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Registered Charity no. 208123

Surrey Wildlife Trust

Living Landscapes Strategy





Contents

1. Background	5
1.1 Making Space for Nature	5
1.2 Ecosystem Services & the National Ecosystem Assessment	6
1.3 Planning reform	6
2. Planning the Ecological Network	9
2.1 Emergence of Biodiversity Opportunity Areas	9
2.2 Ecological networks for climate change adaptation	10
2.3 Targeting of 'People & Wildlife' initiatives	10
3. Overview Of Current Living Landscapes Activity	13
4. What Should Surrey's Ecological Network Actually Look Like?	15
4.1 Relative connectivity in the Surrey landscape	15
4.2 Where, how & when?	15
4.3 Reconnecting people to nature	16
4.4 Towards our Living Landscapes priorities	16
5. Action Plan	18
6. References & Further Reading	28
Appendices	29



1. Background

In 2009 Surrey Wildlife Trust published *A Living Landscape for Surrey*, the Trust's policy document advocating wider recognition of the critical need for wildlife conservation to proceed on a *landscape scale*, if we are to stem the tide of continuing biodiversity losses into the 21st century.

This appraised the national and global problem in a local context, then reiterated the Trust's role and its current capacities within Surrey, and finally introduced the blueprint for a possible solution by securing a strategic network of land sufficient to protect our future biodiversity needs, spanning our county and beyond.

The original *Living Landscapes* vision belongs to our parent Wildlife Trusts movement and all county Wildlife Trusts are presently aligning their strategic direction and detailed business activity to the collective mission this entails. Surrey Wildlife Trust has recently launched its *50-Year Vision* and related *5-Year Plan (2013-18)* for our delivery of Living Landscapes.

Immediately following *A Living Landscape for Surrey* came a raft of iterative endorsements of the landscape-scale approach to conservation, freshly justified by a looming realisation of our absolute dependence on and critical need to protect nature's 'ecosystem services'. First was the publication of Sir John Lawton's *Making Space for Nature* report in 2010, being a timely review of the national nature conservation system to assess its current fitness for purpose, especially in the context of challenges from future climate change. The following year saw the new Coalition Government's long-awaited White Paper on the natural environment *The Natural Choice: securing the value of nature*, followed closely by the reviewed national biodiversity strategy; *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*, with a new set of targets to meet our commitments to the 2010 International Convention on Biological Diversity at Nagoya, Japan. The *National Ecosystem Assessment* was also published in 2011, being an in-depth ecosystem services valuation representing the total net sum of UK Natural Capital. Internationally, aspiration for a pan-continental ecological network is gaining momentum under the Council of Europe's 'Emerald Network' initiative.

1.1 Making Space for Nature

Making Space for Nature is a pivotal document commissioned originally by the previous government, which sought to review whether the English wildlife site identification and protection system presented a 'coherent and resilient ecological network' capable of adapting to

climate change and other 21st century pressures. If found wanting, the review was to investigate how this might be better achieved and make prioritised recommendations on the measures that should be taken. The review concluded that, despite much commendable work, the system could definitely not function reliably as an adaptive ecological network and made 24 detailed recommendations to turn this around (see **Appendix i**). These are an essential guide to help us identify and prioritise our strategy for achieving such a network in Surrey.

The review claimed the principal reasons for this failure to include; the majority of England's wildlife sites being *too small* to withstand outside negative impacts; certain habitat types having *declined so much* that the remaining area can no longer support stable constituent species populations without unrealistic levels of intervention; the generally *unprotected* and *under-managed* state of most important wildlife habitats beyond SSSIs; and wildlife sites having become *increasingly isolated* as the natural connections in our countryside are degraded or destroyed entirely. A less direct yet equally relevant additional reason is that too few people in modern society enjoy easy and meaningful access to wildlife, contributing to the self-fulfilling process whereby environmental degradation is allowed to continue simply due to a diminishing body of people who care enough to object. The critical examination section of the review concluded that "*Many species are now largely restricted to wildlife sites simply because they have mostly been lost from everywhere else. We need to take steps to rebuild nature.*"

“ Immediately following *A Living Landscape for Surrey* came a raft of iterative endorsements of the landscape-scale approach to conservation ”

With ***The Natural Choice*** the government responded to Sir John Lawton's recommendations and pledged action to achieve his coherent and resilient ecological network vision. Specifically, it expects fresh impetus to arise from the new Local Nature Partnerships working intimately with their relevant Local Enterprise Partnerships. Lawton's idea of piloting the landscape-scale approach within a suite of new landscape designations was taken up with the advent of Nature Improvement Areas (NIA), now in their third of a five year project to test the approach in different parts of the country.

Planning reform is seen as a further key enabler, to catalyse habitat protection, restoration and creation through strategic land use decision-making that delivers truly sustainable developments, designed to return more than they take from the environment. Government intends to place natural capital “*at the centre of economic thinking and at the heart of the way we measure economic progress nationally*”, and has established the Natural Capital Committee to advise and report on the state of this in England¹. Another of the White Paper’s themes is *Reconnecting people and nature*, citing the essential role of the environment in maintaining the nation’s health to justify making “*..enhancing nature a central goal of social action across the country [-] with action in the health and education systems and in our communities.*”

Biodiversity 2020 is the updated strategic plan to realise this vision. Its stated mission is; “*To halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.*” The strategy prioritises the necessary action to achieve this mission, organised across four high-level “themes”, with associated “outcomes” as the targets to measure that achievement.



