

**SEO 3: Protect and appropriately manage the historic environment for its contribution to local character and sense of identity and as a framework for habitat restoration and sustainable development, ensuring high design standards (particularly in the London Green Belt) which respect the open and built character of the Thames Basin. Enhance and increase access between rural and urban areas through good green infrastructure links to allow local communities recreational, health and wellbeing benefits.**

**For example by:**

- Conserving historic features in the landscape with heritage interest and improving the condition of heritage assets through appropriate measures, and seeking to reduce conflicting or unsympathetic management regimes.
- Conserving and interpreting archaeological earthworks and sub-surface archaeology while recognising the high potential in this landscape for undiscovered remains.
- Preserving and enhancing current public access sites including nature reserves, common land, country parks and public footpaths and rights of way to attract the wider community.
- Creating better access to the countryside with an increased number of public footpaths and rights of way so that more of the area is open access. Enhancing current public access paths would also be beneficial to make the experience of the countryside more inviting and enjoyable.
- Restoring the connectivity of key habitats as well as expanding and creating new habitats which will maintain and enhance their attraction for visitors. Also, working to increase species diversity and density to increase this attraction for the community.
- Preserving the open landscape, enhancing geodiversity and biodiversity, for example the iconic species and habitats that attract visitors, to preserve their appeal to the wider community.
- Maintaining and enhancing the status of Sites of Special Scientific Interest, Special Protection Areas, Special Areas of Conservation, National Nature Reserves and Ramsar sites. This will preserve the character of the landscape, protecting and enhancing the sense of place.

- Increasing awareness and raising understanding within the community of the natural environment to improve their appreciation of their landscape so as to help to enhance their experience. This will also help to instil a sense of place.
- Planning for future pressure from urban expansion and urban-related development, major roads and other infrastructure as a result of the expansion of Stansted and Luton international airports (impacting from adjacent NCAs) and the impact of strategic growth in and around the NCA, such as at the Thames and Haven Gateways, Chelmsford and Southend, and the regeneration in the Lea Valley. Seeking measures to help to implement the All London Green Grid frameworks in order to ensure that associated design standards are of a high quality and pay due regard to the natural environment for the benefit of people and wildlife.
- Planning for a new vision of agricultural landscapes in areas of significant planned growth such as within the Thames Gateway, Haven Gateway and M11 corridor, including, potentially, the exploration of new forms of community food growing and community land ownership, providing a 21st-century interpretation of the plotlands of the 1920s and 1930s that are characteristic of this NCA.
- Ensuring positive management of land that may be developed in the future to preserve the character of the area and not adversely affect the rural areas that provide many resources, including food provision, carbon sequestration and recreation for the rural and urban communities.

**SEO 4: Manage and expand the significant areas of broadleaf woodland and wood pasture, and increase tree cover within urban areas, for the green infrastructure links and important habitats that they provide, for the sense of tranquillity they bring, their ability to screen urban influences and their role in reducing heat island effect and sequestering and storing carbon.**

**For example by:**

- Promoting the establishment of a coherent and resilient network of treescapes (native woodland, wood pasture, parkland, coppice, scrub, field trees and hedgerows) through expanding and linking existing woodland with areas of new planting.
- Managing the area's diverse range of historic woodlands, veteran trees and wood pasture and parklands to enhance landscape character and safeguard their biodiversity value while seeking opportunities to enhance access.
- Expanding current woodlands to create a greater resource and re-introduce coppicing and other management back into woodlands so as to make wood available to be sold commercially.
- Working within established management plans to ensure that the viability of the woodlands is not affected and that biodiversity is maintain or enhanced.
- Creating new woodlands, taking into account natural processes and bringing them into wood production management. Sensitively incorporating them into and around new developments to enhance landscape character. Community woodlands should be maintained and increased where possible for this purpose as well as for recreation.
- Creating new woodlands around or near to urban areas, which will, through carbon sequestration, help to counteract the carbon that is produced. Woodlands within urban areas will help to reduce the heat island effect.

- Incorporating woodland rides and paths within woodlands to allow for public access but also to create a variety of habitats within the woodlands which will increase biodiversity.
- Maintaining and enhancing woodland habitats which support important invertebrate species such as stag beetles, rare fungi and priority species such as dormouse. Ancient woodlands also support ground flora such as bluebells.
- Maintaining the diverse appearance of the landscape and shield developments and infrastructure from the wider landscape. This character should be maintained within any future developments that are built.
- Managing, restoring and re-linking areas of remnant lowland heathland and acid grassland found on areas capped by glacial sands and gravels, notably within the Essex heathlands and wooded hills and ridges.
- Conserving characteristic landscapes linked to the arts, such as Dedham Vale in the north- easternmost corner of the NCA (the inspiration for Constable), and the rich heritage of designed parklands associated with estates (particularly in the Hertfordshire plateaux and river valleys and the Essex wooded hills and ridges).

## Additional opportunity

Continue to utilise the mineral resource as appropriate, ensuring screening and restoration plans are in place to protect landscape assets. Restore, enhance and manage previous mineral sites as suitable habitats or sites of key geological importance to demonstrate the significance of the rich mineral resources in shaping the area's landscape, and their potential as recreational and ecological assets of the future.

### For example by:

- Appropriately utilising the minerals which are a much-needed resource in the area, with the continuing demand for new housing and other building projects. Ensure long term restoration plans seek landscape and ecological benefit so this resource can provide a source of revenue and jobs for the area as well as an opportunity to enhance our knowledge and awareness of geodiversity, and provide new assets for the community in the long term
- Restoring previous extraction to habitats that are appropriate for the area to improve the network of semi-natural habitats, and the recreational and educational opportunities for local communities.
- Provide appropriate access and interpretation to important geological sites once mineral extraction is completed to use this exposed resource to educate and inform people of the geological and geomorphological features.
- Encouraging an understanding of the interrelationships between the geological and archaeological heritage of the area.
- Ensuring appropriate management, educational access and interpretation of important geological and above and below ground archaeological features and sites throughout the area.

## Supporting document 1: Key facts and data

Total area: 251,000 ha

### 1. Landscape and nature conservation designations

The Northern Thames Basin NCA contains 1,208 ha of the Dedham Vale Area of Outstanding Natural Beauty (AONB) covering less than one per cent of the NCA.

The management plan for the protected landscape can be found at:

[www.dedhamvalestourvalley.org/](http://www.dedhamvalestourvalley.org/)

Source: Natural England (2011)

#### 1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	% of NCA
International	Ramsar	Abberton Reservoir; Lee Valley; Crouch and Roach Estuaries (Mid-Essex Coast Phase 3); Colne Estuary (Mid-Essex Coast Phase 2); Blackwater Estuary (Mid-Essex Coast Phase 4); Hamford Water	1,123	<1
European	Special Protection Area (SPA)	Abberton Reservoir SPA; Lee Valley SPA; Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA;	1,123	<1
	Special Area of Conservation (SAC)	Epping Forest SAC; Wormley-Hoddesdon-park Woods SAC; Essex Estuaries SAC	2,041	1

Tier	Designation	Name	Area (ha)	% of NCA
National	National Nature Reserve (NNR)	Broxbourne Woods NNR; Blackwater Estuary NNR	241	<1
National	Site of Special Scientific Interest (SSSI)	A total of 72 sites wholly or partly within the NCA	6,156	2

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.

All of the Ramsar sites are also SAC. Some of the areas covered by international and European designations are also designated nationally (SSSI or NNR).

There are 1,814 local sites in Northern Thames Basin covering 23,482 ha, which is 9 per cent of the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm>
- Details of Local Nature Reserves (LNR) can be searched: [http://www.lnr.naturalengland.org.uk/Special/lnr/lnr\\_search.asp](http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp)
- Maps showing locations of Statutory sites can be found at: <http://magic.defra.gov.uk/website/magic/> – select Rural Designations Statutory.

