from the set of strategic green links, as they are not part of a strategic route linking urban areas to other urban areas or to strategic multi-functional greenspaces, but are designed to link open spaces and other community infrastructure with existing and proposed residential areas within the borough. Detailed routes of public access links should be determined through appropriate survey, community consultation and feasibility studies.

5.13. The green infrastructure and community elements considered in the identification of these links include:

- All open space
- Schools
- Community hubs (such as town centres)
- Communities severed by transport infrastructure
- Cycle routes (existing and proposed)
- PRoW
- Brownfield land
- New residential and community areas identified in the Spatial Plan
- Strategic Green Infrastructure Opportunities

Potential for Local Multi-functional Greenspace

5.14. These sites were identified through either survey work undertaken in the field as part of the Landscape Condition Assessment (See Section 4), or through use of the National Land Use Database (NLUD). NLUD provides locations of land which was previously developed but is now derelict, and these sites have potential to provide an open space function, particularly where they occur within an urban area or on the urban fringe. No size threshold has been identified to differentiate local multi-functional greenspace from strategic multi-functional greenspace, however, most of the Potential Local Multi-functional Greenspaces are located in urban and urban fringe areas and it is assumed that the total area of land available for open space will therefore be restricted. In addition, these local open spaces may not be semi-natural in nature, and would tend to attract the local rather than borough wide community, due to their location within existing urban and residential areas.

5.15. Those potential open spaces which fell within an area of deficiency in local parks should be prioritised over those which are outside the open space deficiency area. (See **Figure 4.9)**. Further prioritisation of these sites for investment and management should be based on the need for additional open space in the area and demand for open space areas. Feasibility studies should be carried out at site-level to assess the potential for open space at these sites.

Strategic Heritage Assets

5.16. This category is designed to promote the range of heritage assets which exist within the borough. Thurrock has an interesting and varied past and these assets should be promoted where possible through public access and interpretation. The military heritage features of the areas along the Thames, the industrial legacy, and the importance of links between the low-lying marshes and the higher ground, both of which were essential to human's ability to

settle and develop communities in Thurrock, should all be reflected and heritage features conserved in future management of Thurrock's green infrastructure. The sites identified in this category have been identified from a number of sources, some were mentioned in the South Essex Green Grid, others have been highlighted by local heritage experts, and others have been identified through review of the Thurrock Landscape Capacity Study[9] and the Thames Gateway Historic Environment Characterisation Study[14]. The priorities for conserving and enhancing Thurrock's heritage in management of the GIFP are outlined in Section 5, under Green Infrastructure Principles.

Strategic Biodiversity Assets

5.17. The strategic biodiversity assets identified on the Plan represent sites with national or international biodiversity designations. These sites are the priority sites within the borough to safeguard for biodiversity. Management to maintain and enhance the key features of the site should be a priority in these areas, and public access for informal recreation and educational purposes should be considered on a site-by-site basis, in consultation with Natural England, dependant on the sensitivity of the site and the species it supports.

5.18. Locally designated biodiversity sites also have a key role to play in a successful Greengrid for Thurrock. The Thurrock Biodiversity Study provides a detailed audit and summary of these sites, and identifies sites which should receive local protection through designation as Local Wildlife Sites. These sites will be incorporated into the final Thurrock Greengrid.

Strategic Flood Management

5.19. A number of opportunities for strategic flood management have been identified through field and map research. These opportunities have been split into three broad categories:

- Potential for various flood management measures;
- Potential for strategic Sustainable Drainage Systems (SuDS);
- Potential for Managed Realignment.

5.20. Further details regarding each specific proposal can be found in **Appendix 6,** which provides a summary of all strategic opportunities identified. Each proposal would need further research and a site-specific feasibility study prior to implementation.

Natural Systems

5.21. The roles and functions of natural systems are numerous and varied. Natural systems support the various environmental functions mentioned above such as biodiversity and flood management, and also fulfil many other roles, including control of air and water pollution, climate change control, local climate management, and various forms of energy production. Pollution control is provided by woodlands and other vegetation, and woodlands absorb large quantities of atmospheric pollution, especially 'particulates'[14]. In addition, green infrastructure also exploits the natural processes of sedimentation, filtration

[14] The countryside in and around towns, Countryside Agency and Groundwork (2004) *The countryside in and around towns*

and biodegradation, thereby improving water quality by acting as a filter to remove pollutants from the water cycle[15]. In addition, properly managed and protected flood plains and water meadows can store flood waters to help to protect nearby urban areas from flooding[15].

5.22. The Greengrid has the potential to incorporate renewable energy provision such as wind energy, solar power, biomass and wood fuel, and alongside local food-growing schemes, this can help offset the carbon footprint created by development.

5.23. Thurrock Greengrid will reflect and implement the proposed Thames Gateway Parklands approach for the wider Thames Gateway. The Department for Communities and Local Government (DCLG) describe the Thames Gateway Parklands as being 'based on the natural system of the tidal Thames'. The recent Thames Gateway Interim Framework[16]states that the Thames gateway Parklands extend the Greengrid concept, and identifies the need for multi-functional greenspaces that are planned alongside, or in advance of, development. Functions that the network of greenspaces should fulfil include opportunities for local renewable energy development, locally grown food and integrated water and flood management. Proposals have been made within the Thurrock Greengrid to reflect these natural systems functions, and are set out in Appendix 6.

5.24. Potential natural systems opportunities identified include the management of woodlands in the west of the borough for wood fuel through sustainable forestry, potential to co-fire Tilbury Power Station using biomass and the potential to source the biomass required from within Thurrock, where appropriate plants could be grown and harvested from the borough's arable land. Land reclamation sites are potential biomass sites, as well as low-grade arable land. There is now some demand for biomass in neighbouring borough of Havering, as a woodchip boiler has been installed at the Thames Chase Forest Centre. As for the flood management opportunities, detailed site-specific feasibility studies would be required prior to incorporating any of the opportunities.

LANDSCAPE MANAGEMENT AREAS

5.25. The 'Landscape Management Areas' provide an additional layer of guidance on the character of future green infrastructure in Thurrock (**Figure 4.15**). The Landscape Management Areas descriptions should be reflected in all green infrastructure projects and developments incorporating green infrastructure across Thurrock. This element of the Plan suggests a visionary approach to the future of Thurrock's landscape, and promotes the enhancement of the traditional character of the area through application of four broad landscape character categories. More importantly, it offers the opportunity to offset the carbon footprint of existing and future development through restoration or enhancement of landscape character. Proposals within the Thames Chase boundary should also consider these landscape management areas with reference to the management zones identified in the Thames Chase Plan.

[15] Sustainable Drainage Systems, CIRIA, 2004
[16] Thames Gateway Interim Framework, DCLG (2006)

5.26. The broad landscape management areas were defined following fieldwork and the identification of opportunities for developing the green infrastructure of Thurrock. The landscape character areas of the Thurrock Landscape Capacity Study were grouped into broad areas of similar character, and landscape management objectives were applied to them. The Landscape Management Areas are:

- Wooded landscape to be enhanced;
- Marshland landscape to be conserved and enhanced;
- Pastoral landscape to be conserved and enhanced;
- Create restore landscape character in line with principles.

5.27. The purpose of this was to highlight the broad management objectives for the landscape based upon its character and features. This will be useful to:

- Developers- to ensure that new development (housing/industry) and its incorporated landscape elements are in keeping with existing landscape character;
- Green space managers (Thurrock Council, green space initiatives and conservation organisations)- it will help to guide the enhancement of existing green spaces (particularly fine grain green spaces), which are currently in poor condition and not designed in keeping with the landscape character.

5.28. The broad landscape management areas are set out below:

Table 5.1: Landscape Management Areas

Landscape Management Area	Character areas incorporated (as defined in the Thurrock Landscape Capacity Study)	Landscape Management objectives
Wooded landscape to be enhanced	B2 Langdon Hills Rolling Farmland and woodland/wooded Hills B3 Fobbing Ridge Rolling Farmland/Wooded Hills B4 Belhus Rolling Farmland/Wooded Hills, D1 Aveley/South Ockendon Urban Fringe E1 Aveley Urban Area	• A landscape with a wooded elevated character. • Landscapes with a strong urban edge character; providing gateways into Thurrock. • Enhancement of the woodland would be in character with the existing environment, and woodland would provide an attractive gateway feature • Seek to achieve Thames Chase woodland creation objectives as identified in the Thames Chase Plan.
Marshland landscape to be conserved and enhanced	C1 Fobbing Marshes C2 Coryton and Marshes C3 Mucking Marshes	• Low lying land located along the River Thames. All the character areas share the characteristic that they were historically grazed marshland. • Although significant parts of the area have been developed for industrial purposes e.g. the Shellhaven site, all areas are unified by their flat topography, open

Landscape Management Area	Character areas incorporated (as defined in the Thurrock Landscape Capacity Study)	Landscape Management objectives
	C4 Mucking Flats and Marshes C5 Tilbury Marshes E5 Tilbury and Docks Urban Area.	skyline and sense of exposure. • Areas of the marshland showed considerable potential for enhancement for both ecological and recreational purposes, possibly including the re-introduction of extensive grazing. • It is important that the conservation of the marshland landscape is considered when developing the area for recreational purposes e.g. Mucking SPA/RAMSAR
Pastoral landscape to be conserved and enhanced	A1 Bulphan Fenland B1 Sticking Hills Rolling Farmland/Wooded Hills	• A mixed arable and pastoral landscape, an open fairly exposed character (outside of the woodland blocks) with a tranquil, rural character away from main roads. • Contains settlements with elevated views to the south across the mudflats and marshes to the Thames. • It is beneficial to maintain the open character of the area, and encourage traditional pastoral farming as a land use, which will maintain open views to the south. • Where appropriate to landscape character, creation of further woodland blocks within the open landscape character should be sought • Encouragement for creation of Strategic Semi-natural Greenspace (e.g. Bulphan/Orsett Fen)
Create/restore landscape character (in line with principles).	D2 Mar Dyke River Valley Urban Fringe D4 White Crofts/Orsett Heath Urban Fringe D5 Linford/Buckingham Hill Urban Fringe E2 South Ockendon Urban Area, E3 West Thurrock and Purfleet Urban Area E4 Grays/Chadwell St Mary Urban Area E6 Corringham/Stanford-le-Hope Urban Area part of D7 West Tilbury Urban Fringe.	• A very strong urban influence, either being large settlements within Grays or urban fringe containing roads, electricity pylons, and a degraded character. • The prominent townscape character is created by the late 20th century development. • Fine grained green spaces exist within the settlements, although they have a weak landscape character, being characterised by either small parcels of amenity grass with poorly maintained and designed play facilities, or contain non-native vegetation. • Land within character areas D5 and D7 would have at one time shared a landscape character with the areas of marshland to the south and D4 with the pastoral landscape to the north. • Although land within character area D2 is undergoing restoration of wet grazing and woodland, there are further opportunities to enhance green connectivity

PRIORITISATION OF OPPORTUNITIES

5.29. It is likely that prioritisation of the green infrastructure opportunities identified will be necessary in order to allocate funding as it becomes available. Prioritisation of opportunities within Thurrock should be undertaken with reference to three broad criteria: need; practicality; and benefits. Key criteria against which the council and other delivery bodies should consider an opportunity are set out in **Table 5.2** below. The Greening the Gateway Partnership is developing a Public Benefits Mapping Tool for further consideration of proposed green infrastructure projects. This has potential to provide guidance for Thurrock Council and other delivery bodies in terms of the likely benefits of proposed green infrastructure.

