Formal response from the Buckinghamshire and Milton Keynes Natural Environment Partnership to the Buckinghamshire pilot Local Nature Recovery Strategy

[NB – text in green boxes = summary text for the online survey responses]

Introduction

The Buckinghamshire and Milton Keynes Natural Environment Partnership (the "NEP") champions the value of the environment in Buckinghamshire and encourages environmental protection and improvement - for the benefit of the environment, as well as for businesses and the economy, the health and wellbeing of communities and the society of Buckinghamshire. The NEP works in partnership with a range of organisations from across the public, private, health, academic and education sectors, conservation and community organisations.

The NEP's response to the pilot LNRS survey questions are based on the NEP's existing published strategies, visions and other NEP documents, also priority current areas of work that we are working with our partners to produce, including the design of a biodiversity net gains implementation scheme and the revision of the NEP's Biodiversity Action Plan to 2030, covering Buckinghamshire and Milton Keynes.

Fundamental to our response is the NEP's collective recognition that biodiversity and the environment, if known, conserved, enhanced and managed in the right way over the long-term, is critical to providing, maintaining and improving the multiple benefits from the environment needed to support wildlife and sustainable growth that meets the needs of the environment, our economy and society.

Format of the NEP's response

This NEP response aims to provide answers to each of the questions posed in the Buckinghamshire LNRS Pilot "have your say" survey document. The questions, as asked in the survey, are answered in detail below, drawing on the NEP's published strategies, visions, principles and its current work priorities. The specific response provided to the online pilot LNRS survey from the NEP is shaded in green in the text that follows; the detailed response referred to there is provided in this document.

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1. What do you like about nature in Buckinghamshire?

See the NEP's published Biodiversity Action Plan "Forward to 2020" (page 4-8) introductory section for a summary of the nature in Bucks that the NEP wishes to highlight here. This includes:

- The landscape – from meandering alluvial floodplains in the north, the clay vale, to the chalky escarpment of the Chilterns, and the dip slops giving way to acid drift gravels to the south – which all combine to provide a breadth of landscape features, beautiful and treasured in their own right, and which support a variety of habitats and wildlife.

- The wildlife – habitats and species supported – from historic hunting forests, to flood meadows, river corridors, ancient woodlands, to hedgerows, scrub, chalk grassland, field margins, chalk streams, box woodlands, beech woods and ancient wood-pasture. Species include those important or valued locally or nationally, from the Chiltern Gentian to the Water Vole, Chalkhill Blue butterflies to marsh violets.

  The NEP's "Forward to 2020" Biodiversity Action Plan lists, at Appendix 1, the priority protected and other "notable" species in Buckinghamshire and Milton Keynes (the NEP's area). These can be found via the BAP web pages on the NEP's website: https://bucksmknep.co.uk/projects/forward-to-2020-biodiversity-action/

- The connectivity of habitats – to improve the resilience of wildlife to external pressures.

- Ecosystem services – all the benefits of our natural assets that support our wildlife as well as people, communities and the economy of Buckinghamshire (see answer to Q2).

In more detail, what the NEP "likes" (although this list is NOT exhaustive) includes:

- Landscape features – such as: meandering alluvial floodplains in the north, ancient ridge and furrow, and the acidic soils of the greensands in the Brickhills area, with its many springs. The clay vales to the north of the Chiltern Hills are characterised by pasture and damper grasslands, also slow-flowing brooks with regular winter flooding. In the central area of Buckinghamshire rise the Chiltern hills – the steep escarpment and chalk grasslands, clay-capped hills supporting woodlands, and the gentle dip slopes leading from chalk into acid drift gravels and river valleys. All combine to provide a huge breadth of landscape features, geology and soils to support a variety of habitats and species.

- Habitats – such as the remains of historic hunting forests in the north, to networks of hedgerows, flood meadows and wet pastures along river corridors. In the acidic greensands Brickhills area are relics of heathland vegetation and pockets of marshy ground. The clay vales lie immediately to the north of the Chilterns and include slow-flowing brooks, with regular winter flooding, providing feeding grounds for

birds. The Chiltern Hills rise with a steep escarpment, with swathes of species-rich chalk grasslands, along with areas of rare box woodland, scrub, field margins and stands of juniper; beech hangers, heathy wooded commons and some chalk heaths are found on the clay-capped hills, and fast-flowing chalk streams through the valleys below. Further south, the acidic drift gravels support heathlands, pockets of acid grassland, bare ground and birch woodland, which provide niches for invertebrates and reptiles; there are also scattered clumps of hilltop and valley-side woodland. Burnham Beeches is a tract of ancient wood-pasture in the south of the county, with ancient wooded areas and pollards, with a diverse range of habitats – woodland, grassland, heath, bog, ponds and ditches.

- Specific species – both important or valued locally or nationally, from the Chiltern Gentian to the Water Vole, black hairstreak butterflies, barn owls and orchids to great burnet, meadow sweet and ragged robin; slow-flowing brooks in the vale are lined with willow pollards and black poplars; and regular winter flooding provides for snipe and curlew. Pockets of marshy ground support unusual species such as marsh fern and bog bush cricket in the acidic Brickhills area. Glow worms, Roman snails and Chalkhill Blue butterflies are found in the chalk grasslands of the Chilterns escarpment, along with swards of thyme and marjoram. In the south, the heathlands support birds including the nightjar, woodlark and hobby. wetter areas support unusual plants including insectivorous bladderwork and sundews; and sphagnum mosses are found in in bog pools and ditches, along with dragonflies and beetles. The wild service tree, early purple orchid and white admiral butterfly are found in clumps of hilltop and valley-side woodland. Burnham Beeches supports notable fungi and insects including the marsh violet and the black darter dragonfly.

2. Why is nature in Buckinghamshire important to you?

The landscapes, wildlife and habitats of Buckinghamshire are invaluable and important in their own right.

However, the NEP also recognises the importance of such natural assets in providing benefits, or ecosystem services, to all – wildlife, people, communities and the economy. As set out in the recent Natural Capital mapping report for Bucks [available here: https://bucksmknep.co.uk/projects/natural-capital-mapping/], completed by Natural Capital Solutions in 2020, and also as recognised in our own NEP 2016 "Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes", such ecosystem services, important to us all, include:

- Habitats - support wildlife;
- Connected habitats and green spaces - provide vital links to improve the resilience of wildlife to pressures such as the effects of climate change, and to help reverse the effects of habitat loss and fragmentation of habitats;
- Clean air and improved local air quality (filtration of air pollutants)
- Regulation of micro-climate – reduces urban heat island effect, provides shade and urban cooling;
- Contribution to climate change mitigation and adaptation – e.g. carbon uptake / sequestration by growing vegetation; provision of shade from a warmer climate;
- Green spaces (especially local and accessible), biodiversity, landscape, habitats and wildlife provide physical and mental health, wellbeing and quality of life benefits – e.g. through recreation and leisure and enjoyment of green space and exercise opportunities;
- Vegetation can assist with water quality regulation;
- Vegetation can also reduce flood risk – e.g. impacts on the speed and nature of surface runoff, drainage, e.g. via "slowing the flow" and flood risk reduction benefits;
- Green space, habitats and biodiversity provide a sense of place / local pride – can help to boost community cohesion and integration, with community and culture benefits – particularly through community growing projects such as community orchards;
- Economic opportunities and benefits – e.g. visitor / tourism economy and associated businesses; impacts on land values (green spaces and biodiversity can make an area attractive to live and work in); opportunities for green jobs, use of nature as an educational resource, and opportunities for new commercial activity – e.g. in conservation, agriculture, renewable energy, outdoor environmental education, recreation, land management;
- Food provision;
- Timber and other resource provision;
- Pollinator services (habitats support pollinators)

A sustainable Buckinghamshire for the future is dependent on proper recognition in decision-making and investment in nature for its own benefit as well as to safeguard and improve the provision of these ecosystem services – into the long term.

3. What parts of nature would you like to see recovered or improved over the next 25 years?

A Summary is highlighted in green for inclusion in the online survey; the detailed response then follows:

There are various areas of the NEP's work that highlight aspects of nature and biodiversity that should be recovered or improved within Bucks as a priority. The key aspects are summarised below; the details and mapping produced that relates to these areas are provided in the *online Formal NEP Response to the pilot Bucks LNRS on the NEP's website .*

- UK BAP Priority habitats – at least an overall 20% improvement (creation or restoration) with a focus geographically on Biodiversity Opportunity Areas and priority water catchments – as a proxy for species.

- A focus on more, bigger, better and more joined habitats, through action at both the area-wide scale and the more local, national character area scales. The draft NEP "Forward to 2030" Biodiversity Action Plan recognises that all types and scales of areas are important to nature's recovery – whether rural, urban, large or small scale, and everything in-between.

- The new, draft NEP Biodiversity Action Plan "Forward to 2030" identifies the following as priorities for recovering and improving across the NEP area:

    - Enhance **existing habitats and improve habitat condition -** to achieve more hectares in positive management for wildlife and increase the use of nature-based solutions for climate change adaption. This includes a focus on public spaces, the urban environment, farming and land-management.

    - **Biodiversity to be a key principle in the design** of i) the urban environment and ii) new developments

    - **Retain, enhance, expand and create priority habitats – with a focus on Biodiversity Opportunity Areas (BOAs)** and strategically-identified areas as providing the greatest opportunities, alongside other areas.

    - **Increase the area of other wildlife-important habitats** (e.g. wildflower-rich meadows, nature semi-natural woodland, species-rich grassland including wet grassland, and scrub and edge habitats for nesting birds and invertebrates, including hedgerows and scrubby grasslands)

    - **Increase the land area under positive management to benefit wildlife**, people and to mitigate and adapt to climate change (for example, by reducing atmospheric greenhouse gas concentrations - such as creating and managing wildflower-rich meadows, native woodland and managing new grassland). (NB across the Growth Arc,

the NEP supports a "Doubling Nature" target – to double the area of land in positive management for wildlife in the Growth Arc

- **Increase the area of core and high quality biodiversity sites** (e.g. alongside Priority Habitats, Local Wildlife Sites, Sites of Special Scientific Interest and nature reserves) and **buffer such sites following** best-practice guidelines, and, by improving the surrounding land to improve biodiversity resilience, enhance the visual characteristics of the landscape.

- **Connect quality habitats across the landscape** to enable species movement across larger areas to improve resilience to external pressures – with a focus on connectivity **within and between BOAs** as well as into the wider landscape.

- **Improve people's connectedness with nature** – so that the community values and understands the role of nature in mental and physical wellbeing.

To achieve this, the NEP advocates:

- **Using nature-based solutions** to reduce resource-use, improve biodiversity and adapt to climate change;
- **Seeking to deliver multiple benefits** where appropriate, alongside biodiversity, for example to help absorb carbon, purify our water and reduce run-off and help to mitigate climate change, and/or provide health & wellbeing benefits with access to nature. However, where biodiversity and delivering multiple benefits conflict, **the priority will be to retain and enhance biodiversity.**
- **Raising awareness and understanding** of the value and role of nature in mental and physical wellbeing and engage more people with nature and in improving biodiversity.

- The NEP's work, alongside its partners and experts, to produce an updated Biodiversity Action Plan for 2030, has also identified specific **outcomes for each broad NCA area** – to sit *alongside* the strategic outcomes (i.e. the Buckinghamshire-wide actions also apply) – to help achieve the draft BAP 2030 aims and objectives. These are provided at *Table 2 in the NEP's online Formal NEP Response to the pilot Bucks LNRS.* They include:

1) Northern Bucks NCAs: Promote sustainable and water-friendly agricultural practices; Protect aquifers and enhance the quality, state and structure of the River Great Ouse; Manage, enhance, extend, link and encourage native woodland; Encourage the appropriate management and expansion of traditional orchards; Management, extension and linkage of semi-natural habitats and green infrastructure; Regenerate towns and major urban areas and build biodiversity into planning
2) Aylesbury Vale Area NCAs: Restore and create wetland habitats; Maintain and enhance hedgerows and field/hedgerow trees; Encourage green development

and access to nature. Midvale Ridge: Protect and manage complex of calcareous (chalk) habitats; Encourage and restore diverse arable habitats; Restore and connect ancient and semi-natural woodlands;

3) Chilterns Area NCA: Improve the condition of existing Chilterns wildlife habitats, including chalk grassland, ancient woodland, beech woodland, chalk streams and riparian habitats, arable field margins, hedgerows and traditional orchards; to promote and support landowner and farmer-led initiatives that prioritise nature; to encourage livestock grazing of chalk grassland; to create more joined up habitat networks; to end environmentally-unsustainable abstraction from chalk streams and promote opportunities to restore natural processes such as natural flood management, extensive grazing or reintroduction of key species.

4) Thames Valley NCA: Protect and sustainably manage the area's historic parklands, wood pastures, ancient woodland, commons, orchards and distinctive ancient pollards, and restore and increase hedgerows, woodland for carbon sequestration, noise and pollution reduction, woodfuel and protection from soil erosion, while also enhancing biodiversity, sense of place and history; Enhance the area's rivers – restoring their natural geomorphology to bring benefits to biodiversity; Ensuring that access to the ancient woodland, veteran trees and other environmentally sensitive sites provides equality of opportunity and a connection with nature and history, without causing damage or degradation to these unique assets

- **Achievement** of the NEP's Vision for **Green and Blue Infrastructure** across Bucks and MK by 2030 – of **a connected, wildlife-rich, accessible and multi-functional network**, **valued, protected and managed into the long-term**, at all scales and across administrative borders.