### 1.1.1 Condition of designated sites

A breakdown of SSSI condition as of March 2011 is as follows:

SSSI condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	125	2
Favourable	3,232	53
Unfavourable no change	328	5
Unfavourable recovering	2,453	40

Source: Natural England (March 2011)

Details of SSSI condition can be searched at:

<http://www.sssi.naturalengland.org.uk/special/sssi/reportindex.cfm>

## 2. Landform, geology and soils

### 2.1 Elevation

Elevation in the NCA ranges from 0.02 m below sea level to a maximum of 155 m above sea level. The average elevation of the landscape is 47 m. The 'Bagshot Hills' are prominent features of the Essex part of the NCA, rising to a high point of 116 m at Danbury Hill.

Source: Natural England 2010

### 2.2 Landform and process

This NCA can be broken down into four sub-character areas: Hertfordshire plateaux and river valleys; Essex wooded hills and ridges; London Clay lowlands; and Essex heathlands. The Hertfordshire plateaux and river valleys area is topographically complex, having many valleys cut into the broad plateau landform which is often obscured by vegetation cover. In places river erosion has created isolated landforms such as the Shenley Ridge. The Essex wooded hills and ridges rise above the London Clay lowlands to an altitude of approximately 100 m AOD. The London Clay lowlands are generally flat and typically gently undulating. Broadly, the Essex

heathlands landform is relatively flat with only minor undulations; however, some of the river valleys are steep sided such as the Stour, Colne and Roman.

Source: Northern Thames Basin Countryside Character Area description, London Basin Natural Area Profile

### 2.3 Bedrock geology

The London Basin is a concave dish which formed as a result of the Alpine Orogeny (mountain building episode). It overlies the Chalk, which was laid down in warm shallow seas during the Cretaceous (95 to 65 Ma) and which is the main aquifer for London. As a result of the Orogeny the land here rose above sea level and it was subject to major erosion. The sea level then rose again and the basin was filled by Palaeogene and Neogene (Tertiary, 64 to 2 Ma) sands and mudstones. After continued sea-level rise some 55 Ma, the London Clay was laid down.

Overlying the London Clay are the Bagshot, Barton and Bracklesham Beds. These sands and clays were deposited on a large coastal plain as the sea level fell again.

Source: Northern Thames Basin Countryside Character Area description, London Basin Natural Area Profile, British Geological Survey maps

### 2.4 Superficial deposits

Important Quaternary sediments are present, recording the changing temperatures during this Period and the presence and absences of ice-sheets. The Anglian ice sheet advanced as far south as the northern rim of the London Basin and forced the young River Thames to change its course to its current one. Fluvial sediments deposited by the Thames river system before the Anglian Ice Age occur predominantly along the northern edge of the London Basin, parallel with the axis of the syncline. Sediments deposited after the Anglian Ice Age are found along the flood plains of the current rivers. These latter deposits are found at lower altitudes than their predecessors, as a result of a combination of factors. The youngest sediments are sands and gravels deposited by the Thames in its current location since the last ice age.

Source: Northern Thames Basin Countryside Character Area description, London Basin Natural Area Profile, British Geological Survey maps

### 2.5 Designated geological sites

Designation	Number of sites
Geological Site of Special Scientific Interest (SSSI)	17
Mixed interest SSSI	3

There is 1 Local Geological Sites within the NCA.

Source: Natural England (2012)

- Details of individual Sites of Special Scientific Interest can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm>

### 2.6 Soils and Agricultural Land Classification

London Clay gives rise to heavy acidic soils often prone to flooding in winter and cracking in summer. River valleys are fringed by well-drained fertile brown earths, produced from alluvial deposits. Sand and gravels give rise to nutrient poor, free draining soils, for example in the Bagshot Hills and Essex heathlands. Light sandy soils of former heaths are found in Essex, particularly around Colchester.

Source: Northern Thames Basin Countryside Character Area description

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area):

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	23	<1
Grade 2	28,676	11
Grade 3	120,556	48
Grade 4	5,418	2
Grade 5	39	<1
Non-agricultural	19,032	8
Urban	70,745	28

Source: Natural England (2010)

Maps showing locations of Statutory sites can be found at:

<http://magic.defra.gov.uk/website/magic/> – select 'Landscape' (shows ALC classification and 27 types of soils)

## 3. Key water bodies and catchments

### 3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

Name	Length (km)
River Lea or Lee	41
River Colne	33
Grand Union Canal	28
River Crouch	15
Roman River	13
Cobbin's Brook	9
River Ver	8
River Beane	6
River Chelmer	6
River Blackwater	5
River Rib	3
Chelmer and Blackwater Navigation	2
Cobbin's Brook	2
Langford Cut	1
River Stort	<1
River Ter	1

Source: Natural England (2010)

Please note: other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.

Hertfordshire plateau and river valleys: Rivers cut through the broad plateau, draining into the Colne and Ver to the north-west and Lea to the east. Reservoirs and canals are features of this area.

Essex wooded hills and ridges: The ridges of Epping Forest, Brentwood to High Wood, Thorndon to Billericay and Danbury to Wickham Bishops are dissected by the valleys of the rivers Roding, Wid and Chelmer. The Ter, Brain and Blackwater also contribute to the drainage of much of the area. Hanningfield Reservoir provides a notable body of open water within the sub-area.

London Clay lowlands: Undulating lowlands drained by numerous streams including the Roach, Crouch and Blackwater, which merge before widening into the flat marshes to the east. Layer Brook in the north is dammed on its way to the Roman River to form Abberton Reservoir.

Essex heathlands: Steep sided valleys of the Stour, Colne and Roman and their tributaries drain the plateau before discharging into the North Sea.

### 3.2 Water quality

The total area of Nitrate Vulnerable Zone is 185,636 ha or 74 per cent of the NCA.  
**Source: Natural England (2010)**

### 3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies

[http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=\\_e](http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e)

## 4. Trees and woodlands

### 4.1 Total woodland cover

The NCA contains 20,914 ha of woodland, 10 per cent of the total area, of which 7,742 ha is ancient woodland. Twelve per cent or 29,366 ha of the NCA is land

within Community Forests; Watling Chase 18,522 ha and Thames Chase 10,843 ha.

**Source: Natural England (2010), Forestry Commission (2011)**

### 4.2 Distribution and size of woodland and trees in the landscape

Significant areas of wood pasture and notable numbers of pollard ancient and veteran trees are found across the area, including Hainault Forest, at Thorndon Country Park, Wormley and Hoddesdon Great Park, Epping Forest and Richmond Park. Epping Forest, within the Essex wooded hills and ridges sub-area, includes mixed woodland and blocks of broadleaved woodland greater than 500 ha in extent.

The eastern part of the Hertfordshire plateaux is heavily wooded, including coppiced hornbeam woods with oak standards. Areas of coppice are up to 20 ha in size. Large blocks of woodland occur along river valleys in Hertfordshire, including former lime woods replanted with conifers. Some conifer blocks are over 150 ha. The hilltops and ridges of Essex are crowned by woods, including ancient woodland and secondary woodland on commons. These woods are mainly smaller than 50 ha.

The distinctive 'plotland' woods of Laindon and Thundersley can be found in the London Clay lowlands sub-area. These are mainly less than 50 ha in size. Small clusters of secondary and ancient woodland exist along shallow valleys in the Essex heathlands area, which is predominantly open. Apple orchards are a feature of the London Clay lowlands and Essex heathlands.

**Source: Northern Thames Basin Countryside Character Area Description**

### 4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed over.

Area and proportion of different woodland types in the NCA (over 2 ha)

Woodland type	Area (ha)	% of NCA
Broadleaved	20,914	8
Coniferous	1,760	1
Mixed	290	<1
Other	1,104	<1

Source: Forestry Commission (2013)

Area and proportion of Ancient Woodland and Planted Ancient Woodland within the NCA.