Table 5.2: Criteria to consider in the prioritisation of green infrastructure opportunities

Issue	Evaluation questions	Guidelines
Practicalities:	• What would be the approximate cost of this proposal?	Approximate (e.g. low, moderate, high)
	• Is there any funding available in this area? How would maintenance be funded?	Yes/No
	• Is there potential for integration within a nearby development?	Yes/No
	• Are there any other initiatives or organisations working in this area?	Yes/No
	• What is the ownership of the site?	Council/Non-council
	• What is the current use of the site?	Land use categories (agriculture, recreation, brownfield, ex-mineral extraction)
	• How, and by whom, will the site be managed and maintained in the long term?	
Need:	• Is the area within any categories of open space deficiency?	Parks and gardens, natural and semi-natural greenspace, amenity greenspace, playspace, allotments, churchyards and cemeteries
	• Is the route identified in the Thurrock Cycle route network or Public Rights of Way Improvement Plan?	Yes/No
	• Is the site within flood zones 2 or 3 and could it contribute to flood management and protection?	Yes/No
	• "Is the site identified in other strategies, e.g. the Thames Chase Plan?"	Identify relevant strategies and objectives
Benefits:	• What perceived benefits will the proposal have in terms of:	
	- Environmental benefits	High/moderate/low
	- Social benefits	High/moderate/low
	- Economic benefits	High/moderate/low

GREEN INFRASTRUCTURE PRINCIPLES

5.30. In order to ensure that a best practice approach is followed in green infrastructure development within Thurrock, a set of principles has been compiled to support the opportunities identified above. These principles should be applied in all planning, design and management of green infrastructure, for the opportunities suggested in this document, and for other green infrastructure and open space management in the borough. The principles should be referred to by council officers, organisations and developers and others working with green infrastructure in Thurrock. These principles have been developed through:

- identification of local priorities through the review of key local plans and strategies (see Section 3);
- review of national green infrastructure guidance to ensure best practice is followed;[17]
- consultation with experts to help identify the key issues within Thurrock.

[17] Best practice guidance used included: Biodiversity By Design: A Guide for Sustainable Communities (TCPA, 2004), The Countryside in and around towns (Countryside Agency and Groundwork, 2005, Creating Sustainable Communities: Greening the Gateway ODPM (2004), Sustainable Drainage Systems (CIRIA, 2004),

Recreation and access

5.31. The planning, design and management of green infrastructure in Thurrock should:

- Ensure the creation of new open spaces in areas of open space deficiency as a priority (See Open Space Strategy).
- Enhance access to existing open space where needed
- Promote attractive and safe public rights of way with effective signage.
- Promote a network of recreational access routes that can be accessed from to promote healthy living and sustainable transport choices (See Local Green Links).
- Ensure that new public access routes reflect those identified in the Thurrock Public Rights of Way Improvement Plan (See Thurrock PRoW Plan).
- Ensure a feasibility study is undertaken to inform exact routes for new public rights of way and other green links.
- Help overcome barriers such as roads or other infrastructure which limit access to strategic open spaces (See Strategic Bridging Points and Local Green Links).
- Incorporate well-designed and appropriate visitor facilities, cultural and educational activities to increase the appeal of the site.
- Refer to Open Spaces Strategy and best practice guidance for green space for quality criteria for new and enhanced open space.

Cyclist with dog at Blackshots Sports Centre, which is separated from Grays urban area by a main road

Biodiversity and Geology

5.32. The planning, design and management of green infrastructure in Thurrock should:

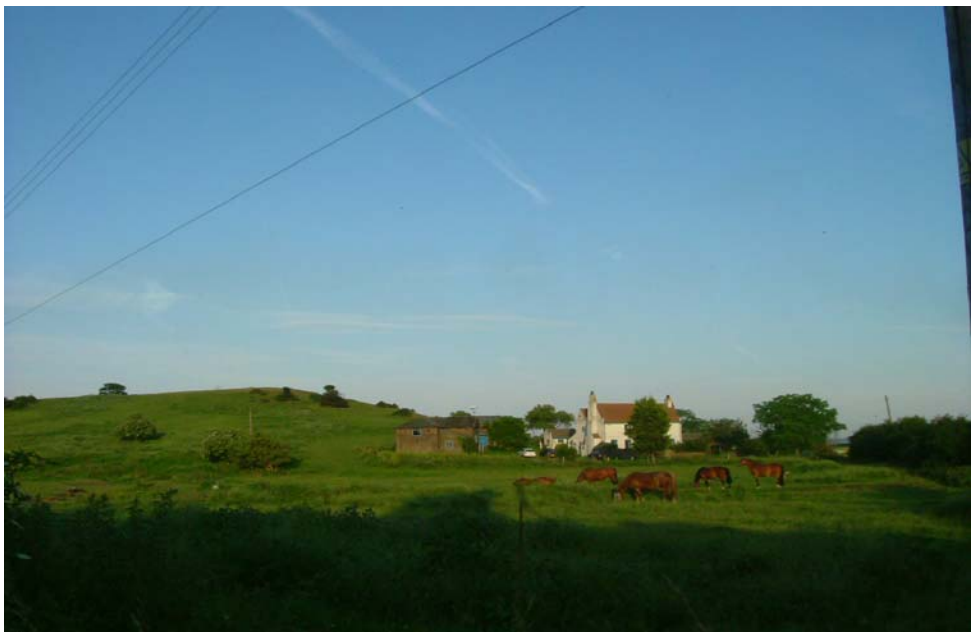
- Deliver new and enhanced sites for bio-diversity through development as identified in Biodiversity By Design: A Guide for Sustainable Communities[17].
- Conserve and enhance the network of nationally and internationally designated sites in line with the Wildlife and Countryside Act (1981) and the Countryside and Rights of Way Act (2000).
- Ensure the ongoing protection of the 'Strategic sites to safeguard for biodiversity' as outlined in this document.
- Increase robustness of biodiversity and geological assets by creating new semi-natural greenspace around assets to act as a buffer to development and other impacts.
- Reflect and incorporate the biodiversity priorities outlined in the Thurrock Biodiversity Action Plan. This could either be through creation of new areas of BAP Priority habitat, or through creation of environments to support BAP Priority species.
- Reflect the recommendations of the Thurrock Biodiversity Study in regard to specific sites. This applies to sites which are currently open space, and also those which are not currently open space but are being considered for future management as such.
- Refer to the findings of Buglife's "All of a buzz in the Gateway" survey of brownfield sites to identify the important invertebrate species on these sites and ensure the ecological conditions which support them are maintained.
- Create new areas of biodiversity importance through the use of native species and traditional countryside management approaches. Habitat creation will be a mechanism to create new areas of biodiversity importance.
- Seek to conserve, enhance, manage and where appropriate promote and make available for study the geological resource, both designated sites and outside the designated sites, wherever possible

Common adder: a priority species identified in the Thurrock BAP

Landscape, townscape and 'sense of place'

5.33. The planning, design and management of green infrastructure in Thurrock should:

- Seek to deliver sustainable development objectives through enhancement of existing landscape and townscape character, or creation of new sustainable landscapes based on Thurrock's intrinsic character.
- Incorporate key characteristics from the Thurrock Landscape Capacity Study to develop an overall 'concept' for the types of green infrastructure developed to ensure that the green spaces will be sustainable and strengthen the character of the Borough.
- Ensure that the green infrastructure network enhances the landscape character of the area, by delivering the key enhancements identified in the 'landscape management areas' and their guidelines.
- Seek to improve the condition of existing green spaces and links through enhancement of green infrastructure in order to strengthen landscape character.
- Seek to improve urban public realm or townscape character through enhancement of fine-grain elements of green infrastructure such as green roofs, street tree networks, landscape enhancement of public squares and residential roads
- In addition to developing physical linkages, creation or enhancement of green infrastructure should promote visual connectivity between urban areas and surrounding landscapes with the aim of strengthening landscape character. Reference should be made to Table 5.1 of this document, and the Thurrock Landscape Capacity Study[18].



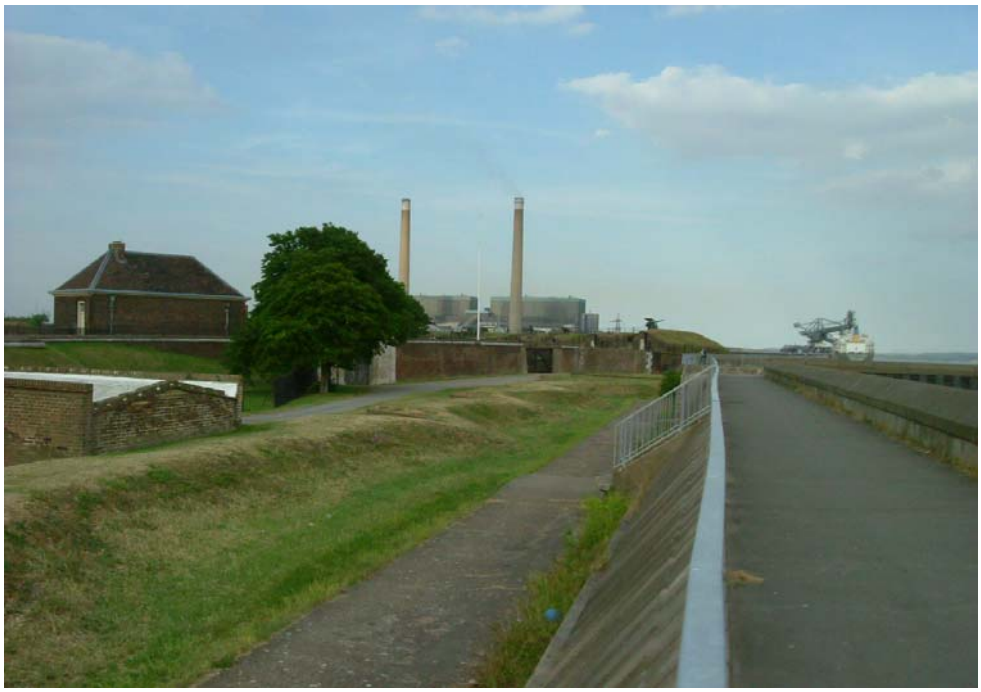
View from Biggin Lane, Biggin.

[18] Thurrock Landscape Capacity Study (Thurrock Council/Chris Blandford Associates, 2005)

Heritage, archaeology and cultural assets

5.34. The planning, design and management of green infrastructure in Thurrock should:

- Enhance and celebrate the historic environmental character of the borough wherever possible.
- Refer to Thames Gateway Historic Environment Characterisation Study[19] to inform the design of new proposals.
- Conserve, enhance and promote the heritage of the site wherever appropriate.
- Where there are crop marks (with Scheduled Monuments or otherwise) within agricultural management areas, consider the potential to convert agricultural land to public open space to prevent the destruction of these regionally important crop marks (See Figure 4.5).
- Respect the important historical relationship between the uplands and coastal and inland marshes, and conserve and enhance views between these two areas of Thurrock
- Consider the potential to restore inland marshes and historical common land such as Orsett Fen back to semi-natural greenspace to promote heritage and biodiversity benefits.