- **A focus on particular zones / areas of Buckinghamshire to recover and improve habitats – including**:

    - The NEP's Green Infrastructure Opportunity zones – to achieve the NEP's Vision and Principles;

    - The opportunity areas identified for Buckinghamshire through the recent Natural Capital Mapping work by Natural Capital Solutions, for the creation of new woodland, semi-natural grasslands and wet grassland and wetlands habitats, connected to existing areas of those habitats and also providing other benefits;

    - Growth Arc (Doubling Nature) broad-scale zones of environmental opportunity, which, in Buckinghamshire, include the Bernwood-Otmoor-Ray area, the Arc Parkland Forest, Burnham Beeches and the Aylesbury Green Ring and Black Poplar landscape;

- Priority offset areas as identified by the NEP for biodiversity net gains;

- Other designated and important sites: e.g. LWS and BNSs, SSSIs, SACs, UK BAP priority habitats, Roadside Nature Reserves, National and Local Nature Reserves, Biodiversity Opportunity Areas, the AONB, etc.

- **The NEP also requests that full account and use is taken of the recent Natural Capital mapping completed for Buckinghamshire by Natural Capital Solutions** in the LNRS work- the broad habitats types, details of the ecosystem services (supply and demand) and the opportunity mapping – are all relevant and should be built on in the relevant analysis of existing status and future opportunities and priorities.

- **Actions to combat Climate change pressures** – including a focus on
  - Trees – for their provision of ecosystem services, a sustainable planting strategy (including local initiatives), appropriate management and monitoring e.g. ancient and veteran trees,/woodland, and "right trees in the right places" guidance;
  - Water resources and management (concerning extreme weather, demand for water, risks of pests and diseases, habitat management, landscape-scale conservation, urban heating, woodland management, impacts of increased visitors, farming, food production, protecting soil resources
  - Sustainable land management (celebrating best practice, supporting farmer-led approaches, increase awareness and understanding)
  - Best practice document (awareness of, and targeted promotion of, existing guidance, including for private sector, public, land managers, and with a focus on development and infrastructure)

Details

The NEP's Forward to 2020 Biodiversity Action Plan
sets out an ambitious aim for a 20% increase in priority habitat compared with 2010, with a focus on achieving this goal within the **Biodiversity Opportunity Areas (BOAs).**

The BOAs are seen as the key and most effective locations for the delivery of priority habitat biodiversity improvements and to help create ecological networks – aiming towards the "more, bigger, better and more joined up" Lawton principles. NB – creation in the NEP's BAP also includes restoration – bringing habitat that no longer meets the standards for priority habitats, back into a system of management to meet those standards.

The BAP also recognises opportunities to create priority habitat in areas outside the BOAs, and at all scales. For example, through agri-environment schemes, biodiversity offsets and through legislation to drive improvement projects – e.g. Water Framework Directives; through opportunities on roadside verges, public open spaces and through improving habitat quality of sustainable drainage schemes; and with small-scale actions, including the placement of swift boxes, green roofs and walls.

The specific targets for each **UK BAP priority habitat** are set out on page 19 of the plan. Appendix 1 of the BAP sets out the **priority, protected and other "notable" species** across the NEP area of Buckinghamshire and Milton Keynes. These are the "parts of nature" that the NEP would like to see recovered and improved.

As stated in Forward to 2020, to be most effective, **effort should be focused on, but not exclusive to, Biodiversity Opportunity Areas (BOAs) and priority water catchments.**

Outcomes relevant to Buckinghamshire identified by the NEP's current draft "Forward to 2030 BAP" (not yet NEP-Board approved; in progress)

This sets the following strategic aims, objectives and principles. Based on the findings and principles derived from the Lawton Review, the work sets an overarching aim to **create more, better, bigger and more connected landscapes**.

Strategic Aim

The Buckinghamshire and Milton Keynes Biodiversity Action Plan, in line with the Government's 25 Year Environment Plan, aims to reverse biodiversity decline and contribute to nature's recovery
by working together to create **better, more, bigger and more joined-up habitats** across Buckinghamshire by 2030.

To achieve this aim, the NEP's partners plan to work towards a series of objectives and follow a set of principles:

Objectives: Strategic outcomes

Better

1 **Enhance existing habitats and improve habitat condition -** to achieve more hectares in positive management for wildlife and increase the use of nature-based solutions for climate change adaption. This includes a focus on public spaces, the urban environment, farming and land-management.

More

2 **Retain, enhance, expand and create priority habitats** – with **a focus on Biodiversity Opportunity Areas (BOAs)** and strategically-identified areas as providing the greatest opportunities, alongside other areas. Specific Priority Habitat targets are set out at in Section [6] below as a proxy for species.

3 **Increase the area of wildlife-important habitats within Buckinghamshire and Milton Keynes, and the land area under positive management to benefit wildlife, people and to mitigate and adapt to climate change** (for example, by reducing atmospheric greenhouse gas concentrations - such as creating and managing wildflower-rich meadows, native woodland and managing new grassland).

Bigger

4 **Increase the area of core and high quality biodiversity sites** (e.g. alongside Priority Habitats, Local Wildlife Sites, Sites of Special Scientific Interest and nature reserves) **and buffer such sites following best-practice guidelines**, and, by improving the surrounding land to improve biodiversity resilience, enhance the visual characteristics of the landscape.

More joined-up

5 **Connect quality habitats across the landscape** to enable species movement across larger areas **to improve resilience to external pressures – with a focus on connectivity within and between BOAs as well as into the wider landscape.**

6 **Improve people's connectedness with nature – so that the community values and understands the role of nature in mental and physical wellbeing.**

Principles

In delivering actions to achieve the strategic aim and objectives, we will follow these Principles:

1 **Seek to deliver multiple benefits where appropriate,** alongside biodiversity, for example to help absorb carbon, purify our water and reduce run-off and help to mitigate climate change, and/or provide health & wellbeing benefits with access to nature. However, where biodiversity and delivering multiple benefits conflict, the priority will be to retain and enhance biodiversity.

2 **Contribute an expert-led, technical view of biodiversity priorities, and a format and structure for delivering the actions required to achieve them, applicable to the development of Local Nature Recovery Strategies in Buckinghamshire and Milton Keynes**

3 **Raise awareness and understanding of the value and role of nature in mental and physical wellbeing and engage more people with nature and in improving biodiversity**. This may include, for example:

i. Working with farmers, landowners and local authorities to encourage educational initiatives (such as open farms, improved access and interpretation) that promote engagement with the local environment and develop cultural identity and awareness
ii. Through delivering the actions in the BAP, where appropriate, support and encourage recreation, access to and engagement with nature
iii. Including extensions to public right-of-way networks and cycle routes where this provides opportunities for strategic habitat links between assets, and creating short amenity routes or improved access to wilder green spaces.

4 **Ensure appropriate and well-managed habitat creation: right species, right habitat, right place.** For example - when planning to create new habitats (notably trees but with application to all habitats), consideration should be given to:

i. Historic and existing land uses and soil profile – is new planting the right proposal?;
ii. Where it is in relation to other habitats and landscape features - expert advice should be sought, to ensure the right habitats and planting, in the right places;
iii. Habitats / planting must be:

- strategically-planned
- support broader goals to buffer, link and create habitat mosaics
- sympathetic to the environment (e.g. for trees - the preference is for native trees and shrubs)
- appropriately planted, following best practice
- supported locally
- with funded, ongoing management planned into the long-term to succeed, according to expert advice

Area-wide priorities for nature's recovery and those relevant at the National Character Area Scale

The draft Forward to 2030 Biodiversity Action Plan recognises the need to work at all scales, and that all types and scales of areas are important to nature's recovery – whether rural, urban, large or small scale, and everything in-between.

The Action Plan section of the draft NEP's BAP 2030 sets out further priorities relevant here, with priorities **at the area-wide scale**. **At the more local scale**, the NEP's contributors to its draft BAP 2030 have identified the priorities by National Character Area relevant to Bucks.

Table 1, below, draws on those draft priorities and broader NEP-related work to set out priorities for nature's recovery at the Buckinghamshire-wide area. Table 2 sets out the priorities for nature's recovery, and possible actions needed to achieve them, at the NCA-scale. The section then also sets out the NEP's vision for Bucks drawn from its GI Vision and Principles document.

Area-wide priorities for nature's recovery:

Table 1: Strategic Outcomes and Measures: Objectives, opportunities and area-based actions ("measures") needed to achieve them: Buckinghamshire-wide

Strategic Opportunity / Objective	**Measures / Actions – could include:**
Strategic aim: Create more, bigger, better and more joined habitats to improve resilience; reduce biodiversity loss	
1. **Increase Priority Habitats by 20% across Bucks and MK by 2020** Targets to retain, enhance and improve – see Appendix 3 for the latest draft targets to 2030 (*NB these are for Bucks AND MK however)*	**Work in Partnership to achieve the priority habitat targets** – improvement, creation and linkage of priority habitats across Bucks, **with a geographical focus in the BOAs and priority water catchments**, in line with the NEP's "Forward to 2020" Biodiversity Action Plan. BOAs represent a targeted landscape-scale approach to conserving biodiversity and the basis for an ecological network.
2. **Protect, retain, create, improve, expand and manage other habitats.** Alongside the Priority Habitats, **we also want to see the creation, retention, enhancement , expansion and management of other habitats** across Buckinghamshire, and improved recognition of their value, such as: • **Wildflower-rich meadows** and wildflower verges • **Native semi-natural woodland**	Work in partnership with the NEP to deliver these objectives, to encourage and, where possible, incentivise land owners and land managers. This will also require, e.g. - Identify appropriate areas of land - Funding via e.g. net gain, ELM, other - Management and monitoring plans to improve condition, create, connect habitats

Strategic Opportunity / Objective	Measures / Actions – could include:
• **Species –rich grassland**s – including wet grassland • **Scrub and edge habitats** and scrubby grassland - e.g. road verges – for nesting birds and invertebrates; and e.g. hedgerows - to improve condition, management, linkage and plan and manage new hedgerows – to improve habitats for pollinators and link habitats for species movement	
3. Increase the area of core and high-quality biodiversity sites. E.g. • **Local Wildlife Sites** • **Sites of Special Scientific Interest** • **Nature Reserves**	**Increased investment in identifying and managing**, using **best practice guidelines**:
4. Create and manage buffers around core and high quality habitat and biodiversity sites	**Create buffers** between existing and new priority habitat sites and the core and high-quality habitats and biodiversity sites Buffers should be sought and **managed following best-practice guidelines.** **Improve surrounding land** to improve biodiversity resilience, and to enhance the visual characteristics of the landscape.
5. Link habitats - within and across landscapes Link habitats across the landscape to improve habitat and species resilience to climate change and other pressures. Actions are needed across Buckinghamshire to both reduce the risk of biodiversity loss and to provide opportunities for biodiversity to migrate and adapt to changing circumstances.	**Improve habitat connectivity within and between the Biodiversity Opportunity Areas.** This may be continuous linkages or "stepping stones" of habitats to allow species movement. Improved connectivity can provide important re-connected habitats for a range of specialist species and they can also provide natural buffers to flood events which erode soils, lower water quality, flood our homes and damage our economy. **Protect, enhance and connect** landscapes and habitats **Improve habitat connectivity into the wider landscape whenever creating new habitat**; and seek to enhance existing areas and expand into neighbouring habitats – especially where this increases the potential for connectivity. Manage and enhance our landscapes with **mosaics of**

Strategic Opportunity / Objective	Measures / Actions – could include:
	good quality, diverse habitats, suitable to support a range of species; **Support catchment-based principles** and consider management plans for improving water quality and flows – e.g. improving low flows or ensuring high / increased flows where appropriate; **Promote cooperative management across wider areas** to support larger and better integrated resources for wildlife and a sense of connectivity - in terms of resources for biodiversity, support for landowners and managers, and visual aesthetics; **Work towards achieving the NEP's GI Vision and principles for the Improvement of Green Infrastructure** across Buckinghamshire and Milton Keynes[1] (which includes "blue" infrastructure) – striving to provide, connect, improve and protect Green infrastructure assets for their many benefits into the long-term. **Link across borders** - any actions involving habitats and species near the administrative borders of Buckinghamshire and MK must consider what happens across the border too. Buckinghamshire is not an island – so action planning must include working with those responsible for habitats beyond our own, so we can work at a landscape-scale, striving to link habitats and create a more cohesive ecological network.
6. Double Nature: **Double the area of land in positive management for wildlife in the Growth Arc** (From the LNPs' collective ambition for the Growth Arc- available here: https://bucksmknep.co.uk/projects/doubling-nature/)	**10% wilder** - Public Open spaces to be at least 10% more wild by 2030 **Increase uptake of land management schemes** - more hectares in positive management for wildlife; and undertaking land management solutions to adapt to climate change. **Aim for best practice for wildlife on farmland to improve biodiversity**. Recognise and promote good practice e.g. soil management (contour-ploughing, no tillage, following NFU guidelines, showcase case-studies). **Encourage landowner / farmer and land manager**

[1] NEP, Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes (2016), available here: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/. Also - the NEP's accompanying Green Infrastructure Opportunities mapping work. Available here: https://bucksmknep.co.uk/projects/gi-opportunities-mapping/