1.2 Ecosystem Services & the National Ecosystem Assessment

Justification to win-over those kinds of decision-maker that might actually shift society away from its presently unsustainable course of environmental exploitation now comes by arguing the case as ‘Natural Capital’. This attempts a true and accurate valuation of the collective, essential worth to mankind of everything the natural environment provides us, to be utilised with a re-enlightened sense of respect. Monetising this is not at all straightforward, especially as so much of environmentally-derived wealth has historically been viewed as “common goods”, owned by everybody but largely taken for granted. Nevertheless this monumental work is now complete, and most worryingly the **National Ecosystem Assessment** provides evidence that over 30% of the services provided

by our natural environment are in decline.

The natural ‘water cycle’ presents one of the easier range of ecosystem services for us to understand and indeed value, given the financial structures in place around the water utilities and insurance services to compensate damage to property from flooding. Future water security is the subject of its own White Paper **Water for Life**. Here the government sets its vision for the water industry and protection of the wetland environment. Driving this is the EU Water Framework Directive, which imposes a zero-tolerance attitude to water pollution across the European Union and requires member states to meet strict water quality standards by 2027 (presently only 27% of water-bodies nationally are compliant). Defra’s response has been the ‘catchment-based approach’ (CaBA) to future water management, whereby the Environment Agency (as the responsible authority) must engage with the broadest set of stakeholders, across complete watersheds, as necessary to address the perennial problems underlying local water pollution.

1.3 Planning reform

In 2012 new Government planning guidance was provided by way of the **National Planning Policy Framework**. This replaced the multiple and not always complementary series of Planning Policy Statements developed over previous decades. Here too, even within its stripped-down format is further, clear support for the landscape-scale conservation approach, which began with PPS9 *Biodiversity & Geological Conservation*.

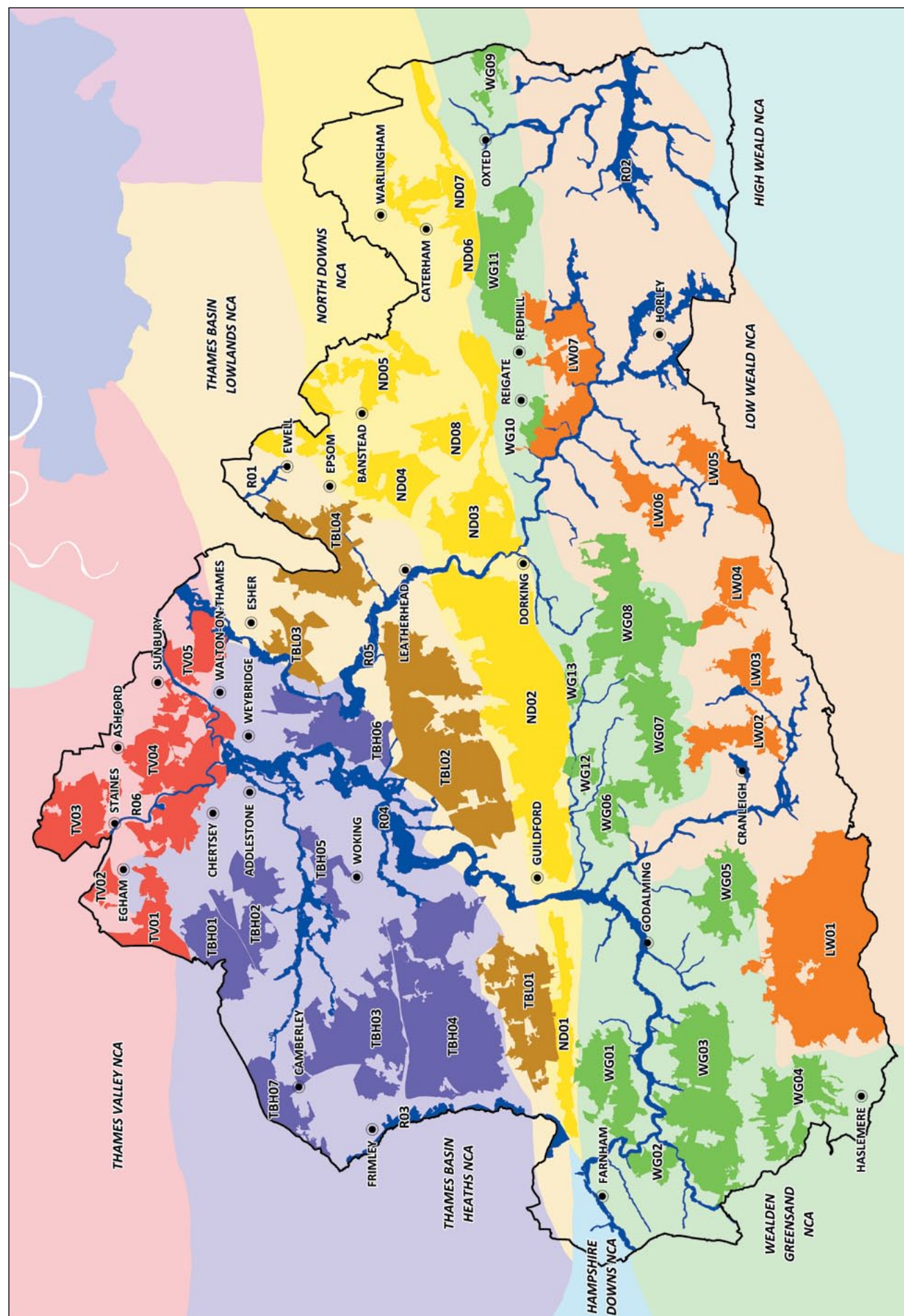
In the context of its central message seeking to achieve sustainability throughout the development process, the opening words of the NPPF’s Chapter 11 on *Conserving and enhancing the natural environment* state; “*The planning system should contribute to and enhance the natural and local environment by ... minimising impacts on biodiversity and providing net gains where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*”. And later; “*Local planning authorities should plan for biodiversity at a landscape scale.. identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation*”.