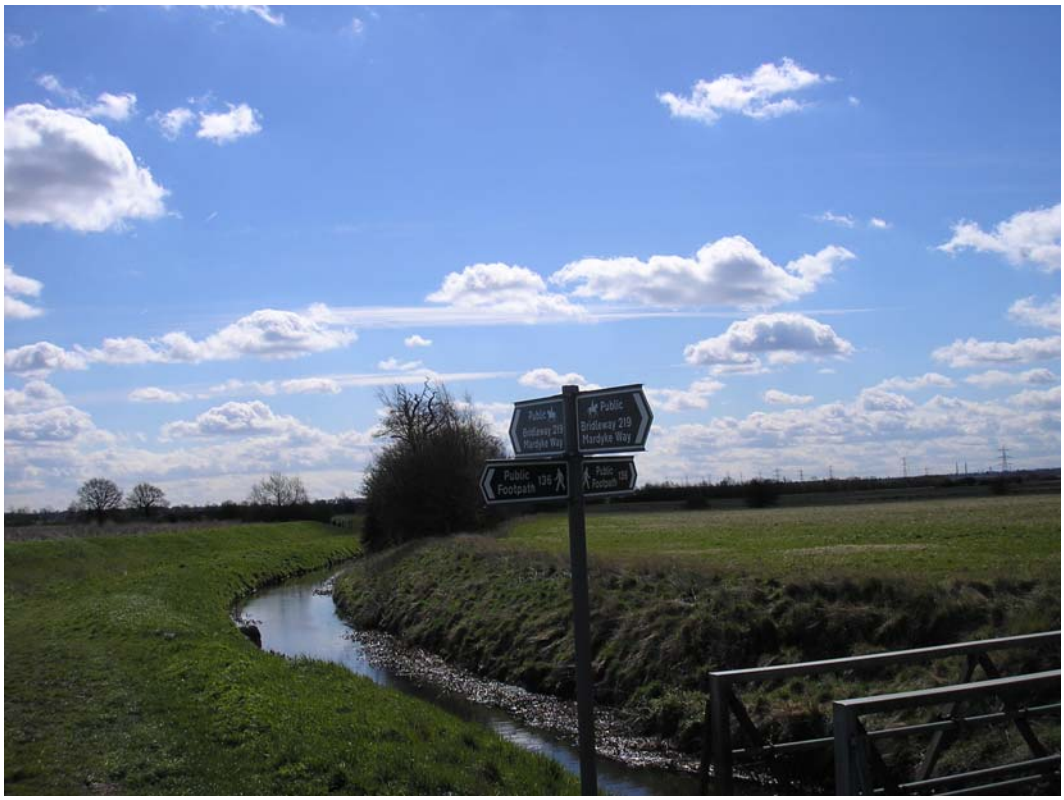
Tilbury Fort and Power Station, one of Thurrock's many historic landmarks

[19] Thames Gateway Historic Environment Characterisation Project (English Heritage and Chris Blandford Associates, 2004)

Flood and water management

5.35. The planning, design and management of green infrastructure in Thurrock should:

- All new development in Thurrock should seek to deliver sustainable water management options.
- Deliver naturalistic strategic flood management elements, such as SuDS, water storage or other features wherever possible (See Potential for Strategic Flood Management).
- Seek to provide land-use allocations to ensure that the implications of climate change, and in particular rising sea levels and coastal squeeze are satisfactorily accommodated.
- Incorporate naturalistic local flood and water management features wherever possible.



Mar Dyke Valley, which has considerable potential for flood management

Community Cohesion

5.36. The planning, design and management of green infrastructure in Thurrock should:

- Involve the community in order to ensure that planned green infrastructure is appropriate
- Involve the community in ongoing management of green infrastructure to encourage 'Sense of Place' and 'Pride'
- Provide opportunities for skills development, education and Life-long learning in its creation and management
- Reflect the six core themes of the 'Aspire: A Community Strategy For Thurrock'[20].

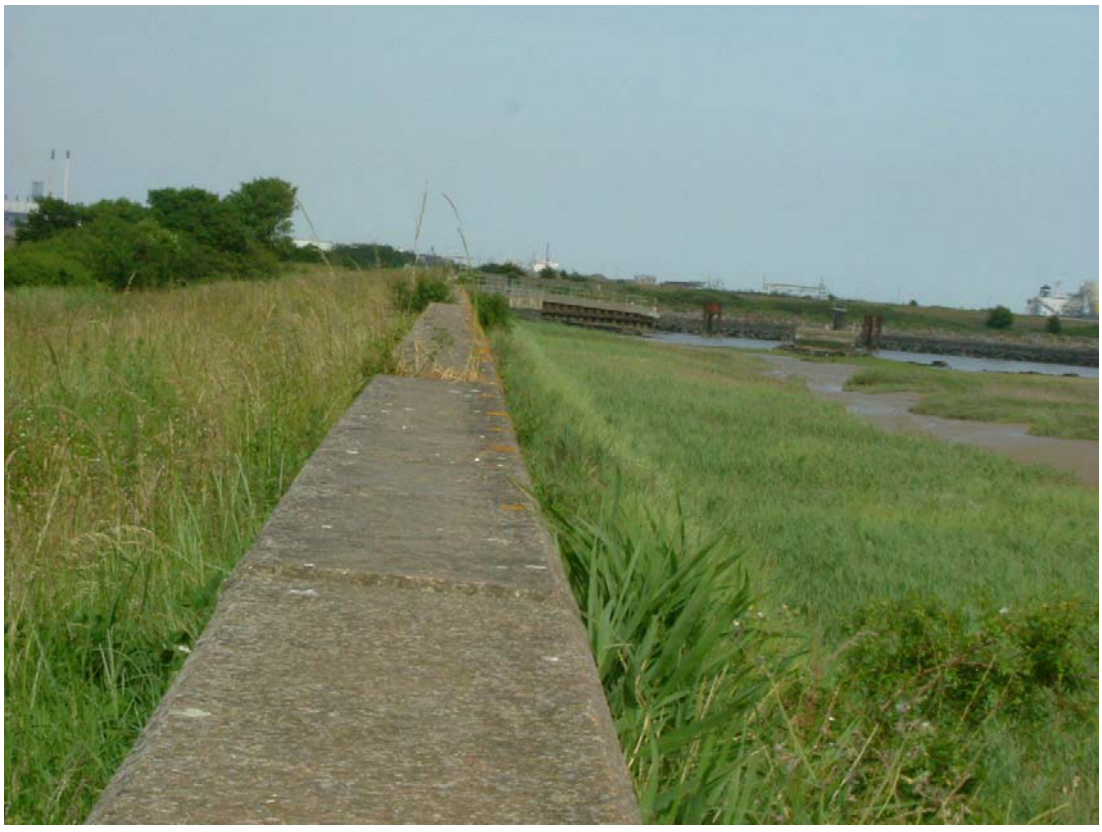
Poorly maintained community play area in Chadwell St Mary

[20] Aspire: A Community Strategy for Thurrock, Thurrock Local Strategic Partnership (2003)

Natural Systems

5.37. The planning, design and management of green infrastructure in Thurrock should:

- Protect the integrity and functioning of natural systems (hydrology, soils, bio and geo-diversity) and seek to improve it wherever possible.
- Seek protection and enhancement to natural systems through development
- Seek sustainable management initiatives which utilises natural systems to provide financial income toward the maintenance of the green infrastructure feature. Options may include sustainable forestry for wood fuel, creation of renewable energy infrastructure, biomass cropping and community gardens.
- Promote the expansion of agri-environment schemes to in crease the biodiversity value of farmland in accordance with the draft East of England Plan.
- Seek to safeguard appropriate allocation of farmland to provide for future habitat enhancement opportunity for freshwater habitats.

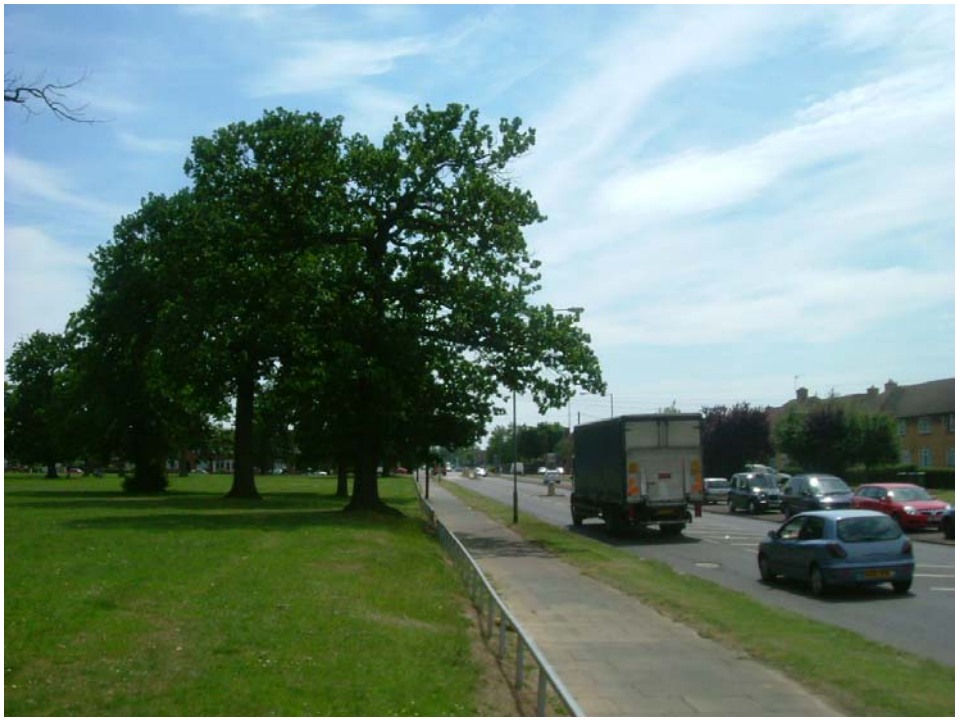


Existing flood defences at Mucking Flats. There is potential for more naturalistic coastal management in such area

Urban green spaces

5.38. The planning, design and management of green infrastructure in Thurrock's urban areas should:

- Incorporate native species, and traditional management approaches (such as meadow cutting and coppicing) within urban green space wherever this does not conflict with local character or community safety fears.
- Urban greenspaces should reflect the landscape and heritage character of the urban area
- Should reflect design/style of the settlement.
- Incorporate fine-grain elements of green infrastructure, e.g. SuDS, permeable paving, green roofs, allotments/greenhouses as part of new developments.
- Be designed with the community to encourage community cohesion and co-located with other community infrastructure wherever possible



Small urban park in South Ockendon

New developments and infrastructure

5.39. All new development and infrastructure within Thurrock should:

- Conserve and enhance biodiversity by incorporating biodiversity and geological interest, and where possible creating new habitat consistent with the requirements of PPS9.
- Reflect the broad landscape character as outlined by the Landscape Management Areas.
- Incorporate local and strategic green links in line with the Thurrock Greengrid.
- Refer to the Thurrock Landscape Character Assessment (CBA, 2005) for further guidance on local character.
- Use materials that reflect, celebrate or complement local character.
- Be subject to a planning condition to secure green space within development and other features to contribute to sustainability such as bike storage and good cycle access.
- Should be designed to reflect or celebrate the historic character of the area and to complement adjacent heritage assets.
- Incorporate urban flood management elements such as SuDS wherever possible.
- Large developments should where possible incorporate strategic SuDS.
- Incorporate other fine-grain green infrastructure such as green roofs.
- Protect the integrity and functioning of natural systems in the area.
- Incorporates GI that delivers against renewable energy targets such as managing and harvesting woodlands for woodfuel.
- Make use of the anticipated Thurrock Developer Guidelines for Green Infrastructure, and best practice guidance[21] when planning for green infrastructure in development.

[21] Best practice guidance includes: Biodiversity By Design: A Guide for Sustainable Communities, Town and Country Planning Association (2004); Designing sustainable communities for people and biodiversity, English Nature (2005); Integrating Biodiversity into Development, Essex Biodiversity Project (2005); Essex County Council Urban Place Supplement, Essex Design Initiative (currently in production); livingroofs.org.uk; www.thamesweb.org.uk

NEXT STEPS

5.40. Progress towards adoption and implementation of the Thurrock Greengrid will focus around the following broad tasks:

- Bring the Open Space Strategy, Biodiversity Study and Green Infrastructure Framework Plan together through a comprehensive Greengrid summary document.
- Undertake consultation on the Greengrid documents through posting on Thurrock Council website to ensure wide-spread support for the approach.
- Work towards adoption of Greengrid as a Supplementary Planning Document (SPD) so that Greengrid principles and standards are a material consideration in planning development in Thurrock.
- Set up Greengrid Partnership including representatives of key initiatives operating in the borough, to oversee effective implementation of the Greengrid.
- Identify priority opportunities for enhancement or creation of new elements of green infrastructure such as the potential for greenspace at Mucking Marsh where the Council is in dialogue with RSPB, Essex Wildlife Trust and Land Restoration Trust.
- Produce a set of 'developer guidelines' for green infrastructure in Thurrock, building on the Green Infrastructure Principles set out in this document.
- Develop urban design and riverside guidance to reflect and complement the principles of the Thurrock Greengrid.