Strategic Opportunity / Objective	Measures / Actions – could include:
	collaborations, improve support and inspiration for them to lead the way in restoring / enhancing wildlife habitats, increase uptake of agri-environment schemes – all to positively manage for wildlife and adapt to climate change, while leading to nature's recovery and enhancing wildlife habitats across the wider landscape. **Engage the public in managing land for wildlife**, such as gardens and community spaces.
7. Use nature-based solutions to reduce resource-use, improve biodiversity and adapt to climate change Nature-based solutions should be used by default, which support wildlife and general adaptation to climate change – e.g. integrating biodiversity and green infrastructure features into new development; natural flood management, wetland management for water purification, urban trees for cooling and shade for people. To aid the ability of habitats and species to cope with climate change, actions are needed to both reduce the risk of biodiversity loss as a result of a changing climate, and to provide opportunities for biodiversity to adapt to changing circumstances.	**Encourage sensitive soil management** to limit loss and degradation, chemical particulate runoff and loss of underpinning soil biota **Promote sensitive water usage** in both urban and rural environments **More sympathetic management** – more driven and led by natural processes **Reduce runoff from hard surfaces** (See Appendix 1, below, Opportunities for Natural Flood Management) Ensure more sites achieve the Lawton principles of "**better, bigger and more connected**" – so that species can move and adapt more easily to external pressures including climate change; **Developing further adaptation plans** to tackle the risks climate change brings (see Natural England and RSPB, 2014. Climate Change Adaptation Manual). **For example, areas of cooler/shadier/drier/damper habitat, such as north-facing slopes, could be created** within habitats, to give species places to survive as they learn to adapt. These are sometimes called 'microclimatic refugia'.
8. **Biodiversity to be a key principle in the design of i) the urban environment and ii) new developments** Urban environments have a disproportionately important role in providing benefits for physical health and mental wellbeing. For example: • Public land (e.g. road verges, school grounds, parks, cemeteries) and corporate estates all have the potential	**Follow good practice in design of new developments to incorporate biodiversity and green infrastructure features and take cues from existing wildlife, habitats and landscape.** For example, the NEP's recent work and good practice document related to development[2] advocates the use of existing features to guide the design of new development; and for features to be incorporated at all scales from plot to street to development scales and

[2] Incorporating Biodiversity and Green Infrastructure into Development (NEP) – esp. slides 8-9. Available here: https://bucksmknep.co.uk/projects/best-practice/ Accessed Sep 2020

Strategic Opportunity / Objective	Measures / Actions – could include:
to provide for wildlife if managed sensitively. • Simply changing grass and hedgerow cutting regimes can have significant positive effects for a range of species. On an individual level, even small gardens can support wildlife–rich habitats such as ponds. • Gardens can be significant for pollinating insects. Open Mosaic Habitats can be found mainly in urban and formerly industrial areas and can have high biodiversity value; supporting rare plants, mosses, lichens and a large number of rare invertebrates, especially bees, wasps and beetles. This habitat was identified as a UK BAP Priority Habitat in 2007. Such sites can be threatened by redevelopment (due to their status as brownfield sites), inappropriate 'restoration', inappropriate management or natural succession. Biodiverse areas are often rich in landscape features such as ponds, woods and textural pasturelands. House values are directly affected by the perceived quality of the surrounding green spaces. It is therefore in the interest of developers to factor-in features which will support a wider range of wildlife. **Alongside the forthcoming mandatory 10% net biodiversity gain requirements for new development, all new developments should seek to provide for wildlife in other ways and at all scales wherever possible, and in a sympathetic manner** with existing habitats, linear features, and the water environment. And its long-term management secured – for the lifetime of the development (not just for the short term via a short-term management company following completion). **The challenge in urban ecosystems is how best to harness the cumulative management activities of multiple land managers in a coordinated way**. For example, private gardens have the potential to significantly improve the wider landscape mosaic through a heterogeneity of habitat patches and in turn empower individuals and communities.	beyond: for example - hedgehog holes, swift bricks, bird boxes, bat bricks or boxes, fruit trees, boundary treatments to allow movement of wildlife, street trees, pocket parks, grassland road verges, butterfly boulevards, wildlife-rich green infrastructure networks; and include "non-intervention" green space. **Ensure that spatial planning and design for urban development and infrastructure aim to reduce surface water run-off, protect and restore habitats, improve the quality of rivers and groundwater,** and so protect drinking water supplies. E.g. through the use of **sustainable urban drainage systems** to reduce flood risk; and **water conservation measures** to support water resources and manage demand. **Maintain existing greenspace and plan for good, connected green infrastructure, including tree planting, as a result of development**, e.g. to help link developed areas to natural recreation areas, and help to reduce noise and air pollution, buffer noise, reduce the impact of urban fringe development, benefit climate regulation, reduce soil erosion, improve water quality, enhance perceptions of tranquillity and reduce flooding issues. **Encourage good practice with development incorporating features of biodiversity and well-designed green infrastructure**; also to incorporate sustainable urban drainage systems to reduce flood risk, and water conservation measures to support water resources and manage demand. **Coordination** of local governmental the various stakeholders, including planners, ecologists, wildlife charities and community groups. **Engage the whole community –** to increase knowledge

Strategic Opportunity / Objective	Measures / Actions – could include:
	and participation. **Challenge the norms of landscape maintenance to create more biodiverse spaces**, both in the public and private realm; **Encourage green development and access to nature.** Meet access to Natural Greenspace Targets and integrate biodiversity features within proposed developments. Extend the linear park system into new developments[3]; and **Maintain and enhance ponds and hedgerows;** conserve veteran trees, hedgerows and woods. Ensure a diversity of new trees are planted and the correct species for the location is chosen.

[3] Milton Keynes continues to grow, and the original principles need to grow with it, this is encapsulated in the aspiration to be the greenest city[3]. The linear parks, for example, will continue to extend, blending with the surrounding countryside creating a wider green network providing multiple benefits both to the local and wider environment as well as to our economy.

National Character Area-specific priority outcomes for nature's recovery

The NEP's work, of its partners and experts, to produce an updated Biodiversity Action Plan for 2030, identified specific **outcomes for each broad NCA area** – to sit alongside the strategic outcomes (i.e. the Buckinghamshire-wide actions also apply) – to help achieve the BAP aims and objectives.

These priorities are summarised in Table 2, below.

Table 2: Specific Outcomes and Measures by NCA-area within Buckinghamshire:
Objectives, opportunities and area-based actions ("measures") needed to achieve them

Opportunities / Objectives and priorities	**Measures / Actions – could include:**
Northern Bucks NCAs	
1. **Promote sustainable and water-friendly agricultural practices.** Maintain and manage a sustainable and productive claylands arable landscape, while managing, expanding and linking woodlands, hedgerows and other semi-natural habitats to benefit biodiversity, improve soil and water quality, and ameliorate climate change by promoting good agricultural practice	**Work with local farmers, landowners and managers to promote best practice** - including reducing herbicide and pesticide use to minimise runoff containing chemicals, buffering field margins, woodland edges and water courses, linking areas of semi-natural habitat, reducing soil compaction, managing vegetation to bind the soil, using local water sources sustainably and improve water quality for aquatic biodiversity, and managing soils to keep them on the field and to sequester CO2, preparing, implementing plans to control new pests and diseases, retaining winder stubble to support farmland birds and pollinators and promoting woodland management. **Work to reduce surface and groundwater pollution** under the principles established by **Catchment Sensitive Farming**[4].
2. **Protect aquifers and enhance the quality, state and structure of the River Great Ouse**, its valley and tributaries, habitats, waterbodies and flood plain by seeking to enhance their ecological and recreational importance while taking into account their contribution to sense of place and regulating water flow, quality and availability.	**Encourage sustainable land management in farming areas and along water courses** Use of **sustainable urban drainage systems** such as permeable surfacing within urban areas to help reduce run-off. **Reinstate flood meadow pasture** to allow for seasonal high water levels and summer grazing, and to support its associated species and assemblages; **Enhance and expand suitable conditions for wetland species** including natterjack toad, sedges, lower plants including liverworts,

[4] Catchment Sensitive Farming is a partnership between Defra, the Environment Agency and Natural England. It works with farmers and a range of other partners to improve water and air quality in high priority areas. CSF offers farmers free training, advice and support for grant applications. Further info available here: https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution

Opportunities / Objectives and priorities	Measures / Actions – could include:
	and fungi; **Enhance river corridors by planting wet woodland**, including native willow, poplar and alder; **Prevent the introduction and spread of non-native invasive species** (plants and animals) that have an adverse impact on river life biodiversity and ecological status.
3. **Manage, enhance, extend, link and encourage native woodland**	**Conserve and manage existing woodlands** **Replace introduced species with native species**, such as indigenous broadleaves **New tree and woodland planting** to link existing sites and ancient and veteran trees, to enhance biodiversity.
4. **Encourage the appropriate management and expansion of traditional orchards**	**Bring traditional orchards back into active management** - to conserve their genetic diversity, biodiversity value and cultural heritage; **Promote and encourage local markets** for locally grown orchard produce
5. **Management, extension and linkage of semi-natural habitats and green infrastructure.**	**Plan and create high-quality green infrastructure to help accommodate growth and expansion**, linking and enhancing existing semi-natural habitats and helping to improve biodiversity – with positive impacts on soil and water quality, climate regulation and recreation. This could include **targeted environmental enhancements**, including ponds, hedgerows, hedgerow trees including conserving and planning for the replacement of ancient and veteran trees, and species-rich grasslands (such as areas found along road verges, green lanes and field margins) as well as conserving, strengthening, restoring **and creating links between native woodlands, hedgerows, orchards and historic parkland** to support biodiversity.
6. **Regenerate towns and major urban areas and build biodiversity into planning -** to improve and create new opportunities for biodiversity, recreation, timber and biomass provision while strengthening sense of place, tranquillity, resilience to climate change, and people's health and wellbeing.	**Create new woodland on urban fringes** **Manage sites experiencing visitor pressure** **Conserve and manage traditional orchards, hedgerows, parkland, ancient and veteran trees** from inappropriate development and land use **Design green infrastructure early and strategically** in line with the NEP's Vision and Principles for the Improvement of Green

Opportunities / Objectives and priorities	Measures / Actions – could include:
	Infrastructure in Buckinghamshire & Milton Keynes.[5]
Aylesbury Vale Area NCAs	
1. **Restore and create wetland habitats.** As hydrological conditions sustainably allow, providing for a range of wildlife and contributing positively to the wider mosaic of habitats in the landscape including wet grassland, ponds and fens.	**Conserve wetland habitat in the flood plains** which support breeding birds including waders.
2. **Maintain and enhance hedgerows and field/hedgerow trees.**	**Conserve veteran trees** in fields, hedgerows and woods. **Ensure there are successor trees** and retain deadwood where possible. **Maintain characteristic native black poplars** in the Aylesbury Vale **Increase hedgerow planting** within the landscape.
3. **Encourage green development and access to nature.**	**Developments required to meet Access to Natural Greenspace Targets (ANGSt) and integrate biodiversity features** within proposed developments. **Opportunity for creation of new traditional orchards** using varieties of local provenance.
Midvale Ridge	
4. **Protect and manage complex of calcareous (chalk) habitats.**	**Promote awareness** of and provide advice to landowners on managing these calcareous habitats of biodiversity interest. **Increase the connectivity of fragmented calcareous grassland** and flushes, and where possible seek to link and extend them to strengthen their resilience.
1. **Encourage and restore diverse arable habitats.**	**Encourage management of arable land for farmland bird communities** by less intensive management and active restoration where necessary. **Promote awareness among landowners** of the location of particularly important uncommon arable weed communities and their management requirements.

[5] NEP (2016), Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire & Milton Keynes. Available here: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/ . See also the accompanying map and explanatory document – available here: https://bucksmknep.co.uk/projects/gi-opportunities-mapping/

Opportunities / Objectives and priorities	Measures / Actions – could include:
2. Restore and connect ancient and semi-natural woodlands.	**Restore** coppice management and conifer Plantations on Ancient Woodland Sites (PAWS) back **to native broad-leaved woodlands** where appropriate. **Develop a co-ordinated approach to deer management** with landowners. **Encourage the restoration of hedgerows** where these will link patches of woodland. **Encourage management and landscape planting for Bechstein's Bat and black hairstreak butterflies.**
Chilterns Area NCA	
1. **Improve the condition of existing Chilterns wildlife habitats**, including chalk grassland, ancient woodland, beech woodland, chalk streams and riparian habitats, arable field margins, hedgerows and traditional orchards.	**Manage woodlands to create habitat mosaics and increase diversity of specie**s mix and age. Restore plantations on ancient woodland sites through a mix of natural regeneration and appropriate planting **Encourage livestock grazing of chalk grassland and the creation of habitat mosaics** including small areas of scrub and longer grassland as well as short turf **End environmentally unsustainable abstraction from Chilterns chalk streams** **Promote opportunities to restore natural processes** - for example introduction of natural flood management, extensive grazing or reintroduction of key species such as pine marten to help the Chilterns achieve better ecological balance.
2. **Create large, more joined up habitat networks**, reconnecting surviving pockets of habitat and working at landscape scale.	**Promote and support landowner and farmer-led initiatives** that prioritise nature and deliver wildlife conservation, aquifer recharge, soil health and carbon storage at a landscape/ catchment scale **Restore and manage native hedgerows and hedgerow trees to enhance connectivity.** (Many of the above actions for 1 above apply here too).
Thames Valley	
1. Protect and sustainably manage the area's historic parklands, wood pastures, ancient woodland, commons, orchards and distinctive ancient pollards, and restore and	**Form ecological corridors along restored rivers** to link sites that benefit wildlife.

