GreenArc Strategic Green Infrastructure Plan (with Hertfordshire)

Final Report
Prepared for the GreenArc Partnership
by
Land Use Consultants
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Land Use Consultants team comprised: Kate Ahern (Principal), Andrew Tempany (Project Manager), Alex Massey, Emma Deen, Fearghus Foyle, Graham Savage, Sofie Swindlehurst, Matthew Parkhill and Diana Manson.

1 Introduction

1.1 Green infrastructure (GI) is increasingly recognised as a cornerstone of sustainable development and communities. It is a 'must have', and offers many social and environmental benefits.

1.2 Green infrastructure planning and delivery articulates many of the aspirations in earlier GreenArc work[i]. It helps bridge the gap between strategic planning and site design and management, providing messages to inform spatial land planning and development management decisions.

1.3 Working on behalf of a network of stakeholders, in particular members of the Hertfordshire Technical Chief Officers Association (HTCOA) and Natural England, Lee Valley Regional Park Authority, Environment Agency, Forestry Commission and the Herts & Middlesex Wildlife Trust, Land Use Consultants was commissioned by Hertfordshire County Council and the GreenArc Partnership in September 2010 to develop the Hertfordshire and GreenArc GI Plans. This encompassed a two tier approach with companion Strategic Highlights Green Infrastructure Plans (SHiPS) for the GreenArc and Hertfordshire and 'local level' district Green Infrastructure Plans for seven Hertfordshire districts. The GreenArc Strategic Highlights Green Infrastructure Plan has been developed in parallel with the Hertfordshire Strategic Highlights Green Infrastructure Plan and also the district wide plans for St Albans, Watford, Dacorum, Three Rivers, Hertsmere, Welwyn Hatfield and East Herts. Account has also been taken of existing GI plans to ensure links across both district and county boundaries, with this strategic GI Plan also considering existing GI work in the GreenArc. Reference has also been made to ongoing strategic GI initiatives such as the Community Forest at Thames Chase and the Lee Valley Regional Park, as well as proposals made in the All London and South Essex Green Grids, and in the Harlow Green Infrastructure Plan.

1.4 This is a strategic level Green Infrastructure Plan, which identifies further work which will be needed in future to deliver green infrastructure. Where more detailed green infrastructure planning work will be required, this is also referenced.

1.5 The GreenArc Strategic Highlights Green Infrastructure Plan :

- Provides an overview of existing strategic green infrastructure assets within the GreenArc, including consideration of assets and proposals which are significant for national and sub national/regional green infrastructure planning;
- Sets out an assessment, at the strategic level, of the ability of green infrastructure to provide multiple environmental and social and in some cases economic functions;

- Considers opportunities for enhancement and creation of green infrastructure;
- Outlines a series of potential projects to deliver multiple functions and benefits, and
- Provides advice on taking green infrastructure proposals forward through spatial planning and practical delivery.

1.6 The Strategic Highlights Green Infrastructure Plan for the GreenArc relates to GI assets and proposals which would concern more than one district. Strategic sites considered include Epping, Hainault and Hatfield Forests, and the Lee Valley Regional Park, as well as sites in the Hertfordshire part of the GreenArc (cross refer to the Hertfordshire Strategic Highlights Green Infrastructure Plan), such as the Broxbourne Woods Complex.

What is green infrastructure?

1.7 Green infrastructure is described in **Planning Policy Statement 12: Local Spatial Planning**, as:

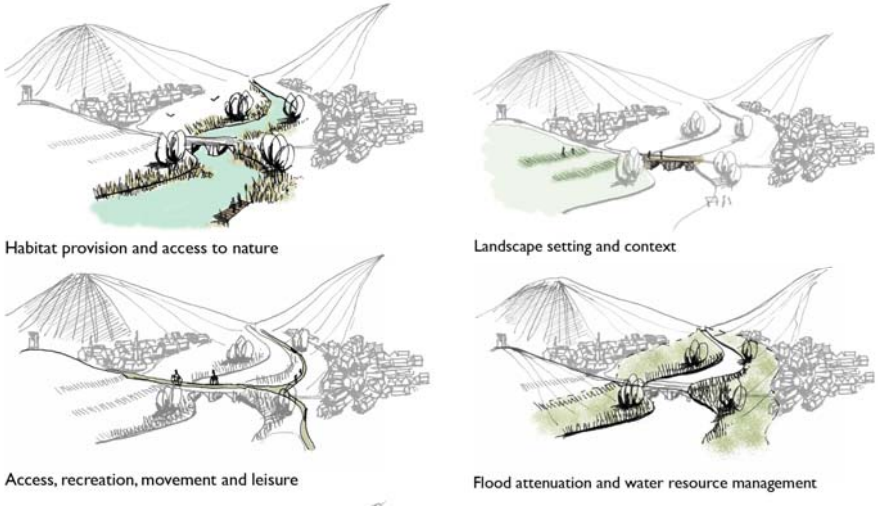
*a **network** of **multi-functional greenspace**…both **new** and **existing**…both rural and urban…which **supports** the **natural and ecological processes**…and is **integral** to the **health and quality of life** of sustainable communities…"*

1.8 This definition is reinforced and expanded in **Green Infrastructure in Hertfordshire: A Framework** and in Natural England's **Green Infrastructure Guidance**[ii].

Aspects of multi functional green infrastructure – links and spaces for people and wildlife

Benefits and relevance of the green infrastructure approach to the GreenArc

1.9 In the face of competition for resources and environmental change, now more than ever we must look to our landscape and to sites to perform the widest range of functions for people, communities and quality of life, wildlife and ecosystems. This concept of 'multi functionality' is shown in the illustration on the right, from Natural England's Green Infrastructure Guidance.



The green infrastructure approach: One site performing multiple functions (source: Natural England, Green Infrastructure Guidance)[iii]

The green infrastructure of the GreenArc

1.10 The GreenArc in Essex and north east London has a varied green infrastructure resource, including woodland assets and water courses. Ancient woodlands and hunting forests which today form key green lungs and valued open spaces such as Epping Forest and the country parks at Hainault and Hatfield Forests, form key components in an often high quality strategic green infrastructure resource, as do the Stort and Lee Valleys and associated Lee Valley Regional Park, which provides links to the London greenspace network. This forms the component which potentially links the green infrastructure of Hertfordshire

and the GreenArc, and forms the focus for proposals in both strategic GI Plans.

Varied landscapes and habitats

1.11 In the GreenArc, there is a varied mosaic of landscape and habitats, such as ancient and plantation woodland and farmland. The area is covered by a variety of regional landscape types (www.landscape-east.org.uk). These include *Wooded Plateau Farmlands*, *Settled Chalk Valleys* and *Valley Meadowlands*, *Lowland Settled Claylands*, *Lowland Settled Farmlands* and *Coastal Levels*. Several of these regional landscape types are relatively rare.

1.12 Hydrology and associated issues of riverine ecology and quality are also important parts of the landscape and the green infrastructure network in the GreenArc, which lies within the Thames and Tributaries catchment area. Other important green infrastructure elements include rivers such as the Roding and minor watercourses draining into the Thames, such as the Mardyke in the easternmost part of the GreenArc, and associated marshes in the Thames Floodplain.

Historic legacy

1.13 The GreenArc has a notable historic legacy relevant to green infrastructure, evident in the parkland and landed estates scattered across the area. It also has an interesting urban green infrastructure heritage in the form of planned mid 20th century New Town development and associated designed greenspaces at Harlow.

Existing Strategic GI Initiatives

1.14 There is also a wide array of existing strategic green infrastructure initiatives operating in the GreenArc, such as the Thames Chase Community Forest and associated network of promoted greenways and the Lee Valley Regional Park, as described above. Also the Stort Valley and associated package of recently implemented and ongoing projects such as the Stort Valley Path (shared use commuting and recreational route). The GreenArc also has clear physical links to wider strategic GI initiatives in adjacent counties, such as the Thames Gateway Parklands in Essex and the Olympic Park in legacy (Queen Elizabeth Legacy Park) in the lower Lee Valley.

1.15 Against this must be considered issues of green infrastructure need and demand at the strategic level, how existing green infrastructure is performing, and the potential for green infrastructure to contribute to landscape and environmental enhancement in more fragmented parts of the GreenArc (presence of major transport corridors and associated barriers, areas of high deprivation and proposed growth locations).

What this Strategic GI Plan will do

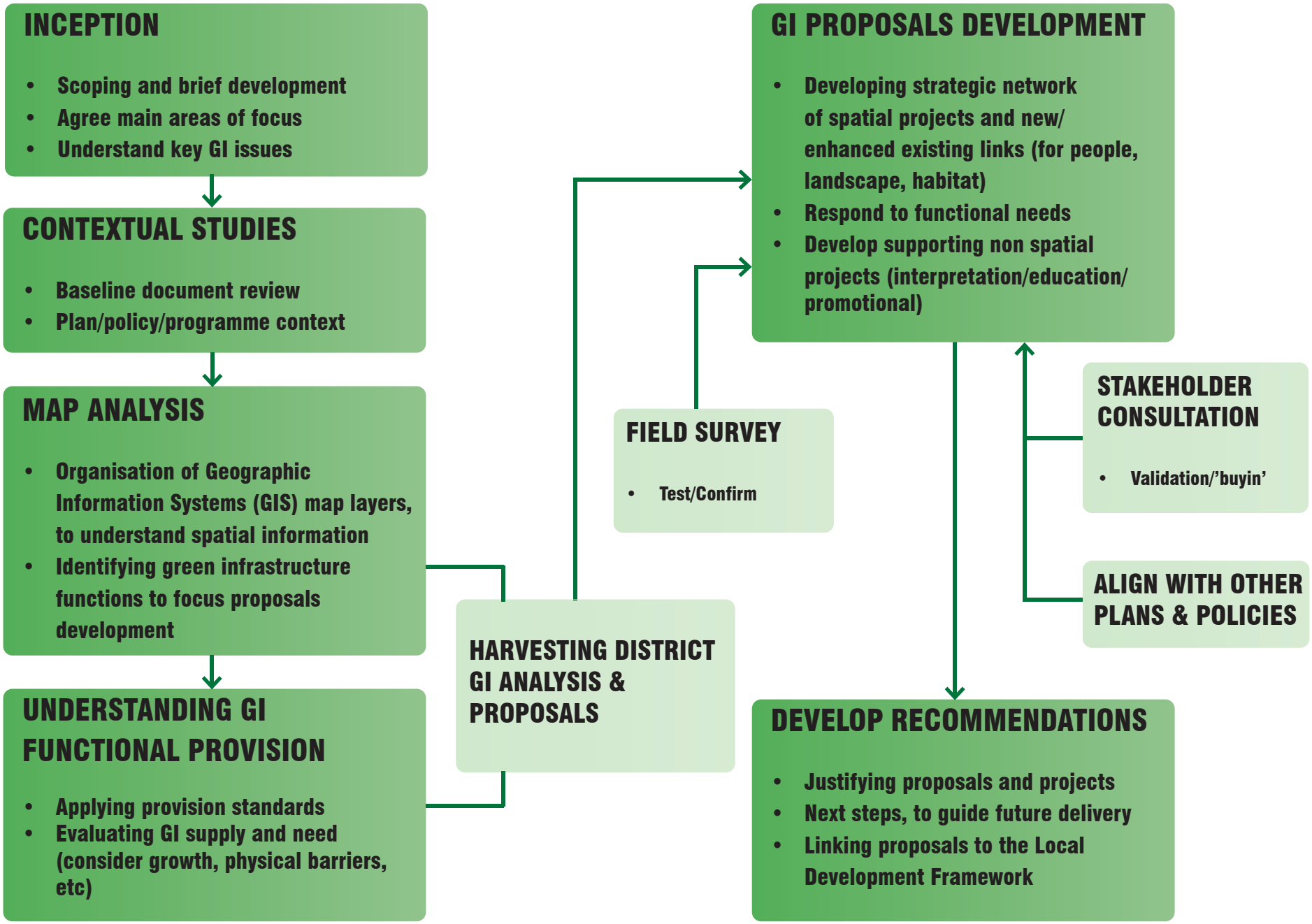
1.16 In some cases, existing GI assets are delivering the necessary functionality, in others not. This pattern of demand and supply forms the basis for the analyses undertaken and proposals made in this plan. For example, issues relate to access and links, and the variable ability to reach assets as part of a green travel network.

1.17 This Strategic Highlights Green Infrastructure Plan seeks to address the need for links and connections, alternative greenspace provision and low cost, maximum benefit interventions such as improved landscape management to deliver a wider array of functions. It also looks at ways to influence sustainable living modes and transport choices through non spatial and educational projects to support spatial proposals.

The strategic green infrastructure planning process – a summary

1.18 For the purposes of this study, the green infrastructure planning process can be summarised in the diagram overleaf.

Developing the Strategic Green Infrastructure Plan: Summary of Process



STRUCTURE OF THIS STRATEGIC HIGHLIGHTS GREEN INFRASTRUCTURE PLAN

1.19 The remainder of this Strategic Highlights Green Infrastructure Plan is set out as follows:

- Section 2: Green infrastructure demand and opportunity in the GreenArc by function
- Section 3: Proposed strategic green infrastructure network and projects
- Section 4: Linking the green infrastructure proposals to local spatial planning

1.20 Appendices are presented in a separate volume. **Appendix 1** sets out the record of stakeholder consultation undertaken as part of the study. **Appendix 2** shows the summary findings from a thematic document review undertaken to set the GI Plan in context. **Appendix 3** sets out the methodology for the functional analysis.

2 Green infrastructure demand and opportunity in the GreenArc by function

2.1 To evaluate existing strategic green infrastructure opportunities, a rapid thematic document review was undertaken to understand the environmental and social context. The themes for the document review are different from but are linked to and have informed the separate analysis of GI functional provision

2.2 Themes for the literature review were:

- Access and recreation
- Landscape character and experience; settlement setting
- The historic environment
- Health and deprivation
- Functional ecosystems and flood risk
- Productive landscapes (orchards and allotments) and land in Higher Level Stewardship
- Land remediation (issues concerning mineral sites and restoration, derelict and previously developed land)
- Nature conservation

2.3 Documents reviewed and key messages from each theme are set out in **Appendix 2**.

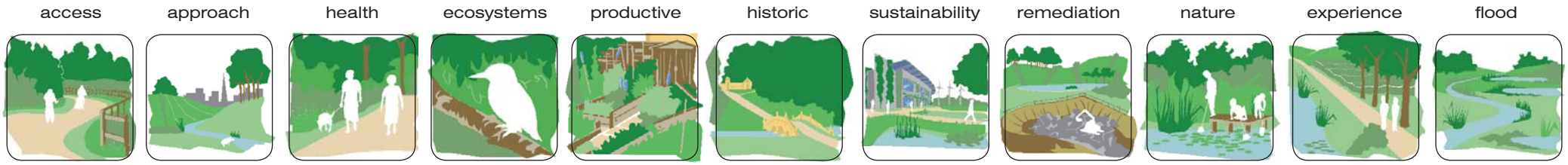
GREEN INFRASTRUCTURE FUNCTIONS

2.4 Key to understanding green infrastructure and to justifying the proposals is consideration of the functions green infrastructure can and needs to perform.

2.5 The eleven functions which have been identified for this strategic Green Infrastructure Plan are shown overleaf.

2.6 These functions have been defined and mapped to understand geographical/spatial provision of green infrastructure assets in the GreenArc. Consideration has been given to shortfalls and potential need and supply. The functions have also been used to develop strategic proposals in response to identified need and to evaluate proposals, for prioritisation and future implementation by others.