Land Use Consultants, September 2006

APPENDIX 1

Summary of plans and policy review

Summary of relevant plans reviewed as part of the study

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
Creating sustainable communities: Greening the Gateway	ODPM, 2005	Growth area	Two Key Objectives; - To have well managed green space as the setting for new and existing residential and commercial areas. - That the landscape should be regarded as functional green infrastructure, recognising the wide range of benefits from healthy recreation, to wildlife protection and enhancement, to flood risk management.	High quality green spaces are to go hand in hand with sustainable communities. The Thames Gateway as a positive image and a place where people want to live and work.	Projects the ODPM has funded in the Thames Gateway so far include Green Grids for: • London • Essex • Kent	
Thames Gateway Green Infrastructure Guidance	Greening the Gateway Partnership/ LUC, 2006	Growth area	Objectives for green infrastructure projects should be SMART (Specific, measurable, achievable, realistic, time-orientated) and informed by local knowledge. Project objectives should be focussed on outputs (e.g. habitat creation, outcomes (e.g. enhanced air quality), and inputs (e.g. funding)	Green infrastructure is a network of multifunctional greenspace, which helps to provide a natural life support system for people		Qualities which green infrastructure should have (CABE): clean, accessible, attractive, comfortable, inclusive, vital and viable, distinctive, safe and secure, robust and functional.
Thames Gateway South Essex Green Grid Strategy	Thames Gateway South Essex Partnership, 2005	Sub-region	South Essex Green Grid vision: *To achieve a living landscape threading through the urban and rural landscape, connecting places that are attractive to people, wildlife and business, and providing clean air, water, energy, minerals and materials.* The purpose of the Green			The Green Grid was designed to influence the development of other plans such as the RSS, LDFs and to provide context for the PPG 17 Open Spaces Strategy. Thurrock Strategic Area Framework is

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
			Grid is to: • Provide a holistic and long term vision for the sustainable future development and management of the Strategy Area • Define an environmental infrastructure that promotes the establishment and management of appropriate character settings • Provide the context for development in the long-term.			identified as a key are for work on the Green Grid, and a further level of detail is provided for the area. Proposals are mapped on a strategic plan/figure and include: Strategic Destinations, Riverways, Greenways, Strategic Views, Strategic Parks (see document for interpretation of these terms)
Thurrock Open Spaces Strategy	Thurrock Council, 2006	Local	To create a network of high quality open space that will serve the whole community now and in the future. All sites were assessed for 1) Value and 2) Quality Standards were developed which determine what should be provided in terms of: - accessibility - quality - quantity *See back of document for actions related to recommendation*	<u>Geology:</u> To pursue to use of redundant quarries as multi-functional open spaces To allow exploited landscapes to regenerate naturally <u>Hydrology:</u> Use FRA to identify open spaces which could offset flooding impact Improve rivers as recreational resource Create vibrant open spaces along watercourses <u>Landscape:</u> Utilise existing and identify potential for new open spaces along the Thames Design landscapes to compliment the local landscape character Preserve landscapes which provide dramatic views	External examples such as those from Zurich and Aarhas are provided	Types of space covered by the Open Space Strategy: • Parks and gardens • Amenity greenspace • Provision for children and young people • Outdoor sports facilities • Natural and semi-natural greenspace • Allotments • Churchyards and cemeteries Types of space NOT covered by the Open Space Strategy: • Water-based greenspace

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
				Biodiversity: Protect and enhance existing areas of significance Develop new open spaces which improve biodiversity of urban areas To manage open spaces so that a balance between access and protection To enhance biodiversity in existing open spaces Design-led approach to brownfield sites setting aside areas of wildlife colonisation Parks and gardens: Strategic priorities are Hardie Road Park, Spider Field, Elm Road, West Thurrock Memorial Ground and Woodview Play Area. Other improvements should: Address the negative elements of the park as outlined in OSS Country parks: Create management plans for Belhus Woods(has Green Flag) and Langdon Hills Country Parks Improve pedestrian and public access Facilitate installation of shelters and play equipment Semi-natural greenspace: Scored based on human value, improvements need to be tempered with importance and sensitivity of sites Amenity greens: Improvement to threshold standard Opportunities in other typologies: Claudian Way, Chadwell St Mary Dickens Ave, Tilbury		• Common land • Civic spaces • Green corridors

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
				Ruskin Road, Stanford Le Hope Gabborns Crescent, SLH <u>Play space:</u> see OSS <u>Strategic Sports Sites:</u> Sport England are encouraging development of 'strategic sports sites', There are two within Thurrock which should attract investment and enhancement: Blackshotts and Belhus Park <u>Allotments:</u> Improve provision at Anchor Field, Bull Meadow, Cromwell Road, Thurloe Walk, Whitehall Lane, West Road, Adams Road, Wharf Road and High Road There is deficiency across large parts of borough and this should be addressed by deficiency <u>Churchyard and cemeteries:</u> Improve quality of existing and id. New areas for burial		
Thurrock Public Rights of Way Improvement Plan (GIS layers)	Thurrock Council (partially complete)	Local				
Thurrock Landscape Capacity Study	Thurrock Council/CBA, 2005	Local				
Aspire: A community strategy for	Thurrock Local Strategic Partnership	Local	"Thurrock will be a place for enterprise and skills which builds on the heritage and	Summarised comments: ASPIRATIONAL THURROCK: • 79 per cent of local people said they		Core themes of 'Aspire': • Aspiration

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
Thurrock	(2003?)		prosperity of the River Thames and welcomes new opportunities for trade. It will be a place where people feel included and where our diverse communities can build a safe, healthy, vibrant area in which they are proud to live work and play." Feedback from community consultation found that priorities for the future include: more facilities for young people better education for all reducing inequalities a more vibrant use of the river frontage for leisure and entertainment a cleaner area with more recycling and fewer waste tips better access to hospitals and shorter waiting times for appointments better public transport more policing on the streets and action to tackle vandalism	were satisfied with their neighbourhood as a place to live • over the last 10 years employment trends have moved towards the retail and service sectors but the profile of the local skilled labour pool is 'out of step' with today's needs • 700 children aged 5-16 have a statutory statement of special education needs due to disability, emotional, sychological, and/or learning needs • 37 per cent of 16-69 year olds do not envisage participating in any further learning • 12 per cent of the population (16-69) are qualified to degree level or above • one in four young people aged 13-19 use youth services • of 20 wards, seven are among the most 200 most deprived wards in the country REGENERATED THURROCK: • 19 per cent of local people live in council homes and 2 per cent in privately rented or housing association homes. • 60 per cent of Thurrock is Green Belt. we recycle less than 10 per cent of the waste we produce. we import up to 90 per cent of our water in a dry year. • 16 of our 242 listed buildings were		• Safety • Prosperity • Inclusion • Regeneration • Energy and health

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
				identified as being 'at risk' in 2001–02. • 2 per cent of the 58,700 homes in Thurrock are exposed to high levels of air pollution. • Public library usage is currently 5.4 visits per thousand population. • 2,825 11 to 25 year olds visited the theatre in 2000-01. ENERGETIC THURROCK: • mortality from most cancers is significantly higher in Thurrock than the national average - although the rates are falling • low birth weights are common in Thurrock • there are rising levels of diabetes and obesity – linked to inactivity and overeating • more than a third of Thurrock's adult population increase their risk of developing chronic heart disease and cancers by smoking • 40 per cent of local people use leisure facilities and 68 per cent of local people use parks and open spaces • slipping, tripping or falling over at home is a major cause of injury for older people		
Transforming and revitalising Thurrock: a framework	Thurrock Thames Gateway Development Corporation,	Local	Regeneration Framework has 6 key challenges, of which the following are particularly relevant: • To create a sense of place	<u>Key housing areas are:</u> Grays and South Stifford (5000) Lakeside and West Thurrock (2300) Purfleet (2200) Outlying Communities inc. Aveley,	<u>Relevant landscape and green link proposals</u> 1. Proposed Mar Dyke Valley Country Park 2. Proposes 'river links'	

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
for regeneration and sustainable growth	2005		by reconnecting the public water front • To increase the use of public transport • To assist in making Thurrock a more sustainable place to live Related to these are strategic goals which include: • To enhance the quality and use of valuable green space • To increase opportunities for leisure • To ensure that all parts of Thurrock are accessible	South Ockendon, Chadwell St Mary, Tilbury, East Tilbury, Stanford Le Hope and Corringham (2450) <u>Transport proposals inc:</u> New train station at West Thurrock (link to GI network) Road widening at A13 and A128 South Essex Rapid Transit (SERT) from Chafford/Grays to Basildon Sustrans cycle route Also transport link proposed across river to Gravesend <u>Education:</u> Alongside numerous schools, an Academy is also proposed at Grays <u>Health:</u> Maintain existing hospital at Grays North and proposed new Community Hospital at South Stifford Key opportunity sites named inc: Askew Farm Rd Titan Pit (Grays Town Centre) Globe Works (East Grays)	(pedestrian/cycleway links) between Mar Dyke and Thames through a) Purfleet, b) West Thurrock, c) Chafford Hundred and Gorge 3. Riverside public access 4. Proposed SUSTRANS cycle link 5. New and improved open spaces 6. Proposed verge planting scheme: potential to influence this re. appropriate species Landscape Character: Outlines four broad landscape character areas in which proposals will be realised. Refers to Fig. 8 of Spatial Plan Preferred Option, but cannot find this figure Also proposes **extensive nature conservation enhancement and informal recreation** provision in area surrounding Mucking Flats and Tilbury/East Tilbury Outlines desired and existing footpaths	
Countryside in and around towns	Countryside Agency/ Groundwork, 2005	National	The countryside in and around towns can: • Be made readily accessible to most people • Contribute to the health, wealth and well-being of urban and rural	The countryside in and around towns should play the following roles: • A bridge to the country • A gateway to the town • A health centre	National examples provided: see document for more details	

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
			communities • Underpin more sustainable living • Strengthen biodiversity in both town and country	• A classroom • A recycling and renewable energy centre • A productive landscape • A cultural legacy • A place for sustainable living • An engine for regeneration • A nature reserve		
Thames Strategy East	Thames Estuary Partnership, 2005	Sub-regional	• Outlines various objectives on improvements to the area, under following headings: Planning, Landscape/Townscape/River scape character, • Biodiversity, • Archaeology, Historical and cultural resources, • Urban form and infrastructure,		In regard to green infrastructure, the document particularly highlights the potential of: West Thurrock marshes Grays Beach Riverside Park Thames Path Purfleet Riverside	Provides good description of the land uses within the area
The Thames Chase Plan 2000	Thames Chase, 2000	Sub-regional	• Outlines strengths and weaknesses of key areas, inc. Ockendon, Aveley and Mar Dyke • Restoration of disused mineral sites as part of		Ockendon: • Plan to develop potential of open spaces in South Ockendon, working with local communities • Assist Thurrock Council	Provides additional layer of detail for sites and spaces which fall within the Thames Chase boundary

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
			Community Forest • Creation of strategic 'greenways' to allow informal access to the Forest • Creation of the 'Forest Circle', a network of greenways and quiet lanes • Mentions Aveley and Ockendon Forest Park Project Area (407 ha block of land to be used for community and education purposes)		with woodland mgt and encourage good management of private woods • Plant woods to screen harsh urban edges Aveley: • Coppice mgt of Belhus Woods CP for woodland products • Potential for re-restoration of poorly-restored landfill sites through woodland planting • Create links between Mardyke path and London Loop to form part of 'Forest Circle' path • Mardyke: • Potential for significant woodland creation at Grange Farm landfill site, South Ockendon • Small scale planting in lower valley to create sense of seclusion • Creation of wetland habitat to add to biodiversity value • More sympathetic grazing	