Opportunities / Objectives and priorities	Measures / Actions – could include:
increase hedgerows, woodland for carbon sequestration, noise and pollution reduction, woodfuel and protection from soil erosion, **while also enhancing biodiversity, sense of place and history.**	**Restore other areas for biodiversity – e.g. Colne Valley Gravel Pits and Reservoirs** **Woodlands and scrub** – maintenance and restoration **Encouraging sensitivity in development, particularly along the river**, to avoid causing any detriment to the character of the historic features and landscape.
2. Enhance the area's rivers – restoring their natural geomorphology to bring benefits to biodiversity	**Re-establish and reconnect reivers to their flood plains and wetland habitats**, or provide compensatory flood plains to aid the regulation of water flow, improving water quality and benefitting biodiversity. And – **improve the maintenance of rivers and watercourses** feeding into the Thames.
3. Ensuring that **access to the ancient woodland, veteran trees and other environmentally sensitive sites** provides equality of opportunity and a connection with nature and history, without causing damage or degradation to these unique assets.	**Encouraging the dispersal of visitor pressures** through investment in high-quality infrastructure designed to meet the different needs and levels of use of all visitors, including local communities, recreational day-trippers and tourists.

Outcomes for Buckinghamshire identified through the NEP's GI Vision and Principles work from 2016

In addition to the Buckinghamshire-wide and NCA-specific outcomes that the NEP's draft Forward to 2030 Biodiversity Action Plan suggests, **the NEP's GI Vision and Principles**[6] set out back in 2016 the following vision. We would like to see the following outcomes, set out in the vision, endorsed and supported by the Buckinghamshire LNRS:

- A landscape-scale network of green and blue infrastructure - of multi-functional, natural, semi-natural and man-made green spaces and links streams, canals and other waterbodies - to provide an environmental support system for communities and wildlife. The network should be a planned and integrated web of green and blue spaces, designed to deliver strategic functions and local needs into the future.

- A well-designed, accessible, used and valued connected network – that is high-quality, biodiverse and accessible and that will further connect urban areas with surrounding countryside, rights of way and access routes, widely valued by all of visit, live and work in the area.

- Residents, particularly in urban areas, to have better access to well-designed green spaces to make the natural environment relevant to them - from local to large-scale green spaces.

- Habitats connected at the landscape scale – connecting a diverse range of wildlife habitats to provide important corridors for species dispersal and migration to improve resilience to external pressures. Existing green and blue infrastructure should become part of the integrated and planned green network, and include the Chilterns AONB, Biodiversity Opportunity Areas and other important sites for wildlife.

- Landscape-habitat connectivity should include across administrative borders;

- Wildlife-rich network of green spaces – demonstrating high standards of protection, enhancement, creation and long-term management of species-rich features – within public open spaces, local green spaces and BOAs; as well as being integrated throughout new developments and in the open countryside. While some wildlife habitats are particularly sensitive to human disturbance and may not be suited to access, sites, routes and links taken together should seek to create a multi-functions and connected network.

- Long-term investment, recognition (e.g. in local decision-making including planning), management and monitoring – to create, improve and maintain the network in a sustainable manner.

[6] The NEP's full GI Vision and Principles document "*Vision and principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes*" (2016) includes a focus on blue infrastructure. Available at: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/

The NEP's Green Infrastructure Opportunities zones – achieving the NEP's Vision for Green and Blue Infrastructure through nature's recovery

In 2018, the NEP produced a map of GI opportunity zones for Buckinghamshire and Milton Keynes, to accompany its earlier Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes[7]. The mapping was based on expert-led exploration of the following:

- Mapped networks of water assets, biodiversity assets and access – "heat maps" of several layers of data (with double-counting removed) to show where the greatest concentrations are and where the gaps are (see below – "baseline mapping considerations);

- Understanding of other considerations – including existing settlement and potential areas of development, such as known or likely area of housing and infrastructure development, existing major roads and motorways, Biodiversity Opportunity Areas, the Chilterns AONB;

- Data on flood risk and impacts, index of multiple deprivation and water quality data;

- Known characteristics or GI across Bucks and MK, including issues, needs and threats, so that broad "zones" could be identified;

- Expert views on specific GI opportunities posed for each zone; and
- Cross-boundary GI strategies and known links.

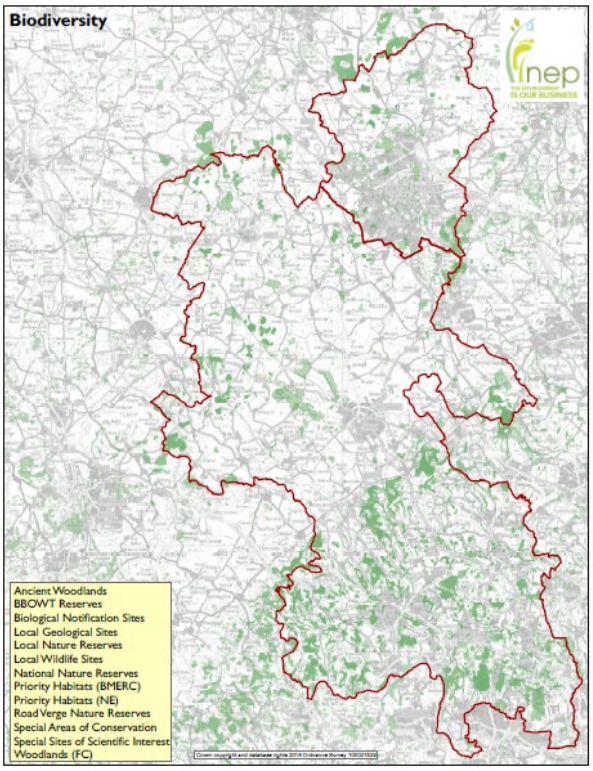
The resulting Bucks & MK GI opportunity zone maps were guided by the expertise of the NEPs Green Infrastructure and Health Group. The map shows that GI opportunities exist across the whole area, although there are several landscape-scale "opportunity zones" which have specific, large-scale, broad areas of demand for GI< and/or provide specific large-scale opportunities for GI in the future, to provide benefits to landscape, wildlife, water and people.

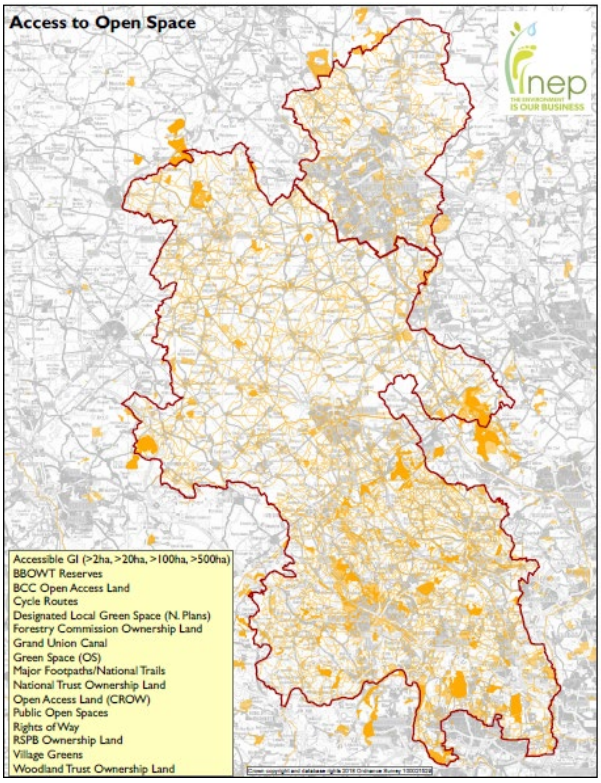
The map is intended as a high-level, discussion starting point and should be read alongside its supporting document (found here) and the NEP's Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes.

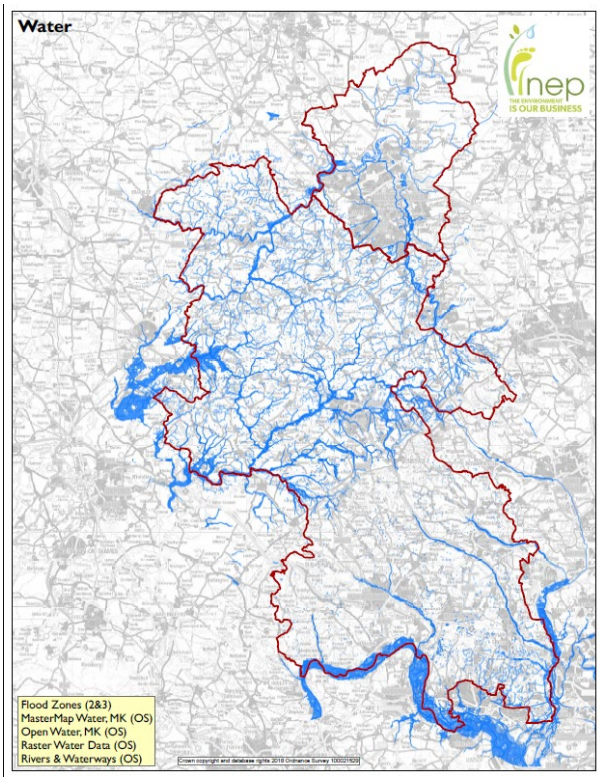
Together, this suite of documents provides an area-based, high-level strategic approach to protecting and enhancing GI. To maximising opportunities from it through early and strategic planning for GI assets and their benefits, and to reducing the risk of ad-hoc and unplanned negative consequences to the environment as a result of rapid growth and development.

[7] Available here: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/

Baseline mapping considerations for the NEP's GI Opportunity Zones





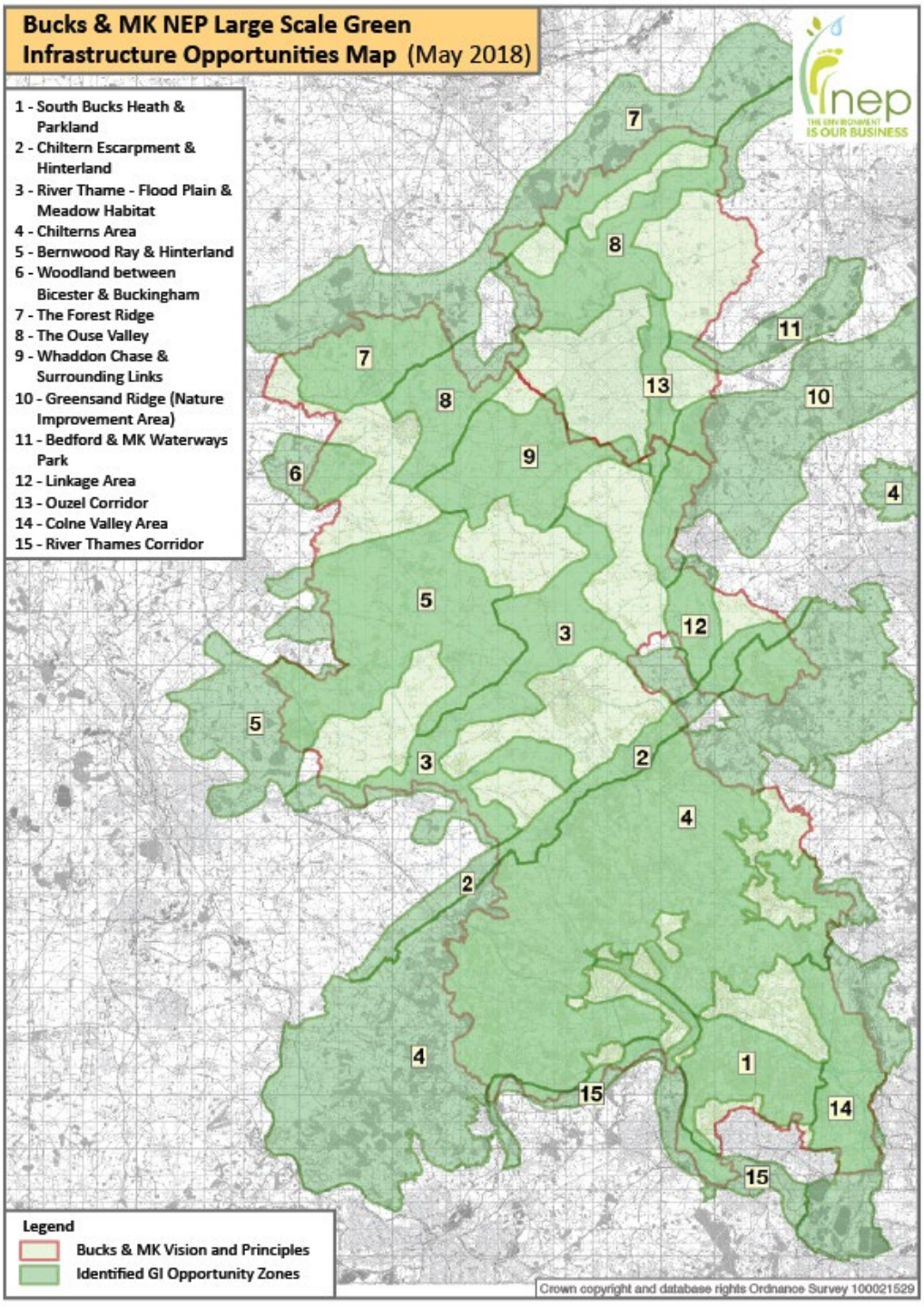


The NEP's Green Infrastructure Opportunity Zones

- showing the landscape-scale areas of opportunity for zones of green and blue infrastructure – and a visual interpretation of the NEP's GI Vision

The NEP's GI opportunity zones, available in map form, set out the specific objectives for GI – many of which involved habitat creation and connectivity – relevant to each zone. The biodiversity-related opportunities identified in each zone will be relevant to the pilot LNRS.