Green infrastructure functions

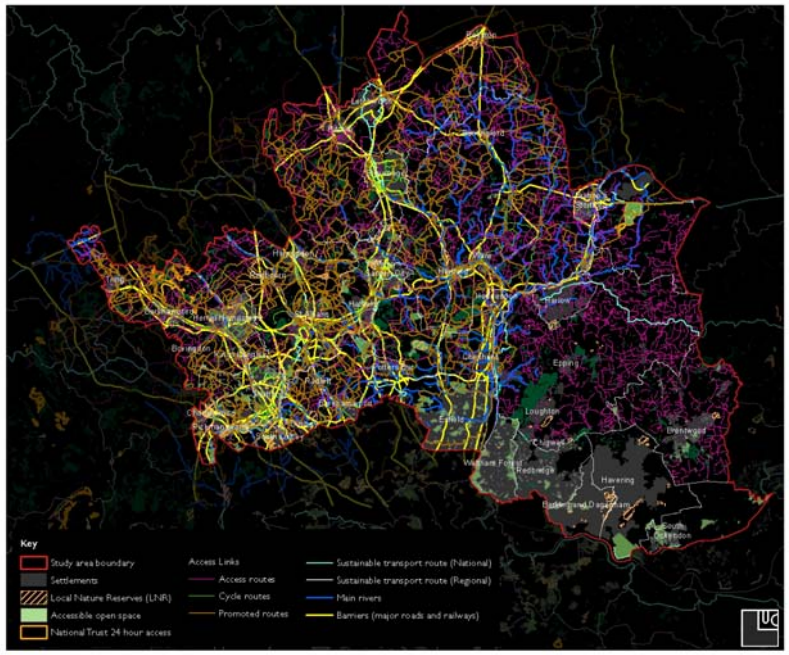


2.7 The analysis methodology for each function (including provision standards applied) is set out at **Appendix 3**. Supporting mapping has been used to generate visual and statistical analysis, and to understand nature of provision and shortfalls. This is shown below, in relation to each function.

THE FUNCTIONS – SUMMARY OF NEED, SUPPLY AND OPPORTUNITY IN THE GREENARC

2.8 The findings from each functional analysis are summarised below. Note that mapping shows both the GreenArc and Hertfordshire, as part of the integrated approach taken to developing the two Strategic GI Plans. This has also been reflected on the proposals map at **Figure 3.1**, which shows both areas.

Access to recreation



2.9 Accessible open space forms a key part of the quality of life of communities, although it is recognised that functionality varies according to the type and size of spaces. Areas may not always be well served due to settlement evolution and the presence of barriers to access, such as motorways. These issues are particularly relevant to many parts of the GreenArc.

2.10 The Natural England Accessible Natural Greenspace (ANGSt) Standards identify four thresholds for semi natural greenspace provision:

- 500ha and above;
- 100ha and above but below 500ha;
- 20ha and above but below 100ha;
- 2ha and above but below 20ha

2.11 These sites can be identified in terms of their strategic importance with the larger sites (500ha) representing regional provision, the smaller sites (100ha) representing county provision while sites up to 20ha represent district/local provision.

2.12 The ANGSt standards[iv] show that households in Epping Forest, Harlow and Brentwood are well served. All have access to a 100 hectare site and all households in Harlow have access to a 500 hectare site. Of the whole Essex area, Epping Forest and Harlow local authority areas have the highest percentage of households meeting all of the ANGSt requirements. With the exception of access to 500 hectare sites for Brentwood, all of the ANGSt size categories for these three local authority areas are above the Essex average.

2.13 Households in the southern Essex local authority areas (in particular Thurrock) have access to a 500 hectare accessible natural greenspace and there is above Essex-average provision of 100 hectare site access in this area.

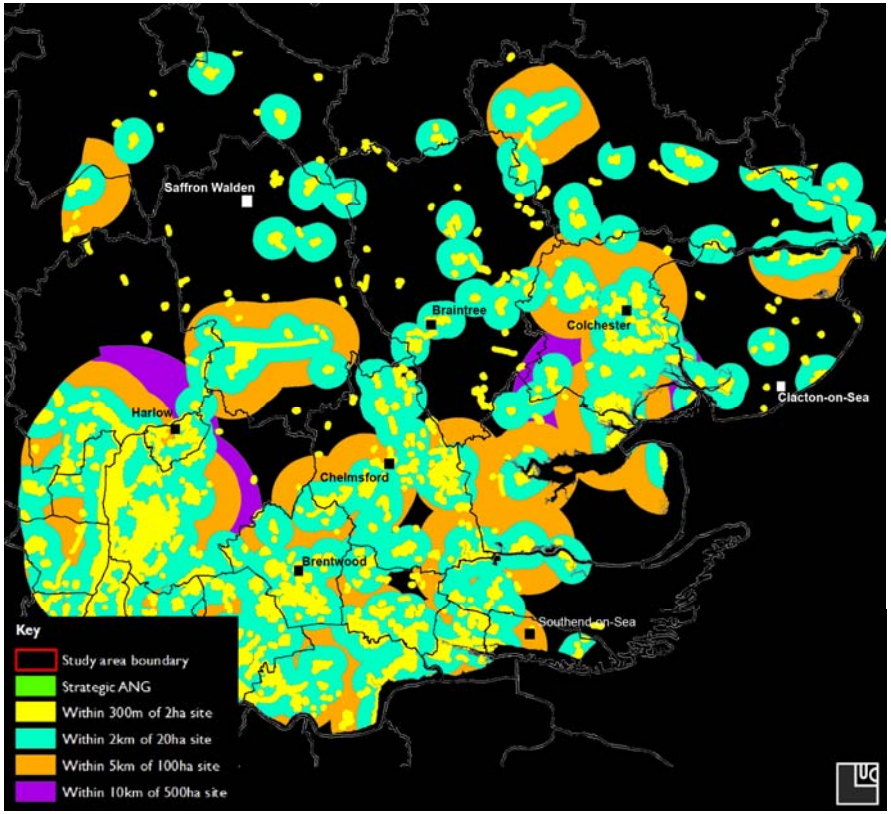
Barking and Dagenham have been identified as areas deficient in high quality open space in the ANGSt assessment.

2.14 In terms of access links, the Essex Rights of Way Improvement Plan (ROWIP) aims to improve accessibility to the rights of way network, whilst also promoting sustainability. Principal challenges identified in the ROWIP include lack of information provision, whether physical, online or promotional material, and need for partnership working with adjoining districts, health trusts/partnerships and schools groups.

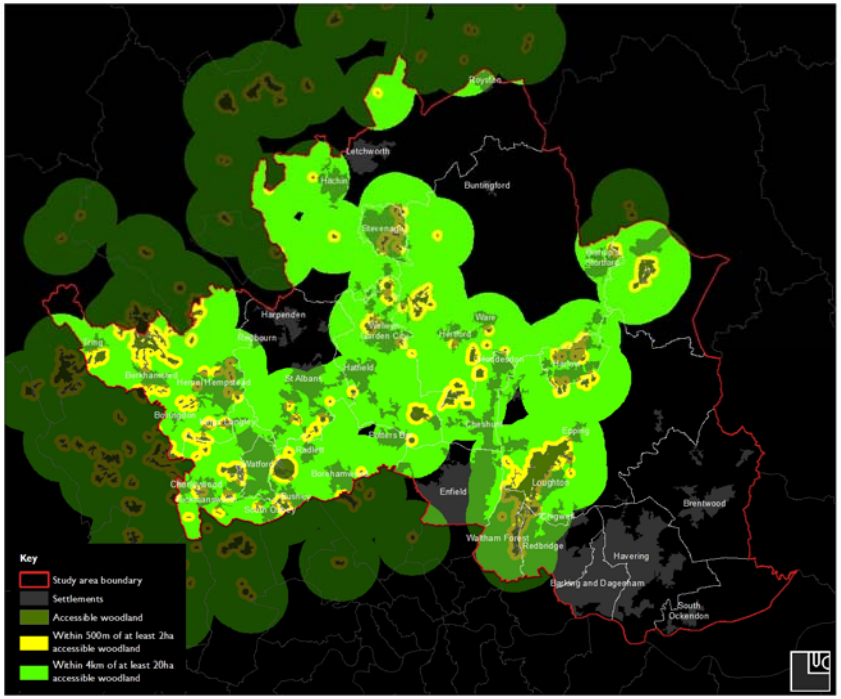
2.15 Key links severance issues are presented by transport barrier such as M25, M11, A12, A414 & A130.

2.16 Promotion and addressing severance have both formed foci for strategic projects in **section 3** ('Re-connect' and 'Greening the GreenArc' interactive mapping project proposals).

2.17 Interpreting the Woodland Trust's Accessible Woodland Standard, much of the GreenArc is relatively poorly provided for. Only the western swathe of GreenArc encompassing sites such as Epping Forest and Hatfield Forest and Broxbourne Woods within the Hertfordshire part of the GreenArc are within the catchment area of both the 2 hectare (ha) and 20ha accessible woodland provision standards. This indicates a need for further woodland creation and linkage, which could form alternative semi natural green space. This has formed part of the focus for the Woodland Arc project at **section 3**.

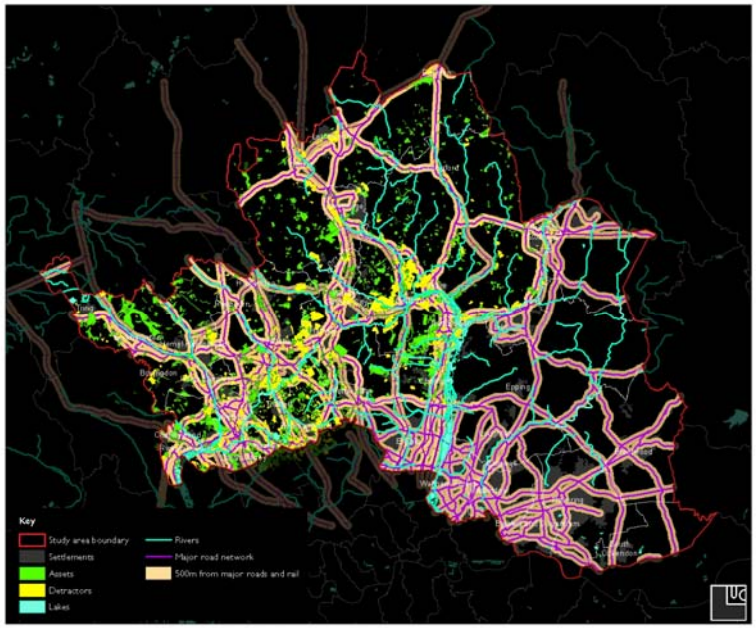


Accessible Natural Greenspace (ANG) provision, applying the Natural England ANGSt standards (source: Natural England[v])



Accessible Woodland Provision (Woodland Trust standard)

Prestige on settlement approach corridors



2.18 The concept of prestige, that is, the experience and perception of settlement approaches, is a key part of the green infrastructure approach and for positive planning of settlement fringes. Within the context of the principal transport corridors in the GreenArc's main settlement approaches, this functional analysis has referred to visual analysis of aspects of landscape character within a 500 metre buffer of main road and rail corridors within the GreenArc. Reference has also been made to the Essex Landscape Character Assessment where appropriate.

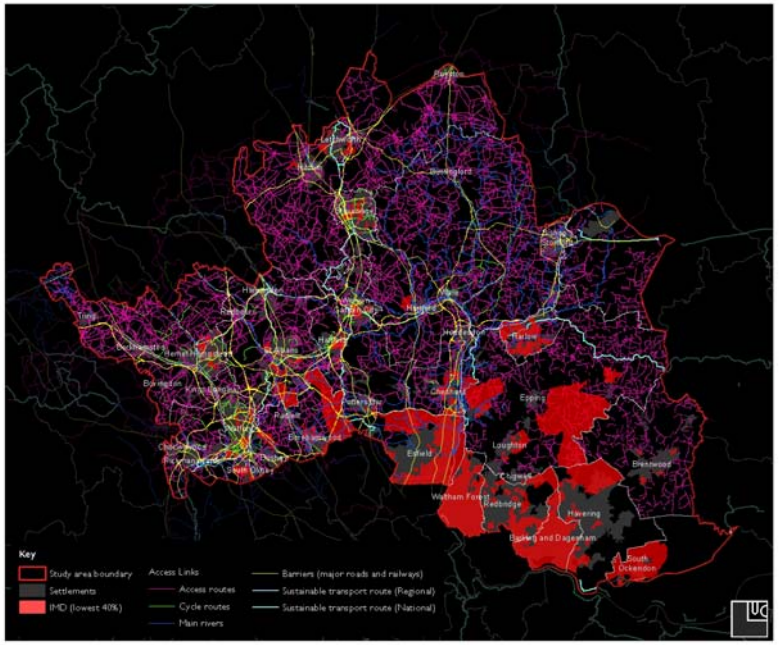
2.19 The primary transport corridors have been analysed in terms of tree and woodland cover using aerial photography and where opportunities or deficiencies exist these have been outlined below. Along the M25, there is a relative density of woodland cover at Crews Hill, while there is a need for greater level of woodland buffering to edges of Waltham Cross, where they intersect the motorway. Where the M25 intersects the Lee Valley Regional Park (near industrial estates at Waltham Cross) there is potential to enhance and expand woodland and wet woodland. There is potential to enhance and re link woodland in this part of the corridor as far south as Mardyke Valley, to assist in delivering objectives of Thames Chase Community Forest, as well as providing an improved settlement and landscape interface and better sense of integration for the M25 corridor.

2.20 The A12 is a well wooded corridor forming settlement edge at Ingatestone, and to Brentwood (there is some enhancement and reinforcement potential here). Inside the M25, there is little opportunity for structural GI to enhance prestige, due to density of development in East London suburbs, although south of Harold Wood, woodland planting may provide some strategic greenspace enhancement in relation to the East London Green Grid area and delivery of Thames Chase Community Forest objectives.

2.21 Along the route of the A120 there is dense concentration of ancient woodland at Hatfield Forest, otherwise more sparse and confined to farm woodland blocks around the edge of Takeley (strategic opportunity to reconnect woodlands). While the A414 has a thin level of woodland cover to the east, there is potential to re link woodlands within the buffer around the Ongars, and to link woodland to habitat creation initiatives south of Harlow, as proposed in the Harlow GI Plan (mixed and scrub woodland).

2.22 There is sparse woodland cover in the southern part of GreenArc, although there is potential to link to Hatfield Forest and Great Hallingbury (habitat conservation and enhancement project identified in the Harlow GI Plan – scrub woodland), as well as the minor wooded valley south of Sheering, which is severed by the M11 corridor (Woodland link restoration could also connect to Harlow GI habitat creation proposal at Matching Tye), delivering enhanced prestige as well as habitat. There is also variable woodland cover within the settlement buffer around Harlow, but there is potential to re link woodlands south of Harlow as part of the Harlow GI strategic habitat creation (woodland proposals) – this can include M11 buffering. There is a dense concentration of woodland cover around Epping Forest where there is potential to enhance and re link sites to enhance the setting of Epping Forest and to provide a 'buffer' to settlement edges, while south of Epping, there are narrower woodland swathes as the route moves towards higher density of development within the London suburbs.

Health



2.23 In this analysis, access links and proximity to areas of deprivation were mapped. Main road corridors were also considered to understand where there were linked issues of 'unhealthy environments' (air quality and pollution), or need to target tree planting as described in relation to the 'prestige' function above.