Clearly, the national policy is fully in place and has faithfully echoed both ours and others’ campaigning voices - the task now is to ensure that local planning decisions and partner agencies correctly interpret the prescribed approach. In this our steer and drive will be invaluable. *A Living Landscape for Surrey* boldly proposed the Trust should co-ordinate the landscape-scale approach for Surrey. This strategy now sets out how we go about this in the immediate five-year period, and then out to 2050.



¹ See; *The State of Natural Capital: Towards a framework for measurement and evaluation* (Natural Capital Committee, 2013); and *The State of Natural Capital: Restoring our National Assets* (Natural Capital Committee, 2014).

Figure 1. Surrey Biodiversity Opportunity Areas



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2. Planning the Ecological Network

Summarising the role of Biodiversity Opportunity Areas as the regional basis for *Making Space for Nature's* sustainable, resilient and effective ecological network for England; achieving *Better, Bigger, More* and *Joined-up* protected wildlife sites.

2.1 Emergence of Biodiversity Opportunity Areas

Early thinking on strategic planning for landscape-scale conservation, primarily to assist the planning sector respond to then current national policy guidance in *Planning Policy Statement 9: Biodiversity and Geological Conservation*, resulted in an informed synthesis and identification of potential regional ecological networks for the whole of England. PPS9 required that regional spatial strategies should “include targets for the restoration and re-creation of priority habitats and the recovery of priority species populations.” Local planning authorities were expected to “...maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans”; and within local development frameworks should “...identify any areas or sites for the restoration or creation of new priority habitats which contribute to regional targets, and support this restoration or creation through appropriate policies.”

Under the co-ordination of Natural England, specialist biological records centres across the former local government regions were tasked with analysing spatial habitat distribution databases, and in consultation with their relevant local biodiversity forums to then identify these potential ecological networks. For the South East Plan the regional network would be composed of ‘Biodiversity Opportunity Areas’ featuring high concentrations of important wildlife habitats formally selected as significant sites for nature conservation, in alignment with the parallel work to articulate local landscape identity by defining ‘National Character Areas’ for the Landscape Character Assessment. This work took place largely between 2007 and 2010 and was undertaken for Surrey by the Surrey Biodiversity Information Centre (SBIC) hosted by the Trust.

Regional spatial strategies have been withdrawn, but as noted in the previous chapter the *National Planning Policy Framework* is even more prescriptive around the requirement for planning policy to identify and achieve coherent and resilient local ecological networks, where this now falls solely to local planning authorities. After several iterations the Surrey Biodiversity Opportunity Areas (BOAs) are now accurately mapped and in use to inform strategic policy emerging through individual borough and district Local Plans (see **Figure 1**). Area-specific descriptions and conservation objectives have yet to be fully formulated however, and this has been an ongoing limitation on their universal comprehension and acceptance by the planning sector.

To be clear, an individual BOA consists of an assemblage of already recognised and protected sites for wildlife conservation (corresponding to Lawton’s Tiers 1 & 2, or ‘Foundation’ sites); inside a boundary that also includes further but as yet un-designated ‘Priority’ habitat types (plus some other essentially undeveloped land-uses); all of which have common and contiguous geological, soil, hydrological and topographic characteristics to those of the Foundation sites. As such, BOAs represent those areas where improved habitat management, as well as efforts to restore and re-create Priority habitats will be most effective in enhancing connectivity to benefit recovery of Priority species² in a fragmented landscape.

Therefore these areas are where to concentrate our pursuit of *Making Space for Nature's* sustainable, resilient and effective ecological network for England; achieving **Better, Bigger, More** and **Joined-up** protected wildlife sites.

Where appropriate the BOAs link across neighbouring counties, but currently stop at the outer edge of strongly urbanised land-uses; Surrey’s cities, market towns and villages. Ultimately ecological connectivity will not be achieved if our efforts exempt such areas, which incidentally also offer the richest opportunities for reconnecting people and nature. There is clearly outstanding work to also realise the ecological network within urban areas, and it is here that Green Infrastructure³ strategies, as well as town and parish Neighbourhood Plans, will likely play their most significant role.

“ As such, BOAs represent those areas where improved habitat management, as well as efforts to restore and re-create Priority habitats will be most effective in enhancing connectivity to benefit recovery of Priority species in a fragmented landscape ”

2.2 Ecological networks for climate change adaptation

The threats posed by future rapid climate change have been an additional constant driver to developing a landscape-scale approach to halt declining biodiversity and the Natural Capital this supports. The identification and maintenance of ecological networks is thus viewed as vital climate change adaptation strategy for conserving biodiversity.