Woodland type	Area (ha)	% of NCA
Ancient semi-natural woodland	6,090	2
Ancient re-planted woodland (PAWS)	1,652	1

Source: Natural England (2004)

## 5. Boundary features and patterns

### 5.1 Boundary features

In the Hertfordshire plateaux and river valleys woody and species rich hedgerows are the main boundary types. Hawthorn hedgerows surround more recent fields with wire fencing commonly around horse paddocks close to settlements. In the London Clay lowlands boundaries are often formed by long lengths of hedgerows which historically have been dominated by elm, although there has been significant loss through Dutch elm disease. Blackthorn hedgerows are now the most common. In the Essex heathlands hedgerows are the dominant boundary feature on land surrounding the heaths. These vary much in species richness and composition.

Source: Northern Thames Basin Countryside Character Area description; Countryside Quality Counts (2003)

### 5.2 Field patterns

Field pattern is varied across the basin reflecting historical enclosure patterns. The Hertfordshire plateaux and river valleys are dominated by the informal patterns of 18th century or earlier enclosure reflecting the medieval colonisation of the heaths and woodland. This is particularly noticeable in the east where small organic-shaped fields are common. In the west ancient organic-shaped fields can be found alongside regular 'Enclosure Acts' fields. Similar pre-18th century irregular small enclosures can be found in the Essex wooded hills and ridges with some later, more regular, medium sized fields present. Within the London Clay lowlands large rectangular fields dominate arable land on the heavy clay soils. Early, Roman planned 'Dengie' form regular enclosure patterns occur, which are a subtle but important feature of land in the east of the area. In the Essex heathlands 18th and 19th century enclosure of heathlands and commons followed by extensive 20th century field enlargement is dominant. Straight edged fields surround areas of remnant heath with small fields characterise the river flood plains. Some areas of regular enclosure are associated with the rationalisation and amalgamation of farms and estates in the 18th and 19th centuries.

Source: Northern Thames Basin Countryside Character Area description; Countryside Quality Counts (2003)

## 6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

### 6.1 Farm type

Broader plateaux areas in the NCA are mainly in agricultural use, with a mix of arable and pastoral farming. There has been a 62 per cent decrease in dairy farms from 37 to 14 farms. Trends also show a decrease in the number of specialist pig farms from 26 to 14 farms or a 46 per cent reduction. There have also been reductions in the number of horticulture holdings from 298 to 165 or 45 per cent, of mixed holdings from 92 to 62 or 32 per cent, of specialist poultry farms from 54 to 45 or 17



per cent, of general cropping from 132 to 110 holdings or 17 per cent, and of lowland grazing livestock units from 215 to 190 or 12 per cent. The general category of 'other' holdings, most commonly associated with small-holdings, has seen an increase of 9 per cent from 373 to 405 holdings. The number of cereal holdings has remained relatively static with 494 reducing to 480 or a decline of 3 per cent.

**Source:** *Agricultural Census, Defra (2010)*

### 6.2 Farm size

Farms between 5 and 20 ha are the most common in the area, 428 holdings accounting for 29 per cent of all holdings, followed by farms over 100 ha, 340 in number or 23 per cent of holdings, farms between 20 and 50 ha, 323 or 22 per cent of holdings, and farms under 5 ha, 207 or 14 per cent of holdings. The least common farms in the area are those holdings between 50 and 100 ha at 187 or 13 per cent of holdings. The largest holdings, those over 100 ha, make up 75 per cent of the total farmed area, compared to those under 5 ha which cover less than 0.5 per cent of the farmed area. The trends in farm size show a significant decrease in the number of farms of less than 5 ha decreasing by 42 per cent from 358 to 207. The number of holdings between 5 and 20 ha also decreased by 12 per cent from 485 to 428, as did the number of holdings between 50 and 100 ha by 7 per cent from 200 to 187, and the number of holdings over 100 ha also by 7 per cent from 366 to 340. The number of holdings between 20 and 50 ha increased by 4 per cent from 311 to 323.

**Source:** *Agricultural Census, Defra (2010)*

### 6.3 Farm ownership

Sixty-six percent of the total farmed area is owner occupied. There has been a 3 per cent increase in the owned area of farmland over the 2000 to 2009 period and a 2 per cent increase in the tenanted farm area.

2009: Total farm area = 113,572 ha; owned land = 74,843 ha

2000: Total farm area = 113,897 ha; owned land = 72,846 ha

**Source:** *Agricultural Census, Defra (2010)*

### 6.4 Land use

The dominant agricultural land uses are cereals, accounting for 48,817 ha or 43 per cent of the total farmed area, and grass and uncropped land which accounts for 32,804 ha or 29 per cent. These are followed by oilseeds which cover 11,742 ha, 10 per cent of the area, and 'other' arable crops which cover 7,252 ha or 6 per cent of the area, with other agricultural land uses each representing less than 5 per cent of the total farmed area. Between 2000 and 2009 there was a 6 per cent decrease in the area of cereals, a reduction by 2,937 ha, and a 7 per cent decrease in the area of grass and uncropped land, a reduction by 2,352 ha. The area under oilseeds increased by 4,284 ha, or 57 per cent, and the area under 'other' arable crops increased by 519 ha, or 8 per cent. There have also been increases in the area of land used for growing stock feed by 325 ha or 183 per cent, cash roots by 377 ha or 11 per cent, and vegetables by 62 ha or 5 per cent. A decrease was seen in the area of land used for fruit growing, down by 374 ha or 47 per cent, and glasshouses, down by 46 ha or 26 per cent. Other agricultural land uses were relatively static or related to less than five holdings.

**Source:** *Agricultural Census, Defra (2010)*

### 6.5 Livestock numbers

Sheep are the most numerous livestock within this landscape, numbering 35,500 animals. Pigs are the next most numerous with 17,500 animals and cattle numbered 16,500. All livestock numbers have decreased during the period 2000 to 2009. Pig numbers decreased by 52 per cent (19,100 animals), cattle by 39 per cent (10,500 animals) and sheep by 27 per cent (12,900 animals).

**Source:** *Agricultural Census, Defra (2010)*

### 6.6 Farm labour

The majority of holdings are run by principal farmers, including their spouses and business partners, rather than salaried managers; 1,974 principal farmers and 37 salaried managers. Together, employed full time and part time workers

(1,520 full time and 620 part time) are more numerous than casual/gang workers (1,147). Trends from 2000 to 2009 show a decrease in the number of principal farmers, down by 509, and an increase in salaried managers, up by 30. During this period the number of casual/gang workers also increased, by 148, as have full time workers, up by 89, but the number of part time workers has decreased, down by 293.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data is estimated by Defra so will not be accurate for every holding (ii) Data refers to Commercial Holdings only (iii) Data includes land outside of the NCA belonging to holdings whose centre point is within the NCA listed.

## 7. Key habitats and species

### 7.1 Habitat distribution/coverage

#### Hertfordshire plateaux and river valleys:

Woodland: The river valleys contain some of the largest blocks of woodland. Many woods have been felled and replanted with non-indigenous species, such as former lime woods which are now coniferous plantation. These woods often follow and accentuate the valley form, following the contours of the valley sides above flat and predominantly open valley floors. The woodland cover also comprises a number of small ancient beech and oak woods found mainly in the valleys to the west. The eastern part of the plateaux is heavily wooded with some traditional coppice woodland, with oak as standards and coppiced hornbeam; the unusual prevalence of hornbeam is related to its historical use as a quality firewood crop for London. Birch and ash are also frequent in this area. Wood pasture and parkland was once more widespread. Remaining areas such as around Broxbourne contain many veteran trees.