See the NEP's interactive mapping work (map and accompanying document) for further details for the opportunities identified as relevant each zone here: https://bucksmknep.co.uk/projects/gi-opportunities-mapping/ and https://bucksmknep.co.uk/download/1244/



Opportunities for habitat creation – woodland; semi-natural grassland; and new wet grasslands and wetlands. These areas of nature should be prioritised, recovered and improved over the next 25 years.

In Autumn 2020, Buckinghamshire Council's natural capital mapping work was completed by Natural Capital Solutions[8]. This was based on the latest available information and extensive analysis.

The purpose was to:

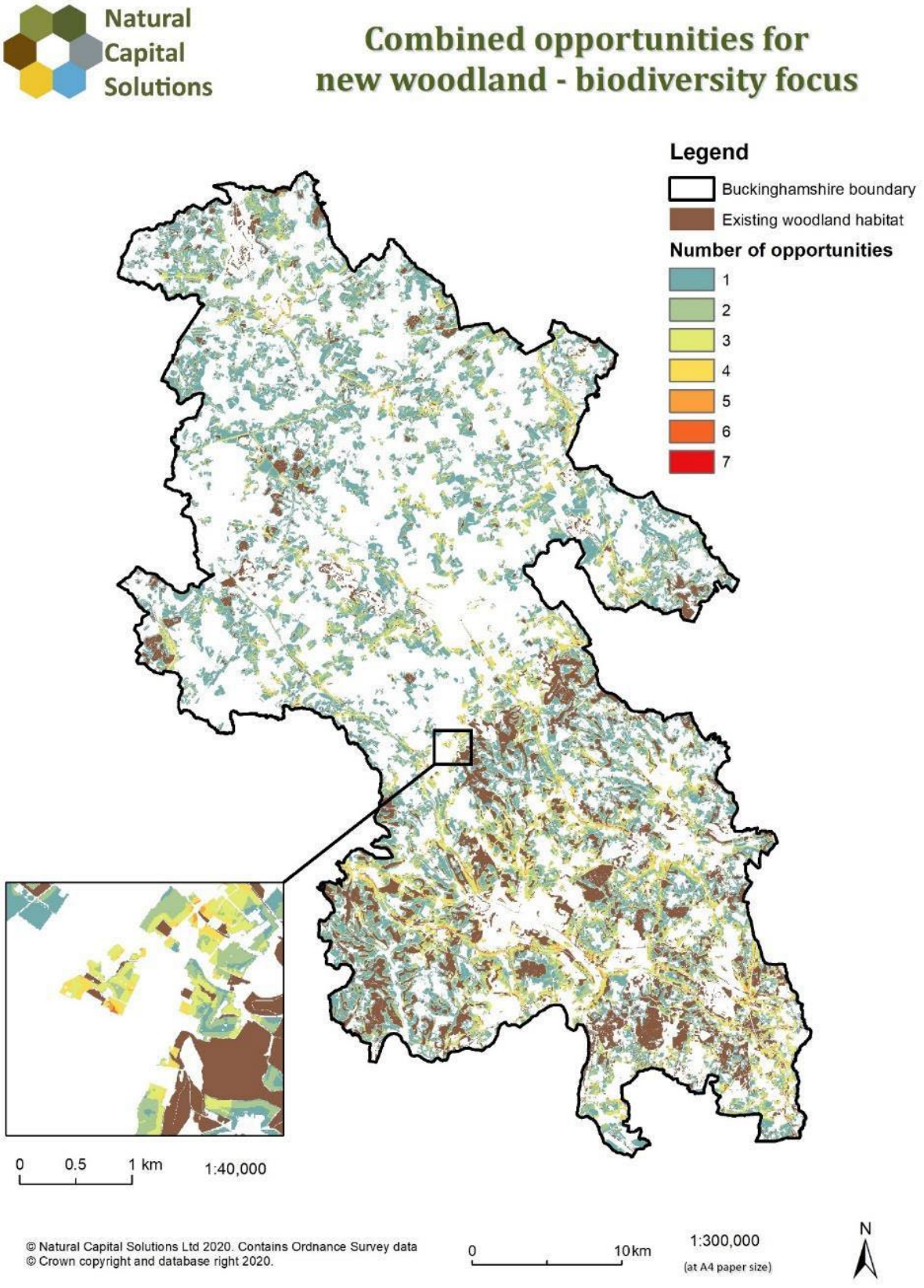
1. Identify the natural assets (baseline habitats) across Buckinghamshire and Milton Keynes;
2. Model the ecosystem services that are provided by those habitats; and
3. Create maps to show the best opportunities for creating new habitats – woodland, grassland and wetlands – in order to i) maximise biodiversity gains, ii) priorities habitat connectivity, and iii) provide a range of other ecosystem services / multiple benefits.

The resulting analysis produced opportunity maps for woodland, wetland and grassland – which show where benefits for wildlife / biodiversity are prioritised, where opportunities are restricted to areas ecologically connected to existing areas of habitat, and the number of ecosystem services benefits also provided at those locations.

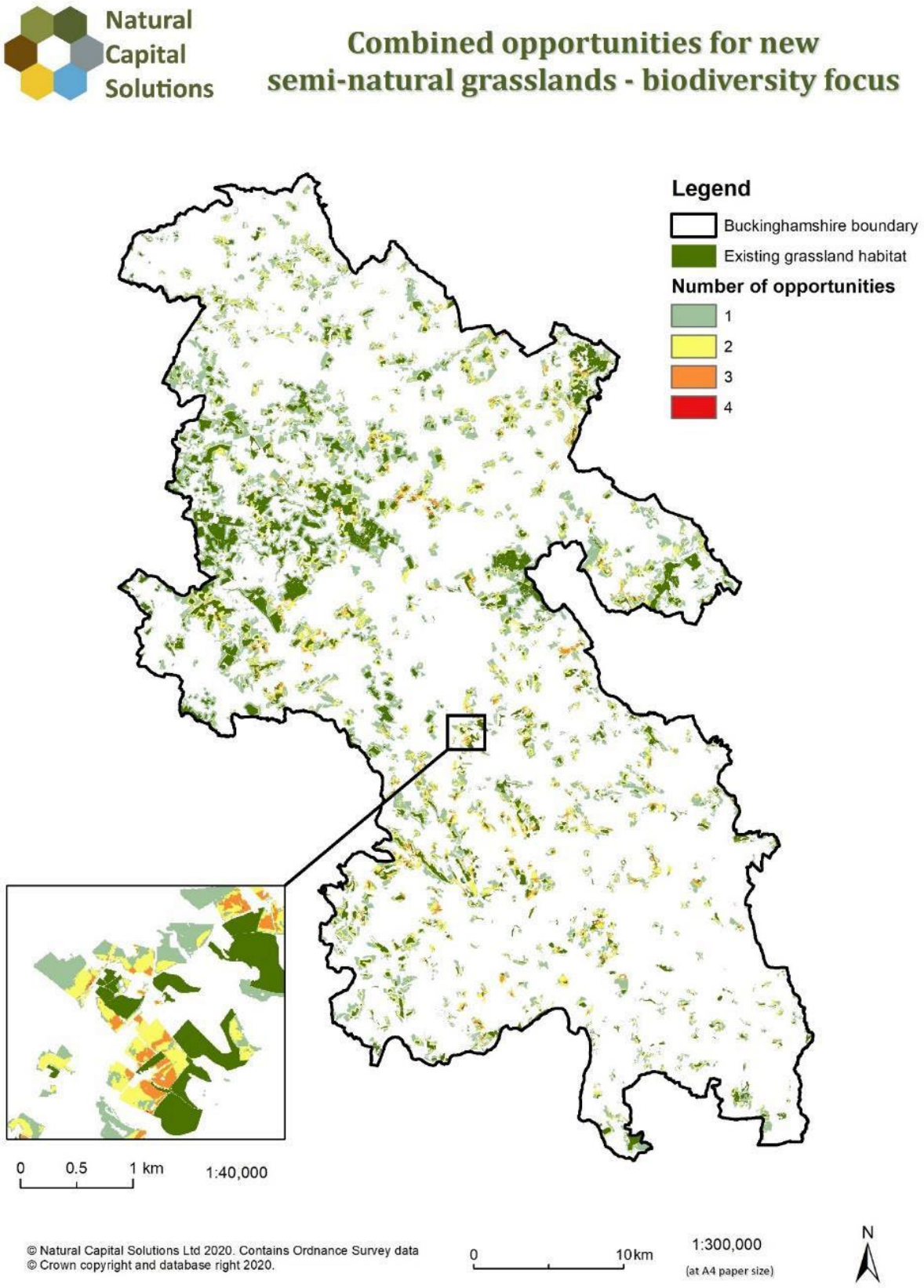
There are shown in the mapping produced by Natural Capital Solutions and *are reproduced in the NEP's online formal response to the LNRS*.

[8] Natural Capital Solutions (2020), Mapping Natural capital, ecosystem services and opportunities for habitat creation in Buckinghamshire. Available at: https://bucksmknep.co.uk/projects/natural-capital-mapping/

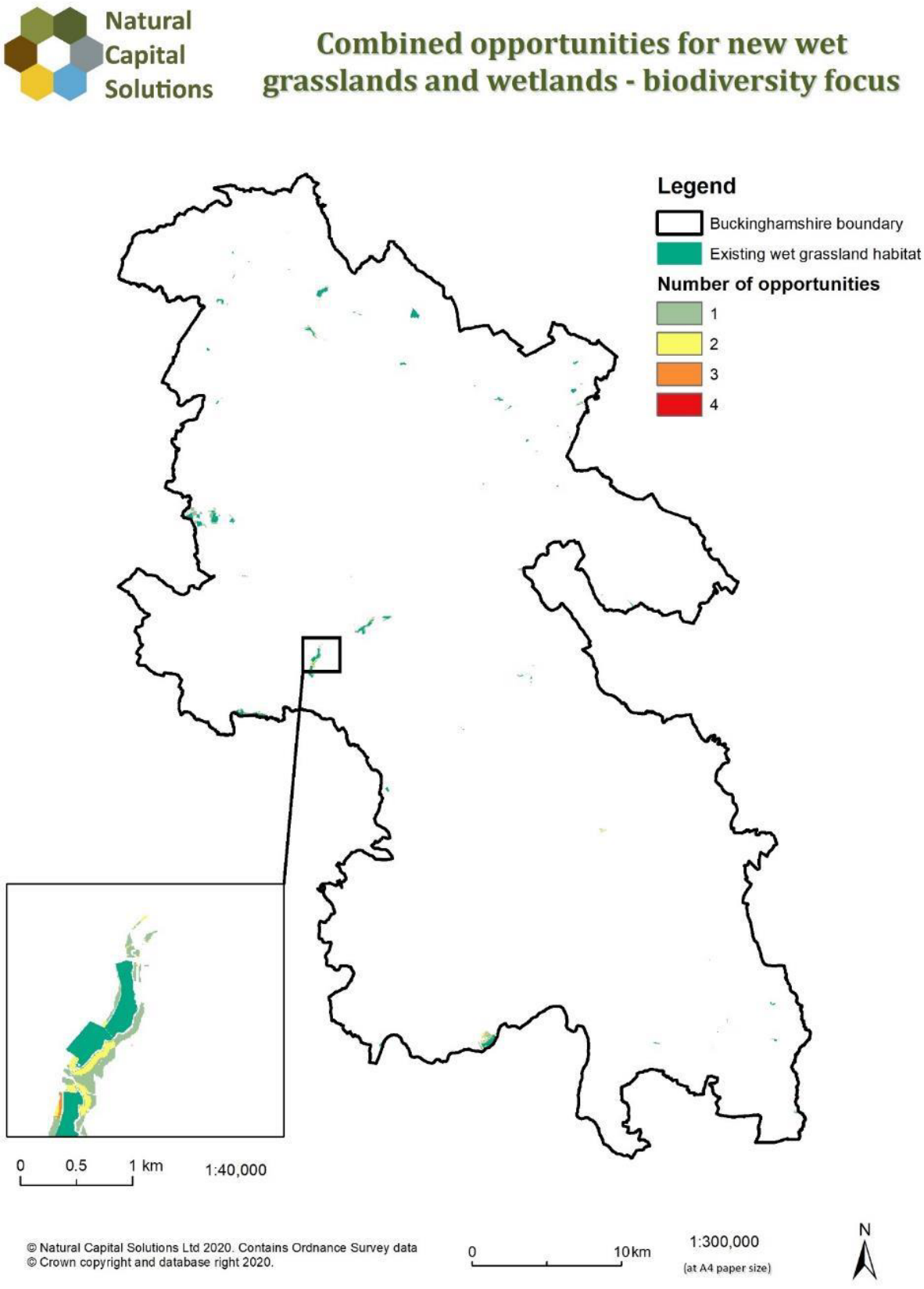
WOODLAND: Combined opportunities for new woodland across Buckinghamshire, restricted to areas that are ecologically connected to existing woodlands.



GRASSLANDS: Combined opportunities for new semi-natural grasslands across Buckinghamshire, restricted to areas that are ecologically connected to existing grasslands.