2.24 Deprivation appears to relate mainly to built development density as much as severance by transport barriers. Some

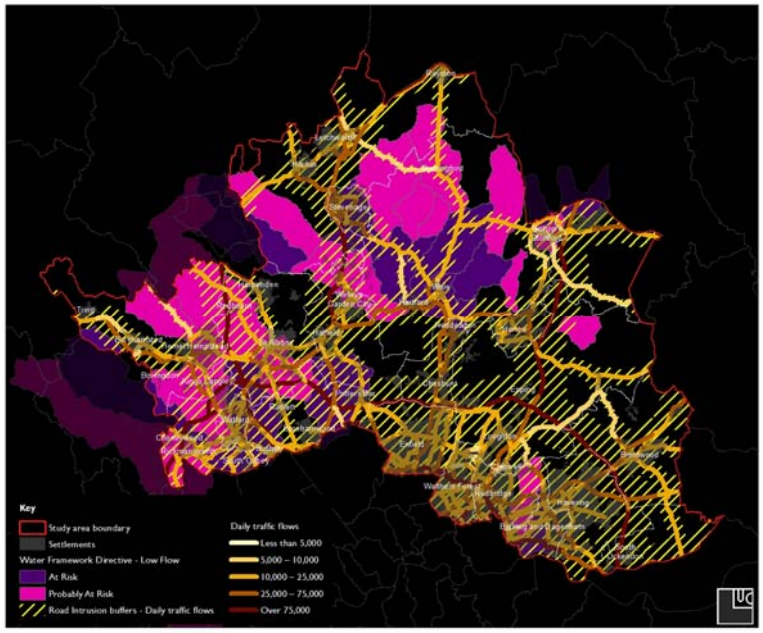
key GI assets such as the Lee Valley also provide potential opportunities to enhance and improve access, although at present this also forms a barrier in some areas due to lack of lateral access links. This has formed the focus for a project to enhance lateral connection sin the Lee Valley, including to other strategic GI resources such as Epping Forest, at **section 3** of this GI Plan. The analysis has shown that much of the western and central parts of the GreenArc contain areas of high deprivation and as a result, these areas have informed the proposals outlined in the strategic GI Plan (see **Figure 3.1**).

2.25 There are a number of wards identified as having high levels of deprivation (lowest 40% identified in the Indices of Multiple Deprivation or IMD). In Enfield, the Wards identified with highest levels of deprivation are Turkey Street Ward, along with a large swathe in the north eastern part of Enfield Borough, Ponders End and Edmonton Green. In Waltham Forest, relevant wards are Higham Hill, Hoe Street, Markhouse and Lea Bridge Wards, Cann Hall and Cathall wards (adjacent to the A12 – key barrier). In adjacent Boroughs, high levels of deprivation exist in Valentines Ward in Redbridge (adjacent to railway line) while in the London Boroughs of Barking and Dagenham and Havering; Valence, Becontree, Albion, South Hornchurch and Heath and Village Wards all have high levels of deprivation.

2.26 Strategic road corridors such as the A406 and A412 form key opportunity areas for woodland and tree planting to provide an attenuation function in relation to air quality and particulate filtration. They have formed part of the spatial focus for the Woodland Arc project described at **section 3**.

2.27 Other key issues relate to the Olympic legacy in the Lower Lee Valley and the need to enhance links along and across the Lee Valley to reflect related growth/regeneration. Also consideration of potential future growth north of Harlow which makes enhanced healthy travel links along the Stort Valley and eastwards into the wider GI network in GreenArc, all the more critical.

Sound ecosystems



2.28 Sound ecosystems are a key part of a green infrastructure network, and proposals should seek to contribute to positive and proactive management of these for community benefit. The focus for this analysis has been the key services of water and air quality. The River Thames and its tributaries dominate the hydrology in the southern area of the GreenArc, while the River Lee and River Stort are of significant ecological and landscape importance in the northern half of the GreenArc area.

2.29 Interpreting the Water Framework Directive (WFD) data produced by the Environment Agency for river catchments, the riverine environment of the Cobbins Brook and Crispey Brook in the north have been identified as being of poor ecological status so ensuring they are managed in a sensitive manner may help ameliorate any problems. The main catchment areas at risk of abstraction and low flow pressures are Mayes Brook East/Gores Brook and Seven Kings Water in the south, while Higher Layer Brook in the north is also at risk of low flows.

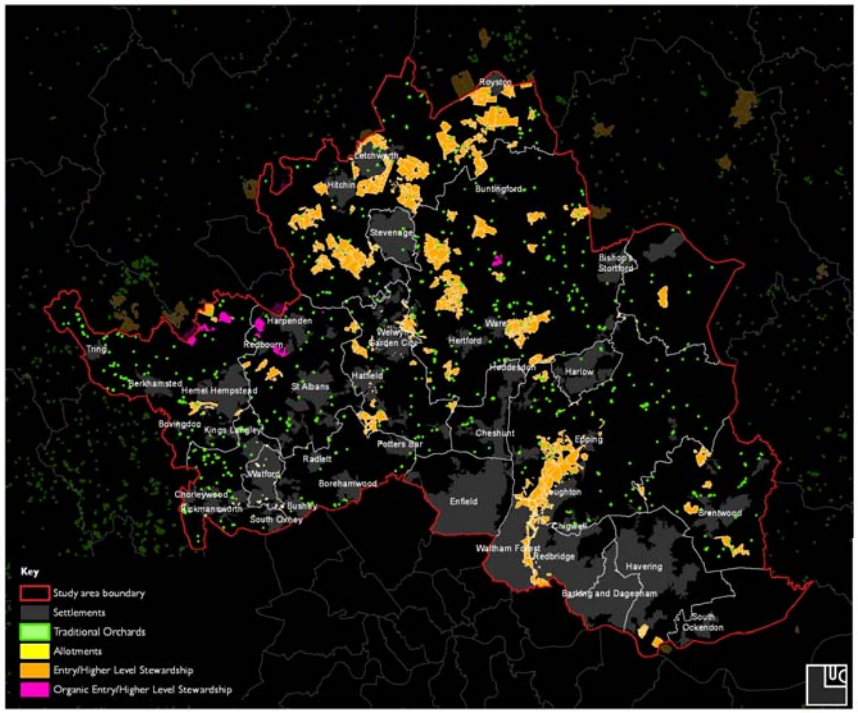
2.30 The analysis indicates a need for positive management of the Lee, Stort, Roding and Thames and their various brooks within the GreenArc. Also reinstatement of native wetland and riparian river corridors, and making space for water should form part of GI proposals. A strategic project for the positive management of all the rivers within the GreenArc area (and complementary to the aspirations of the Thames River Basin Management Plan, the Water Framework Directive and the Thames and Tributaries Integrated Biodiversity Delivery Area, has been devised at **section 3**, and shown on **Figure 3.1**.

2.31 The Lee and Thames have also been heavily modified by widening and flood embankments over time. This and future pressures relating to climate change will place further stress on the riverine environment, creating a need for 'spaces for water' through naturalistic landscape management solutions. Land uses throughout the GreenArc also have implications on water courses and environmental contaminants and planning for future land

use will be a key consideration in relation to water use and potential pressures such as quality and flow.

2.32 Whilst large parts of the principal transport corridors (M25, M11, A12, and A127) are partly wooded, there is a need for additional woodland and hedgerow belts to reconnect existing woodland blocks and improve air quality. Cross referencing to the Hertfordshire Strategic Highlights Green Infrastructure Plan, primary locations are the M25 (to deliver linked benefits for woodland buffering) and the A414, focussing on links between existing large scale woodlands such as Epping Forest, Hatfield Forest and the Broxbourne Woods Complex. These could also link to delivery of strategic woodland and community forestry objectives such as those embedded in the Thames Chase Community Forest Plan. Areas of potential woodland creation and enhancement which could contribute to creating healthier environments are shown in the Woodland Arc project on **Figure 3.1**.

Productive green environments



2.33 Consideration of the wider farmland landscape in the GreenArc reveals that only a relatively small proportion of the landscape is managed through Higher Level Stewardship (HLS). The most significant area of coverage is notably to the east of the Lee Valley Regional Park at Epping Forest and Great Monk Wood, while small clusters of HLS coverage exists but are more dispersed across the

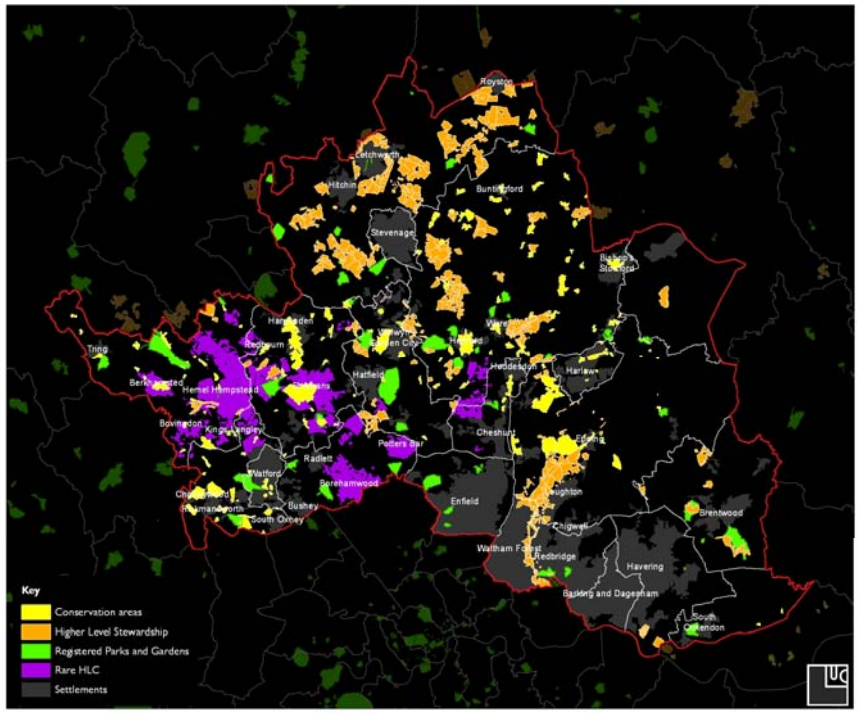
GreenArc area to the east (Stort Valley and area surrounding Brentwood) while there are also small clusters along the Thames Estuary in close proximity to the Thames Chase Community Forest. Mapped analysis shows no land in organic stewardship schemes within the GreenArc.

2.34 HLS and organic stewardship uptake are therefore key opportunities to enhance productivity and functionality of farmland landscapes in the GreenArc. HLS schemes which will also be supported outside the Natural England target area include those which seek to maintain, restore or create wet woodland or ancient semi-natural woodland. An opportunity therefore exists to benefit both biodiversity and production of timber and/ or biofuel by tree planting, support for natural woodland expansion or the bringing of existing woodland under management such as coppicing. This links also to the Woodland Arc project at **section 3** and **Figure 3.1**. The Woodland Arc project helps deliver on the Forestry Commission's aspirations for enhanced woodland creation and take up of Woodland Grant Schemes (WGS) through the 'Quality of Place' project. Areas of high priority identified by the Forestry Commission for woodland creation have also informed the Woodland Arc project. These areas include, but are not limited to the arc surrounding the London urban edge linking Watling Chase Community Forest with the Thames Chase Community Forest. Such areas could all contribute to enhanced landscape productivity with positive woodland management, and are complemented by the Woodland Arc project proposed at **section 3** of this plan.

2.35 Throughout the GreenArc, rural areas east of Epping and Harlow and areas with low housing density appear to have poor access to allotments. Allotments are thinly scattered across the GreenArc with no particular areas of concentration, while the majority of people in demand areas are in higher density urban areas such as the London Boroughs. There is an opportunity to improve the quality and value of many of these allotment sites throughout the settlements, but also to provide enhanced urban greening and locally productive landscapes as part of GI proposals. This should be a priority in high density environments with long standing greenspace deficiencies, where quality of life could be enhanced by provision of open space (e.g. London Boroughs in the GreenArc area). Identification of opportunities for community gardens and orchards could contribute to this objective. This has formed the focus for an Urban GI Heritage Conservation Project (urban greening) at **section 3**, which highlights potential for local food production and community gardens/orchards, to contribute to this aim (in particular in New Town greenspaces such as at Harlow). Opportunities include incorporating allotments/ community gardens into new publicly accessible open space and developing links with interested community groups including existing GI initiatives such as the Thames Chase Community Forest (TCCF). At the wider landscape scale an opportunity is to promote opportunities to develop an organic farm

network similar to the Field-to-Fork project to support a range of community food enterprises, including farmers' markets, community-owned shops, community supported agriculture, country markets, food co-operatives and many others.

Conserving historic landscape character



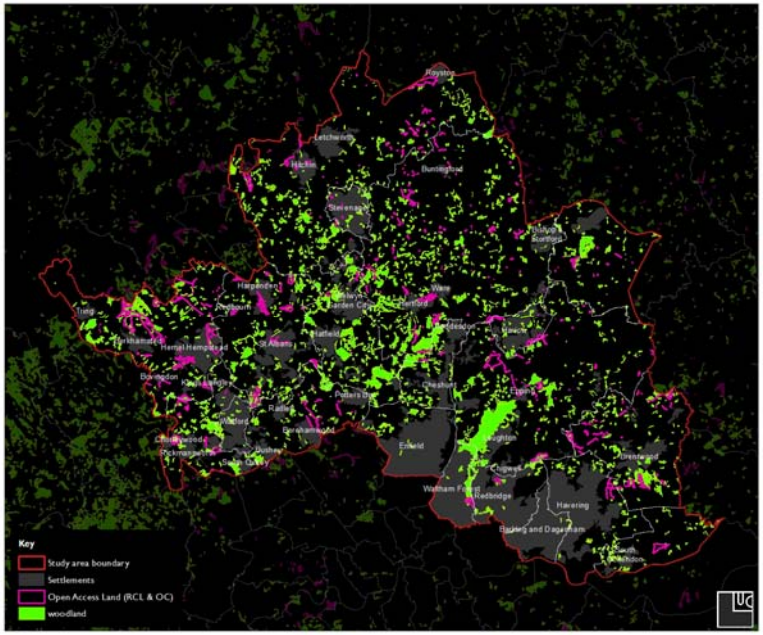
2.36 The historic environment and historic legacy provides a rich resource for conservation and interpretation as part of a multi functional green infrastructure network. It also clearly links to other functions such as prestige, experience and the potential for recreation. This analysis considered the distribution of designated heritage assets in addition to rare historic landscape character types, as a basis for identifying aspects of historic legacy to be conserved as part of the GI network.

2.37 With regard to rare historic landscape character types, Broxbourne Borough, in the Hertfordshire part of the Green Arc, includes some 434ha of co axial enclosures (sinuous, parallel field boundaries). This rare historic landscape type also extends into East Herts within the Green Arc area. Discussions with Essex County Council for the Essex part of Green Arc have suggested that pre 18th Century field systems are important and should be considered for protection. However it is not possible to attribute this chronologically or spatially to the Essex HLC data.

2.38 Some of the heritage assets such as registered parks and gardens enjoy additional protection through positive management as part of Higher Level Stewardship (HLS) schemes (Weald Park, Thorndon Hall, parts of Wanstead Park). Large tracts of ancient woodland in particular primary GI assets such as Epping Forest are also protected through HLS, although this often does not apply to smaller concentrations e.g. dense area around Stondon Massey. Relatively few of the registered parklands are bounded

by/contain ancient woodland (Hill Hall, Copped Hall within Epping Forest, Belhus Park). Key points are therefore to secure more positive management and re linking of ancient woodland sites through HLS and additional native planting, to create a lateral link from Epping Forest to Stondon Massey, and to use woodland planting as part of this connected network to conserve and enhance registered parklands. Such woodland linkages to enhance settings of historic assets could also link to the Forestry Commission's Quality of Place project, which aims to secure enhanced Woodland Grant Scheme take up. Priority locations relevant to GreenArc are the areas surround the Lee and Stort Valleys, linking ancient woodland sites such Epping Forest and Hatfield Forest.