Flood plain grazing marsh: Remaining areas of grazing marsh can be found throughout the river valleys.

Wetlands and open water: Many of the river valleys have been modified by reservoirs, current and reclaimed gravel pits, landfill sites, artificial wetlands, river realignments and canals many of which are important as a recreational and wildlife resource, for example along the River Lea.

Lowland heathland: Only isolated remnants remain within commons such as at Bricketwood Common or Colney Heath Common.

#### Essex wooded hills and ridges:

Woodland: The woodland found on the prominent hills and ridges of Epping Forest, Hainault, Thorndon, Galleywood and the Danbury to Tiptree ridge, exists on a belt of sand often referred to as the 'Bagshot Hills' stretching through Essex from Epping Forest to Tiptree. Many are ancient but there are also some large areas of secondary woodland on former common land. Many of the wooded commons have veteran trees associated with them and some secondary woodland is defined in many places by medieval wood banks. There are also some notable areas of wood pasture and parkland associated with historic 'gentry' houses and their grounds.

Flood plain grazing marsh: Remnants of grazing marsh remain within the river valleys.

#### London Clay lowlands:

Woodland: The south-east Essex Hills around Langdon, Hockley and Rayleigh are quite well wooded relative to the heavily developed surrounding land. The 'plotland' woods of Laindon and Thundersley provide wildlife benefits on former urbanised land.

Open water: To the north, the tiny Layer Brook has been dammed on its way to the Roman River to form Abberton Reservoir. The open expanse of Abberton Reservoir provides a popular wildlife resource.

## Essex heathlands:

Arable land and field margins: Improved grassland and arable fields, punctuated by a regimented pattern of horticultural holdings and market gardening on the light sandy soils of the former heaths dominate the area. It is important for farmland birds and other species associated with farmland for example brown hare.

Lowland heathland: Historically there were extensive heaths and commons north of Colchester and as far as Dedham. However, the area is now generally characterised by small isolated pockets of largely scrub-dominated heathland within the mixed agricultural landscape.

Rivers and streams: The steep-sided slopes of the Stour, Colne and Roman River valleys, with their tributaries, have associated abundant woodland and small fields with dense hedgerows. Gentler slopes have areas of coastal and flood plain grazing marsh, fen and reedbed at the river margins. An intricate pattern of hidden creeks and small valleys extend the influence of the coastal grazing marshes inland.

Source: London Basin Natural Area Profile

## 7.2 UK Biodiversity Action Plan (BAP) priority habitats

The Government's new strategy for biodiversity in England, Biodiversity 2020, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in Biodiversity 2020, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about Biodiversity 2020 can be found at: [www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx](http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx).

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

UK BAP priority habitat	Area (ha)	% of NCA
Broadleaved mixed and yew woodland (broad habitat)	10,598	4
Coastal and flood plain grazing marsh	1,677	1
Lowland heathland	838	<1
Lowland dry acid grassland	517	<1
Lowland meadows	377	<1
Reedbeds	304	<1
Fens	252	<1
Mudflats	22	<1
Purple moor grass and rush pasture	8	<1
Lowland calcareous grassland	3	<1

Source: Natural England (2011)

- Maps showing locations of UK BAP Priority Habitats are available at: <http://magic.defra.gov.uk/website/magic/> – select 'Habitat Inventories'

## 7.3 Key species and assemblages of species

- Maps showing locations of UK BAP Priority Habitats are available at: <http://magic.defra.gov.uk/website/magic/> – select 'Habitat Inventories'
- Maps showing locations of 541 species are available at: <http://data.nbn.org.uk/>

## 8. Settlement and development patterns

### 8.1 Settlement pattern

There is generally a high degree of dispersed settlement in the landscape. The creation of new settlements is also a feature of the area, beginning with the pioneering new Garden Cities at Welwyn and Letchworth. There has been a high rate of change to urban fringe areas. There is evidence of an extension of urban influences into fringe areas creating peri-urban centres around some of the larger towns such as Colchester, Tiptree, Wickford, Greys, Hatfield, St Albans and Rickmansworth. In addition there is evidence of more scattered development on greenfield sites throughout especially between Benfleet and Billericay.

**Source:** Northern Thames Basin Countryside Character Area description; Countryside Quality Counts (2003)

### 8.2 Main settlements

The main settlements within the NCA are; North London suburbs, Watford, Chelmsford, Basildon, Southend-on-Sea, Colchester, Harwich, St Albans, Welwyn Garden City, Hertford, Brentwood, Billericay, Benfleet, Clacton-on-Sea and Harwich. The total estimated population for this NCA (derived from ONS 2001 census data) is; 4,080,214.

**Source:** Northern Thames Basin Countryside Character Area description; Countryside Quality Counts (2003), Natural England (2012)

### 8.3 Local vernacular and building materials

Throughout the NCA brick was increasingly used from late 17th century. In the London Clay lowlands traditional buildings are of timber with brownish red plain tiled roofs. Weatherboarding is usually more typical than colour-washed plaster as the principal walling material. The weatherboards are often painted white, although traditionally they were painted black or tarred. The browns and reds of the tiled roofs form a contrast with the black or white painted weatherboards. The principal building type characteristic of the Essex

heathlands are antique timber buildings with weatherboarding and white-washed plaster typically used as wall finishing materials. Brick is generally more common in the north of the Heathlands.

**Source:** Northern Thames Basin Countryside Character Area description; Countryside Quality Counts (2003)

## 9. Key historic sites and features

### 9.1 Origin of historic features

The Hertfordshire plateaux and river valleys were extensively cleared and occupied in the prehistoric period leaving a substantial legacy of funerary monuments and settlement sites, visible as both crop marks and earthworks. Prehistoric and early historic settlement pattern in the London Clay lowlands area is also extraordinarily rich in evidence, in particular of extensive Roman and Saxon settlement. In addition the Essex heathlands offer evidence including territorial earthworks, perhaps most famously relating to the powerful tribes of the Iron Age and the establishment of the Roman capital at Colchester – Britain's earliest urban settlement, and first Roman capital.

Limited survivals of co-axial field systems are present in the woodlands east of Broxbourne and north of Borehamwood and are potentially of Bronze Age origin and therefore highly significant. There is also significant, if limited, survival of co-axial and irregular sinuous enclosures in the vicinity of Waltham Abbey and Loughton.

Profitable farming conditions saw the demise of much medieval parkland in the 17th and 18th centuries, alongside the growth of substantial farming estates.

The Hertfordshire plateaux area is dominated by informal enclosure patterns of 18th century or earlier framed by woody hedgerows. Parliamentary enclosure had little impact on the adjacent Essex woodland hills, and then mostly on the

late surviving common, the remaining examples of which, for example Nazing, are infrequent but highly significant. The Essex wooded hills have a characteristic pattern of substantial farmsteads within regular patterns of enclosure from the late 18th and 19th centuries especially in the more low lying areas.

Extensive areas of ancient woodland with remnant wood pasture occur and are now mainly managed for conservation and recreational values. The survival of ancient woodlands, such as Broxbourne and Wormley Woods, is a feature of the area. Smaller copses and belts of ancient woodland and modern plantation are commonly associated with areas of former medieval and post medieval parkland.

The heathlands were intensively farmed for centuries and subjected to widespread enclosure in the 19th century, which brought about the pattern of new farmsteads and mixed farming still in evidence today.