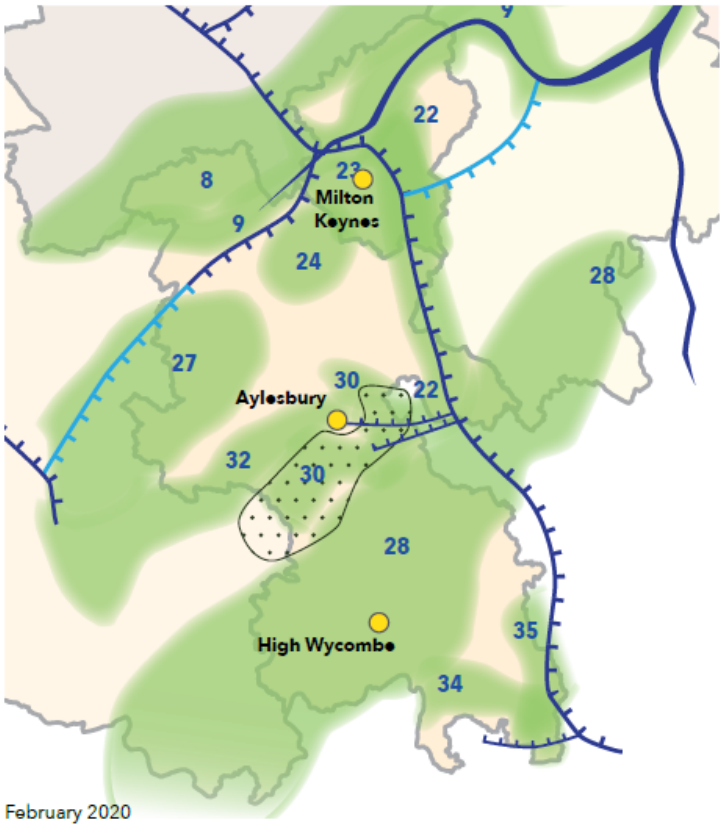
WET GRASSLANDS AND WETLANDS: Combined opportunities for new wet grasslands and wetlands across Buckinghamshire, restricted to areas that are ecologically connected to existing wetlands



The NEP's identified key strategic environmental opportunity areas that were fed into the joint Local Nature Partnerships' Oxford-to-Cambridge Growth Arc environmental opportunity mapping

In February 2020, as part of its input into the Oxford to Cambridge Growth Arc environmental opportunities mapping work alongside other Local Nature Partnerships, the NEP took the GI Opportunity Zones and worked up a higher landscape-scale set of opportunity zones. This fed into work identified across the Arc with an ambition to double nature. The NEP area's input is shown below, which shows links across administrative areas, landscape scale connectivity, a broad range of benefits and habitats and connectivity in mind:

The following map shows the Bucks-only zones in the context of the entire Growth Arc; the following map shows this in the context of the entire Growth Arc.



Landscape Scale Green Infrastructure and Biodiversity Opportunity Areas: Buckinghamshire & Milton Keynes

For more information about each of these zones, please refer to the accompanying document: *Strategic-Scale Environmental Opportunity Mapping: Doubling Nature in the Oxford-Cambridge Arc*

8. Ark Parkland Forest
9. Ouse Valley Corridor
22. Ouzel Valley and Grand Union Canal Corridor
23. Milton Keynes Green Spaces
24. Whaddon Chase Freedom to Roam Parkland
27. Bernwood Forest, Otmoor and River Ray Complex
28. The Chilterns
30. Aylesbury Green Ring and Black Poplar Landscape
32. River Thame and Cycleway Corridor
34. Burnham Beeches and Black Park
35. Colne Valley

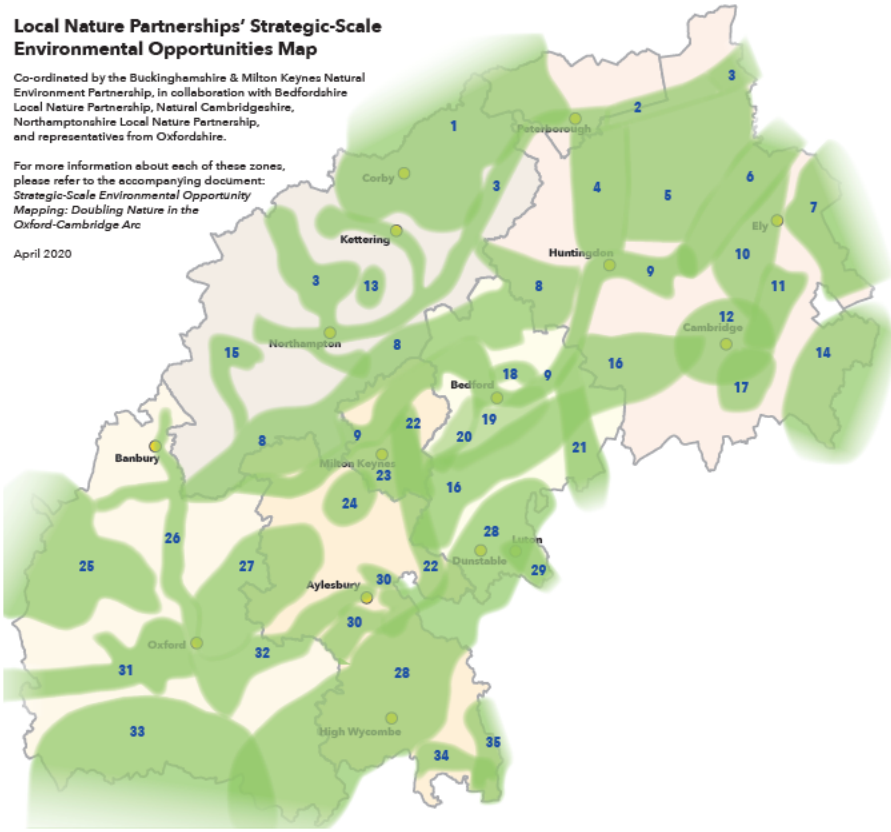
Opportunity area
River Ouse *(approximate path)*
Canal
New canal
Black poplar landscape

Local Nature Partnerships' Strategic-Scale Environmental Opportunities Map

Co-ordinated by the Buckinghamshire & Milton Keynes Natural Environment Partnership, in collaboration with Bedfordshire Local Nature Partnership, Natural Cambridgeshire, Northamptonshire Local Nature Partnership, and representatives from Oxfordshire.

For more information about each of these zones, please refer to the accompanying document: *Strategic-Scale Environmental Opportunity Mapping: Doubling Nature in the Oxford-Cambridge Arc*

April 2020



1. Rockingham Forest into John Clare Country
2. Nene Washes
3. Nene Valley
4. Great Fen
5. Wildlife corridor linking Great Fen and Ouse Washes
6. Ouse Washes
7. East Cambridgeshire and Suffolk Fens
8. Arc Parkland Forest
9. Ouse Valley Corridor
10. Wildlife corridor linking Ouse Washes and Wicken Fen Vision
11. Wicken Fen Vision
12. Cambridge Green Spaces
13. Sywell Wood Area
14. South East Cambridgeshire Ancient Woodland Cluster
15. South of Daventry
16. Greensand Ridge into West Cambridge Hundreds
17. Gog Magog Hills
18. Bedford Green Arcs
19. Forest of Marston Vale
20. Bedford-Milton Keynes Waterway Park
21. Ivel Valley
22. Ouzel Valley and Grand Union Canal Corridor
23. Milton Keynes Green Spaces
24. Whaddon Chase Freedom to Roam Parkland
25. Western Valleys and Cotswolds
26. Cherwell Valley and Oxford Canal
27. Bernwood Forest, Otmoor and River Ray Complex
28. The Chilterns
29. River Lee
30. Aylesbury Woodland Ring featuring Black Poplar Landscape
31. Upper Thames, Wytham and Cothill
32. River Thame and Cycleway Corridor
33. Vale of White Horse and North Wessex Downs
34. Burnham Beeches and Black Park
35. Colne Valley

The NEP's spatial priorities for the location of biodiversity offsets

As part of its work creating a biodiversity net gain system for the area, the NEP has worked with its partners and with the support of Warwickshire County Council to create a map of the priority areas to which biodiversity offsets should be directed. The resulting map is below, which prioritises the following:

1) **Strategic areas - Biodiversity Opportunity Areas (BOAs);**

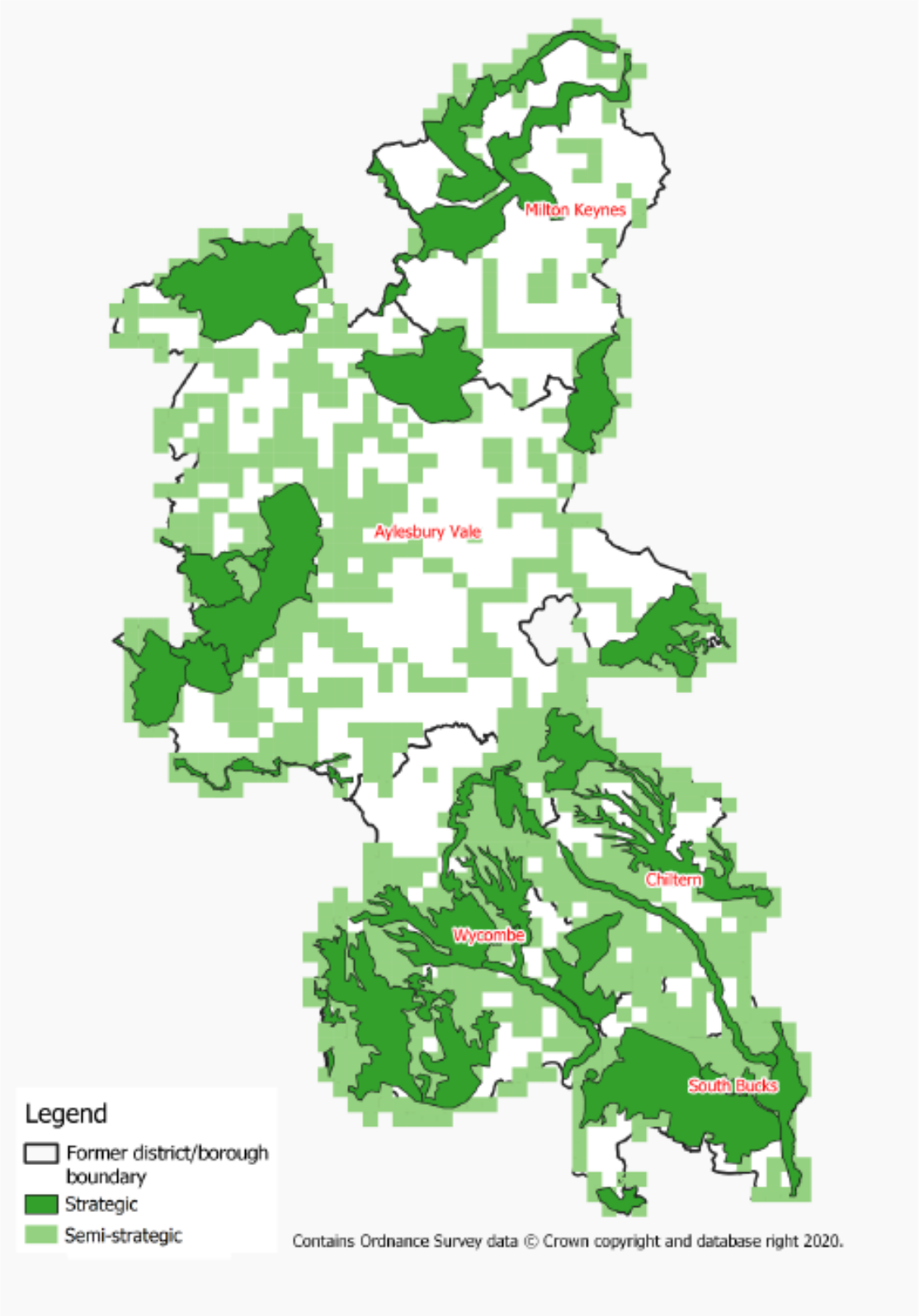
2) **Semi-strategic areas -**based on grassland and woodland coverage, creating **buffers** around the BOAs, **linkages between BOAs** and incorporating other **high-value sites** not already included via coverage (including **SSSIs** not within the strategic areas, **wetland and heathland habitats** from Natural England's Priority Habitat mapping (lowland fens and heaths) and **important freshwater areas** for the Thame catchment (the only catchment data then available), plus additional linkages based on expert input, including for the Ray, Thame and Ouse valleys; and

3) **Non-strategic areas –** are all other areas in the county

In the NEP-designed biodiversity accounting scheme, the NEP's working group favoured incentivisation towards the areas where there is significant coverage of woodland or grassland habitats, but not enough to be considered functional – i.e. targeting where it can make the most difference. BOAs remained the key targeted areas, however, in line the with thinking in the Forward to 2020 BAP, and the buffers around them and linkages between them are to be targeted through offsets where possible and in conjunction with other assessed criteria. The map below shows the broad priority offset locations on this basis.

(NB the NEP-designed scheme suggests this map of priorities is reviewed as a broad guide, along with a list of other criteria, in selecting favoured offset locations).

The NEP's proposed spatial priorities for the targeting of biodiversity offsets (NB only one of a number of assessment criteria taken into account in scheme selection)



Produced for the NEP by Warwickshire County Council, based on NEP expert input.