Plan	Author and date	Scale	Green infrastructure objectives	Green infrastructure principles	Case studies/examples	Other comment
					regimes • Extend Mardyke Way to meet Thames Riverside Path at Purfleet • Potential of Stifford Pumping Station as centre of recreation and learning	

APPENDIX 2

List of GIS datasets reviewed

GIS LAYERS USED IN THE STUDY

Provided by Thurrock Council

- Aerial Photos
- All Open Spaces
- Allotments
- Amenity area in shopping or housing
- Amenity greenspace
- Barriers to Movement
- Bridleways
- Children's Play Space
- Churchyards, cemeteries
- Common Land
- County Wildlife sites
- Cycleways (existing and proposed)
- Flood risk
- Golf Clubs
- Green corridors as designated in the local plan
- Green Verges
- Landscape Capacity Study
- Local Nature Reserves
- Natural and semi-natural green space
- Natura 2000 Sites (SPA, SAC and RAMSAR)
- Nature Conservation Designations
- Open Space Deficiency
- OS Thurrock Boundary
- Outdoor sports

- Parks and Gardens
- Public Rights of Way
- Schools with community use
- Sites of Importance for Nature Conservation (SINC)
- Sites put forward for development
- Sites of Special Scientific Interest (SSSI)
- Street trees
- Urban capacity sites
- Urban parks and gardens
- Urban Regeneration areas
- Water-based greenspace
- Woods

Provided by Essex County Council

- Ancient woodland
- Archaeological Context Areas
- Basic topography map
- Boundary lines
- Combined and simplified Sites and Monuments Record (SMR)
- Complete data highlighting Pleistocene sites
- English Heritage Data
- Historic Environment Character Areas
- Historic Landscape Character Areas
- Historic Landscape Characterisation image
- Historic Parks and Gardens in Kent
- Medieval Market, Fairs and Mint database
- Registered Parks and Gardens
- Thames Gateway Area

- Urban Character Areas

Independently Sourced by LUC

- A Roads
- Major Rivers
- Minor Rivers
- Motorways
- National Land Use Database (NLUD)
- Primary Roads

APPENDIX 3

Form used for Landscape Condition Assessment fieldwork

THURROCK LANDSCAPE ASSESSMENT OF CHARACTER, CONDITION AND QUALITY at 1:25,000

LANDSCAPE TYPE:
LANDSCAPE CHARACTER AREA:

DATE:…….WEATHER:…… ……..
SURVEYORS:…… ……..
PHOTOGRAPH NUMBERS:……

LOCATION AND BOUNDARIES OF THE CHARACTER AREA

……
……...……
……...…….....……
……..

KEY LANDSCAPE CHARACTERISTICS **(SPECIFIC TO EACH CHARACTER AREA, TAKEN FROM THE EXISTING LANDSCAPE CHARACTER ASSESSMENT).**

Key landscape characteristics	Present in the landscape? ✓✓ Prominent ✓ Present X Absent
•	
•	
•	
•	
•	
•	
•	
•	
•	
•	
•	

Other significant landscape features……
……
……
……
……

FORCES FOR CHANGE (VIEWED IN THE FIELD)

……
……
……
……

CONDITION/QUALITY AND OPPORTUNITIES OF THE LANDSCAPE

PHYSICAL RESOURCES AND NATURAL SYSTEMS (E.G. TOPOGRAPHY, STREAMS, AREAS OF FENLAND)

……
……
……
……

Landscape condition

Renew/create……
…….....……
……..

Enhance……
……...……
……
Conserve……
……..……
……..

Opportunities for enhancement/further development

……
……
……

EXISTING OPEN SPACE

……
……
……
……

Landscape condition

Renew/create……
…….....……
……..

Enhance……
……...……
……

Conserve……
……..……
……..

AGRICULTURAL LAND

Renew/create……
…….....……
……..

Enhance……
……...……
……

Conserve……
……..……
……..

Opportunities for enhancement/further development

……
……
……

ECOLOGICAL ASSETS AND BIODIVERSITY (INCLUDING WOODLAND)

……
……

……
……

Landscape condition

Renew/create……
…….....……
……

Enhance……
……...……
……

Conserve……
……..……
……..

Opportunities for enhancement/further development

……
……
……

ARCHAEOLOGICAL, HISTORICAL AND CULTURAL ASSETS

……
……
……
……

Landscape condition

Renew/create……
…….....……
……

Enhance……
……...……
……

Conserve……
……..……
……..

Opportunities for enhancement

……
……
……

ACCESS NETWORKS

……
……
……
……

Landscape condition

Renew/create……
…….....……
……

Enhance……
……...……
……
Conserve……
……..……
……..

Opportunities for enhancement

……
……
……

APPENDIX 4
Summary of Consultation Workshop

THURROCK GREEN INFRASTRUCTURE FRAMEWORK PLAN: WORKSHOP OUTPUTS

INTRODUCTION

This Appendix summarises the proceedings and outputs of a consultation workshop held on 20th July 2006 in Thurrock, which aimed to progress the Thurrock Green Infrastructure Framework Plan. Invitations were extended to approximately 35 greenspace managers or stakeholders from across Thurrock. A total of 24 attendees were present on the day, representing eight different organisations including government bodies, local and county authorities, non-governmental organisations, land owners and other interest groups from Thurrock and the Thames Gateway. A full list of attendees is provided as **Annex 1**.

Land Use Consultants (LUC) facilitated the workshop and prepared this summary. The statements included in this document are summaries of statements provided by workshop participants.

The purpose of the workshop was to secure stakeholder support for the emerging Green Grid Strategy for Thurrock and to consider draft proposals for new and enhanced green infrastructure.

PRESENTATIONS

A number of presentations were given, outlining progress in related strategies in Thurrock. These included:

- The Green Infrastructure Framework Plan (Philip Smith and Emma Deen, LUC)
- Thurrock Open Space Strategy (Greg Pitt, Thurrock Council)
- Thurrock Biodiversity Study (Isabel Baxter, Thurrock Council)
- Thurrock Local Development Framework (Sarah Lubbock, Thurrock Council)

KEY QUESTIONS TO ATTENDEES

There were three break-out groups, each of which consisted of attendees from both the Council and external stakeholders, and all of which incorporated a range of expertise. The breakout group discussion session focussed on three key themes:

Review the data collection and analysis undertaken to date

- Have all existing and potential green infrastructure assets been identified?

Review proposals for new and enhanced green infrastructure within Thurrock, and suggest additional proposals

- Are the current proposals appropriate?
- Are there any other opportunities which have not been identified?
- Are there any proposals which overlap other initiatives in the area that you are aware of?

Implementation of the green infrastructure proposals

- What delivery mechanisms are available for implementation?
- Are there any other organisations/initiatives which could be interested in working toward the Green Grid Strategy?
- How should the proposals be prioritised?

COMMENTS FROM BREAK-OUT GROUPS

Review the data collection and analysis undertaken to date

Currently the Green Infrastructure Plan does not display existing GI very clearly, nor does it show transport links. Sites such as parks and other green spaces should be identified on the final GIFP.

Some of the biodiversity assets in the borough have been identified as being extremely sensitive to public access. In particular, the work on the sustainability appraisal and appropriate assessment of LDF suggests that public access to Thames Estuary and Marshes SPA (at Mucking Flats) should be minimised as much as possible. Further assessment will need to be made and interests of biodiversity and recreation need to be balanced.

Several minor amendments to the Green Infrastructure Plan were proposed, and these changes have been made. One example is the need to show the cross-boundary link provided by the Sustrans cycle route, which extends into Basildon/One Tree Hill.

Review proposals for new and enhanced green infrastructure within Thurrock, and suggest additional proposals

Development sites with biodiversity value

Some potential development/brownfield sites have considerable biodiversity interest. This biodiversity value should be incorporated into developments on such sites where possible. In addition, there are numerous former mineral sites which have potential for conservation and recreational use, and this should be considered along side other opportunities as an option for their restoration.

Use of native species on planting schemes

Native species are not always the most suitable for GI, and the design of the area and purpose of the GI should be considered when selecting species.

Green space categories

Some sites designated for biodiversity value have been classified as semi-natural greenspace, but are actually very sensitive to public access. Thames Estuary and Marshes SPA is one example of this. Sites such as this should be reconsidered as to the most appropriate category, although these sorts of issues will be fully reviewed when the GI work is combined with the biodiversity and open space work in the Green Grid Strategy.

Strategic Green Links

Feedback on proposed green links was positive, and in addition there were several other suggested green link routes. More green links should be provided into Grays centre, incorporating brownfield sites where possible. In general, more detail is needed on urban green links that connect Green Grid.

Strategic Green Links should also link with the Forest Circle Path, and links between Aveley and Mar Dyke should be improved. Davy Down is a key focus of green infrastructure network and this importance should be promoted. In addition, Hoford Road and Buckingham Hill Road were seen as potential green link locations to link Tilbury and Stanford Le Hope via numerous discussed pits.

Where possible, a hierarchy of green links should be shown on the map, e.g. links of regional, borough and local importance. Strategic Green Links should also be developed incorporating other related facilities such as cycle hire/bike collection schemes.

Parkways

The Tilbury Docks approach road should also be incorporated as a 'Parkway'.

Countryside management areas

The findings of the Landscape Condition Assessment should be incorporated into the final plan through the creation of countryside management areas. These areas will have broad aims and will focus on areas of need such as urban fringe areas and the marshes. These more detailed maps will be able to show green infrastructure proposals in greater detail.

Heritage

There are several other heritage features and their literary associations within Thurrock which should be considered for inclusion as heritage assets. These include the Bata Shoe factory and Tilbury New Port and High House at Purfleet, and Davy Down.

Green verges

Certain road verges are being managed as 'Wildlife Verges' by the council, as part of their 'Greening the Road' scheme. These verges should continue to be managed with biodiversity as a priority. The numerous other verges identified through the Landscape Condition work should be considered in terms of their footpath and cycle link potential as suggested by LUC.

Fragmented communities

There is an issue with fragmented communities which do not integrate with neighbouring communities (See OSS). Purfleet and East Tilbury are particularly deprived communities and need additional urban greenspaces as well as physical links to rural open space

Riverside

There was a suggestion that further consideration should be given to the role of the riverside in terms of the green infrastructure functions it can provide to Thurrock.

Brownfield green space creation

It is important to recognise that in some areas of restricted open space such as Purfleet, Grays and West Thurrock, creation of green infrastructure on brownfield land will be essential.

Retention of rough space/wild areas

Whilst some of the many unmanaged green areas and brownfield sites should be a focus for development of both urban areas and green infrastructure, it is desirable to leave some areas as they are in order to maintain the provision of rough space for use particularly by teens and young people for motorbiking, bonfires and other similar activities.

Mucking Landfill

Mucking Landfill is an extensive site located to the south east of Stanford Le Hope near Fobbing Marshes. Recent plans aim to restore the landfill into 'Thurrock Conservation Park' which will provide habitats to support and enhance the Thames Estuary SPA nearby. The site will be managed by the RSPB and will have public access and aims to incorporate modern coastal management techniques such as managed realignment and regulated tidal exchange.

Sports centres

Two new strategic sports centres are planned for Thurrock, at Belhus Park and Blackshots Leisure Centre. Potential for green access and other green infrastructure opportunities should be considered at both these sites.

Implementation of the green infrastructure proposals

Planning conditions

There was agreement that planning conditions should be used where possible to secure green space within development and other features to contribute to sustainability such as bike storage and good cycle access. The policy developed to secure green infrastructure investment should be robust enough to support strategic contributions to open space where it is most needed, not necessarily in close proximity to the development site. There is clear potential to secure planning contributions from P&O in their proposed development of Shellhaven as a container port. Suggested requirements of such a planning condition include a Green Travel Plan and an associated new cycle route.