Source: **Countryside Quality Counts Draft Historic Profile, Northern Thames Basin Countryside Character Area description**

**9.2 Designated historic assets**

This NCA has the following historic designations:

- 58 Registered Parks and Gardens covering 5,159 ha
- 2 Registered Battlefields covering 119 ha
- 181 Scheduled Monuments
- 8,363 Listed Buildings

Source: **Natural England (2010)**

More information is available at the following address:

- <http://www.english-heritage.org.uk/caring/heritage-at-risk/>
- <http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/>

**10. Recreation and access**

**10.1 Public access**

- Five per cent of the NCA, 12,028 ha, is classified as being publically accessible.
- There are 3,084 km of public rights of way at a density of 1.2 km per km2.
- There are no national trails within the NCA

Sources: **Natural England (2010)**

The table below shows the breakdown of land which is publically accessible in perpetuity:

Access designation	Area (ha)	% of NCA
National Trust (Accessible all year)	96	<1
Common Land	1,289	<1
Country Parks	3,261	1
CROW Access Land (Section 4 and 16)	184	<1
CROW Section 15	3,368	1
Village Greens	184	<1
Doorstep Greens	11	<1
Forestry Commission Walkers Welcome Grants	4,268	2
Local Nature Reserves (LNR)	1,907	1
Millennium Greens	3	<1
Accessible National Nature Reserves (NNR)	241	<1
Agri-environment Scheme Access	86	<1
Woods for People	7,054	3

Sources: **Natural England (2011)**

Please note: Common Land refers to land included in the 1965 commons register, CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.

## 11. Experiential qualities

### 11.1 Tranquillity

Based on the CPRE map of Tranquillity (2006) it appears that the least tranquil areas are associated with urban centres such as the north London suburbs of Watford, Chelmsford and Basildon together with Colchester towards the north and the coastal towns of Southend-on-Sea, Clacton-on-Sea and Harwich. Other areas of disturbance are associated with the main transport routes linking these centres including the M25, M11, A1(M), A12 and A127 roads. The most tranquil areas tend to be the lowland areas to the east of the NCA towards the coast. These more rural areas are more sparsely inhabited, such as around the Maldon District and to the south of Colchester around the Abberton Reservoir, and less disturbed. In the west of the NCA the area around Broxbourne Woods to the east of Hatfield provides some tranquillity from the surrounding disturbed areas.

A breakdown of tranquillity values for this NCA is detailed in the table below:

Tranquillity	Tranquillity Score
Highest value within NCA	44
Lowest value within NCA	-135
Mean value within NCA	-30

Sources: CPRE (2006)

More information is available at the following address:

<http://www.cpre.org.uk/what-we-do/countryside/tranquil-places/in-depth/item/1688-how-we-mapped-tranquillity>

### 11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows a similar pattern to the

tranquillity mapping, with areas of disturbed land associated with urban areas, for example Watford and Chelmsford, and towns, such as Colchester and Harwich, and the main road and rail transport corridors linking these centres. Light pollution resulting from intensive agriculture, growth of settlements and road infrastructure improvements (A1M) is particularly apparent in the flat terrain.

A breakdown of intrusion values for this NCA is detailed in the table overleaf.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	40	56	55	15
Undisturbed	36	20	13	-22
Urban	24	24	32	7

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are that disturbed or intruded land has increased by nearly 15 per cent during the period between 1960 and 2007 which is matched by a reduction of around -22 per cent of undisturbed or unintruded land over the same timescale.

More information is available at the following address:

<http://www.cpre.org.uk/resources/countryside/countryside/tranquil-places>

## 12 Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)

- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Inventory of Woodland & Trees, Forestry Commission (2003)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)\*
- Ancient Woodland Inventory, Natural England (2003)
- BAP Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006) Detailed River Network, Environment Agency (2008)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100%. The convention has been used to denote values less than a whole unit.

## Supporting document 2: Landscape change

### Recent changes and trends

#### Trees and woodlands

- Woodland cover is extensive across the Hertfordshire plateaux and the Essex wooded hills and ridges. Smaller intimate tree-lined valleys provide a strong contrast through un-wooded areas. About 50 per cent of the woodland cover is on ancient woodland sites. The proportion of these sites covered by a woodland grant scheme has remained around 40 per cent since 1999. There have been a significant number of agreements for coppice management. Evidence suggests woodland character has at least been maintained. New tree planting is concentrated into larger blocks with apparent targeting within the Community Forests that occur in the area.

- Deer impact on woodland flora and succession of tree species is an increasing pressure on woodlands locally.

#### Boundary features

- The main boundary feature in this area is hedgerows which accounts for most of the existing boundary features found here. The other two features found are ditches and woodlands.
- Between 1999-2003 Countryside Stewardship capital agreements for linear features including hedge management, planting and restoration, amounted to only two per cent of the total resource.

#### Agriculture

- The area has a varied land use pattern comprising a mix of arable and pasture land. There has been an overall loss of mixed and general cropping and horticulture since 1998, although the rate of grassland loss has slowed and the mix of farm holding types has stabilised.
- There has been a reduction in livestock numbers across the NCA with cattle numbers suffering the steepest decline of 52 per cent between 2000 and 2009. The number of livestock farms reduced during this time by 21 per cent. There was a reduction of grazing intensity between 1990 and 2003, which is below the national average.



Mixed farming at Nyn Manor Farm in Hertfordshire.



- A loss of landscape character of agricultural land during the period between 1998 and 2003 is suggested by CQC data from inappropriate management of set aside land in some areas of the Hertfordshire plateaux and river valleys and a decoupling of historic farmsteads from modern agriculture resulting in a redundancy of traditional barns and other buildings. In London Clay lowlands mineral extraction is also replacing some farmland.

### Settlement and development

- London has an expanding population and pressure to meet housing demand and other changes is placing pressure on existing greenspace which varies considerably in quality. There is an overall lack of access to greenspace especially in the case of deprived urban communities.
- Small parts of the Northern Thames Basin NCA fall within The Thames Gateway Growth Area, including the new town of Basildon, the hinterland of Thurrock and most of Southend. Industrialisation has left a legacy of industrial and minerals sites that are now used as geology and wildlife nature reserves or to house development for example in Thurrock. The sub-regional priorities include promoting green infrastructure to improve the quality of the environment and create habitats and attract visitors through the ongoing application of the All London Green Grid more widely. Thames Chase Community Forest provides a substantial new element of green infrastructure in this area.
- Within the Heart of Essex sub-region, as defined within the East of England Implementation Plan, growth is focussed within the character area on the town of Chelmsford due to its good links with London and proximity to Stansted airport. Chelmsford is a strategic Growth Point, but retains issues in relation to flood risk in the town centre. It is an area heavily influenced by its

proximity to London, containing the M25 and the London section of the M11, as well as high quality natural environments such as Epping Forest, the Lee Valley Regional Park and Hatfield Forest. The proximity to London already puts strong pressure for housing on the area, and affordable housing is a need. The Lee Valley is identified as a priority area for regeneration.

- The part of the Northern Thames Basin in Colchester Borough lies within the Haven Gateway Growth Point. This sub-region is one of the key international gateways to the UK. Colchester is part of the regional 'cities' east initiative. The rural hinterland includes nationally important landscapes (Dedham Vale AONB) and internationally important ecological designations. The sub-region is subject to major housing and jobs growth putting potential pressure on sensitive landscapes and habitats through increased public access and recreation. Water resources are predicted to become stretched.
- Brownfield sites can be a great source of biodiversity in developed areas, becoming a haven for many invertebrate species some of which may be locally or national important. Demand for housing and development in the area often results in the loss of these sites.

### Semi-natural habitat

- Recent reductions in heathland extent and quality in the NCA have been caused by development pressure, a lack of active management (including traditional grazing practices) resulting in succession to woodland, over-management by amenity cutting, and recreational pressure. Major heath restoration and recreation works are currently progressing in Essex under Environmental Stewardship concentrated in Epping, Danbury and Tiptree with the aim of creating 20 ha of habitat and restoring 75 per cent of the existing resource.

- Lack of management of coppice woodlands in Hertfordshire and Essex has resulted in the growth of dense 'high forest'. Less than one per cent of woodland types are classified as coppice. This could be one cause for the lack of shrubs and young trees found in the NCA as less than 0.5 per cent of the woodland include these. This is also exacerbated by the high numbers of deer found in woodlands and rural areas.