We are already detecting changes in Surrey’s biodiversity that can be attributed to long-term trends in the UK climate⁴. There are now many examples of species exhibiting dramatic northward range expansions and of new arrivals in the county. Some of the better known include breeding birds such as the Little egret and Firecrest, as well as invertebrates like the Long-winged conehead (a bush-cricket), the Wasp spider and the recovering Silver-spotted skipper butterfly (see **Figure 2**).

National climate change adaptation strategy has recently consolidated with the publication of the **National Adaptation Programme**, being the government’s melding of both policy and action to ready the country for a changing climate. An in-depth analysis of vulnerabilities in ecosystem services provision is presented in the Committee on Climate Change’s latest report **Managing the land in a changing climate**. Guidance for conservation practitioners aiming to help wildlife and habitats adapt to climate change remains as the six key principles summarised by the UK Biodiversity Partnership in 2007⁵ (see **Appendix ii**).



Natural England has recently developed a model that provides a high-level indication of the relative vulnerability of Priority habitats to climate change in different localities. The **National Biodiversity Climate Change Vulnerability Model** identifies why areas are vulnerable and which possible interventions can have the biggest impact in increasing resilience to the changing climate. This builds on the earlier identification of Biodiversity Opportunity Areas as the basis of our ecological network and will further inform prioritisation of action to maximise effectiveness and resilience to future climate change scenarios.

2.3 Targeting of ‘People & Wildlife’ initiatives

Environmental education and interpretation programmes around nature and the importance of biodiversity conservation have been themed ‘People and Wildlife’ within the Wildlife Trusts movement, including here in Surrey. This is the coal-face at which we have traditionally attempted to reconnect people to nature through incremental successful initiatives, including the 2009-2013 Surrey Greenspace Project.

Other providers of environmental interpretation across the county include the National Trust from its extensive properties portfolio; Surrey County Council as the key local education authority and via its associated countryside management projects (including Gatwick Greenspace); the Field Studies Council at Juniper Hall; the local authorities on their natural open spaces; and from discrete estates of several further environmental NGOs including the Worldwide Fund for Nature, the RSPB at Farnham Woods and the Woodland Trust.

The Trust’s is a varied programme, including centres-based education where groups of all ages are encouraged to visit, alongside multi-stranded outreach to deliver both curriculum-based education within schools as well as under less formal circumstances using ours and others’ natural open space sites. We have also actively developed the local branch of ‘Wildlife Watch’ for the Trust’s junior membership, being the UK’s leading environmental action club for children. The Trust’s rangers also provide guided walks on many of our sites plus illustrated talks on approaches to site management and other relevant topics, to a wide-ranging audience throughout the county. We frequently host workshops on practical conservation themes such as ‘gardening for wildlife’, targeted at local community groups county-wide. Exhibitions on the Trust and its mission are visible at most of the larger community events on the Surrey calendar. We have permanent exhibition spaces at two of our most popular public access sites; Newlands Corner and Ockham Common.

Many of our site rangers welcome the efforts of dedicated volunteer groups recruited from the immediate local populace or deployed by us from central assembly points elsewhere. Most recently, we have begun running *BioBlitz* events, taking ‘citizen science’ to new levels of organisation and effectiveness. Our Communications team also manages our fully interactive website and issues a steady stream of news releases to the local press, while our resident column in the magazine *Surrey Life* is a popular feature frequently eliciting feedback and queries from the public.

Targeting of people & wildlife projects has typically responded to the priorities of prevailing funding sponsors. Thus the Surrey Greenspace Project had three local authority partners and concentrated outreach delivery to particular neighbourhoods within the boroughs of Guildford, Woking and Reigate & Banstead. Facilities-based work is by definition less targeted, dependent on schools and other visitors’ abilities to travel to the two education centres at Nower Wood in Headley and Bay Pond at Godstone.

Figure 2. Firecrest Breeding Range Extension



- ▲ Gain since 1988-91
- △ Gain since 1968-72
- Present all atlases
- Missing in 1988-91
- ▽ Loss since 1968-72
- ▼ Loss since 1988-91



Map reproduced from Bird Atlas 2007–11, which is a joint project between, BTO, BirdWatch Ireland and the Scottish Ornithologists’ Club. Map reproduced with permission from BTO.