Implemented across the borough

There was some concern that green infrastructure must be successfully incorporated and retro-fitted if necessary into affordable accommodation and not just more exclusive developments.

Education

Urban development on brownfield land is usually preferred by public, who view green field land as most worthy of protection. This is not always best option as often brownfield sites have higher biodiversity value and also better potential as functioning green spaces. Public education on this issue is needed. Education will also be key to ensure communities are aware of nearby green space.

Promotion and marketing

In addition to community education there is also a need for wider promotion and marketing of the new and enhanced green infrastructure resources. This should be provided through a range of media such as local press, community groups and notices and on the internet.

Existing initiatives

SUSTRANS will implement some of the cycle routes as outlined in Thurrock Cycle Map and the Green Infrastructure opportunities.

There is potential for expansion of Thames Chase into Thurrock. Thames Chase objectives could complement the identified need for woodland planting particularly around South Ockendon and Aveley.

DEFRA funding

Essex ESA and Countryside Stewardship funding have now expired, but there is potential for funding from the DEFRA Entry Level, Organic Entry Level and Higher Level Schemes for land managers and the Single Payment schemes for farmers. The Woodland Grant Scheme may also b e a good source of funding for some sites

Tourism revenue

There is some potential for tourism revenue based around the marshes and the heritage of the borough.

Heritage Lottery Fund

There are currently several outstanding HLF bids within Thurrock. As HLF funding is being reduced, it will be important to coordinate any further funding bids within Thurrock, in order to ensure time and money are not wasted developing an excessive number of competing bids.

Other funding

Dartford Toll provides annual funding (approximately £800k) for transport-related work.

There is some funding potential from aggregate and mineral extraction companies.

Sponsorship

There is potential for some sponsorship of smaller green infrastructure by local business. One example of this is the roundabout sponsorship scheme currently being promoted by Thurrock Council. The Thurrock Play Strategy has recently secured £380K sponsorship, some of which could be used on green infrastructure-related improvements.

Sports

Consider developing a 'signature sport' for Thurrock, which may encourage funding and investment in appropriate facilities. Adventure activity could also be developed in the same way.

Internal Thurrock schemes

There are a number of internal Thurrock council schemes which could support the implementation of the Green Grid. Examples of such schemes include the Thurrock Greening the Road and the Wildlife Verges schemes. Other departments within Thurrock Council will act as delivery partners for the Green Grid, and some additional funding may be available from other departments such as housing and play.

Other comments

Potential for the case study

Ideally the site used as a case study example of how green infrastructure can be incorporated into development should offer a combination of existing and new development. East Tilbury was suggested as a possible case study, as approximately 17,000 new homes have recently been proposed here. It was decided however that this site may be controversial as it would suggest a different vision to that already created by developers. It is likely that Purfleet will present many challenges in terns of lack of availability of land for open space, deprived existing communities and flood

risk problems, although focussing on this area would need to be done in a sensitive way in light of the already developed Purfleet Masterplan. North Grays was seen as an appropriate location for a case study as it is very deficient in green space and is a priority for development for both Thurrock Council and the Development Corporation.

Next Steps

Catherine Bailey provided a summary of the next steps in the Green Infrastructure Framework Plan and the wider Green Grid Strategy work. She outlined that LUC will provide an approximate cost for creation of the Green Grid Strategy document by the end of the month, and that all strategies feeding into the Green Grid (Open Space, Biodiversity and Green Infrastructure) will be circulated by the end of August. A two-month consultation on the documents would then take place. A Green Grid Group, incorporating an internal Council officer group and an external partners group, would be created and will meet on a six-weekly basis to track the progress of the Green Grid. The completion date for the Green Grid Strategy is provisionally March 2007.

ANNEX 1

List of attendees at Thurrock Green Infrastructure Workshop, 20th July 2006

GREENGRID GREEN INFRASTRUCTURE WORKSHOP ATTENDEES	
Philip Smith	Land Use Consultants
Emma Deen	Land Use Consultants
Catherine Bailey	Thurrock Council, Strategic Environmental Planning, Senior landscape Officer
Isabel Baxter	Thurrock Council, Strategic Environmental Planning Manager
Greg Pitt	Thurrock Council, Environmental Planning Assistant
Bob Ivison	Cabespace Enabler
Mark Ansell	Thurrock PCT
Simon Aguss	Thames Chase Community Forest
Mat Kiely	Thurrock Council (Strategic Planning, Transport)
Clare Lambert	Thurrock Council (Strategic Planning, Sustainable Development Officer)
Peter Wall	Thurrock Thames Gateway DC
Nick Stanley	Thurrock Council, (Neighbourhood Services) Site Manager Langdon Hills CP
Steve Starr	Thurrock Council, (Neighbourhood Services), Parks Operations Manager
Martin Haskell	Thurrock Council, Verge maintenance operations manager
Luke Bristow	Essex Wildlife Trust, Wildlife Sites Officer
Frances Falconer	English Nature/Natural England, Conservation Officer
Ian Rydings	Thurrock Council, Housing, Head of Housing
Sue Hastie, Housing,	Thurrock Council, Housing, Tenant participation and regeneration manager
Tony Norrington	Thurrock Council, Strategic Planning, Head of Development Control
Grant Greatrex	Thurrock Council, Sports and Leisure, Policy development Manager
Martin Wakelin	Essex County Council, Landscape and Ecology Manager
Sarah Lubbock	Thurrock Council, Strategic Planning, Planning Assistant
Andrea Winterflood	Thurrock Council, Corporate Services, Technical Officer
Clare Cadman	EWT, Thames Gateway Officer

APPENDIX 5

Findings of Landscape Condition Assessment

Summary of findings from Landscape Condition Assessment

Character Area	Features to create	Features to enhance	Features to conserve
A1: Bulphan Fenland	• Strategic Green Links between Mar Dyke and Orsett Fen to be of recreational and ecological value. • Possibility of creating SUDS feature e.g. stormwater wetlands at the site of the disused pit works west of Orsett.	• Orsett Fen-Revert to grazed land-manage grasslands for wildlife by grazing the land.	• The open expansive views • The unsettled character • The rural setting of the arable and pastoral landscape (with consideration for reverting some areas of arable cultivation to pasture e.g. Orsett Fen).
B1: Sticking Hill Rolling Farmland/Wooded Hills	• Features to celebrate the fruit growing past at Orsett. •	• Enhance panoramic views out of the character area, particularly from Horndon on the Hill • Enhance the network of hedgerows considering species composition and management for ecological value. • Tunnelled views down the hill from Horndon created by the woodland and hedgerow lined rural roads. Enhancing the hedgerow network would further enhance the views.	• The tranquil rural setting of the villages of Horndon on the Hill and Orsett. • The nucleated settlement pattern of Horndon on the hill and the historic landscape at Orsett. • Maintain woodland blocks found between Orsett and Horndon on the Hill, particularly woodland at Orsett Park.
B2: Langdon Hills Rolling Farmland/Wooded Hills	• Taking inspiration from the existing mature woodland of the character area, extend woodland planting to screen views of, and noise from the A13. • Consider creating a new recreational trail along existing footpath network connecting the Langdon Hills Country Park resource with villages in the more settled Sticking Hill Rolling Farmland/Wooded Hills character	• Enhance the management strategy of woodland within the character area outside of the Langdon Hills Country Park. • Improve readability of the landscape by enhancing signage associated with the footpath network.	• Panoramic views facilitated by the sloping nature of the landscape. The sense of elevation and intimacy. • The low settlement density and absence of linear features such as pylons. • The network of footpaths crossing the Langdon Hills • Well maintained and managed woodland at Langdon Hills Country Park

Character Area	Features to create	Features to enhance	Features to conserve
	area.		
B3: Fobbing Ridge Rolling Farmland/Wooded Hills	• Possibility to create a recreational feature surrounding Marsh Lane [connects Fobbing with Fobbing Marsh]. Consider possibilities for improving pedestrian linkages between Fobbing and the Langdon Hills	• Enhance woodland planting to provide a denser screen to the urban edge of Corringham. • Enhance management of small copses within the character area, increasing woodland size where possible to provide more attractive urban edge to Fobbing,.	• Elevated scarp landscape with views across to Fobbing Marshes. • Large rectilinear fields. • Conserve the hedgerow network as a strong landscape pattern
B4: Rolling Urban Farmland and Woodland	• Opportunity for developing a **SuDS scheme** based around South Ockendon	• Views from the M25 i.e. consider what can be seen of Thurrock from the motorway, as the character area provides a gateway into Thurrock. • Enhance the condition of the footpaths which cross the character area particularly with relation to their route considering the loss of routes when the M25 was built. Consider the routes in order to connect the numerous points of interest (both existing and possible) e.g. Kennington Country Park, Bushy Woods Country Park. • Consider how best to develop and enhance the disused pits. Possibly used as part of SUDS schemes? Could pits which are not protected for ecological reasons be utilised as a setting for new housing? • Enhance the condition of water bodies contained within the area	• Conserve the **older rural roads** which provide a good connection for vehicles between South Ockendon and Upminster. • The woodland which provides an attractive screen to the urban edge of South Ockendon. • The areas of parkland landscape e.g. Belhus Woods Country Park. • The arable and pastoral fields bounded by mature, generally intact hedgerows.

Character Area	Features to create	Features to enhance	Features to conserve
		(Runningwater Brook, long pond,) to contribute ecological and recreational value.	
C1: Fobbing Marshes	• Consider ways to create a feature of views to the Shellhaven industrial land. • Consider redesigning the flood defences to incorporate a footpath and possibly a viewing platform.	• Enhance the tussocky structure of the marshes through pasture land use to control the weeds. • Enhance the species composition of the marshes . • Encourage uptake of Environmental Stewardship Schemes to improve the quality and condition of the pastoral fields. • Improve management of ditch network to improve ecological intactness.	• The flat, undeveloped landscape • Sense of wildness and remoteness due to the absence of settlements and roads.
C2: BP Croydon and Marshes	• Possibilities for liaison with Shell as the owners of the land to develop a SUDS scheme to alleviate flood risk? • Managed retreat of flood defences to protect the salt marsh community.		• The pockets of arable and pastoral land which provide the setting for the Shellhaven development.
C3: Mucking Marshes	• ? Any development at Bata factory on the site should consider the need for amenity green space, and connections with other settlements • Floodplain alleviation/SUDS scheme possibilities. Tilbury would be an ideal exemplar site • Soften the edge of East Tilbury-	• Enhance linkages with this prominent landmark-particularly with the settlement of East Tilbury. • Potential to enhance greenspaces within East Tilbury in line with requirements of Conservation Area. Incorporate native species/better quality planting • Enhance visual and physical	• Coalhouse Fort is managed by the Coalhouse Fort Project and is a well managed resource.