Sustainability and responding to climate change



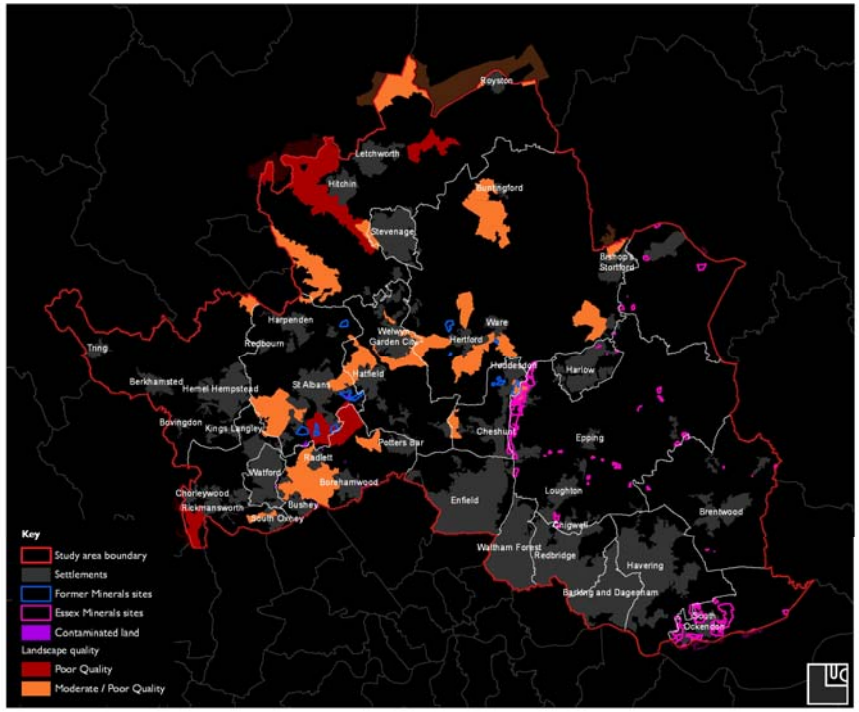
2.39 Urban greening, shading and cooling is a key part of community focussed green infrastructure. This analysis has considered only tree cover. There are however clear links with other functions such as flood attenuation and water management, as part of a climate change adapted response to spatial planning.

2.40 Issues and opportunities relate mainly to conserving what exists and managing this appropriately/planning for succession planting and ensuring new tree planting in

relation to redevelopment sites – use of the TCPA standards for enhanced urban tree planting of 80 street trees, of appropriately robust grade, per linear km.

2.41 Any future growth and redevelopment should plan for street tree planting as an integral part of the masterplan to ensure climate change adaptation, seeking to apply the above TCPA standard, where possible.

Land remediation

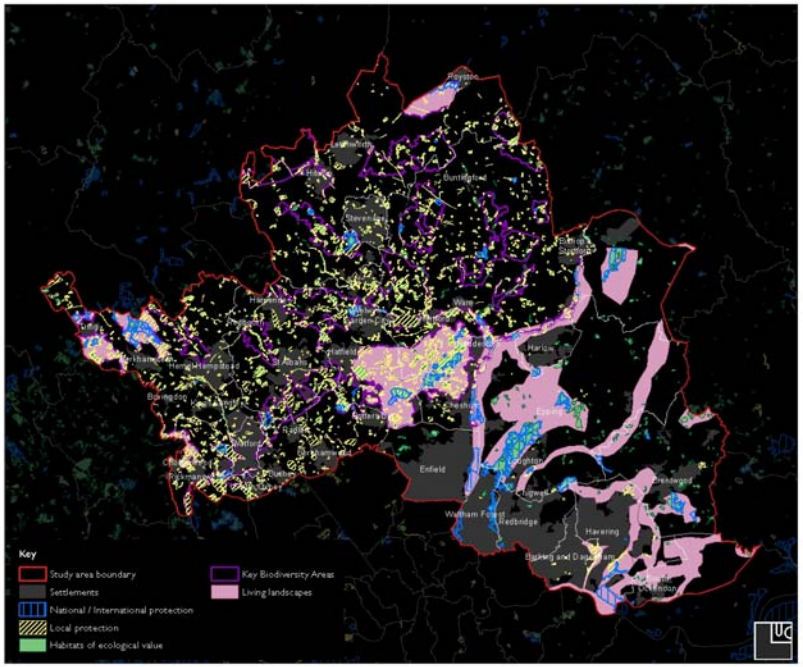


2.42 Green infrastructure planning and design can play a key part in delivering enhancement and restoration of landscape character and quality, and in enhancing areas of degraded landscape (e.g. mineral and re restoration sites). The Essex Landscape Character Assessment does not contain qualitative information on which to base analysis and recommendations.

2.43 There are a large number of mineral sites within the GreenArc, particularly clustered around the Lee Valley, near Hatfield Forest and at South Ockendon. Since they were commissioned (early 1990's) they have had an influence on the landscape and the changing nature of land use in the GreenArc. Restored sites, particularly in the Lee Valley, have provided additional GI assets and, as a result of their restoration, have contributed to rich wildlife habitats and have increased the provision of good quality open space in the region. Similarly lagoons around South Ockendon, which are the legacy of mineral extraction, present opportunities for the green infrastructure network.

2.44 Such sites provide a template for additional projects of a similar nature at previously worked sites. Future proposals for such sites could also integrate initiatives such as the Trees Against Pollution (TAP) project, pioneered by St Albans District Council (Hertfordshire) which aims to links restored sites using large scale woodland planting along the M25 corridor. They also have the potential to contribute to community forestry objectives in the Thames Chase Community Forest Plan.

Nature conservation



2.45 Conservation and enhancement of habitats, together with planning for sustainable communities, is a key consideration of multi functional green infrastructure planning. This plan has taken a landscape scale approach, considering Essex Biodiversity Action Plan Key Biodiversity Areas (KBAs), and Essex Wildlife Trust Living Landscapes in addition to statutorily and locally designated nature conservation sites and areas of local protection (Local Wildlife Sites).

2.46 Key areas for habitat expansion have been identified in the Hertfordshire and Essex Biodiversity Action Plans (BAPs) which aim to link both the GreenArc and Hertfordshire. These are outlined in terms of woodland, heathland and farmland expansion areas below. Woodland expansion has been identified in south east Hertfordshire, and more generally, at locations adjacent to existing ancient semi-natural woodlands, particularly where accessible from urban areas. This has formed part of the focus of the Woodland Arc project outlined in **Figure 3.1** at **section 3**. The Essex Orchard BAP includes general objectives to halt further loss and to expand this habitat resource.

2.47 Key areas for wetland enhancement which have been identified include river confluences which could be expanded into large wetland habitat mosaics, e.g. Stort Valley and Lee Valley. Cross-complementary to this, areas specified for expansion in the Essex Reedbed BAP include new reedbed at Cheshunt Gravel Pits in the Lee Valley (as part of the Lee Valley Park BAP). The creation of new reedbeds aim to replace those likely to be lost due to rising sea levels in the GreenArc area along the coast and Thames Estuary.

2.48 Areas identified for grassland expansion in the Herts BAP include the Broxbourne-Northaw-Hatfield Park complex fringing the GreenArc area where heathland-type habitats should be created on agricultural or forestry land to

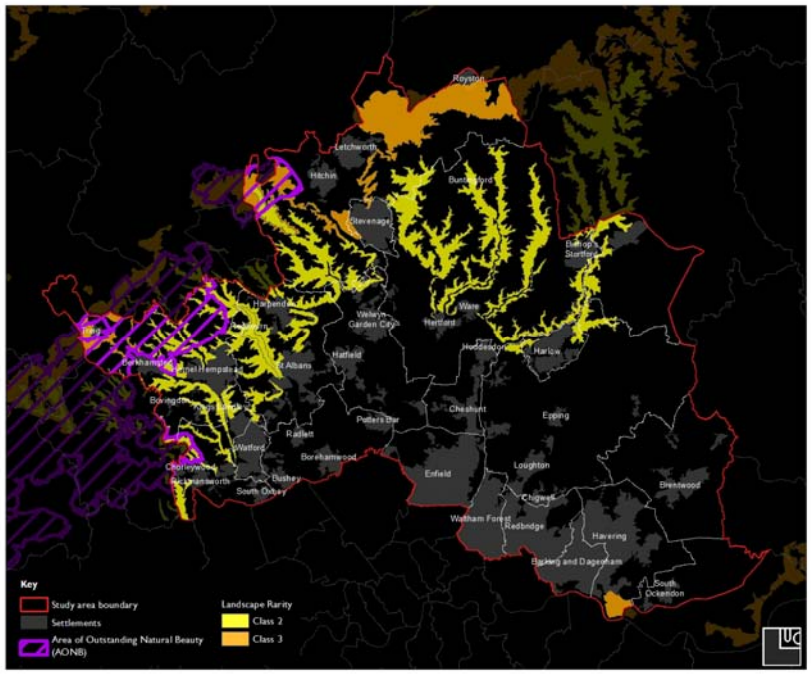
enlarge and buffer these (e.g. old Northaw and Cuffley Commons and a ride/glade network through the Broxbourne Woods area).

2.49 Heathland habitat expansion targets in the Essex BAP seek restoration of 50ha and creation of 50ha (examples include Epping Forest SSSI, Galleywood Common). Key locations for Environmentally Sensitive Areas identified in the Herts BAP include the East Hertfordshire river valleys, River Stort flood plains, Lee Valley, Mimram Valley and Bramfield plateau, and Broxbourne Woods. There are no specific areas identified for proposed restoration or creation of Reedbeds or Coastal Grazing Marsh habitats within the Essex BAP.

2.50 As there are no Key Biodiversity Areas specified for the London boroughs, the foci for GI provision here may be urban greening, particularly to link between existing designated and non-designated greenspaces.

2.51 Primary issues relate to the connectivity of habitats in light of future landscape change and climate change, and barriers to habitat connectivity created by the transport network. Habitats are generally fragmented in distribution and isolated in nature e.g. heathland in particular and there is poor connectivity across the habitat mosaic of the GreenArc (lack of linear corridors) where main barriers to habitat links are the infrastructure corridors of the A10, M11, M25 and A127.

Experience



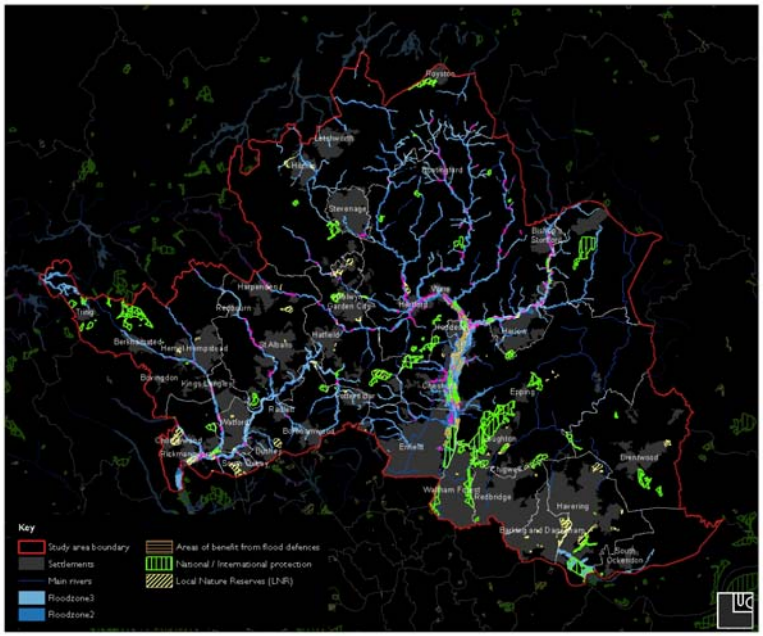
2.52 Experiential and perceptual aspects of landscape are integral parts of place led green infrastructure planning. For this analysis, the three rarest classes of regional landscape types were identified and their distribution in the GreenArc mapped. GreenArc includes rare landscape types in rarity classes 2 and 3.

2.53 Mapping the distribution of regionally rare landscape types in the GreenArc, the main regionally rare landscape types are the Settled Chalk Valleys and Coastal Levels. The

Settled Chalk Valleys represents 2.01% of the total GreenArc area. In the GreenArc this landscape type is primarily found in the Stort valley and associated networks on the Hertfordshire County border (at Harlow town). The Coastal Levels represents 0.58% of the total GreenArc area (and 1.88% of the total East of England regional distribution of the landscape type). In the GreenArc area this landscape type is represented by a small land area to the south along the north bank of the river Thames between Dagenham and Purfleet. The character type is essentially made up of three marshes forming the Rainham Marshes Complex: Rainham Marsh, Aveley Marsh and Wennington Marsh.

2.54 The regionally rare landscape types have formed foci for individual project proposals at **section 3**. For example, the Settled Chalk Valleys form part of the Thames Tributaries River Valleys and Corridors project. The Mardyke Valley Greenway extension project at **section 3**, and associated wetland creation, provides links to the Coastal Levels landscape type.

Flood attenuation and water management



2.55 Planning for and making space for water forms a key part of considering future landscapes in the face of climate change, particularly through sound flood risk management.

2.56 The GIS part of this particular functional analysis has been limited by variable availability of GIS Strategic Flood Risk Assessment (SFRA) data for the GreenArc districts.

2.57 Within the GreenArc, the Lee Valley is drained by a complex system of watercourses and other wetland

features within the Lower Lee Catchment. Its tributaries are the River Ash, River Stort and Cornmill Stream. The other significant water bodies in the Lee Valley include the flooded gravel pits in the north and the large elevated reservoirs in the mid section of the valley. In the lower reaches there is a complex series of channels constrained by engineered banks which link with the River Thames further south. Historically the area has been prone to widespread flooding, however in recent times large flood defence structures have been built as can be seen by the flood relief channel running through the mid section of the Valley.

2.58 The River Thames and its tributaries dominate the hydrology in the southern area of the GreenArc, where their corridors provide good physical access links, as well as habitat connectivity. Due to the nature of the topography in this area, the large low lying areas surrounding the Thames, Crouch and Roach estuaries are at risk of flooding by high tides. Potential flood alleviation measures include incorporating more naturalistic solutions to flood management such as extended wet woodland areas and additional flood zones allowing for increased biodiversity and habitat expansion. This analysis has informed proposals in the GI Plan at **section 3**, **Figure 3.1** – see the Thames Tributaries River Valleys and Corridors project at **section 3**.

3 Proposed green infrastructure network and projects

GREEN INFRASTRUCTURE VISION

3.1 The green infrastructure vision for the GreenArc is:

To conserve and enhance

- The varied landscapes of the GreenArc – farmland, ancient woodland, wooded valley crests and the intricate network of river valleys;
- The functionality of the riverine environments, in terms of landscape character, ecology and flows;
- Key strategic green infrastructure resources such as the Lee Valley Regional Park and the Stort Valley;
- The strong sense of place created by aspects of historic legacy, such as ancient woodland and former hunting forests (e.g. Epping and Hatfield Forests) and associated landscape mosaics such as heathland and grassland.

To improve and create

- Enhanced landscape and habitat connectivity between river valleys, and woodlands, including links for access and landscape and habitat connectivity between the Broxbourne Woods complex in Hertfordshire, the Lee Valley and Epping Forest;
- Accessibility and connections to and along the river valleys, including links for a variety of users – walkers, cyclists and riders, and enhanced connections to the strategic GI network in other counties and links to the All London Green Grid;
- 'Space for water' - naturalising river courses to reduce the potential for flooding in the GreenArc and aid creation of additional recreational water spaces;

To recognise and value

- The diverse cultural pattern, in particular assets such as ancient woodlands, parklands and aspects of modernist urban planning relevant to GI heritage e.g. Harlow New Town and associated designed greenspace network;
- The significance of Community Forestry, the aspirations of the Thames Chase Community Forest and the associated network of promoted greenways as integral parts of the strategic GI network;
- GI for people – the importance of provision for low key and informal recreation to enhance the value of existing green infrastructure, and creating/promoting an improved series of links between settlements and the wider countryside, particularly where this could contribute to enhanced quality of life such as at the Thames Gateway near Mardyke;
- The importance of the green infrastructure network for health and quality of life, seeking to promote awareness and appreciation of the network;

- The need for an appropriate balance between community, access, recreation and biodiversity interests, ensuring that these co exist rather than conflict;
- The need for joined up working with key partners, strategic stakeholders and landowners, to deliver sustainable proposals;
- The educational potential of GI - the need to raise awareness of and promote linked agendas such as local food including recognition of the importance of historic orchards throughout the GreenArc.