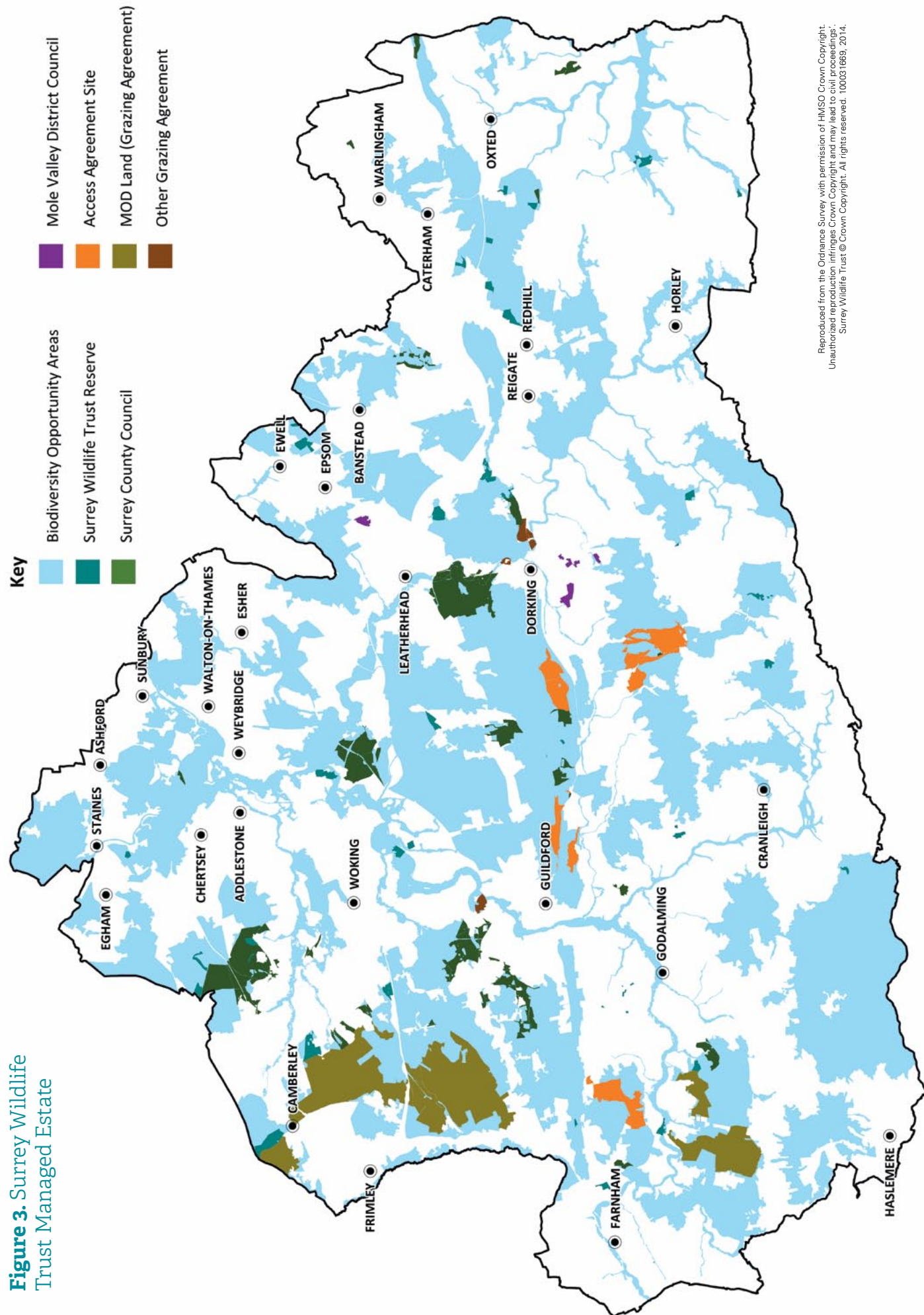
² Listed under S.41 of the Natural Environment & Rural Communities Act 2006 as ‘Habitats & Species of principal importance for the conservation of biological diversity in England’.

³ See; *Planning for a healthy environment – good practice guidance for green infrastructure and biodiversity* (TCPA/Wildlife Trusts, 2012)

⁴ See; *Terrestrial Biodiversity Climate Change Impacts Report Card 2012 -13* (LWEC, 2013)

⁵ See; *Conserving biodiversity in a changing climate: guidance on building capacity to adapt* (Defra, 2007)

Figure 3. Surrey Wildlife Trust Managed Estate



3. Overview Of Current Living Landscapes Activity

Expanding on the Trust's role and current capacities as a key stakeholder in Surrey's ecological network.

In *Making Space for Nature* Sir John Lawton clearly leaves prioritisation of the local action to achieve his coherent and resilient ecological network to local community partnerships, involving private landowners, local authorities, statutory bodies and wildlife charities. He also endorses the Wildlife Trusts' *Living Landscapes* vision as an example of an ideal framework to inform and, where necessary, co-ordinate such actions.

Surrey Wildlife Trust is a leading organisation in the county's formally-recognised Local Nature Partnership (the **Surrey Nature Partnership**), and is well-positioned to advocate for the concept and realisation of the local county ecological network. Here then, it will be helpful to pick up from the close of the previous chapter with an expanded overview of the Trust's role as a stakeholder in the network, and its capacities as promoter of the landscape-scale approach to date.

Biodiversity, Evidence & Policy

This department includes the small **Living Landscapes team** whose primary working objective has been to push the landscape-scale agenda forward. Cross-sector landscape management partnerships have gained recent traction within the CaBA-driven process focussed in the catchments of the Rivers Wey and Mole. Hosted here is also the **Surrey Biodiversity Information Centre** generating much of the underpinning evidence base. The **Planning Advisory Service** is our interface with local authorities and the statutory planning policy process. **Ecology Services** is a key supplier of ecological advice to managers of land in Surrey, and leads on survey, review and initial recommendation for protection of the non-statutory Local Wildlife Site element (Lawton Tier 2) of the network. Additional capacity includes a dedicated woodland management advisory team.

Countryside Management

This department manages 8,326 ha (5%) of the county, within 82 sites (see **Figure 3**); a significant proportion of which are within Tier 1 (statutory sites) at the heart of the ecological network, thus attracting state management funding support (primarily Higher Level Stewardship). The Trust estate is variously controlled, being either owned outright; leased under time-bound agreements; or managed under contract on behalf of partner agencies (representing proven success with current land management advisory outreach). Some agricultural land and built property within the estate is tenanted, being the responsibility of **Property Services**. Management capacity on the estate is significantly extended by volunteers, co-ordinated and supported from within the department.