Climate change – NEP's priority work areas – these aspects of nature also need improving over the next 25 years

The Buckinghamshire landscapes, habitats and wildlife are under pressure from multiple sources (climate change, development, fragmentation of land, declining land management, pollution and waste, etc) and operating at multiple scales. Some solutions can be nature-based (others require process-orientated, decision-making and funding solutions)

In January 2020, the NEP held a workshop with its partners and experts to identify priorities for the NEP in relation to mitigation to and adaptation to climate change. It prioritised the following as needing particular attention within Bucks, including possible avenues of future work for the NEP:

- Trees – for their provision of ecosystem services, a sustainable planting strategy (including local initiatives), appropriate management and monitoring e.g. ancient and veteran trees,/woodland, and "right trees in the right places" guidance;

- Water resources and management (concerning extreme weather, demand for water, risks of pests and diseases, habitat management, landscape-scale conservation, urban heating, woodland management, impacts of increased visitors, farming, food production, protecting soil resources;

- Sustainable land management (celebrating best practice, supporting farmer-led approaches, increase awareness and understanding); and

- Best practice document (awareness of, and targeted promotion of, existing guidance, including for private sector, public, land managers, and with a focus on development and infrastructure)

Other aspects of nature need improving over the next 25 years too: designated, recognised and important biodiversity areas and sites:

Other aspects of nature that should be recovered or improved are sites already designated or recognised as important for biodiversity in some way. These should be **protected, enhanced, extended, better connected, and also maintained and monitored into the long term,** and include:

- BAP Priority Habitats
- Local Wildlife Sites
- Biological Notification Sites
- Sites of Special Scientific Interest
- Special Areas of Conservation
- Roadside Nature Reserves
- National and Local Nature Reserves
- Biodiversity Opportunity Areas

4. To achieve this recovery, what are the actions that need to happen over the next 2-5 years?

For nature: Buckinghamshire-wide priority actions – at all scales (local to area-wide):

Outcome	Actions needed
Reverse biodiversity and habitat loss More, bigger, better, more joined habitats to improve resilience to pressures on the environment and species	All the BAP-related targets: - Priority habitat creation / improvement targets (See Appendix 3) - Create and enhance other habitats (e.g. Wildflower-rich meadows and wildflower verges; Native semi-natural woodland Species –rich grasslands – including wet grassland; Scrub and edge habitats and scrubby grassland - e.g. road verges – for nesting birds and invertebrates; and e.g. hedgerows - to improve condition, management, linkage and plan and manage new hedgerows – to improve habitats for pollinators and link habitats for species movement) - A spatial and habitat approach to nature conservation - focus on high value and priority biodiversity sites, including BOAs, but also designated sites and LWS, and create buffers around them and linkages between them; - Design biodiversity and GI into development - More and wilder local green spaces - More sustainable land management - Focus on BOAs, buffers and linkages within and between them - "Double nature" - Focus on specific species – e.g. taking the current BMERC priority, protected and other notable species list – develop a "tracker" list of species and monitor regularly - as a proxy to identify changes to and status of habitats
Water – reduce flood risk, regulate water supply, improve water quality	- Design natural flood management schemes into development - More sustainable land management - Better riparian management - Behavioural change re demand for water - raise awareness and understanding

Outcome	Actions needed
Contribution to climate change mitigation and adaptation	- Habitat protection, enhancement and creation - Tree planting (right tree, right place) with long-term management – to sequest carbon and provide shade - Link habitats; - Consider future-proofing plant choices - Action at all scales – micro to regional
Link people and the environment	- Better access to greenspace (physical and cultural) on the doorstep - Raise awareness of the importance of the environment to health and wellbeing - Retrospective planting in built areas - Best practice design – biodiversity and GI into development - Community projects – orchards, gardens, etc.
Improve air quality	- Plant trees and manage them into the long-term – esp along main roads and in urban areas - E.g. community orchards, community trees, street trees, green roofs and walls, woodland creation and management
Boost pollinator populations and support food production through more sustainable land management	- Wilder edge habitats – e.g. road verges, field margins, wilder areas in green spaces such as parks and gardens - Awareness-raising of pollinator-friendly gardening - Sustainable land management, including soil, water and for climate change

<u>NCA-specific priorities:</u>

Alongside the generic pressures such as climate change and pests and diseases affecting the whole area, different areas of Buckinghamshire are faced with specific localised pressures, or impacts arising from them. These threaten the character and biodiversity of the areas, and the NEP believes should also be factors into prioritising action for nature over the next 3-5 years.

Appendix 4 in the *NEP's online formal response to the LNRS* sets out the specific threats to nature by National Character Area in Buckinghamshire – which should be addressed as a matter of urgency within those broad areas.

To support and enable the direct on-the-ground, nature-based work, other actions are also needed as a priority. The NEP suggests the following:

- *Scales: action is needed at all scales, from Bucks-wide, to area-specific;*
- *Assessment of likely habitats lost (type, extent) to development and other major pressures – if we know what may be lost we can plan better for what we need to do in the future.*
- *Provision of budget and capacity to galvanise support, support partnership- and collaborative working and deliver the LNRS – including organising delivering the nature-based and broader solutions, but also the longer-term management and monitoring to ensure its success*
- *Prioritising working with closely with landowners and farmers and with connecting people to the environment - to help deliver nature's recovery at the scale and pace needed*
- *Work at the landscape-scale and across borders – nature does not stop at administrative boundaries*
- *Take into account the following in local decision-making – derived from the NEP's GI Principles – for GI, nature can be substituted:*
  - Recognition of green and blue infrastructure as vital infrastructure in planning for sustainable Buckinghamshire growth – on a par with man-made infrastructure and social infrastructure - for the health and wellbeing of Buckinghamshire's economy, environment and society
  - GI, its value and benefits to be planned for early and strategically at all spatial scales of development, and planned to provide a range of ecosystem services – taking into account potential contribution to objectives and targets, good practice actions and activities related to Buckinghamshire' environment, health and economy
  - Management of the GI to be prioritised and set-aside into the long-term – including coordination across administrative borders
  - Connect networks of green infrastructure at the landscape to local scales, to maximise the benefits

5. Do you want to tell us anything else?

Please see the full text of the *NEP's formal response to the LNRS* – which has further details and is available on the NEP's web pages, including relevant maps and summaries of relevant strategies, visions, principles, objectives and courses of action.

Yes – please see the following links to the Bucks & MK NEP's strategies for more information about all of the above, including objectives, priorities, principles and action required:

NEP's Biodiversity Action Plan: "Forward to 2020":
https://bucksmknep.co.uk/projects/forward-to-2020-biodiversity-action/

NB – for more information about Biodiversity Opportunity Areas, see here:
https://bucksmknep.co.uk/biodiversity-opportunity-areas/

NEP's Biodiversity Offsetting – priority areas for offsets mapping work (completed 2020): Available here: https://bucksmknep.co.uk/biodiversityaccounting/

NEP' GI Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire and Milton Keynes: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/

NEP's GI Opportunity Mapping work – both the map and accompanying document available here: https://bucksmknep.co.uk/projects/gi-opportunities-mapping/

NEP's Growth Arc "doubling nature" work – Strategic-scale environmental opportunities mapping in the Growth Arc (2020): Map and accompanying document available here:
https://bucksmknep.co.uk/projects/doubling-nature/

Natural Capital Solutions: Natural Capital Mapping work for Buckinghamshire – available at:
https://bucksmknep.co.uk/projects/natural-capital-mapping/

Appendices:

1 Opportunities for Natural Flood Management
(from the NEP's draft BAP 2030) – need permission from Karen to upload here.

2 Multiple and cumulative pressures on valuable aspects of nature in Buckinghamshire

3 *DRAFT* UK BAP Priority Habitat Targets for the "Forward to 2030" NEP Biodiversity Action Plan.

4 Pressures, threats and specific challenges facing the local areas of Bucks

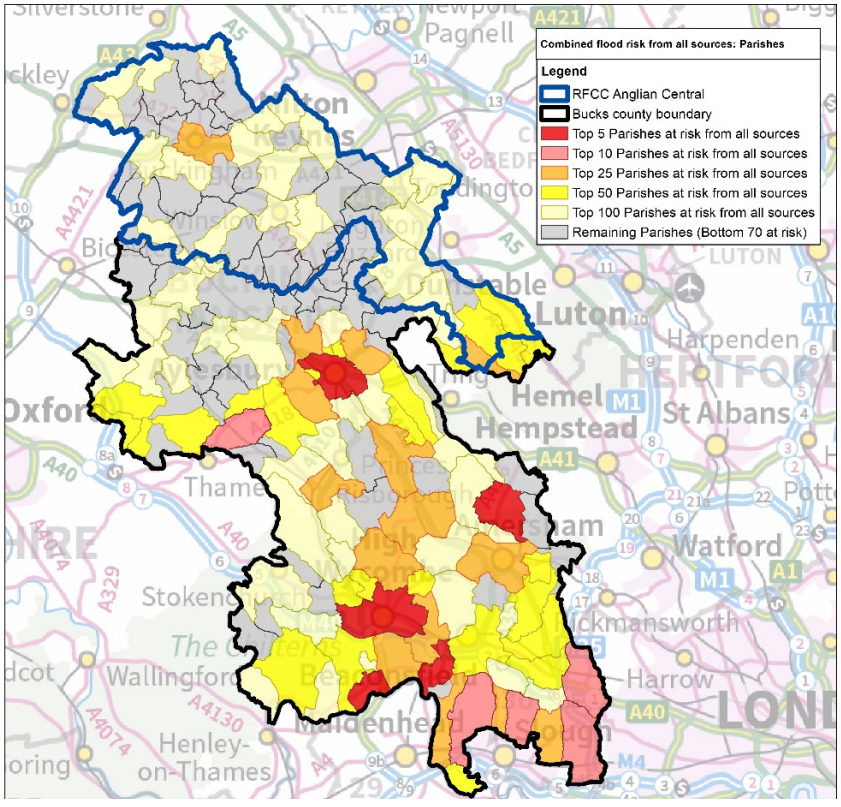
Appendix 1: Opportunities for Natural Flood Management ("NFM") *(from the NEP's draft BAP 2030)*

Areas already being explored or implemented for NFM

- River Leck catchment
- Catchments upstream of the EWR line from Calvert across to Milton Keynes (Great Ouse catchment) and around Waddesdon and Oving (Thame catchment)
- Catchments to the west of Buckingham (Great Ouse catchment)
- Sub-catchment upstream of Buckingham (RTCT NFM Project)

Potential locations for NFM and river restoration

- North of Chesham along Vale Road
- Upstream of Great Missenden – Rignall road and to the west of Great Missenden town centre
- High Wycombe – dry catchments to the north of Sands and to the west of Coates Lane, Hughenden.
- Upstream of Fulmer (Alderbourne catchment)
- Streams and catchments upstream of Haddenham and Long Crendon (Thame catchment)
- Newt Ditch through Spade Oak area between Marlow and Bourne End



Appendix 2: Multiple and cumulative pressures on valuable aspects of nature in Buckinghamshire**.** (amalgamated from NEP's own and supported work and NEP partners)

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
Loss of biodiversity *Objective: to increase biodiversity across Buckinghamshire*	Climate change – which can exacerbate many of the other pressures and become a threat to species unable to adapt quick enough Pests, invasive species, diseases Land use change / intensification Development and infrastructure projects Changes in land management – e.g. change of use, under- or over-grazing, changes in farming practices (e.g. hedgerows and field margins) Historic river channel engineering – leading to change habitat and species composition Pollution – waste, polluted runoff, soil erosion, sound, light, noise, chemicals and particulates	- Priority habitat targets – retain existing, improve, expand and manage; plant new priority habitat - Other habitats – protect, retain, create, improve, expand, manage (e.g. wildflower-rich meadows, wildflower verges, native semi-natural woodland, trees, species-rich grasslands, scrub and edge habitats including hedgerows, grassland and heathland grazing and mowing regimes) - Raise awareness of more sustainable land management - Increase investment in identifying and managing, using best-practice guidelines, Local Wildlife Sites, SSSIs and Nature Reserves. - Create and manage buffers around core and high -quality biodiversity sites to improve resilience – managed to best practice guidelines - Design biodiversity and connected natural greenspaces and buffers better into development – public land, cutting regimes for verges and grass; gardens, street trees, widespread use of SUDs schemes, more, local and connected

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
	Habitat loss / change / fragmentation Changes in policy	green spaces, more permeable surfaces; long-term management. - Farmer clusters to improve nature provision on farms and more sustainable land management practices. Includes encouraging larger-scale, more joined-up and more sensitive land management - Manage and enhance landscapes with mosaics of good quality, diverse habitats, suitable to support a range of species - Catchment-sensitive land management and well-connected riparian habitat management to buffer water courses from intensive land-use and connect habitats at a landscape scale - Soil-sensitive land management - Promote sensitive resource use (e.g. water) and pollution-prevention guidance - Vegetation buffers and urban woodland – e.g. to reduce noise pollution, absorb particulates to improve air quality, provide shade and reduce water surface runoff and improve river water quality.

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
		- Take action to adapt to climate change and its risks – e.g. create areas of cooler, shadier, drier, damper habitat created within habitats; consider different and future-proof planting mixes, etc. - Direct development to areas of lowest biodiversity interest and potential and where it does not compromise the development of a NRN and the objectives of a LNRS - Restoration of river channels and removal of barriers to fish migration; reconnection of rivers with floodplains
Loss of habitat connectivity and increased fragmentation *Objective: to improve habitat connectivity and reduce fragmentation*	Land use change / intensification - Remaining habitats become fragmented / isolated from areas of similar habitat – less able to adapt to external pressures. Development and infrastructure projects - Direct and indirect impacts / loss of habitats - Insufficient buffers around development connecting habitats - Obstacles to species dispersal - Fragmentation and loss of connectivity of habitats –	More bigger, better and more joined habitats – within and across landscapes - Protection for existing green spaces - Create more, wilder local green spaces - Focus on connections within and between Biodiversity Opportunity Areas (BOAs). - Seek habitat linkages when creating new habitats - Design biodiversity and connected natural greenspaces and buffers better into

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire

	reduces species dispersal ability and resilience to change
	- Increased demand for water and increased sewerage needs
	
	Changes in land management, e.g.
	