Character Area	Features to create	Features to enhance	Features to conserve
	perhaps by creating a recreational facility on the eastern edge of the settlement.	connections with Mucking Flats	
C4: Mucking Flats and Marshes	• Managed retreat of flood defences to protect the salt marsh community.	• Consider possibilities of enhancing the sea wall structure. E.g. Incorporation of walkway on the sea wall/creation of a viewing platform/bird hide • Enhance recreational routes from C4, through C3 and D7 to the settlements of Tilbury/Chadwell St Mary's	• Maintain long range views to and from Coalhouse Fort and Langdon Hills • The complex series of ditches and creeks.
C5: Tilbury Marshes	•	• A section of the marshland cuts into the urban edge between Chadwell St. Mary and Tilbury. The parcel of land provides an opportunity for ecological and recreational enhancement. It is an ideal gateway route.	• The setting of Tilbury Fort which is currently well managed and maintained. • Views to both Tilbury Fort and Tilbury PowerStation. • The well drained arable and pastoral landscape. • A strong enclosure pattern defined by the ditches and dykes which separate the land into rectilinear field shapes.
D1: Aveley/South Ockendon urban fringe	• Create linkages [footpaths-cycleways] between the flooded gravel pits [both restored and currently unrestored] and south Ockendon • Encourage improved management of set aside land.	• Enhance existing rights of way with signs and improved maintenance • Opportunities for softening and enhancing the urban edge of South Ockendon by planting woodland blocks • Enhance condition of Kennington Country Park.	•

Character Area	Features to create	Features to enhance	Features to conserve
	• Replant hedgerows where they are gappy • Opportunities for improving accessibility to and from the settlements of Aveley and South Ockendon and to recreational facilities, by improving the access and signage	• Enhance the condition of gravel pits which are now disused but not being actively managed. • Conserve and enhance the wide grass verges and the wide variety of species in them, along the main arterial routes. Incorporate footpaths and cycleways into the verges, • Enhance the historic landscape character of amenity grassland to the south of Belhus Park • The amenity grassland south of Belhus Park could be better utilised whilst maintaining its historic character	
D2: Mar Dyke River Valley Urban Fringe	• Flood management schemes in and around Mar Dyke and nearby discussed gravel pits	• Connections between the Mardyke and surrounding settlements e.g. South Ockendon.	• Mar Dyke Valley and associated wet grazing areas
D3: North Stifford Corridor Urban Fringe	• Increase the number of bridging points • Reroute segregated footpaths- provide a good level of signage to ensure that the route is navigable	• Enhance character, and screen views of the 'horsiculture' land use with new woodland • Enhance meadow grassland • Where possible enhance visual and physical connections with Mar Dyke	
D4: White Crofts/Orsett Heath Urban Fringe	• North - south linkages for inhabitants of Grays to have access to the Bulphan Fenland and the rural character of Horndon.	• Soften urban edges with small-scale planting of native woodland species along fringes	
D5: Linford/Buckingham Hill Urban Fringe	• New escarpment woodland to connect areas and create ecological feature		

Character Area	Features to create	Features to enhance	Features to conserve
D6: Chadwell Escarpment Urban Fringe		• Existing network of ecological and landscape features could be linked to connect Tilbury and Chadwell St Mary.	• Visual connections across landscape should be enhanced and promoted as a feature
D7: West Tilbury Urban Fringe	• Create new footpaths linking Chadwell St Mary to the marshes	• Soften the urban edge of Chadwell St Mary. • Improve the quality of derelict land • Disused pit at Turnpike Lane should be linked through PRoW and cycle paths and managed for wildlife and access • Improve existing public rights of way	
E1: Aveley Urban Area	• Provide safe crossing points across the B1335-potentially linking with Kennington Park Country Park in D1	• Possibilities for incorporating grass verges as a roadside feature • Enhance the 'wild edges' of Aveley Park by extending the area of woodland planting. • Remove railings at Aveley Park to improve permeability of the site-perhaps providing link with the proposed cycleway running north-south along the eastern boundary	•
E2: South Ockendon Urban Area	• Improve and create connections and visual linkages with Mar Dyke and other recreational features • Consider options for incorporating fine grain green infrastructure which is currently lacking	• Improve network of footpaths and cycleways • Improve condition and strengthen character of amenity green spaces taking inspiration from the example of Dilkes Park • Consider options for incorporating fine grain green infrastructure which is currently lacking	• Dilkes Park • Green verges along roads
E3: West Thurrock	• Consider options for	• Improve links between Purfleet and	• Conserve views across Thames

Character Area	Features to create	Features to enhance	Features to conserve
and Purfleet Urban Area	incorporating fine grain green infrastructure which is currently lacking • Create public thoroughfare corridor running through West Thurrock	the Thames and Mar Dyke river corridors	from Purfleet riverfront • Conserve biodiversity of West Thurrock Marshes
E4: Grays/Chadwell St Mary's Urban Area	• Improve provision of crossing points • Create footpath and cycle networks between housing areas and open spaces within Grays such as Chafford Gorge. Signposting and improved access information is also essential here	• Extend character of Chafford Gorge into Chafford Hundred settlement with planting of native scrub species • Improve provision of footpaths and cycle networks within the urban area, • Consider potential for 'therapy gardens' like those proposed under Thames Chase initiative • Introduce native species of trees into the amenity green spaces • Undertake demand study to assess what residents want from their local greenspace	• Green verges along roads
E5: Tilbury and Docks Urban Area		• Enhance links between Tilbury and the environmental assets at Tilbury Fort. • Enhance Gabion Park • Consider the boundary treatment and visibility- concentrate on reducing perceived risks.	

APPENDIX 6

Table of strategic green infrastructure opportunities

(See Figure 4.8: Green Infrastructure Plan)

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
Strategic Green Links	1	Links Mar Dyke Valley (Riverway/ Proposed Semi-natural Open Space) and Davy Down (Heritage Asset) across footbridge over M25 to Belhus Park (Proposed Strategic Open Space and Heritage Asset), and through Kennington Country Park towards Hornchurch Country Park and the London Loop national trail.		
	2	Links Thames Riverside (Riverway and Cycleway) through western Purfleet, over the A13 and along the eastern edge of Aveley toward Belhus Park (Proposed Strategic Open Space and Heritage Asset).	South Essex Green Grid TTGDC Purfleet Masterplan Includes route of Thurrock's 'South Essex Way proposal	
	3	Link Mar Dyke Valley (Riverway/ Proposed Semi-natural Open Space) West Thurrock urban area and down towards West Thurrock Marshes (Proposed Semi-natural Greenspace) and Thames Riverside (Riverway and Cycleway)	South Essex Green Grid West Thurrock/ Lakeside Masterplan	SEGG Greenway 1 'Interactive Corridor' Need to assess potential impacts on West Thurrock Marshes SSSI

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	4	Link Belhus Woods Country park and surrounding woodland to South Ockendon and Mar Dyke Valley, over the A13 and through Grays. Bridge the A1089 (Tilbury Docks Approach Road) and continue through central Chadwell St Mary and across restored mineral workings to Coalhouse Fort Strategic Open Space and Heritage Asset.	SEGG	Coalhouse Fort is a Strategic Destination, but need to assess potential impacts on Mucking Flats SPA (esp. lagoon)
	5	Links Thames Riverside (Riverway and Cycleway) up through Chafford Gorge and Proposed Lion Gorge open spaces via proposed bridging point over A13, across Mar Dyke, to Grangewater Country Park . Continues through South Ockendon and Belhus Woods Country Park across borough boundary towards Thames Chase Visitor Centre	South Essex Green Grid	SEGG Greenway 1 Also see Strategic Bridge 1
	6	Links Thames Riverside and Grays Beach through central Grays over the A13 and up through Orsett Fen to the rural landscape in the north of Thurrock. There is also a second arm of this route which goes west from the A13 bridging point and crosses a proposed bridge across the Mar Dyke Valley to join Green Link 5.		

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	7	Links the northern point of the Mar Dyke Riverway to Bulphan and north toward Plotlands Nature Reserve just the on the Thurrock/ Basildon border. A second are of this route goes east to join Green Link 10 at Langdon Hills Country Park		
	8	Links with Green Link 7 at Bulphan in the north and continues down through Orsett and over the A13 into Chadwell St Mary. Travels through centre of Chadwell St Mary and along eastern dge of Tilbury to connect with the Proposed Strategic Open Space and Heritage Asset at Tilbury Fort. Links across the Thames to Gravesend are provided through the ferry link at Tilbury.	South Essex Green Grid	SEGG Greenway 2
	9	Links Stanford Le Hope via Proposed Strategic Open Space at Bluehouse Country Park through Mucking Heath and surrounding ex-mineral pit area to Chadwell St Mary. Continues through Chadwell St Mary to proposed semi-natural greenspace at Tilbury marshes and the Cycleway and Riverway on the Thames Riverside		

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	10	Links Langdon Hills Country Park and Basildon in the north, with Horndon on the Hill, crosses the A13 and continues via Proposed Strategic Open Space at Bluehouse and Cory Country Parks, through proposed Semi-natural Greenspace at East Tilbury Marshes and ends at Coalhouse Fort.	SEGG	Coalhouse Fort is a Strategic Destination, but need to assess potential impacts on Mucking Flats SPA (esp. lagoon) See also Strategic View at Langdon Hill CP
	11	Links East Tilbury via an attractive pocket of countryside at Biggin and across to join Green Link 8 which links with Tilbury urban area and continues down to Tilbury Fort		See also Local Multi-functional Greenspace and Strategic Views at Turnpike Lane
	12	Links Proposed Semi-natural Greenspace at Mucking Marshes via Stanford Nature Reserve and over footbridge to meet with the Thames Riverway. The route then continues up through Stanford Le Hope and Corringham to Langdon Hills Country park and Basildon.	SEGG	See also Strategic View at Langdon Hill CP SEGG Greenways 5 Need to assess potential impacts on Mucking Flats SPA (esp. lagoon)
Riverways	1. Mar Dyke Riverway	Link Mar Dyke path to Thames Riverway at Purfleet	South Essex Green Grid TTGDC Purfleet Masterplan	SEGG Riverway 1

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
		Linking Mar Dyke and Orsett Fen to enhance potential for biodiversity and recreation	South Essex Green Grid	SEGG Riverway 1
	2. Thames Riverway	Link Fobbing to Fobbing Marshes with recreational feature or greenway	South Essex Green Grid	SEGG Greenway 5
		Link Stanford Le Hope/Corringham to Fobbing Marshes	South Essex Green Grid	SEGG Riverway 21
		Redesign flood defence and possibly use railway at Mucking Flats/Rainbow Lane to provide access (limited due to biodiversity importance) and footpath along Flats providing views to Coalhouse Fort and across Thames	South Essex Green Grid	SEGG Riverway 21 See Thurrock Strategic Flood Risk Assessment Assess sensitivity of Mucking Flats SPA to access
Parkways	A13	Survey and enhance road verges for biodiversity	South Essex Green Grid Thurrock Biodiversity Study	
	M25	Enhance LCA area B4 with its 'gateway' function in mind Survey and enhance motorway verges for biodiversity	South Essex Green Grid	

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	A1089/Tilbury Docks Approach Road	Survey and enhance motorway verges for biodiversity	South Essex Green Grid	
Cycleways	Proposed Sustrans cycleway from Aveley to Basildon via Thames riverside	Support implementation of this route, and supplement with GI elements where necessary/possible	Sustrans South Essex Green Grid	
Strategic Open Space	1) Belhus Park	Enhance landscape and features of Belhus Park and promote as strategic open space	Thurrock Open Space Strategy	The surrounding area is deficient in parks
	2) Tilbury Fort	Enhance site with landscaping works and heritage interpretation. Improve access with new PRoW from north along route of common land sites (Parsonage and West Tilbury Commons)	South Essex Green Grid	The surrounding area is deficient in parks
	3) Coalhouse Fort	Enhance site with interpretation and landscaping. Assess issues related to sensitive lagoons SSSI at this site. Improve PRoW access to this site especially from Chadwell St Mary and East Tilbury.	South Essex Green Grid	Strategic Park Strategic Destination Need to assess potential impacts on Mucking Flats SPA (esp. lagoon)

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	4) Blackshots Sport Complex		Thurrock Open Space Strategy	
	5) Cory Country Park	More info needed (restored mineral working?)	South Essex Green Grid	The surrounding area is deficient in parks
	6) Bluehouse Country Park	More info needed (restored mineral working?)	South Essex Green Grid	The surrounding area is deficient in parks
Proposed strategic sites of semi-natural greenspace	1) Mar Dyke Valley and Davy Down	Mar Dyke Valley is already a strategic semi-natural greenspace. It has been identified here to promote its expansion and enhancement where opportunities arise. This could occur through landowners changing the land management in the area to enhance biodiversity, or through the purchase of parts of the Valley by local conservation initiatives. Where possible enhancement should consider the creation of reedbeds along the Valley, as one of Thurrock priority habitats in the Thurrock BAP	Thurrock BAP	
	2) Tilbury Marshes	Utilise opportunities to create semi-natural greenspace at Tilbury Marshes. This site is currently managed for agriculture, mainly arable, but has potential to be restored to coastal grazing marsh	Thurrock BAP	Area is deficient in sites natural and semi-natural greenspace

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	3) West and East Tilbury Marshes	Manage West and East Tilbury Marshes through grazing. Small areas of this area currently support coastal grazing marsh habitats, and these should be considered for statutory protection. Much of the area is managed as arable land (with some being landfill) and landowners should be encourages to restore the traditional grazing marsh where possible.	Thurrock BAP	Area is deficient in sites natural and semi-natural greenspace
	4) Mucking Marshes	Manage Mucking Marshes as traditional pasture to restore coastal grazing marsh habitats. Much of the area has been used previously as landfill, but those areas which are still low-lying should be grazed to restore a coastal grazing marsh habitat.	RSPB Thurrock Council?	
	5) East Tilbury Marshes	Manage East Tilbury Marshes to restore coastal grazing marsh. Most of this area is currently managed as arable land and landowners should be encourages to restore the traditional grazing marsh where possible.	Thurrock BAP RSPB EWT Thurrock Council?	
	6) Fobbing Marshes	Manage Fobbing Marshes to restore coastal grazing marsh. Most of this area is currently managed as arable land and landowners should be encourages to restore the traditional grazing marsh where possible.	RSPB EWT Thurrock Council?	