Education and People & Wildlife

This department delivers the Trust's environmental education programme, from the two **Education Centres** and through a busy outreach programme. Just under 8,500 schoolchildren visit the Nower Wood and Bay Pond centres annually. Adult education is achieved via courses also taught from these centres as well as using external venues. The **Outdoor Learning team** takes environmental education out to its main target audience, which are schools. We look partly to corporate sponsors and other partners to help fund this work, such as the Leatherhead Link Schools project sponsored by ExxonMobil plc. Our **Environmental Group Support team** works with the growing environmental civic society sector, guiding the development and activity of community groups to facilitate voluntary participation in conservation management work on Trust (with Countryside Management) and partners' sites. Around 10,000 person/days per year of voluntary activity are currently being generated directly by the Trust.

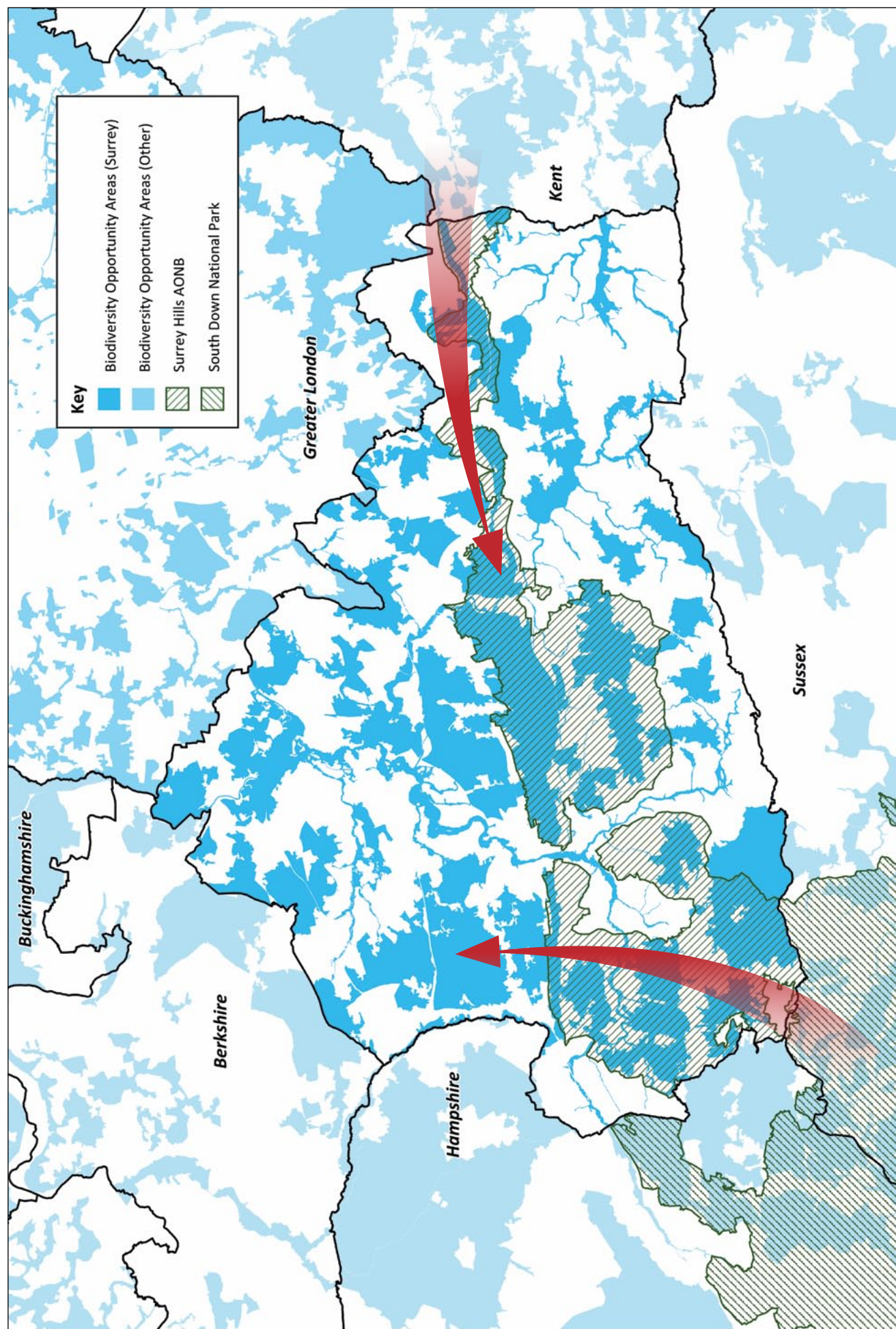
Communications & Fundraising

This department is responsible for the Trust's public relations profile and all generic income generation as a charitable body. The **Communications team** oversees environmental interpretation through printed and electronic media; co-ordinates our events programme (with Countryside Management); and generates all publicity concerning our campaigns and the Trust's central mission. The **Fundraising team** covers membership recruitment and retention; corporate sponsorship targeting the local business sector; our special campaigns and legacies programme; and supports all other departments in chasing funding from grants schemes. Trust membership has been falling recently due to the economic downturn and is currently just below 30,000 (2.8% of Surrey's population).