3.2 The vision is necessarily aspirational and long term, since it will need to consider GI significantly beyond the plan periods for the Local Development Frameworks in the GreenArc districts. Proposals to begin achieving the vision and initial consideration of delivery are set out in the remainder of this section.

DELIVERING THE VISION – THE NETWORK

Rationale, key messages

3.3 The proposed green infrastructure network has been developed in response to the key messages from the document review and the functional need and supply analysis in **section 2**, and to deliver the points of the vision above. It has been proofed against the adjoining counties' green infrastructure context and other relevant spatial plans, policies, programmes and projects. The proposals have also been validated through stakeholder consultation (the main messages from the stakeholder workshop are in **Appendix 1).**

3.4 The proposed Green Infrastructure Network is shown on **Figure 3.1** and the component green infrastructure types which make up the GI network are described below. Spatial projects and non spatial proposals which deliver the GI network are explained at in the sheets at the end of this section, with spatial projects cross referenced to **Figure 3.1**. This includes high level consideration of cost, phasing and delivery and management mechanisms. Recommendations to link the green infrastructure proposals to delivery through spatial planning are set out in **section 4**.

3.5 These sheets have been produced to describe new proposals being made as part of the suite of Green Infrastructure plans being produced for Hertfordshire and the GreenArc area. The intention is to draw together similar sheets for existing strategic projects and initiatives referred to on the maps. In the meantime for information about existing projects and initiatives please refer to the relevant project lead or in absence of an obvious preferred point of contact, to Simon Odell (Simon.Odell@hertscc.gov.uk).

3.6 The existing strategic initiatives identified by this plan are:

- Lee and Stort Valley, including Lee Valley Regional Park
- Harlow Green Infrastructure Plan
- Trees Against Pollution project (Hertfordshire)

- Colne Valley Regional Park (Hertfordshire)
- Thames Chase Community Forest and also the Watling Chase Community Forest in Hertfordshire
- Chalk Arc in Bedfordshire and Buckinghamshire

Green infrastructure types in the GreenArc

3.7 A series of green infrastructure types have been defined to organise proposed green infrastructure projects in the GreenArc, these are:

Urban greenways

Urban blue links

Urban wildspace

Peri urban wildspace

Rural wildspace

Rural blue links

Proposed green infrastructure projects

3.8 Working with members of the GreenArc Partnership, Hertfordshire County Council and key professional and community stakeholders, a series of potential projects have been identified to take forward the GI network and to deliver the functions identified and analysed in **section 2**. These are described at the end of this section, which also identifies supporting non spatial GI projects. **Section 4** identifies potential future work for the GreenArc

Partnership (in parallel with Hertfordshire County Council) to consider in delivering green infrastructure. Due to the high level nature of this study, more detailed work will be needed to test and develop proposals (e.g. further ecological work and advice to determine requirements for suitable habitat creation and enhancement at a local level).

3.9 All of the strategic proposals developed for this Strategic Highlights Green Infrastructure Plan, which are also shown on **Figure 3.1**, are identified below. The projects which relate specifically to the GreenArc or both the GreenArc and Hertfordshire are highlighted in bold, with the non bolded projects specific to Hertfordshire only:

- 1. Grand Union Canal, Colne Valley and Regional Park Enhancements (Hertfordshire only)
- **2. Woodland Arc**
- **3. Mardyke Valley Greenway**
- **4. Urban GI Heritage**
- 5. Mimram Valley Greenspace (Hertfordshire only)
- **6. Thames Tributaries, River Valleys and Corridors**
- **7. Lee Valley Regional Park Lateral Links**
- 8. Chalk Arc (Hertfordshire only)
- **9. Reconnect**

3.10 These are described in the tables at the end of this section. A further, non spatial (thematic or interpretative) project is identified at the end of this section ('**Greening the GreenArc'** interactive mapping project, **project 10**).

3.11 Also identified at the end of this section are GI links with adjacent Counties, to signpost where 'joined up', cross authority working will be required.

3.12 Projects are prioritised according to the functions and benefits they offer, with an indication of steps likely to be required to deliver. Broad consideration is also given to costings, to give a guide as to future levels of investment in delivering capital works, using the following indicative rates/bands:

£ = Up to £50,000

££ = £50,000-100,000

£££ = £100,000 – 500,000

££££ = £500,000 – 2million

£££££ = £2million +

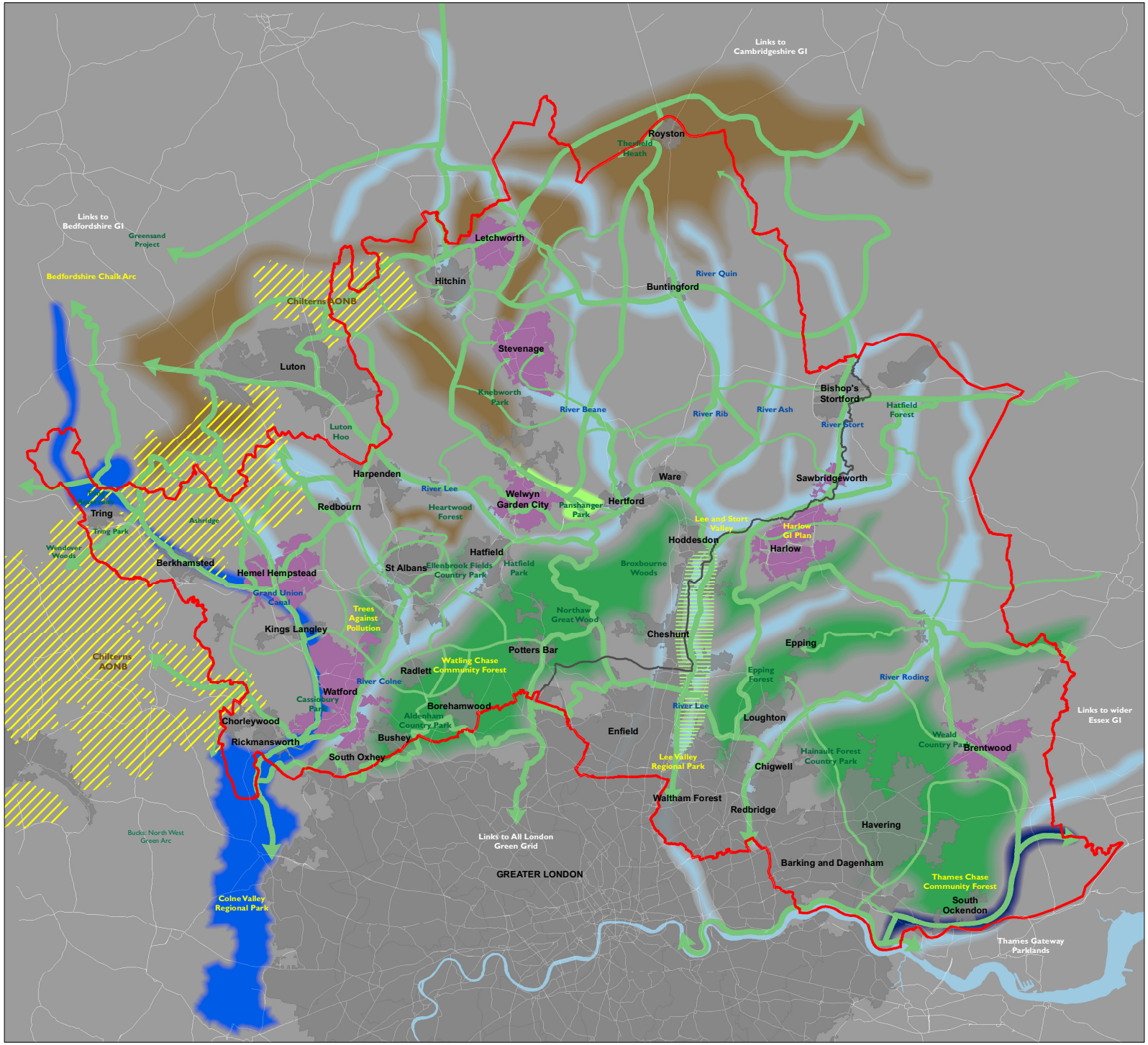
3.13 Note that costs are indicative/guidelines only. Where a project is a series of component sub projects, this will have an effect on costs. They represent a reasonable best estimate of investment costs to deliver the required green infrastructure functionality. It is also recognised that further, more detailed green infrastructure planning and

cost planning will be required. Where a project is a series of component sub projects, this will have an effect on costs. As such, proposals are a 'palette' of projects which the GreenArc Partnership and relevant partners can pick from as appropriate funding streams become available, but which will still help deliver the overall green infrastructure vision. In considering cost ranges, account has also been taken of match funding and grant aid in broad terms e.g. that where this applies, the net effect is to reduce costs of schemes in real terms. Potential funding sources are identified as appropriate in the project sheets at the end of this section.

3.14 The following conservative capital cost rates are given in relation to delivery of aspects of strategic green infrastructure, for information. The rates cover implementation only and not other additional associated costs such as land purchase or professional fees. Costs are based on LUC's knowledge of comparable elements in other schemes:

- Native woodland creation (per hectare): £30,000
- Grassland creation (per hectare):£16,000
- Footpath creation, not shared use, assume 1.2m width, MOT type 1or self binding gravel or similar wearing course (per linear kilometre): £36,000
- Shared use paths/cyclepaths, hard surfaced, 2.4m width macadam with tar spray and chip surface or similar (per linear kilometre): £72,000

3.15 Consideration is given in broad terms to further work needed to deliver projects in the following project sheets. As a general rule, in addition to the liaison, consultation and negotiations identified, each capital project will also require further survey work – land, ecological and archaeological surveys, in addition to impact assessment of proposals and projects in ecologically sensitive areas.



Hertfordshire & GreenArc Green Infrastructure Strategic Highlights Plan (SHiP)

Figure 3.1: Proposed Green Infrastructure Network

Key

- SHIP study area
- Hertfordshire County boundary
- Settlements

SHIP Green Infrastructure Proposals / Projects

- 1. Grand Union Canal, Colne Valley and Regional Park Enhancements
- 2. Woodland Arc
- 3. Mardyke Valley Greenway
- 4. Urban GI Heritage (and Urban Greening)
- 5. Mimram Valley Greenspace
- 6. Thames Tributaries, River Valleys and Corridors
- 7. Lee Valley Regional Park Lateral Links
- 8. Chalk Arc
- 9. Reconnect

Existing

- AONB
- Lee Valley — Existing GI initiatives

N W E S

0 2.5 5 10 Km

Date: 31/03/2011
Revision:

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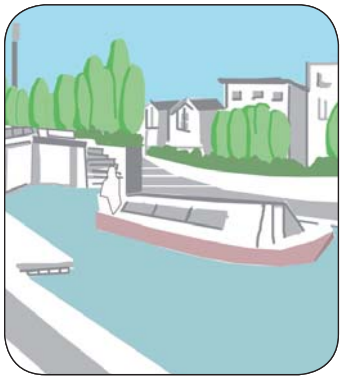
SHIP : HERTFORDSHIRE

PROJECT : 1. Grand Union Canal & Colne Valley Regional Park enhancement

: £££££



URBAN BLUE LINK - Brief description / snapshot of the project

Recognition of the importance of the Grand Union Canal as cross county GI (links into Bucks GI network) & of Colne Valley as strategic GI asset

- Address barriers to access within the Colne Valley & to the Colne Valley Regional Park (CVRP), providing new lateral links & ways to access from the tube & rail networks - space for healthy recreation/movement, address strategic deprivation issues in some Greater London/South Herts suburbs. Enhanced profile for the valley & promote CVRP as strategic GI asset
- Greater space for water through additional wetland creation around settlement pinch points, e.g. Watford (for prestige, flood management & biodiversity)
- Providing a continuous & usable green transport link & connections to North West London greenspace network (link to All London Green Grid), through restoration & upgrading of the canal towpath, to deliver parts of National Cycle Network Route 6

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Contribute to the Herts ROWIP & Sustrans objectives for NCN Route 6 – a true multi functional strategic corridor, connecting the missing pieces in the green transport link to London providing a continuous transport link along the Grand Union Canal & encourage lateral links from the main GI spine. Key part of GI Plans for Watford & Three Rivers. Landscape enhancement & restoration can deliver LCA objectives/restoring fragmented landscapes west of Colne Valley. Wetland creation providing enhanced wildlife habitats linking to & contributing to the work of the Herts & Middlesex Wildlife Trust (HMWT), such as at the Rickmansworth Aquadrome. Address issues of ecological & river quality in Colne Catchment, through 'making space for water'. Complementary to objectives of the Thames River Basin Management Plan (TRBMP), AONB Chalk Streams Project, Colne Valley Park Management Plan, Water Framework Directive & with links to Thames & Tributaries IBDA & the All London Green Grid.

ISSUES ASSOCIATED WITH DELIVERY : Very significant capital costs associated with enhancing & upgrading the national cycle route to a usable standard throughout. Low revenue currently attracted by CVRP Partnership/relatively little 'buy in'. Need for enhanced profile & awareness raising activity (potentially linked to 'Green Hertfordshire' : project 10) & education programme promoting the Colne Valley to the adjacent communities. Given the extent of the land holdings of British Waterways, Lafarge & Veolia in the project area, early liaison with these groups & other key landowners is essential (delivery of corporate responsibilities as part of the project). A valley wide approach to enhancing the landscape character through low key changes in landscape management could be delivered as capital projects through Higher Level Stewardship & environmental stewardship.

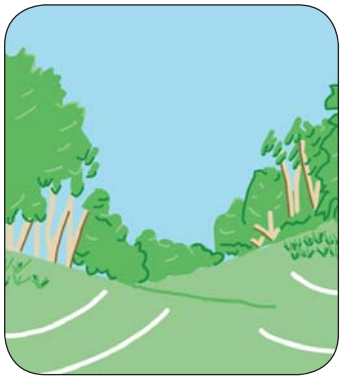
POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Environment Agency for wetland environment restoration & riverine environment regulation & monitoring, British Waterways (for canal path capital works & interpretation project), Groundwork & HMWT for smaller scale delivery & monitoring of wetl& habitat creation. Sustrans, Veolia & Lafarge (restoration of workings, to deliver wider park objectives). Colne Valley Park Partnership & London Boroughs. Monitoring at early & post delivery stages through user & visitor group surveys, & through discharge of relevant consents/site inspections.

WHAT HAPPENS NEXT? PRIORITY / RANKING : Negotiation with major land owners is a key stage, to identify opportunities, funding opportunities & deliverability. Any future development in proximity to canal corridor should contribute to upgrade of the route & seek to make links. With these potential sources of capital funding, the project becomes high priority, albeit to be implemented on a phased basis. Smaller scale quick gains & funding can be achieved in partnership with bodies such as British Waterways, the HMWT, CMS & Groundwork, along with project promotion to relevant communities, Friends groups & local user groups (e.g. Anglers clubs).