- Major losses of semi-natural woodland especially in the Essex wooded hills and ridges. In 2010 woodland covered 6 per cent of the total NCA area. This includes ancient semi-natural woodland (2 per cent) and ancient re-planted woodland (1 per cent). Community woodlands make up the largest proportion of woodlands with a total area of 12 per cent. There are two community woodlands – Watling Chase, which is in the south Hertfordshire/ north London area straddling three major roads, the M25, M1 and A1, and Thames Chase, which is found in the south Essex/east London area. Both were established in the early 1990s.



Restoration of acid heathland at Layer Breton in Essex.

- A decline in orchards, especially apple, has mainly affected Essex. Since 1990 orchards have declined significantly and this trend is continuing. Steps are in place to stop the reduction and future plans are to restore and increase the areas of orchards.
- There is a localised loss of hedgerows due to the creation of larger fields and the loss of elm trees to Dutch elm disease. Through initiatives that use a landscape scale approach, hedgerow planting is being utilised to connect up isolated habitats which may help increase the viability of existing hedgerows and increase the total number.
- A loss of pasture land on the flood plains due to changes in agricultural practices has mainly impacted on the Hertfordshire area.
- The majority of SSSI within the Northern Thames Basin are in favourable condition and only seven per cent are classified as unfavourable declining or unchanged.

### Historic features

- This area has a rich historical heritage and has historical evidence of settlement in the Hertfordshire, Essex heathlands and London areas dating back to prehistoric period along with palaeoenvironmental, Palaeolithic and archaeological evidence.
- Although evidence of early settlements in the Essex wooded hills is sparse it is possible this area was managed for timber and fuel.
- This area has nine sites on the English Heritage at risk register and many listed buildings. The main threats to these sites are the continued need for urban expansion and housing or industrial development and the management of agricultural land. This can be counteracted in some ways by the land owners entering into agri-environmental schemes.

### Coast and rivers

- In recent years rivers and coastal features have been enhanced in terms of chemical and biological quality and SSSI condition by uptake of agri-environmental agreements for management and restoration of riverine and/or coastal features.
- Research from 2006 on nitrate vulnerable zones found that in the Hertfordshire and London area, nitrates have the biggest impact on surface water, with only a small affect on groundwater. In the Essex area nitrates affects both ground and surface water, with a greater affect on groundwater toward the coast. Phosphorus is another factor that can affect the health of river systems and can enter the water from agricultural land. This is having an increased impact in the Essex part of this character area.

- Other factors affecting the rivers are invasive species, such as floating pennywort. This blocks water courses, preventing movement of animals and affects some recreational activities such as boating and canoeing. Himalayan Balsam grows alongside river banks and creates a monoculture, out-competing other plants and preventing their growth. It also increases sedimentation in rivers as it dies back in winter leaving the banks exposed, so soils are easily washed into the rivers during heavy rainfall or flooding. Efforts are being made to remove these plants and others from river habitats through funding from Defra and as of 2014 some species of invasive plant, including floating pennywort, will be banned from being sold commercially in the UK.

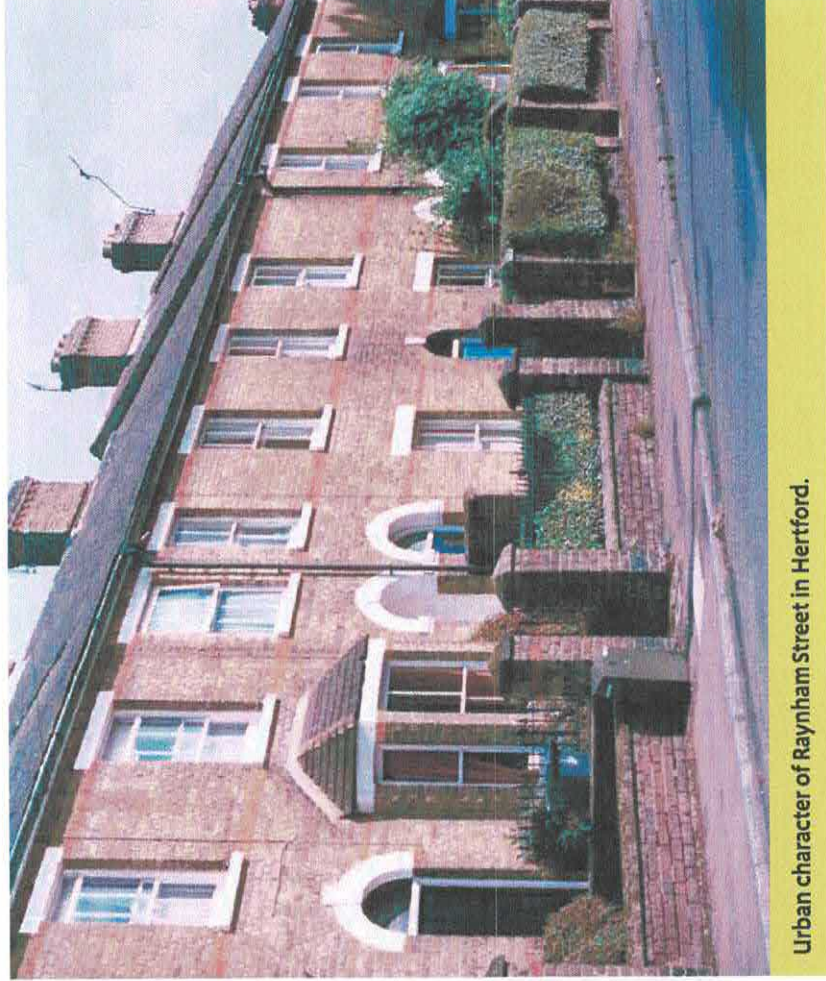
- Recreational activities such as boating can lead to increased rates of sedimentation within watercourses, especially along the River Lea and the Grand Union Canal. Modification of many watercourses can also have a detrimental effect on water overall water quality and the ecology of the area's rivers. There has been extensive morphological alteration of rivers over many years, mainly in the London areas, to create canalised river systems with reinforced banks to prevent flooding and allow dredging to occur. This has resulted in a loss of habitat for species that cannot survive in fast flowing waters (including the young of many fish), the potential for increased erosion of banks that are not enforced, loss of bank/marginal habitats and potential loss of in-channel habitats through dredging. These problems need to be remedied as part of the Water Framework Directive (WFD), in order to obtain a 'Good' status. Funding is currently being invested in creating in-channel habitats for species that do not flourish in fast flowing waters, improvements/removal of bank profiling where suitable and reversal of canalisation where possible.

- Urban diffusion pollution is also affecting parts of this character area and results from runoff from roads, air emissions contributing to acidification, organic waste (mainly from dog fouling), fertilisers and pesticides from gardens, parks and road verges, phosphorus from incorrectly plumbed washing machines and sediment from construction sites. These may result in high metal levels and biodegradable organic matter within the water (resulting in increased oxygen demand reducing the oxygen available for aquatic life).

### Drivers of change

#### Climate change

- The Northern Thames Basin is among the warmest and driest parts of the UK. A number of characteristic specialist species, more typical of continental climates, survive here on the edge of their European range.
- With predictions of increased temperatures, it is projected that species will advance their range northwards therefore the range and types of species found will change over time.
- To facilitate the migration of species, better connectivity between habitats is required to prevent their extinction through loss of appropriate habitats and an inability to move to other areas.
- Agricultural land is also at risk from soil erosion and nutrient loss as the soil becomes more susceptible to wind erosion in the predicted hotter and drier periods and water erosion in the wetter, colder periods. Increasing the size and connectivity of surrounding habitats, such as grasslands, will help support new species and improve biodiversity as well as reduce the affects of soil erosion. Also pollinating insects will benefit from the increase in semi-natural habitats and these in turn will benefit the local agricultural landscape. Predicted longer growing seasons and earlier onsets of spring will present an opportunity for introducing growth of new drought tolerant species.
- There is a possibility that there will be species gains and losses, due to changes in season lengths and weather fluctuations. This could result in new combinations of species and communities.