Everybody working for and associated with the Trust is able to link their individual role back to a part in realising the *Living Landscapes* vision. This strategy aims to help make this clearer and identify where certain roles might be adjusted to better affect, as judged necessary.

“ Everybody working for and associated with the Trust is able to link their individual role back to a part in realising the *Living Landscapes* vision ”

Figure 4. Surrey's Ecological Network in Regional Context



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4. What Should Surrey's Ecological Network Actually Look Like?

Landscape ecological theory and application of the Lawton 'implementation hierarchy' to Surrey; the need for prioritisation; and a clear rationale for our *Living Landscapes* Action Plan.

4.1 Relative connectivity in the Surrey landscape

Surrey is still blessed with an extraordinary trove of Natural Capital, with much to draw those searching for a fuller appreciation of our diverse native flora and fauna. We are a small county but at the crossroads of contrasting natural interfaces, providing the ingredients for a particularly rich and interesting biodiversity. Indeed no less than 29% of all listed UK Priority species still survive in Surrey. On the edge of the UK's largest metropolis, we inherit a legacy of influential lobbying which has succeeded in protecting a significant proportion of the county from the excesses of post-war agricultural change and urban expansion. Therefore Surrey retains a wealth of wildlife-rich habitat compared with many other parts of lowland Britain.

The Biodiversity Opportunity Areas identification exercise is evidence for this. The common protocol used across the South East region had Surrey nearing the top for BOA coverage in proportion to total size, with 37% compared with the lowest (Oxfordshire) with just 18%. We are contenders for England's most wooded county at 23% land cover and also support 13% of the national Lowland heathland audit. These statistics signal a relatively high degree of landscape connectivity being retained, certainly within significant sections of the county.

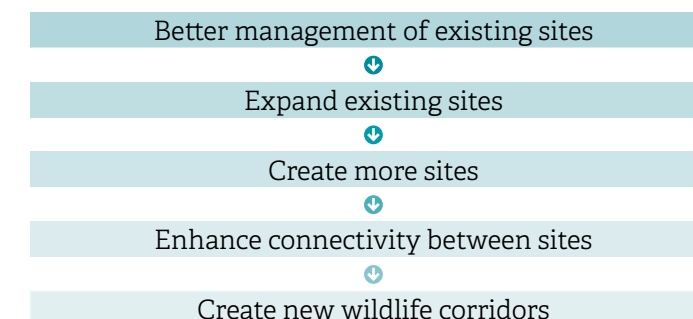
A national map to compare landscape connectivity across England appears in *Making Space for Nature*, showing the National Character Areas graded into four scales of habitat fragmentation (see **Figure 5**). In Surrey only the Thames Basin Lowlands NCA is found to be 'highly' fragmented by this analysis; the others are ranked one above the least degree of fragmentation (which is seen only in the Pennine uplands).

The NBCCV model (see 2.2) now offers a higher resolution analysis of local habitat fragmentation, using data underlying the national map. We hope to refine this still further applying SBIC-derived Priority habitat distribution data in the Surrey Habitat Framework.

Looking again at the South East BOA league table it is notable that Surrey has a high number of *individual* BOAs, even over those counties (Hampshire and Kent for example) with a higher percentage *cover*. This suggests that although our important biodiversity hotspots may be many in quantity they also suffer a vernacular, highly localised fragmentation; no doubt reflecting our high population density on the outer fringes of London with all its attendant infrastructure.

4.2 Where, how & when?

Making Space for Nature sets out firm guidelines to plan a strategy aiming to maximise conservation benefits "on a finite budget and with a fixed area of new land available to bring into conservation management". It proposes a sequential hierarchy of actions to achieve the greatest benefits; as below. The best point to enter this will vary with local factors such as habitat conservation significance and the local degree of fragmentation:



So where there is a relatively high density of wildlife sites with low landscape fragmentation, the priority would be to concentrate on improving management of those sites, and then to extend this to adjacent sites in order to expand and coalesce common habitat patches. This would also serve to buffer the original core sites. Here action is focussed at the upper end of the hierarchy. Where sites are fewer and further between, enhancing connectivity through the more hostile landscape would gain priority; more sites need to be strategically created as 'stepping stones' along aspiring corridors to bridge those hugely compromising gaps between isolated biodiversity hotspots.

In practice there can be no standard methodology for enhancing landscape connectivity, as critical local circumstances will deny credibility for taking this approach in most situations. There is likely to be significant variation in habitat condition and availability, as well as in population sizes and community attributes, all influencing the local reproductive and dispersal behaviour of the species targeted for conservation. Functional connectivity varies considerably for species anyway with respect to their individual mobility, so a generic approach is unlikely to work for the full spectrum of species prioritised⁶.

To guide a way through these problems, landscape-scale conservation projects often select 'indicator', 'focal', or 'umbrella' species to represent typical dispersal capabilities. These could then be monitored for evidence of success of management interventions. Nationally, connectivity modelling and hence project design has frequently involved butterflies⁷ and other winged invertebrates, but also small mammals including the Hazel dormouse, as well as species of bats⁸.