SHIP : HERTFORDSHIRE & GREENARC

PROJECT : 2. Woodland arc

: £££+



RURAL WILDSPACE - Brief description / snapshot of the project

Recognition of the value of woodlands as a multi functional & strategic GI asset, & to deliver aims & aspirations of related partners

- Enhanced resilience to climate change & provision of linked landscape/habitat mosaics (copse, grassland, heathland & wet woodland/wetland), plus sustainable management
- Linking & buffering strategic woodland sites, to provide alternative semi natural greenspace (e.g. Epping Forest, Hainault Forest & Hatfield Forest)
- Delivering 'Living Landscapes': Providing landscape links e.g. Broxbourne Woods & Epping Forest/Hatfield Forest, contributing to original GreenArc aims, as well as creating better woodland links to the urban fringe. Targeted woodland creation to deliver enhanced landscape experience/setting (links to S Herts Woodlands) & deliver Community Forestry
- Using woodland creation to contribute to HLS & EWGS to protect, enhance & manage historic assets & to help deliver Forestry Commission aspirations (Quality of Place), as well as re-restoration of mineral workings (Lee Valley). Also sustainable woodland management
- Provision of appropriately designed & sited access links

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Can contribute to Forestry Commission's Quality of Place project. Contributes to delivery of Hertfordshire BAP habitats & HMWT & EWT's aspirations for Living Landscapes, to extend & link these & Key Biodiversity Areas. Contribution to broad objectives of Regional Woodland Strategy. Opportunities for sustainable woodland management can help meet wood fuel objectives, & to provide commercial/economic incentive for woodland creation. Potential enhancement of regionally significant strategic woodland clusters. Contributes to the All London Green Grid (woodland links between Hertfordshire, Essex & London). Can potentially contribute to tree strategies at local level & (for urban locations) Forestry Commission Street Tree Initiatives. Access links complementary to ROWIP objectives.

ISSUES ASSOCIATED WITH DELIVERY : Land ownership/land prices. Take up of HLS & Woodland Grant Schemes - need to incentivise woodland planting for landowners. Land ownership negotiation & promotion of relevant grant aid schemes are key. Proposals should reflect landscape/ historic character & biodiversity sensitivities. Need for landscape, ecological & archaeological surveys in relation to planting locations. Climate change adapted species should respect landscape character where possible. Larger woodland creation schemes may be subject to Environmental Impact Assessment (EIA). Appropriate management, for woodland creation to contribute to wood fuel. A key issue is to revive the Watling Chase Community Forest as a delivery mechanism.

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Forestry Commission, Groundwork, Natural England, landowners, local authorities. Also CMS (Herts) & Countrycare (Epping Forest District). HMWT/EWT, Woodland Trust. Thames Chase Community Forest (& potentially Watling Chase if revived). Potential funding through HLF. Landowners such as Lafarge & other mineral site operators. Developers through scheme mitigation - factor into s.106 agreements & CIL. Delivery could occur at small scale by voluntary means (BTCV, School Groups, Epping Forest Conservators), & local green groups/ Transition Towns. Potential funding (urban locations) through National Tree Planting Campaign. Monitoring mainly through grant agreements/species surveys.

WHAT HAPPENS NEXT? PRIORITY / RANKING : Uptake of grant agreements should be encouraged in landowner discussions. High priority as woodland creation could deliver many linked benefits at relatively low cost. Need for appropriate links with key strategic delivery partners at county & local level & to prioritise appropriate areas for woodland creation. Link to existing initiatives (e.g. Heartwood Forest). Need for joined up working at local authority level to incorporate into policy & CIL tariffs.

SHIP : GREENARC

PROJECT : 3. Mardyke Valley Greenway extension

: ££££+

RURAL GREEN LINK - Brief description / snapshot of the project :
Extension of green strategic links as well as connections to the Thames Path & further points for access. Wetland, wet woodland & habitat creation opportunity in the valley

- Provide a strategic link from existing Mardyke Valley Greenway & Thames Path, through to Basildon & eastern suburbs via Bulphan
- Programme of wetland & wet woodland extending habitat creation in earlier Mardyke schemes
- Contribute to extending & delivering aspirations of East London Green Grid, with potential for improved links to London GI
- Links to Thames Path & enhanced environment/quality of life in Thames Gateway
- Links to delivery of Thames Gateway Parklands, connect gateway as to the wider countryside
- Complementary to the delivery of the Thames Chase Community Forest Plan & the promoted greenway network (within the Thames Chase Community Forest)

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Extension of the Greenway along the Mardyke corridor will deliver further access as part of the East London Green grid, connecting into the wider Sustrans network. Expansion of the existing route between Stifford Bridge & Purfleet (Sustrans route 137) will provide stronger links to the Thames Estuary Path & National Cycle Route 13, leading Eastwards through Essex into Basildon (via Bulphan), Billericay & ultimately to Chelmsford. Building on access projects such as the Veolia Mardyke Bridge linking Purfleet to the Rainham Marshes Nature Reserve, greenway extension projects contribute to the aims of the Thames Chase Community Forest through new wet woodland & habitat creation & implementing parts of the promoted greenway network. Potential to contribute to & link with the Thames Gateway Parklands.

ISSUES ASSOCIATED WITH DELIVERY : Access projects & link extensions for a green transport corridor (e.g. National Cycle Routes) have a significant capital cost with regards to physical delivery. Delivery of the access & ecological packages may need to be phased & assessed in order of priority (e.g. costs against greatest benefit for community & wider users), with appropriate delivery bodies working together within a coherent masterplan (i.e. under plans such as those set out by The Thames Chase Community Forest). Major funding priorities within the area of East London & Essex may currently favour higher profile projects & delivery within the Thames Estuary, meaning that securing significant funding for the Mardyke Valley would need to be a long term aspiration. Liaison & promotion with key landowners (e.g. Veolia) will be important. Small scale delivery by local bodies & interested parties (e.g. the Wildlife Trust, Groundwork, Countrycare & friends groups) could help to achieve the first links within a longer term plan.

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Potential private & developer contributions through funding (e.g. Veolia) & off-site CIL/s.106 & grant aid funding. Essex Wildlife Trust & the Environment Agency for wetland, flood plan & habitat creation. Thames Chase Community Forest are already key drivers in delivering initiatives within the Mardyke, & their input would be vital. Along the Mardyke Valley there are already precedent projects for funded schemes (e.g. through HLF) which delivered improved access & habitat creation, & this template could be repeated to help deliver links to the wider network. Sustrans monitoring & funding would assist in the delivery of significant access sections within their scheme network (e.g. extension of route 137, & links to National Cycle Route 13).

WHAT HAPPENS NEXT? PRIORITY / RANKING : Priority for a coherent masterplan identifying a breakdown of sub projects which can achieve the overall objectives. Delivery of project components to be categorised into potential funding/delivery brackets & order of importance, as well as identifying what can be delivered at a local scale through local bodies & relevant parties (monitored by bodies such Thames Chase) - for quick wins.

SHIP : HERTFORDSHIRE & GREENARC

PROJECT : 4. Urban GI Heritage conservation & enhancement

: ££££+

URBAN WILDSPACE - Brief description / snapshot of the project

Recognising & conserving the significant planned urban green infrastructure heritage asset, seeking to enhance functionality & improve quality of life in densely developed urban environments

- Project celebrates & promotes the unique urban GI heritage of Hertfordshire/GreenArc (Garden Cities & New Towns), as well as providing enhanced functionality of urban greenspace, through appropriate management & new tree planting. Enhancement of urban biodiversity & recognition of the value of urban greening for climate change adaptation
- Sustainable living options, local food production/allotments, community gardens & orchards
- Securing positive green urban interfaces - enhancement of peri urban greenspace & through landscape mitigation of future urban extensions/settlement growth, as well as linking to orbital greenway projects such as the Letchworth Greenway in Hertfordshire
- Addressing long standing & strategic 'green' (& greenspace quality) deficits through small scale interventions in higher density urban environments such as Watford (street orchards, pocket greenspaces), also enhancing experience/ecosystems/climate change adaptation

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Contribute to enhancement opportunities in relevant open space studies at local authority level. Conserve & enhance historic urban/planned landscape legacy, in relation to registered & less 'tangible' GI heritage assets. Sensitive consideration of landscape pattern & integration as part of urban green network for future growth can respond to Historic Landscape Character & contribute to BAP objectives. Tree planting can to contribute to FC Quality of Place aspirations. Multi functional & enhanced quality greenspaces such as street orchards/community orchards can contribute to the East of England Apples & Orchards Project (use of heritage varieties).

ISSUES ASSOCIATED WITH DELIVERY : Engagement with LPAs & greenspace management programmes. Management & revenue costs & need to educate/change perceptions regarding changes to greenspace management. Urban greening aspirations may be constrained by presence of physical infrastructure in higher density urban environments & as such are aspirational/linked to redevelopment opportunity. Potential need for establishment of local volunteer green groups, linked to existing groups such as the Transition Towns movements in Hertfordshire, or through school groups/youth groups/voluntary organisations such as the BTCV. Need for a co ordinated approach across the relevant local authorities e.g. joined up delivery, sharing good practice.

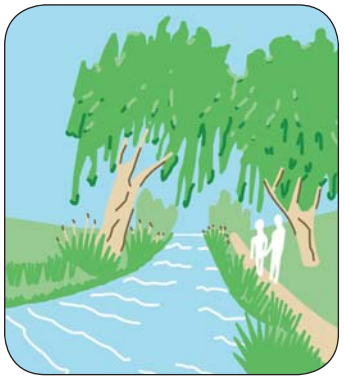
POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Local authorities through delivering urban regeneration visions. Also through parks & greenspace groups, as well as volunteer groups such as BTCV/school/youth groups described above. Potential funding stream is HLF for large scale urban GI heritage restoration projects (e.g. Jellicoe Water Gardens, Hemel Hempstead). Voluntary delivery could potentially also be linked to rehabilitation & probation service. Groundwork could be a potential partner for projects with a community focus, working with Transition Towns & local green groups. Also Countryside Management Service. Potentially involvement from Primary Care Trusts re: health benefits of enhanced greenspace & also from Hertfordshire & Essex County Councils & Highways Authority/Highways Agency in relation to any urban greening within Highways owned land. Potential funding through HLF for restoration of urban greenspace heritage to deliver projects (e.g. restoration of Jellicoe Water Gardens in DBC, as part of Hemel Hempstead urban greening project). Also National Tree Planting Campaign & FC through EWGS.

WHAT HAPPENS NEXT? PRIORITY / RANKING : Priority is high as many interventions could be delivered at relatively low cost e.g. beneficial changes in greenspace management. Others long term & occur through funding bid (HLF) or through link to policy (development briefs for regeneration sites & opportunities).

SHIP : HERTFORDSHIRE

PROJECT : 5. Mimram Valley greenspace

: £££££



RURAL BLUE LINKS - Brief description / snapshot of the project :

Green infrastructure for landscape, habitats & people through enhancement of the Mimram river corridor, & links to multifunctional greenspace at Panshanger Park as part of the long term future of the site

- Enhancement of the Mimram Valley chalk river corridor, making greater space for water & improving landscape character & biodiversity through active management to ease pressures
- Providing physical access to the water course (e.g. greenways/green corridors) & greenspace opportunities (e.g. for recreation) for Welwyn Garden City & outlying communities (e.g. Digswell)
- Wetland conservation (enhanced riverine habitat to improve ecological quality, e.g. wet Alder woodland) & enhanced links to wider network, connecting to Thames Tributaries River Valleys & Corridors Project
- Linked to restoration/after use of historic, biodiversity rich designed landscape of Panshanger Park post mineral extraction & providing settlement buffering
- Enhance settlement setting through positive site restoration (new wetland landscape character)

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Aims of EA's Thames River Basin Management Plan & Natural England's Thames & Tributaries Integrated Biodiversity Delivery Area plan (IBDA) will be implemented through delivery of wetland restoration & creation (e.g. at Panshanger Park & enhanced wetland environment in the Mimram). Enhancing the valley corridor & chalk river landscape to create space for wetlands & increased biodiversity will contribute to objectives of WHBC GI plan, Chilterns Chalk Streams Project & Herts & Middlesex Wildlife Trust, linking to existing projects such as the Archers Green, Hertingfordbury & Tewin Bury Nature Reserve. Prestige & experience, at both Welwyn in the West & Hertford in the East, will be enhanced with a multifunctional Mimram valley improving settlement buffering, & improved access will help address strategic ANG deficiencies & contribute to the Hertfordshire ROWIP. Through woodland creation (selective), the project will contribute to BAP/Living Landscape Key Biodiversity Areas.

ISSUES ASSOCIATED WITH DELIVERY : The project would span several districts, requiring a partnership between them to ensure successful delivery & application for funds. Multiple landownership along the valley could require the project to be split up into sub projects in order to successfully deliver, the projects would all need to work under the unifying scope of an overall masterplan & vision (e.g. by HCC, HMWT & landowners). Panshanger Park's immediate future as a mineral extraction site with ongoing positive restoration works means that the delivery of the project as a whole will need to staged over a substantial period of time, need for continued liaison between LaFarge, HCC & HMWT.

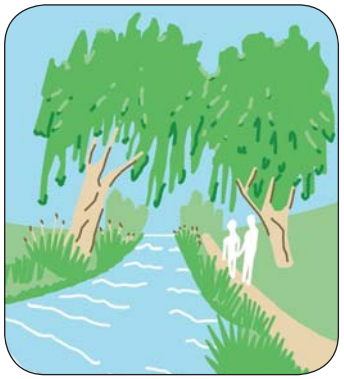
POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Landowners & the mineral operators (e.g. LaFarge through restoration agreement & the aggregates levy sustainable fund) at Panshanger Park will be key partners & Natural England through the HLS scheme in delivering the project, & possible developer contributions through off-site CIL/s.106. The relevant district councils (e.g. Welwyn & Hatfield & also East Herts) through the Herts Rights of Way & the Local Access Forum, as well as the Environment Agency, (& liaison with Veolia), in enabling/facilitation role, & implementation of grant agreements / minerals restoration scheme & species surveys post implementation. Also potentially through HLF & Natural England initiatives such as Access to Nature. Monitoring will occurs as part of audit trail needed to satisfy grant aid conditions.

WHAT HAPPENS NEXT? PRIORITY / RANKING : County level approach to work with the relevant districts to deliver co-ordintated funding bids to Natural England (Aggregates Levy Sustainability Fund, HLS & HLF). Promotion to key landowners & relevant bodies (e.g. Environment Agency), to identify short term gains & prioritise time scales & sub projects to deliver (i.e. create targets for the valley, using the London Rivers Action Plan as a potential model). Access & wet-land restoration to be divided into separate projects to achieve appropriate funding to maximise delivery of both elements.

SHIP : HERTFORDSHIRE & GREENARC

PROJECT : 6. Thames tributaries river valleys & corridors

: ££££+



RURAL (& URBAN) BLUE LINKS - Brief description / snapshot of the project

Living Landscapes: Seeking to enhance/contribute to ecological quality, responding to water management, flood risk & abstraction pressures (making space for water), enhancing landscape & habitat connectivity

- Respond to issues identified in SFRAs re: river pinch points. Creation of enhanced wetlands at settlement gateways (Dacorum valley towns, Watford, St Albans & Welwyn Hatfield, & Hertford)
- Environmental enhancement in vulnerable river valleys & catchments, seeking to restore & enhance/reinforce wetland habitat & conserve clay rivers & nationally important chalk rivers.
- Enhancing riverine ecological quality, to contribute to objectives of Thames River Basin Management Plan, Integrated Biodiversity Delivery Area & Water Framework Directive
- Striking the correct balance between biodiversity interest & access - rivers as people access/ experience/wildlife corridors (appropriate zoning), recognising the importance of rivers as key parts of the multi functional GI network/their connecting function as 'Living Landscapes'
- Contribute to restoration of former mineral sites in river valleys/remediation of contaminated land through enhancement & positive wetland habitat management

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Links to Chilterns AONB Chalk Streams Project & is also complementary to objectives in 'local level' river strategies such as those in Dacorum Borough. Complements landscape framework & LCAs. Conservation & enhancement of chalk rivers & associated wetland environment in Hertfordshire helps protect a BAP Priority Habitat. Project is complementary to EA objectives in terms of the Thames River Basin Management Plan (TRBMP) & associated aims to secure good riverine ecological quality as in the Water Framework Directive (WFD). Can also contribute to strategic Natural England objectives in relation to the Thames & Tributaries Integrated Biodiversity Delivery Area (IBDA). Complementary to guidelines & recommendations in relevant SFRAs. Project can deliver HMWT/EWT aspirations for Living Landscapes & landscape linkages in the river valleys & help deliver the Regional Park Authority's proposals for improved water quality throughout the Regional Park.