Urban character of Raynham Street in Hertford.

- Water availability will be a concern, with the potential loss of specific drought intolerant species, as a result of reduced soil water moisture and rising temperatures.
- Woodland habitats (which make up a large proportion of semi-natural habitats in this area) may have increased above ground biomass due to increased carbon dioxide and nitrogen availability. This may have an impact on ground or lower growing flora.
- Wetlands and open water habitats and associated species are likely to have to cope with greater fluctuations in water levels which could be droughts or low rainfall in the summer with flooding or heavy rainfall in the winter. As great crested newts are found in relatively large numbers in this area, it may have an adverse affect on this protected species.
- The characteristic geological and archaeological deposits are susceptible to predicted changes in soil moisture content and the patterns of stability on exposed sections will change, necessitating new management methods.
- Inner London and surrounding areas, which already have a micro climate/urban heat island (UHI) effect, are likely to experience higher temperature increases than surrounding areas and this could result in species changes, possibly supporting more exotic invasive species such as parakeets that are already living wild in city parks. It is likely that water availability will become an increasing pressure.
- Ideas to reduce the UHI affect include, creating urban forests and parklands to increase vegetation and to use all public green space as potential carbon sequestration. Other adaptations could be to increase the use of garden

roofs on high buildings or creating 'green roofs' (where grass or other vegetation is able to grow in the roofs) on housing.

### Other key drivers

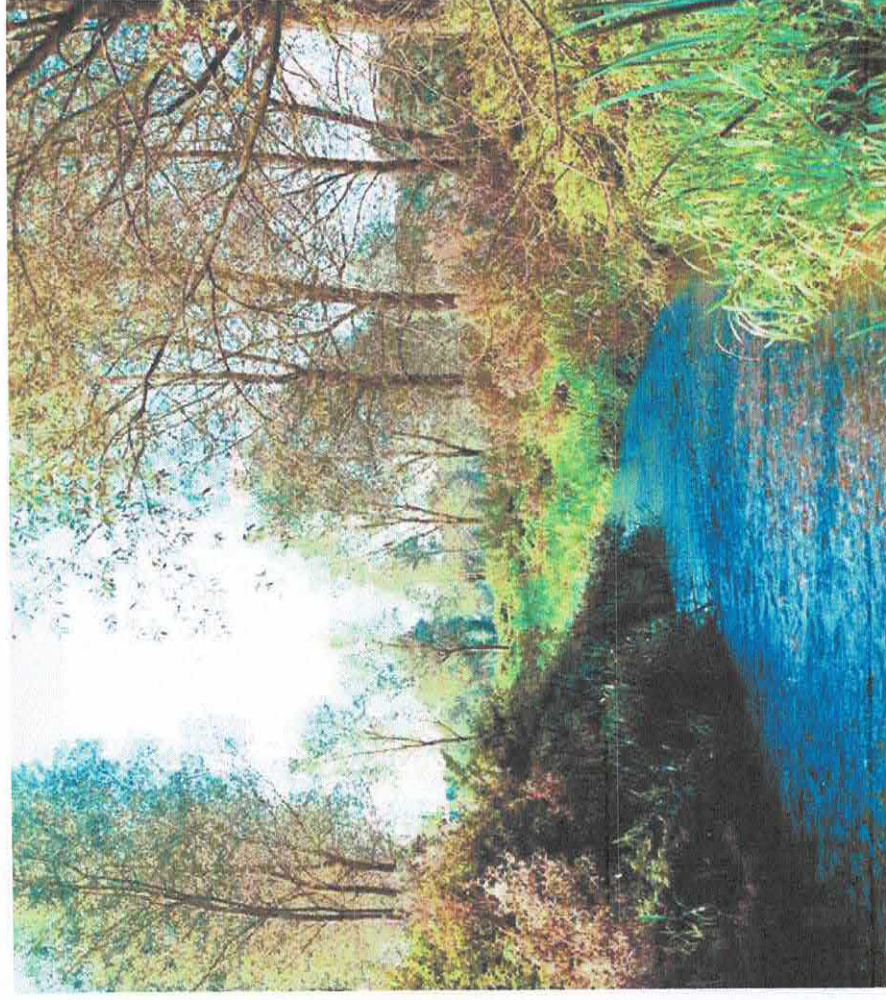
- Pressure for continued urban expansion and regeneration including industrial development, offers opportunities to improve well-being conditions for local communities such as, improving greenspace quality and provision, but will also put pressure on water availability and habitat fragmentation. Future mitigation needs to ensure these factors are considered when developments occur.
- The Environment Agency, through the Water Framework Directive (WFD), is obligated to engage with stakeholders and communities to help improve the ecological status of the rivers by 2027. In this area most river stretches are classified as 'moderate' but some are classified as 'poor' or even 'bad' ecological status, especially those in the Thames area.
- The affects of agriculture practices on water quality, abstraction and surrounding habitats and wildlife will continue to be a challenge. This can be negated through continued support from agri-environmental schemes, which will enable landowners to continue their involvement in creating a diverse and productive environment.
- Fragmented habitats could be improved by buffering and putting in place measures to create a network of connected habitats to allow species to disperse and become more healthy and resilient to the impacts of climate change. Gapping up of patchy hedgerows is one method that could be used and improvements in urban planting in gardens and public parks could also help support biodiversity for example, planting nectar-rich species.

- There is scope to expand the area of recreation provision by improving public access, while ensuring the needs of sensitive sites are not adversely damaged through for example disturbance or excessive trampling.
- The increased pressure for infrastructure development around London is going to continue to grow and create difficulties in preserving the London green belt. Care must be taken so that important habitats, geological, archaeological features and recreational greenspace is not destroyed in the process and the character of the area adversely affected.
- There is significant opportunity to engage urban and rural communities in educational and volunteering activities for the benefit of the natural environment.
- There are many existing mineral sites in the area and the demand for building material is large so this creates industrial opportunities. However, priority habitats need to be preserved to maintain the geodiverse and biodiverse nature of the area. There are also opportunities to return abandoned mineral sites back to the habitats that were previously found there and expand the biodiversity of the area. These mineral sites also reveal important and interesting geological features allowing greater understanding in the development of the local area and provide an important context and insight into our understanding of the potential impacts of future climate change and global warming. These can be useful research and education sites.

## Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.



River Ver chalk stream near Drop Lane in Hertfordshire.