	- Habitat loss: removal of hedgerows, corners and wooded copses for larger fields
	
	- Subdivision of habitat parcel (e.g. woodland) into smaller plots – creates more isolated ecological communities increasingly isolated from each other and less resilient to e.g. climate change or pollution. E.g. sub-lotting woodland management becomes inconsistent at scale
	
	- Historic river channel engineering and/or development on the floodplain – leads to rivers disconnected from floodplain – drying of some habitats – e.g. wetland and reedbed, lowland wet meadows and change in water regime for others – change in characteristic plants and animals. Such as a
		development - public land, cutting regimes for verges and grass; gardens; long-term management.
		
		- Ensure development is directed to areas of lowest biodiversity interest and potential, and does not compromise the development of a nature recovery network and the objectives of the nature recovery strategy
		
		- Ensure development only takes place where and when there are:
		  - adequate and sustainable water supplies;
		  - where there is adequate facility for treatment of waste water; and
		  - adequate capacity for watercourses to receive effluent without ecological deterioration
		
		- Sustainable and more sympathetic land management – e.g. aim for best practice for wildlife on farmland to improve biodiversity; recognise and promote good practice
		
		- Promote cooperative management across a wider area – e.g. woodland management advice / projects across multiple ownerships
		
		- Farmer clusters to improve nature provision on farms: encourage collaborations, improve support, inspiration for them to lead the way to restore and enhance wildlife habitats and positively manage for wildlife and

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
	decline in wading birds.	adaptation to climate change, leading nature's recovery - Link habitats across administrative borders – action-planning must include working with those responsible for habitats beyond our own - to link habitats and create a more cohesive ecological network. - Increase the area of land in positive management for wildlife – from the local scale (e.g. wilder public open spaces – can these be 10% more wild by 2030?), to increasing uptake of land management schemes.
Local air quality - for plant growth and human health *Objective: to improve local air quality for plant growth and human health*	Climate change Land use change / intensification Development and infrastructure projects Pests and diseases e.g. affecting tree health	Long-term and appropriate management secured for trees and woodlands Plant vegetation buffers – e.g. close to main roads and other pollution sources – e.g. urban woodlands, street trees, etc. Planting for carbon sequestration - e.g. woodland creation Higher levels of planting in urban areas / along major roads – e.g. trees close to source for absorbing pollutants Reassess tree species for adaptation to climate change – so can continue to provide air quality services

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
Local climate – urban heat island effect *Objective: to reduce negative impacts of the urban heat island*	Urban hard surfaces absorb more heat – released into environment Energy released by human activity – e.g. lighting, heating, vehicles, industry Climate change likely to exacerbate	Retain and manage urban trees Planting of natural vegetation in urban areas – moderating effect: cools in summer and warms in winter. Extend woodland into urban areas where possible. Install water features and tree planting close to / within built-up areas.
River channels and hydrology, water quality and water-centred habitats; natural connection between river and the floodplain *Objective: to re-naturalise river channels and water-centred habitats; to reconnect rivers to their floodplains*	Land use change / intensification - Affects connectivity of rivers with flood plain, channel structures, runoff rates, levels of pollution, water usage, non-natural erosion and deposition, loss of habitat. Development and infrastructure projects (e.g. unsustainable abstraction from the chalk aquifer to low flows, poorer quality and shorter river habitats in precious chalk streams, and associated loss of river ecology and habitats). Historic river channel engineering Pollution – diffuse and non-diffuse, including	Restoration of river channels Catchment-sensitive farming / land management practices – e.g. - management plans for improving water quality and flows – e.g. improving low flows or ensuring high / increased flows where appropriate - Awareness-raising of good land management practices and impacts / consequences of poor land management - *Buffer-zones to watercourses* - Soil-sensitive land management Spatial planning and design for urban development and infrastructure to factor in the need to reduce surface water run-off, protect and restore habitats, improve river and ground-water quality – eg. - SUDSs

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
	eutrophication Changes in land management – including riparian management beside river channels Affects, for example, the following: - Channel structure - sediment loads from surrounding land - water quality - Bank stability - Channel habitats - Diversity and structure of habitats - Channel structure Non-native invasive species	- Water conservation measures (to reduce flood risk and management demand) *- Plan for good, connected green infrastructure – e.g. tree planting; take cues from natural habitats and landscape features*
Flooding – risk *Objective – to reduce flooding risk*	Development and infrastructure projects - changes to river channel structure and capacity; hard / impermeable surfaces increasing surface runoff Climate change likely to exacerbate frequency and intensify impacts	Natural Flood management Reinstate natural processes to reduce downstream flood risk and "slow the flow" – retain water in upper catchments for as long as possible. E.g. - Better management of vegetation in upper catchments; increase vegetation in upper catchments to help "slow the flow". - Plant natural vegetation in urban areas - reduces impermeable sealed surfaces

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
		- Water conservation measures - Sustainable Urban Drainage Systems
Pollinators: bees, hoverflies, beetles, butterflies, moths, etc. *Objective – to encourage pollinators*	Climate change Land use change / intensification Habitat loss (e.g. hedgerow removal or under-management, loss of woodland,) Habitat fragmentation Pests and diseases Non-native invasive species	Planting for carbon sequestration - e.g. broadleaved woodland Manage verges for wildlife – create and maintain vegetation for pollinators - e.g. field verges, road verges Better and more sustainable management of existing areas of benefit to pollinators and insects.
Pollution – light, sound, air quality, water source, etc. *Objective: to reduce the impacts of pollution*	Major roads, railways airports, construction, industrial areas	Vegetation cover built into existing and new urban and major road design close to sources to screen and reduce effects – esp dense mix of woodland, trees and scrub – any vegetation is more effective than artificial sealed surfaces.

Qualities of nature under threat (e.g. habitat, habitat qualities or species) - ***and related objective***	**Major causes / pressures** (environmental and otherwise)	**Nature-based solutions** - appropriate area-wide in Buckinghamshire
Disconnect between people and nature – lack of awareness can threaten protection and sensitive management *Objective: to increase awareness of, and strengthen the connection of people to, the local and wider environment*	Urbanisation of population	- Better monitoring and management of existing local green spaces for access and wildlife - Create more, wilder accessible local green spaces - Green prescribing for health and wellbeing - Improve availability of conservation volunteering opportunities and projects - Audience-targeting – use trusted sources in new communities to build contacts and networks.

Appendix 3 ***DRAFT*** UK BAP Priority Habitat Targets for the "Forward to 2030" NEP Biodiversity Action Plan[9]

Broad Habitat Type	Priority Habitat	2010 / current habitat area (hectares)	2030 Target for priority habitat creation and restoration (hectares) (and % increase on existing habitat in brackets)	
Woodland	Native woodland: i)Lowland Mixed Deciduous Woodland	1682 ha	Native woodland altogether: 400 (14%)	Per year: 40
	ii)Lowland Beech and Yew Woodland	1191 ha		
	iii)Wet Woodland	33 ha		
	Wood-Pasture and Parkland	536 ha	100 ha (19%)	10
	Traditional Orchards	365 ha	50 ha (14%)	5
Grassland	Lowland Dry Acid Grassland	317 ha	50 ha (16%)	5
	Lowland Calcareous Grassland	344 ha	100 (29%)	10
	Lowland Meadows	382 ha	125 ha (33%)	12.5
	Coastal and Floodplain Grazing Marsh	337 ha	200 ha (59%)	20
Heathlands	Lowland Heathland	77 ha	20 ha (26%)	2
Fen, Marsh and Swamp	Lowland Fens	67 ha	5 (7%)	0.5
	Purple Moor Grass and Rush Pastures	18 ha	5 (28%)	0.5
	Reedbed	25 ha	15 (60%)	1.5
Standing open waters and canals	Eutrophic Standing Waters (lakes, pools and man-made waters)	tbc	Aim to collate info to assess extent and condition; aim to improve	
	Ponds (assuming av size of 0.05 ha; and up to 2 ha)	tbc	Aim to assess number / extent; aim to improve; possible target: create 500 ponds	50 ponds
		tbc	Aim to collate	

[9] In progress, currently being assessed and finalised, although these are the latest figures available prior to the LNRS survey response deadline.
NB Priority Habitat descriptions are per BRIG, 2011. UK Biodiversity Action Plan – Priority Habitat Descriptions. JNCC. Accessed February 2021. Available at: https://data.jncc.gov.uk/data/2728792c-c8c6-4b8c-9ccd-a908cb0f1432/UKBAP-PriorityHabitatDescriptions-Rev-2011.pdf

	Canals (6 across Bucks & MK)		information and measure improved ecological status[10]	
	Rivers and streams (including chalk rivers)	WFD (ecological) status	Improved WFD ecological status – at least half at "good" ecological status and all chalk streams by 2030[11]	
Boundary and Linear Features	Hedgerows (at least 2m wide)	unknown	100km and under better management	10km
Other	Open Mosaic Habitats on Previously Developed Land	unknown	Aim to measure extent; and aim for overall 20% increase	tbc
TOTAL	All UK BAP priority habitats (excluding unknowns, WFD status habitats, hedgerows and ponds)	**5,374 ha** (2.9% of land area)	**1,070 ha (20%)** (0.5% of land area)	**100**

Notes:

i. Current habitat area from BMERC 2012 Core and Local Output Indicators for Biodiversity report

ii. Broad habitat types and priority habitat categories are taken from JNCC guidance

[10] Canals – currently, there are 6 designated WFD canal waterbodies in Bucks and one in MK; in Bucks, 2 are good and 3 are moderate ecological status per Environment Agency 2019 data.

[11] Water Framework Directive ecological quality assessments to be used as a general river habitat status indication'; although this does not necessarily indicate the status of BAP species dependent on that habitats, or about riparian / semi-aquatic species. Ideally, a separate focus on key species is needed; or River Corridor Surveys, River Habitat Surveys and fluvial audits or condition assessments would be needed for accurate baseline and progress measures. WFD target is 100% by 2027; but given that we currently have only 1 river in Bucks at good status, the estimated target is for half to be classified as "good" ecological status and for all the chalkstreams too.

Appendix 4 Pressures, threats and specific challenges facing the local areas of Bucks (as summarised in the NEP's draft BAP 2030)

Alongside the generic pressures such as climate change and pests and diseases, different areas of Bucks are faced with specific localised pressures, or impacts arising from them. These threaten the character and biodiversity of the areas, and the NEP believes should also be factors into prioritising action for nature over the next 3-5 years:

Northern Bucks:

- High levels of future growth and associated increases in leisure and recreation
- Increasing demand for resources, particularly water.
- Managing water resources, including impacts downstream
- Land use change
- Development and infrastructure improvements

Aylesbury Vale Area

- High development pressure – e.g. urban areas and possible infrastructure related to the Oxford-Cambridge Arc concept
- Associated land use change
- Possible further habitat fragmentation as a result of the expected growth

Chilterns

- Poorer management of woodlands:
  Woodlands have been facing a variety of threats for many years. The decline in the furniture industry and the value of timber has meant that **management** of woodlands has in some instances stopped, reduced or changed. Areas which would have been managed in coppice rotation has disappeared and woodland flowers, butterflies and hazel dormice have declined.
  Conifer woodlands: light management regimes has changed the type of humus accumulating and affected conditions needed for native species.
- Ash die-back
  Where ash has grown up in gaps made by the storms of 1989 and 1991, these stands are now being devastated by ash dieback.

- Invasive species, and non-native invasive species
  Non-native grey squirrel, edible dormice and deer are well established to detriment of some native fauna and flora.

  Non-native species such as signal crayfish (which has led to the likely local extinction of the white clawed crayfish) and Japanese knotweed and Himalayan balsam which continually spread in the river.

- Reduction in livestock farming and grazing to retain grassland landscapes
  The remaining Lowland Calcareous grassland is on steep slopes with thin soils which is less suitable to agricultural intensification. These areas have been historically maintained through livestock grazing, however with a **reduction of livestock farming** in some areas, a succession towards scrub and then woodland takes place.

- Over-abstraction and channel modification threatens chalk streams
  Chalk streams have been subject to a range of threats in recent years. The pumping of water and **over-abstraction** from the chalk aquifer in combination with a changing climate has resulted in large lengths drying out with the death of fauna and flora. The presence of **weirs and culverts** stops the movement of species up and down stream and reduces the ability of upper reaches being recolonised.

- Lack of buffers with development
  In more urban areas, **development** has often not respected the need to maintain a buffer to protect watercourses and in rural areas nitrate and phosphate levels are sometimes increased through agricultural runoff.

Thames Valley

- Climate change - Drier summers and increasing temperatures could lead to deterioration in the area's semi-natural wetland habitats, including ancient wet meadows and could also lead to lower river flows and increased demand for water resources; the area's woodlands, particularly its highly characteristic and ecologically important veteran trees may be affected by increased storminess, periods of drought and the prevalence of pests and diseases, with the loss of shallow-rooting beech and previously-pollarded ancient trees to wind and drought-stress.

- Development pressures - include major roads, lighting and signage, expansion of urban areas and airport development, much unrelated to the surrounding area and contributing to the overall fragmentation of the landscape and threats via declines in air quality and pollution.

- Incipient pressure from non-farming use of small-sized holdings - notably horse grazing and land held for 'hope value'. Also pressure from recreational uses, particularly golf course development, often at the expense of commons and heathland.

- Designed parkland features at risk from changing agricultural activities, development pressure and lack of management for individual trees.
- Fly-tipping, casual illegal use such as motorbike scrambling and incursion by travellers are common.