ISSUES ASSOCIATED WITH DELIVERY : Engagement with landowners (stewardship agreements). Need for consultation with EA throughout process & planning & design/delivery, to ensure that any works complement the TRBMP. Engagement with Hertfordshire districts & GreenArc, particularly Hertfordshire GIP districts, to ensure joined up cross boundary working. Importance of river valleys & functionality needs writing into LDF policies re: protection & management. Need for liaison with the Wildlife Trusts. Need for effective policy for protection, enhancement & management of the riverine environment in the respective Local Development Frameworks. Need for liaison with landowners (inc. Veolia & minerals operators such as Lafarge), & British Waterways (navigable rivers).

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : LPAs through expressing aspirations in policy, EA, HMWT & EWT, British Waterways, landowners, Countryside Management Service & Countrycare. Natural England through HLS (although revenue payments for access have ceased from 2010). Also relevant community groups/local societies at local level. Monitoring through uptake & implementation of stewardship agreements, through planning conditions in response to discharge of s106 & planning conditions (urban/peri urban areas -linked to development projects).

WHAT HAPPENS NEXT? PRIORITY / RANKING : Priority is high as many interventions could be delivered at relatively low cost e.g. through stewardship agreements or through relatively low key changes in management. Reference should be made to other examples of good practice e.g. London's Rivers Action Plan. A comparable study should be a future piece of work for Hertfordshire & the GreenArc.

SHIP : HERTFORDSHIRE & GREENARC

PROJECT : 7. Lee Valley Regional Park - lateral links

: ££££+

RURAL & URBAN BLUE LINKS - Brief description / snapshot of the project

Seeking to enhance accessibility to the strategic GI asset from the green transport network & at points on the park boundary, & helping to address greenspace & health deprivation in urban areas in the valley/adjoining the park area

- Creation of enhanced lateral links to/around the park, to address deprivation. Enhanced links should be made from public transport nodes & from within the urban area of Hoddesdon, & enhanced signage & from settlements within Broxbourne Borough, as well as addressing disjointed links across land in multiple ownerships e.g. in East Herts District, & creating safe links to & from Epping Forest, as well as to wider open space network in general
- Enhanced signage, promotion & legibility of existing connections for people across the park
- Project includes woodland & habitat creation in delivering Living Landscapes, e.g. creation of habitat as well as people connectivity to link Lee Valley to wider landscape
- Enhanced public transport network links, seeking to overcome access barriers (e.g. to reservoirs)
- Creation of enhanced connections to other strategic GI assets such as Epping Forest & the Stort Valley, plus enhanced connections to All London Green Grid including London Loop
- Project links closely to Project 9: Reconnect, & also gives expression to local GI links in the Harlow Green Infrastructure Plan
- Links to Project 10: Green Hertfordshire/Greening the GreenArc: promotion of the GI asset & links in the Lee Valley & helping secure links to the Olympic Legacy

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Can help deliver aspirations in the Lee Valley Park Plan, to increase public transport connections & approaches to the park. Also contributes to resolving issues identified in the Hoddesdon Borough Open Space Study - e.g. addressing greenspace deprivation in Hoddesdon town & suburbs to the south, through improved connections to strategic assets. Potential to help address social & health deprivation issues in southern GreenArc authorities. Linked habitat creation could deliver BAP & Living Landscapes Aspirations. Enhanced lateral access links are also complementary to the objectives of the Epping Forest Transport Strategy.

ISSUES ASSOCIATED WITH DELIVERY : Engagement with landowners & in dedicating routes & access (issue of way leaves & also potentially of 'hope value' associated with land which can restrict delivery of links, as well as long standing severance due to level crossings). LVRPA to continue to liaise with these groups. Potential significant capital costs associated with new access links, especially if shared use - need for feasibility studies & land/archaeology & ecology surveys. Potential for access to be delivered through environmental stewardship, noting that revenue payments for access schemes as part of this are no longer available. Need for liaison & consultation with EA to develop proposals & feasible routes in the valley, also for work with both HMWT & EWT in delivering linked package of habitat creation. Engagement with Hertfordshire districts & GreenArc partners to ensure joined up cross boundary approach.

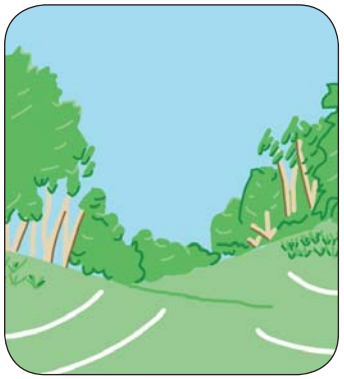
POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : LVRPA, Natural England, EA, HMWT & EWT, Countryside Management Service & Countrycare. Also County Councils, local planning authorities & Highways Agency. Need for ongoing liaison between LVRPA & LPAs to embed aspirations in policy & in setting CIL tariffs, as well as creating framework for local level planning. Monitoring is likely to be through uptake & implementation of stewardship agreements & also through delivery of works by Countryside Management Service/Countrycare.

WHAT HAPPENS NEXT? PRIORITY / RANKING : Priority will be dependent on multi partner & landowner agreement & consultation.

SHIP : HERTFORDSHIRE

PROJECT : 8. Chalk arc

: £££



RURAL WILDSPACE - Brief description / snapshot of the project :

Restore, enhance & conserve chalk scarp & grassland landscape character to the north of the County, with additional landscape linkages to adjacent sites cross county & within the AONB

- Enhance landscape quality & restore areas of fragmented landscape character within the A505 corridor (issues of prestige)
- Protect rare landscape character & aspects contributing to experience (chalk scarps & knolls)
- Create & protect better landscape & habitat linkages between strategically significant sites such as Therfield Heath to the wider landscape & connecting the two parts of the AONB
- Re-connect/& enhance chalk grassland landscapes & also conserve farming traditions (e.g. livestock grazing, where appropriate), balanced with existing productive uses (& habitats), complementary to projects in Bedfordshire (making cross county links to Beds Chalk Arc)
- Conserve & enhance chalk 'mosaic' habitats, (e.g. Aldbury Nowers, upper Mimram & Lilley Bottom Valley west of Stevenage - potential to tie into future urban planning at Stevenage North)

FUNCTIONS MET :

access prestige health ecosystems productive historic sustainability remediation nature experience flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Enhanced connectivity of chalk scarps/grassland can link with the Dacorum GI proposals, North Herts GI Plan & Bedfordshire GI (Chalk Arc), the Herts & Middlesex Wildlife Trust (HMWT) & AONB objectives, as well as the aspirations for the protection & enhancement of this rare landscape character type. The project will help increase the biodiversity to the north of Herfordshire feeding into Living Landscape aspirations within the Biodiversity Action Plans, enhancing key biodiversity areas & protecting important existing habitats (e.g. for farmland birds in North Herts). Enhanced landscape quality & new landscape/habitat links will help contribute to the protection of landscape character & delivery of the Herts LCA strategic objectives.

ISSUES ASSOCIATED WITH DELIVERY : The project will encompass liaison with many landowners, stakeholders & involve adjacent Counties (e.g. Bedfordshire), meaning the project will require clear partnership working (especially with HCC), as well as a project driving body & overall vision to work from to ensure a successful delivery (e.g. working with bodies such as Natural England, HMWT, CMS & FWAG to encourage & facilitate HLS uptake & landowner liaison, smaller projects & schemes contributing to an overall vision). Due to multiple landownership & existing arable land uses within the project work area, the project could be split up into sub projects in order to successfully encourage take up of environmental stewardship schemes & to obtain funding to deliver a network of links/wildlife corridors & areas which contribute to the projects aims. Project could link with existing projects (e.g. the Ridgeway National Trail) for joint promotion.

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : Key delivery partners in terms of the different landowners would be Chilterns AONB partnership & Natural England (through HLS agreements, to encourage habitat restoration & capital payments for access). Also potential off-site developer contributions through CIL/s.106 (e.g. from future town development, such as Stevenage). HMWT, FWAG, adjacent County Councils & bodies (e.g. Bedfordshire & Cambridgeshire County Council), District/Borough Councils (e.g. Dacorum, St Albans & East Herts), government funded initiatives such as through implementation of HLS schemes. Monitoring mechanisms through species surveys & implementation of work by bodies such as CMS, RSPB & BTCV & take up of HLS grants.

WHAT HAPPENS NEXT? PRIORITY / RANKING : Commitment to the Natural England HLS scheme by associated landowners within the project area is a priority to deliver landscape character enhancements. Project awareness & engaging with relevant parties (e.g. HMWT, Natural England, CMS & FWAG) will be required to agree an achievable vision for project elements of enhancement, conservation & habitat creation, as well as on-going management & monitoring.

SHIP : HERTFORDSHIRE & GREENARC

PROJECT : 9. 'Reconnect'

: ££££+

RURAL GREEN LINK - Brief description / snapshot of the project :
Reconnection of Rights of Way that have been severed by major barriers to the movement of people & wildlife (e.g. by rivers, canals & dual carriageways.)

- Replace lost strategic links between existing local Rights of Way networks to provide a step-change in connectivity, reinforcing Rights of Way as a spine of Strategic GI
- Wherever possible each location to have an associated programme of PROW corridor improvements (e.g. verges) to enhance multifunctionality of link
- Opportunities to be taken in line with priorities informed by level of potential non-motorised usage (benefit) as advised by the Local Access Forum

FUNCTIONS MET :

access | prestige | health | ecosystems | productive | historic | sustainability | remediation | nature | experience | flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER : Contribute to Greenways & All London Green Grid (including Mardyke Valley Greenway Extension), Watling Chase Community Forest strategy, & complement Grand Union Canal enhancements & lateral links across Lee Valley. Delivery of Hertfordshire RoWIP & LTP accessibility targets to link people to place. Contribute to delivering & enhancing regionally significant strategic routes, e.g. Ridgeway & Icknield Way. Assist all strategies & plans where access is important (e.g. for site management) or promoting animal crossings.

ISSUES ASSOCIATED WITH DELIVERY : Repair of severance has a significant capital cost & delivery will need to be phased & prioritised in consultation with the Local Access Forum. Associated land acquisition & wayleaves may be required. Some projects may require identification & funding strategically in the context of local collection of developer contributions & an accumulator mechanism for this will need to be agreed. Need for appropriate & sensitive design & management so that structures contribute to sites & landscapes.

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : HCC (Rights of Way & Highway Authority), landowners, local authorities. Highways Agency, Environment Agency, British Waterways Board. Developers through mitigation of potential housing & industrial sites - factor into planning agreements.

WHAT HAPPENS NEXT? PRIORITY / RANKING : A coherent programme to be prepared identifying main areas of search & priority. Development of mechanism to accumulate local & windfall contributions towards strategic projects.

SHIP : HERTFORDSHIRE & GREENARC

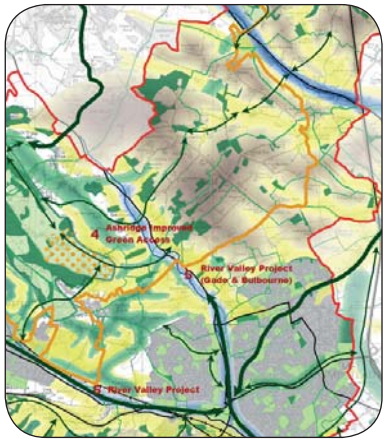
PROJECT : 10. ‘Green Hertfordshire/Greening the GreenArc’ interactive map project

: ££

Brief description / snapshot of the project :

Development of interactive mapping to promote the GI resource

- Accessible electronic GI map based/navigator resource
- Web based & Smartphone app (application) based outputs for easy access & to reach the widest audience, including schools & colleges
- Translate information on the GI network & new green links for people, to users
- Provide information on GI assets (landscape, habitat, historic etc) to users, to aid understanding & appreciation of the natural environment - educational resource
- Development of a series of themed walking/cycling & riding trails & routes from pubs etc & promotion of these to offer low key, ‘low environmental impact’ fun/recreation for all ages
- Link to other relevant programmes e.g. Transition Towns web presence - use of the interactive mapping for people to identify ‘green’ ways of living life - green transport routes for commuting to work & school as well as recreation, places to buy local produce etc, community events in a greenspace setting



FUNCTIONS MET :

access | prestige | health | ecosystems | productive | historic | sustainability | remediation | nature | experience | flood mgmt

COMPLEMENTARY PLANS & PROGRAMMES THE PROJECT CAN HELP DELIVER : Contribute to objectives of Local Transport Plans & ROWIP, in promoting routes for people to use for green travel. Embed most of the aims of much of the spatial planning at county & local authority level (landscape conservation in the Landscape Character Assessments for example) in the wider sub conscious of the communities who use & enjoy these environments. Recognises the full functional potential of green infrastructure (interpretation/education/skills development - ‘soft’ skills) as expressed in the Green Infrastructure Guidance.

ISSUES ASSOCIATED WITH DELIVERY : The main issue is with hosting, managing & updating a comprehensive, but relevant, usable & above all visually engaging & appealing on line resource, as well as marketing & promoting the use of the Green Hertfordshire/GreenArc brand/app to the widest possible audience. Need for specialist ICT, GIS & graphic design skills to help develop the package. Link to a potential GI marketing & communications strategy to launch the GI work & embed the concept. A communications strategy & user groups market research (e.g. school & youth groups) should be undertaken prior to & during development of the App. Map licensing protocols & restrictions on use of Ordnance Survey data would need to be worked around (lead in times associated with delivery of project are likely to be an issue). Need for compatibility with main Smartphone platforms. Could be compatible with traditional leaflet media using Smartphone scannable ‘QR’ codes with links to interactive material.

POTENTIAL DELIVERY PARTNERS & MONITORING MECHANISMS : GreenArc Partnership, the Hertfordshire Districts, Hertfordshire County Council, Hertfordshire Technical Chief Officers Association (HTCOA) landscape group, & Countryside Management Service, as well as key agencies & organisations with an interest in promoting GI (e.g. Natural England, Herts & Middlesex Wildlife Trust, British Waterways) & landowners of key sites within the Hertfordshire districts (e.g. National Trust, landed estates etc) - potential for funding/’in kind’ contributions & sponsorship. Liaison with local green groups e.g. Transition Towns. Possible private sector involvement.

WHAT HAPPENS NEXT? PRIORITY / RANKING : This is a key project to translating GI to a wider audience beyond planners & decision makers. The initial skeleton of the interactive map (which could be added to & developed as & when new information & funding became available), should be developed as a high priority project across the districts, with liaison between HCC, GreenArc, the Countryside Management Service/Countrycare & HTCOA representatives.

GI projects and cross county connections

- An essential part of effective GI delivery is a strategic, co ordinated approach, to ensure that projects are resourced appropriately in terms of capital works and ongoing revenue activity. This section notes potential connections with adjacent authorities in terms of GI links and projects.
- **2. Woodland Arc:** Links with Greater London, GreenArc districts and Hertfordshire County Council
- **6. Thames Tributaries, River Valleys and Corridors:** Links with Hertfordshire County Council, the wider county of Essex beyond the GreenArc (liaise with Essex County Council) and the London Boroughs
- **7. Lee Valley Regional Park Lateral Links:** Links with Hertfordshire County Council and the London Boroughs/All London Green Grid
- **9. Reconnect:** Links with Hertfordshire County Council and wider Essex County Council beyond the GreenArc area
- **10. Greening the GreenArc:** Need for liaison with Hertfordshire County Council

4 Linking the strategic green infrastructure proposals to local spatial planning and development management

4.1 It is intended that this Strategic Highlights Green Infrastructure Plan will help inform the evidence base for Development Plan Documents (DPDs) in the Local Development Frameworks and for green infrastructure issues to be included and addressed in the Development Plan Documents. The plan will also provide an evidence baseline for consideration and planning in relation to/protection of national and sub national GI assets and proposals.