## Ecosystem service

Ecosystem service	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity	
<b>Statement of Environmental Opportunity</b>																				
<b>SEO 1:</b> Manage rivers and river valleys to protect and improve water quality and help to alleviate flooding in the downstream urban areas, while also helping to improve aquifer recharge and provide a sufficient store of water to meet future need, especially with predicted climatic changes. Conserve the riparian landscapes and habitats, for their recreational and educational amenity for their internationally significant ecological value.	↘ *	↗ *	↑ ***	↗ *	↑ *	↑ ***	↑ **	↑ ***	↗ *	↗ *	↗ **	↗ **	N/A	↗ *	↔ **	↗ **	↗ *	↑ **	↑ **	↑ **
<b>SEO 2:</b> Manage the agricultural landscape and diverse range of soils which allow the Northern Thames Basin to be a major food provider, using methods and crops that retain and improve soil quality, water availability and biodiversity.	↑ ***	↔ **	↑ **	↗ *	↔ ***	↗ **	↑ ***	↗ *	↑ ***	↑ **	↗ ***	↗ ***	N/A	↗ *	↗ *	↔ ***	↗ *	↗ ***	↗ ***	↔ ***
<b>SEO 3:</b> Protect and appropriately manage the historic environment for its contribution to local character and sense of identity and as a framework for habitat restoration and sustainable development, ensuring high design standards (particularly in the London Green Belt) which respect the open and built character of the Thames Basin. Enhance and increase access between rural and urban areas through good green infrastructure links to allow local communities recreational, health and wellbeing benefits.	↗ *	↗ **	↔ ***	↗ *	↗ *	↗ **	↔ ***	↔ ***	↔ ***	↔ ***	↗ *	↗ *	N/A	↑ ***	↑ ***	↗ ***	↑ ***	↗ *	↗ *	↗ *
<b>SEO 4:</b> Manage and expand the significant areas of broadleaf woodland and wood pasture, and increase tree cover within urban areas, for the green infrastructure links and important habitats that they provide, for the sense of tranquillity they bring, their ability to screen urban influences and their role in reducing heat island effect and sequestering and storing carbon.	↔ **	↑ ***	↗ **	↔ ***	↑ ***	↑ **	↗ **	↗ *	↗ *	↗ *	↗ **	↗ **	N/A	↑ ***	↑ ***	↑ ***	↑ ***	↗ **	↔ ***	↔ ***

Note: Arrows shown in the table above indicate anticipated impact on service delivery ↑ = Increase ↘ = Slight Increase ↔ = No change ↗ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (\*low \*\*medium \*\*\*high) °symbol denotes where insufficient information on the likely impact is available. Dark plum =National Importance; Mid plum =Regional Importance; Light plum =Local Importance



## Landscape attributes

### Landscape attribute

A diverse mixture of large urban areas, smaller urban settlements, as well as remote villages and hamlets surrounded by agricultural lands, grasslands/heathlands and woodlands.

Underlying Chalk aquifer. London Clay gives rise to heavy acidic soils often prone to flooding in winter and cracking in summer. The river valleys are fringed by well-drained fertile brown soils, produced from alluvial deposits which in Essex creates a more open 'heathy' landscape.

### Justification for selection

- The CPRE Intrusion Map (2007) found the area to be 32 per cent urban, 55 per cent disturbed and only 13 per cent classified as undisturbed due to the network of towns, roads and other infrastructure that criss-cross this area.
- Since the 1960s the area of disturbance and urbanisation has expanded out from London, Colchester and other towns to encase most of the Hertfordshire area and South Essex and has extended to most of the Essex heathlands and wooded hills and ridges.
- Remoteness is still achievable in parks, woods and fields throughout the area. A recent addition to this is the development and management of the community woodlands, Watling and Thames Chase.
- Levels of tranquility are still high in the more rural areas of the Northern Thames Basin.
- The chalk layer that underlies the London Clay in the west of the NCA is a main source of recharge for the principal aquifer supplying London.
- London Clay has traditionally been used as pastoral lands due to its poor quality soil but with developments in farming such as use of fertilisers and improved ploughing methods and a drive for self-sufficiency after the Second World War caused this area to develop into arable farming in the 1950s.
- Almost 60 per cent of agricultural land is Grades 1 to 3 with the majority of the grade 1 and 2 land in the 'heathy' areas of Essex.
- From 2000 to 2009, the dominant agricultural land use was cereal production (43 per cent) and grass and uncropped land (29 per cent) as fits in with the soil types in this area. The areas of cereal grown decreased by 6 per cent and grass and uncropped land decreased by 7 per cent. These have probably been replaced by oilseed, stock feed and other arable crops as these increased during the same period.

### Landscape attribute

A varied pattern of woodlands across the area including considerable ancient semi-natural woodland.

### Justification for selection

- Woodlands help to maintain the distinction between urban and rural areas by filtering views and helping to visually contain the extent of individual settlements.
- Many areas of larger woodland offer key recreational resources.
- Overall woodland covers 6 per cent of the area (15,488ha.) which understates the influence of woodland within this NCA and its very high recreational value. Reflecting this, the NCA includes the areas of two Community Forests – Watling Chase (Hertfordshire) and Thames Chase (east of Ilford and Romford and south of Brentwood) which now form part of the Green Grid of the Thames Gateway.
- The pattern of woodlands is varied across the area. The eastern part in Hertfordshire is heavily wooded both on the plateaux and in the river valleys including the Broxbourne Wood complex as are the Bagshot hills and ridges of Essex.
- Other areas within the London Clay lowlands and Essex heathlands are more open in character although woodland is found in areas of now derelict plotlands, in the remnant shelterbelts around Colchester, on the well-wooded hills around Laindon, Hockley and Rayleigh and in the river valleys of the Essex heathlands.
- Nearly half of the remaining woodlands are ancient semi-natural (2.4 per cent of the area) and a further 0.7 per cent is made up of planted ancient woodland sites (PAWS) including past lime woods within Hertfordshire. The ancient semi-natural woodland is a distinctive feature of much of the area, dominated by hornbeam coppice with oak standards, as in the Broxbourne woods complex of Hertfordshire. These ancient woodlands are of high nature conservation value and include the Epping Forest SPA (1,700 ha) and the Wormley-Hoddesdon Park Woods (336 ha). Priority habitats include 2,500 ha of wet woodland and 1,900 ha of lowland mixed broadleaf woodland.
- Woodlands in the area include Epping Forest and Wormley-Hoddesdon Park Wood both of which are Special Areas of Conservation (SAC) and also Broxbourne Wood which is a National Nature Reserve (NNR).
- They are a haven for wildlife in a heavily urban and agricultural environment, allowing a more diverse species population to continue in this area, for example the BAP priority species, the dormouse, has good populations in the woodlands of the south Essex area and along the Essex hills and ridges.

## Landscape attribute

Significant areas of remnant wood pasture and pollarded veteran trees, including Hainault Forest, Thorndon Country Park, Wormley and Hoddesdon Great Park, and Epping Forest, comprising a distinctive ecological habitat and recreational resource.

## Justification for selection

- Wood pasture was once a dominant feature of this NCA providing the interlinking fabric between the wooded and open commons and areas of ancient woodland in the Essex wooded hills and ridges and the Essex heathlands. It was a characteristic of the Royal Hunting forests of the area as still preserved within Epping and Hainault forests within the Essex wooded hills and ridges. This is a particularly important habitat and landscape asset having suffered a dramatic reduction in area over the last century as sites have been lost to development, agricultural intensification and recreational development – especially as golf courses.
- The ancient pollards provide local oases of species richness for lichens. This is especially where old forest species have survived in undisturbed pockets of woodland (with the surrounding woodland buffering the ancient pollards from the damaging effects of air pollution) and where old exposed trees are set in undrained, unploughed valley parkland. Management by pollarding over the centuries has produced boles of increasing age and decay, which provide the habitats vital to deadwood feeding invertebrates as well as bats.
- Informal patterns of enclosure from the 18th century or earlier reflect the medieval colonisation of the heaths and woodlands and are common in the Hertfordshire plateaux and river valleys and Essex wooded hills.
- Within the London Clay lowlands regular Roman planned enclosures are a subtle but important feature to the east of the area. In the Essex heathlands 18th and 19th century enclosures of heathlands and commons followed by extensive 20th century field enlargement is dominant.
- These features represent the long history of human settlement in the area and it gives an historical character to the area that can be promoted and maintained in future developments.
- In many areas a scattered appearance of settlements creates open views of the landscape and gives a sense of place.
- The tradition of enclosures gave rise to the use of hedgerows as boundaries. Although many are now gone due to the change in recent years to larger field farming they can still create important habitats for many species and connect fragmented habitats to provide connectivity throughout the landscape.

Field patterns are very varied across the basin reflecting historical patterns.