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	7) Aveley and Ockendon Forest Park	There is potential for the existing network of Country parks, woods and other green infrastructure assets to be linked and expanded through the creation of a 'regional park'. This would create a regionally-important open space and biodiversity asset in the west of Thurrock. The extent of the regional park needs to be defined through further research and feasibility studies. This proposed park is likely to incorporate existing country parks such as Kennington and Belhus Country Parks.	Thames Chase Trust	There is already considerable work being undertaken in the Mardyke Valley by the Mardyke Valley Partnership. Under Comments, please insert "Ecological enhancements (reedbeds, improved grazing, wet woodland) and associated access works are being carried out in 2006-2008 by the Mardyke Valley Project – led by Thames Chase.
	8) West Thurrock Marshes	Areas of open space and other land around the West Thurrock Marshes SSSI have the potential to be expanded and enhanced to create an area of semi-natural greenspace in this area of high open space deficiency.	Thurrock Council	
	9) Lion Gorge	There is potential to manage and restore the ex-chalk pit at Lion Gorge and create reedbed habitats at the site. This site could then link with Chafford Gorge to become a strategic semi-natural greenspace	Thurrock BAP Essex Wildlife Trust	
	10) Orsett Fen	Assess biodiversity value of Orsett Fen and manage for wildlife through grazing		Area is deficient in sites natural and semi-natural greenspace

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	11) Langdon Hills Country Park	Langdon Hills is an existing high quality semi-natural greenspace which has been awarded a Green Flag for quality. This site should be maintained and promoted within the green infrastructure network	Civic Trust	
	12) West of Kenning ton Park	There is potential to restore this site as accessible semi-natural greenspace		
	13) South of Kennington Park	There is potential to restore this site as accessible semi-natural greenspace		
	14) Little Belhus	There is potential to restore this site as accessible semi-natural greenspace		
	15)Baldwin's Farm	There is potential to restore this site as accessible semi-natural greenspace		
	16) Land south of North Ockendon	There is potential to restore this site as accessible semi-natural greenspace		
	17) Grange Farm	There is potential to restore this site as accessible semi-natural greenspace		
	18) Habitat creation associated with Shellhaven expansion	Work with RSPB to secure creation of new saltmarsh, mudflats and grazing marsh associated with planned container port at Shellhaven (Not identified on Plan)	Funding proposed as mitigation for planned container port at Shellhaven	Proposed habitat creation focuses on priority habitats from Thurrock BAP

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
Strategic Bridging Points	Pedestrian/ cycle/horse bridges	Pedestrian/cycle bridge over A13 linking Orsett with urban areas of Thurrock		
		Pedestrian/cycle bridge over A13 linking Chafford Hundred and Grays with Mar Dyke, Davy Down and Grangewaters		
		Pedestrian/cycle bridge over A13 to improve links between Grays and Horndon on the Hill/Bulphan Fenlands		
		Bridge over Mar Dyke to the north-east of Grangewaters	Integrated with the Mardyke Valley Project	
		Bridge over Mar Dyke at Purfleet linking Thurrock and Havering along the riverfront		
	Green bridge	Green bridge over M25 at Belhus Woods Country Park linking South Ockendon to BWCP and wider countryside	Aveley and Ockendon Forest Park	
Strategic Heritage Sites	Belhus Park	Belhus Park is a historic landscape and should be enhanced and managed as such.		No historic designations. A Capability Brown designed Landscape. The house was pulled down in the 1960s
	Tilbury Fort	The historic interest of Tilbury Fort and surrounding area should be promoted using interpretation.		Officer Barracks Grade II* Listed Building

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	Coalhouse Fort	The historic interest of Coalhouse Fort and surrounding area should be promoted using interpretation.		Scheduled Ancient Monument
	Purfleet/High House	The planned commercial development at High House should also incorporate heritage interpretation of this historic site.		Purfleet village has a strong military history and is designated as a Conservation Area . Within Purfleet, Purfleet Magazine No 5 is a Scheduled Ancient Monument
	Davy Down	Davy Down acts as a gateway to the Mar Dyke Valley but is also an interesting historic feature in itself. The key landmark is Stifford Viaduct, built in late Victorian times, and there is also an historic pumping station, which is still in operation today.	Thames Chase Plan	Gateway being enhanced for visitors through the Mardyke Valley Project (led by Thames Chase)
	Tilbury Docks	This is a historic port first opened in the 1880's. When Tilbury Docks first opened it goods including madeira, timber, sausage skins and chutney. It has been used since this time and is now mainly used mainly for passenger ships.		Grade II Listed Building
	Bata Shoe Factory and Conservation Area	East Tilbury (Bata) Conservation area was designed and built to house the workforce of the British Bata Shoe Company. The factory is a local landmark and part of East Tilbury is an important example of a 1930'splanned 'garden village' settlement.		Part of the East Tilbury Conservation Area. Some buildings are Listed Grade II.

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	Archaeological Park around crop marks	A number of important crop marks, some associated with Scheduled Monuments, are located north of Grays and south of Orsett either side of the A13. These need to be protected and many are currently being eroded by ploughing. Consideration should be given to the potential to incorporate all of them into a open space/ archaeological park where these regionally important features could be maintained.	Highlighted as historic common by Historic Environment Branch at Essex County Council	Some of the crop marks are designated as Scheduled Ancient Monuments
	Orsett Common	Historically common land, the potential to restore the area to a semi-natural open space with heritage interpretation should be considered. This site is also likely to have potential as an important biodiversity asset.	Highlighted as historic common by Historic Environment Branch at Essex County Council	Local historic landscape
Potential Heritage Assets	Parsonage Common	Historically common land, the potential to restore the area to a semi-natural open space with heritage interpretation should be considered		
	Walton Common	Historically common land, the potential to restore the area to a semi-natural open space with heritage interpretation should be considered		
Strategic Biodiversity sites to safeguard	A) Aveley Marshes SSSI		All protected by designations and through the Local Plan/LDF	

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	B) West Thurrock Lagoon and Marshes SSSI		“ “	
	C) Chafford Gorge SINC/CWS		“ “	
	D) Mucking Flats (part of Thames Estuary and Marshes SPA)		“ “	
	E) Fobbing Marshes and Holehaven Creek SSSI		“ “	
Strategic Views	Promote and enhance views	Promote existing views from all viewpoints identified on the Green Infrastructure Plan.		
Potential for Strategic SuDS	East Tilbury	Any extensive new development at East Tilbury should aim to incorporate strategic SuDS and look toward becoming an exemplar for sustainable drainage in urban development		
	Shellhaven	SuDS should be incorporated into the proposed container port at Shellhaven, potentially stormwater wetland to filter polluted run off		

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	Mar Dyke	Creation of strategic SuDs in areas along Mar Dyke could contribute to flood management in this high flood risk area, by reducing amount of run-of into river. There may be particular potential to incorporate some of the disused mineral workings at the northern end of the Mar Dyke.		Integrate with the Mardyke Valley Project (led by Thames Chase)
Potential for Strategic Flood Management	Mar Dyke	The Mar Dyke should be a priority for alluvial flood management, and there is water storage potential in the disused mineral workings at the top of the Mar Dyke.		Integrate with the Mardyke Valley Project (led by Thames Chase)
Potential Managed Realignment	Stanford Marshes	Managed realignment at Stanford Marshes is an option to support flood risk management in the borough.		
	Fobbing Marshes	Managed realignment at Fobbing Marshes is an option to support flood risk management in the borough.		
Natural Systems Opportunities	1) Wood Fuel Harvesting	Opportunity for sustainable wood fuel harvesting within woodland complexes to the west of the Borough. This could be progressed with Thames Chase.	Thames Chase Plan	Demand for woodchip exists in neighbouring Havering at the Thames Chase Forest Centre. There is potential for the Environmental Stewardship Scheme to fund this type of management.

Type of Opportunity	Name of feature	Description of Opportunity	Related proposals from other strategies	Comments
	2) Co-firing at Tilbury Power Station	There is potential to co-fire Tilbury Power Station using biomass which should be produced in the local area. Further studies would be required to assess whether this is feasible.	Thames Gateway Parklands (Thames Gateway Interim Framework)	
	3) Biomass Plantation	There is potential to create biomass plantations on agricultural land in Thurrock. Further studies into appropriate sites for such management should be undertaken		
	4) Community Garden and Centre	There is potential for a community hub to be developed at High House in Purfleet. This would be related to a commercial scheme planned at he same site. The community hub would include a community garden and possible other elements.		
	5) Renewable Energy Generation	This has potential to be incorporated within the Thurrock Greengrid, particularly within the industrial stretches of landscape along the Thames. Further studies should be undertaken to consider the potential for this.	Thames Gateway Parklands (Thames Gateway Interim Framework)	

Thurrock Green Infrastructure Framework Plan

Figure 2.1 Location of Thurrock

Key

- Thurrock boundary
- Thames Gateway boundary

N
W E
S

0 5 10 Km

DRAFT

Source: Thurrock Council

Date: 31/08/2006

File:\\3800\3840 Thurrock Green Infrastructure\GIS\Themes\ArcGIS9\3840-01_017_Location.mxd

Thurrock Green Infrastructure Framework Plan

Figure 2.2 Map of Thurrock

Key

Thurrock boundary

N
W E
S

0 1 2 Km

DRAFT

Source: Thurrock Council

Date: 31/08/2006

File:\\3800\3840 Thurrock Green Infrastructure\GIS\Themes\ArcGIS9\3840-01_015_Thurrock_Map.mxd

Thurrock Green Infrastructure Framework Plan

Figure 2.3 Topography

Key

Thurrock boundary

N
W E
S

0 1 2 Km

DRAFT

Source: Thurrock Council

Date: 31/08/2006

File:\\3800\3840 Thurrock Green Infrastructure\GIS\Themes\ArcGIS9\3840-01 _Topography.mxd

Thurrock Green Infrastructure Framework Plan

Figure 2.4 Flood Risk and Major Rivers

Key

- Thurrock boundary
- Rivers
- River Thames
- Flood zone 3
- Flood zone 2

N
W E
S

0 1 2 Km

DRAFT

Source: Thurrock Council

Date: 31/08/2006

File:\\3800\3840 Thurrock Green Infrastructure\GIS\Themes\ArcGIS9\3840-01_Flood_Risk.mxd