4.2 In order for any **future** policies that deal with green infrastructure to be found to be 'sound' when going through public examination they will have to comply with the three tests:

- To be consistent with National Policy; a green infrastructure approach is clearly advocated by national policy.
- To be justified; evidence needs to be provided to prove why it is justified for there to be a green infrastructure policy (why something is being proposed and that there is a problem or a need)[vi] (see **sections 2 and 3**).
- To be effective; where a policy proposes tackling a green infrastructure issue there is a need to ensure that the mechanism for tackling the issue will be effective and that there is some basis for taking this course of action.

4.3 The tests of soundness point to the need for a clear link between policy formulation and the evidence that has been gathered.

4.4 PPS12, the Planning Inspectorate[vii] and the Planning Advisory Service (PAS) all give more detail on what is meant by effectiveness and the Green Infrastructure Plan has sought to ensure that all these aspects have been addressed through the development of the Plan. The proposals developed in this Plan have been proofed against other relevant plans, policies and programmes at the strategic level. The Green Infrastructure Strategies and Plans of neighbouring authorities have been reviewed to ensure consistency between this Plan and those of neighbouring counties. A robust and transparent methodology has been used to ensure that proposed solutions are clearly linked to addressing issues and needs identified in the evidence base. A workshop and consultation with delivery partners has ensured that proposed solutions (**section 3**) are deliverable, flexible and that potential delivery partners are identified. Suggestions for monitoring have also been included in the Plan.

4.5 The key findings of the Green Infrastructure Plan that are relevant to planning policy, are set out here. This will aid

plan makers, those assessing the plan (SA/SEA practitioners) and consultees in successfully embedding green infrastructure into the DPD process in relation to the respective Local Development Frameworks.

Evidence Base

4.6 The Strategic Highlights Green Infrastructure Plan is to form part of the evidence base for the LDFs and to inform future iterations of strategic scale spatial plans and proposals such as Minerals Plans and the Rights of Way Improvement Plan. There may be benefits to including or referring to parts of the evidence gathering and analysis undertaken for this Plan in other LDF supporting documents such as Sustainability Appraisal baselines. The following may be useful:

- An overall justification for following a green infrastructure approach is provided in **section 1**.
- Background information on environmental character can be found in **Appendix 2**.
- Key green infrastructure issues are set out by function in **section 2**. These issues should be used by plan makers, SA practitioners and consultees to identify what the broad green infrastructure (and environmental) issues are in the GreenArc.
- The assessment of need for green infrastructure is given by function in **section 2**.
- **Section 3** sets out the proposed green infrastructure vision, network and supporting projects. This may be useful for plan makers when they are developing policies, and for SA practitioners and Consultees when reviewing policies to help ensure options have been presented that take full advantage of potential opportunities and are most likely to help solve current and future problems.

Core strategy

4.7 Key GI points for the Core Strategies to take into consideration are:

- Importance of lateral links across the Lee Valley and associated Regional Park, to help address rights of way severance and create enhanced links to other strategic GI assets such as Epping Forest;
- Woodland linkage and connectivity e.g. between Epping Forest and Hatfield Forest and to the North London fringe;
- Provision of green infrastructure for people and to contribute to quality of life in areas of deprivation – Mardyke Valley Greenway Extension proposal in **section 3**;
- Conservation and enhancement of the riverine environment for landscape, biodiversity and amenity benefits and also to provide good flood attenuation and sustainable water management – making 'space for water'.

DEVELOPMENT MANAGEMENT

4.8 The green infrastructure projects identified in **section 3** form a basis for evaluating future development proposals against the proposed strategic green infrastructure network, and to ensure that they contribute to the desired environmental outcomes and functions. A model process for ensuring that green infrastructure is embedded in development management, and that appropriate account is taken of green infrastructure recommendations, is set out in **Figure 4.1** overleaf. A standardised approach to the design and implementation of a generic green infrastructure development project is shown in the central column of this Figure, with respective responsibilities of the applicant and the District Councils, as they relate to GI, shown to the left and right hand sides respectively.

4.9 **Figure 4.1** is designed to assist Development Management officers and planning applicants ensure that green infrastructure is embedded in the scheme design from the outset, as part of the development process. The diagram can be applicable to any scale of proposed development. The starting point is to identify the green infrastructure proposal area or assets/elements in which a specific site lies and whether it relates to, can contribute to or affects any proposed projects in this strategic GI Plan. Reference should be made to the key messages for the relevant projects e.g. the important green infrastructure assets and links to conserve and enhance, and this should be used as a starting point for site planning and design – a 'greenprint' or a green infrastructure led basis for masterplanning, to ensure that green infrastructure assets are considered and protected from the first.

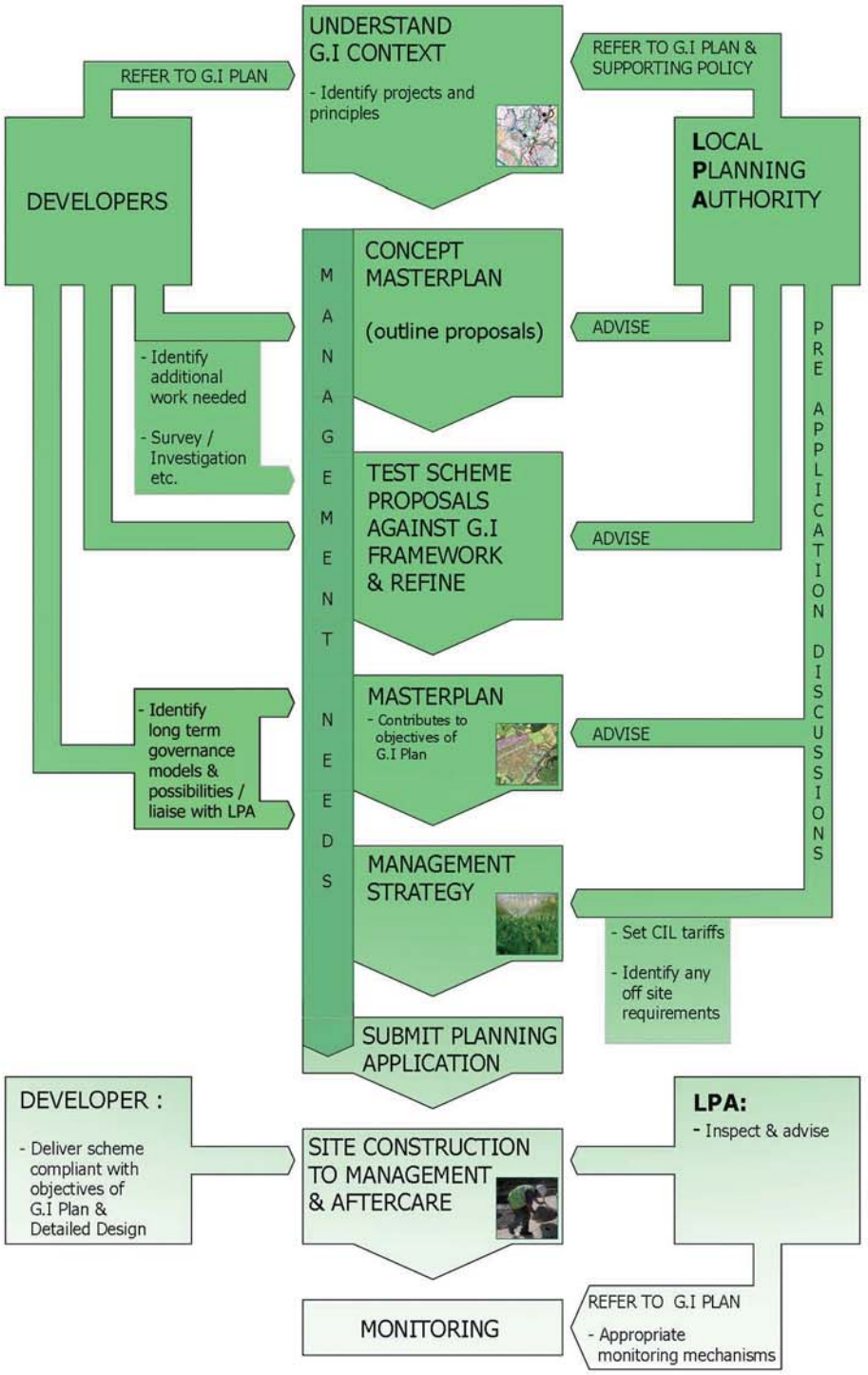


Figure 4.1: Embedding GI in Development Management

NEXT STEPS

4.10 The following steps/alternatives are recommended in order to take forward green infrastructure delivery within the GreenArc:

- Creation of a dedicated **Green Infrastructure Delivery Officer** role at County level. Subject to resources, this may be a desirable long term aspiration;
- **Taking the GI Plan forward in each District through existing mechanisms and bodies**, noting links with district level GI projects which can contribute to delivery of strategic GI objectives in this plan;
- Attendance at and participation in a potential new GreenArc wide/cross district **GI Delivery Panel** (linked to one for Hertfordshire and potentially also to key stakeholders such as the Essex Wildllife Trust). Management of this panel could be commissioned from a relevant commercial organisation such as Groundwork or other GI implementation consultancy. This should have a practical focus in securing on the ground delivery.

4.11 Whichever approaches are selected, clearly there will be a need for close partnership working with other organisations with parallel interests and objectives (GreenArc Partnership in an enabling/facilitating role, liaising as appropriate with Districts and Boroughs and adjacent Counties). By doing this and through intelligent use of existing mechanisms and processes, a SMART approach to GI delivery could be achieved in the GreenArc, as described below. Possible future responsibilities in relation to green infrastructure delivery, whether through a Delivery Officer or through participation in a Delivery Panel, at District/County level, are as follows:

- **Actively promote green infrastructure**, liaising with relevant members of the Local Strategic Partnership, to ensure that green infrastructure contributes to the objectives of spatial planning;
- Preparation and implementation of a **Communications Strategy for green infrastructure** in the GreenArc to raise public awareness of the concept. This should link to the interactive GI mapping/web/app based project described in **section 3**. Focus on projects with a community emphasis, to engender greater public support and ownership, as well as embedding positive informal management/stewardship, in addition to any more formal management structures identified;
- **Advise and assist a nominated green infrastructure 'champion'**, ideally a Council member at county level, to ensure greater potential for 'buy in' from members;
- Provide constructive advice to the Councils on GI delivery, considering the points below:
- **A checklist** for evaluating development proposals in terms of GI and against the components of the strategic GI network in this GI Plan. Possible components of such

a checklist are set out under 'Potential future work', at the end of this section;

- **Consider potential for further work** and additional studies to bring GI forward, including more detailed GI planning work, as highlighted at the end of this section;
- Identification of constraints, challenges and potential conflicts of interest in relation to practical delivery, making early links with appropriate bodies (e.g. in relation to ecological advice, surveys and flood risk etc). **Land ownership liaison and negotiation** (this is a key stage). Also liaison with the districts in ensuring that implementation of the two tiers of GI planning in the GreenArc is 'joined up';
- Where appropriate, as part of liaison with landowners **seek to encourage take up of grant schemes** which could contribute to the aims of the GI Plan e.g. agri environment and woodland grant schemes;
- As a consultee, comment on relevant planning applications through the pre application and application processes, using the proposed strategic GI Network;
- Ensure that developers and others bringing forward strategic green infrastructure not only take account of the key messages in this GI Plan, but that they also identify sustainable, resourced mechanisms and models for long term governance to deliver design intentions and desired environmental outcomes;
- **Make appropriate links with future delivery and funding partners** identified in the projects in **section 3** of this strategic GI Plan, in relation to **co ordination of funding bids**, and also in **making links with adjacent counties** for projects on authority boundaries/in considering adjacent county GI projects which could impact on/benefit the GreenArc's green infrastructure;
- **'Grass roots' delivery:** There is a need to work with the GreenArc districts in ensuring joined up delivery between strategic and district level GI initiatives;
- Liaise with the relevant Local Strategic Partners, **noting and using where appropriate existing processes** that may be of relevance to GI delivery, for reasons of efficiency and avoiding duplication of work;
- Develop appropriate consultancy briefs for masterplanning and detailed design services in relation to key strategic GI projects, making appropriate reference to key messages in the GI network and projects at **section 3**;
- Create an audit trail of appropriate monitoring mechanisms in relation to green infrastructure delivery, making use of existing tools such as site inspections to adoption, and visitor surveys. This will help monitor performance of the green infrastructure proposals in relation to the environmental functions, to inform and refine future iterations of the spatial plans for Essex and

the GreenArc districts, whether strategic plans such as mineral plans, or the Local Development Frameworks;

- With the District and Borough Councils and strategic stakeholders/partners, convene regular updates, meetings and opportunities for progress reporting during the life of the GI Plan, to disseminate results, good practice and lessons learned (e.g. with reference to good practice case studies).

POTENTIAL FUTURE WORK

GI checklist for development management decisions

4.12 In addition to the general pointers shown on **Figure 4.1**, this could cover the following subject areas:

- Sense of place: Including historic character and landscape management;
- Nature conservation enhancement and management;
- Sustainable resource management and climate change adaptation;
- Healthy and cohesive communities including access for all;
- Choices for responsible travel;
- Sustainable design and construction techniques and specifications.

GI Design and Delivery Guide

4.13 This could take the form of accessible, concise, written and illustrated high level design principles aimed at developers and to inform Development Management Officers in evaluating planning applications in terms of green infrastructure. The aim with such a document should be to ensure that the most positive consideration is given to GI planning, design and management, from the outset of the development process.

GI Supplementary Planning Document (SPD)

4.14 It may be desirable for the County and GreenArc Partnership (possibly jointly with the local authorities) to consider production of a green infrastructure SPD, although this must not detract from the wider need to embed green infrastructure more generally within the LDFs, the Core Strategies and relevant policies. It may be more useful to include aspects of the Strategic Highlights Green Infrastructure Plan and potential future work within other SPD (e.g. Planning Obligations/Developer Contributions, or Design SPDs) at local authority level.

More detailed and local level GI planning work

4.15 This is a strategic level GI Plan and more detailed and 'site specific' GI planning work, drawing on this plan, will be required within the GreenArc Districts, particularly where district level GI planning work has not yet been undertaken and as growth locations and areas of change become more

fixed. As such the strategic GI Plan sets a framework in which future GI planning and design can fit.

Outward facing projects to 'launch' the GI concept

Interactive/web/app based mapping project – GI for people

4.16 This is described in the 'Greening the GreenArc' project at **section 3**.

[i] Land Use Consultants, 2004 **Bringing the Big Outdoors Closer to People – Improving the Countryside Around London: The GreenArc Approach**
[ii] http://naturalengland.etraderstores.com/NaturalEnglandShop/NE176
[iii] NE176, **Op Cit**
[iv] Natural England **Analysis of Accessible Natural Greenspace Provision for Essex, including Southend-on-Sea and Thurrock Unitary Authorities**
[v] Natural England/The Landscape Partnership **Analysis of Accessible Natural Greenspace Provision in Hertfordshire**
[vi] Planning Advisory Service 2008 **Local Development Frameworks: Evidence Base**
[vii] The Planning Inspectorate 2008 **Local Development Frameworks: Examining Development Plan Documents – Soundness Guidance**

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