There is also a lack of surety around the ideal management of many wildlife habitats to maximise their performance for biodiversity conservation. Indeed this can be a highly contentious debate, as enthusiasts arguing for priority of particular species groups compete for attention of the site manager making the decisions. A blueprint for the management of the site - its management plan - should adequately reflect these potential conflicts, and be able to either accommodate or rationalise against individual *causes célèbres*. Natural England's 'Mosaic Approach'⁹ is designed to assist reconciliation in these issues. The great underlying problem here is the inadequate size of most English wildlife sites. Larger sites, on the scale of national parks in other parts of the world, can offer far improved opportunities for constituent species to compete naturally for space and resources, and still prevail. This is one obvious argument for prioritising the *expansion* of wildlife sites on the benefits hierarchy described above.

Practical applications of studies into landscape ecology are being developed by the Forestry Commission's Forest Research unit, to support conservation practitioners in the appropriate design of ecological networks. Their emphasis has been on strategies for reversing woodland fragmentation within the landscape, but the tools are transferable to other habitats. Other resources include the tools and modelling developed by CorridorDesign.org¹⁰. A reasonably accurate knowledge of the current and historic spatial distribution of Priority habitats and species is an important prerequisite and for this we have the data of SBIC, used originally to identify the Surrey BOAs.

4.3 Reconnecting people to nature

To contrast and inform prioritisation of where to improve opportunities for people to experience nature, there is Natural England's Accessible Natural Greenspace Standard (ANGSt). In the analysis for the South East region¹¹, Surrey's access to natural greenspace is relatively good when compared with some neighbouring counties, although we still fall well short of the standard for the 'doorstep' provision closest to home (see box below). In short, this means more naturally-managed public open space is required in urban residential areas. A finer scrutiny within Surrey has not been attempted, although an ANGSt study was carried out by SBIC for the Blackwater Valley conurbation (Camberley-Aldershot) in 2008-9.

However, just because the resource is available is no direct indication that people are using it, even though the benefits to health and well-being of a more active lifestyle spent in biologically-diverse natural open space are now widely appreciated and even medically promoted¹². Moreover enhanced accessibility is not universally desirable; some habitats and their wildlife are too sensitive to absorb unrestricted access by the public. Effective environmental education and appropriate interpretation is essential here, both to encourage visits when appropriate and to help achieve balance and understanding when access must be more controlled.

Surrey's performance on the Accessible Natural Greenspace Standard:

"Everyone, wherever they live, should have accessible natural greenspace of at least:"

- ✗ 2 hectares within 300 metres (a 5 minute walk) from home - only 23% of households
- ✓ 20 hectares within 2 kilometres of home - 82% of households
- ✓ 100 hectares within 5 kilometres of home - 90% of households
- ✓ 500 hectares within 10 kilometres of home - 75% of households
- + [1 hectare of Local Nature Reserve per 1000]

4.4 Towards our Living Landscapes priorities

So where to from here? Our Living Landscapes vision is clear enough, aiming *"...to link and create habitats to form large-scale areas rich in biodiversity, in order to secure a healthy long-term future for both wildlife and people"*. But what should the Surrey Wildlife Trust realistically be hoping to achieve by 2020 and beyond?

We may well be fully engaged just holding the current line, preventing further declines in habitat condition, losses in restoration and creation opportunities and worsening overall landscape connectivity for wildlife. Given ever-heightened pressures to develop land and revitalise the economy, our traditional role as champions for safeguarding the county's wildlife is unlikely to vary greatly in the short to medium terms. Here though, rather than simply evoking confrontation we must seek to engage more intuitively with the agents and regulators of these pressures (the planning sector, development and infrastructure providers for example), to always offer them a more sustainable delivery alternative, be it with refining land allocations, the spatial and architectural design of construction, or with approaches to the land management of their estates. A critical first priority will be to ensure our consistent inclusion in the dialogue around such matters. For this an adequately-resourced, proactive outreach and advocacy programme is essential.

The spatial planning of a local ecological network in Surrey has been completed through the derivation of the Biodiversity Opportunity Areas, and it is here that efforts to achieve Sir John Lawton's *Better, Bigger, More* and *Joined-up* wildlife sites will be concentrated. *Living Landscapes* has its own landscape-scale mantra which mirrors Lawton's but adds emphasis to the importance of re-connecting society to nature; the **'Four C's'** - *Conserve, Create, Connect* - and *Celebrate*. There are 50 BOAs in all however, and it would be impractical to attempt a simultaneous campaign involving them all. A better strategy would be to trial an assumed model practice in a carefully selected 'pilot' group of BOAs, which could then become exemplar *Living Landscapes* project areas. An important criterion for selecting these will be where the Trust has most direct influence on outcomes.

“ although our important biodiversity hotspots may be many in quantity they also suffer a vernacular, highly localised fragmentation ”

Another consideration when prioritising work for Surrey's network is its place and function within the regional and, by extension, the national ecological network. A reasonable aim would be for a conceptual 'super-highway' to traverse the county, from east to west and south to north. This would anticipate the likely climate-induced biodiversity impacts under predicted scenarios, and link into networks in adjacent counties. This 'macro' strategy would also work with the grain of the Thames basin and western Weald and could perhaps follow the intersection formed by the North Downs and the West Surrey Heathland arc, with the river corridors of the Wey and Mole as complementary linking features (see **Figure 4**). This would also resonate with the lie of the Surrey Hills AONB and South Downs National Park.

The model approach within the selected pilot BOAs is scoped in depth as Annex B to the Action Plan in the next chapter. Initially the key stakeholder land-managers would be identified and formally unified as a project 'partnership'. This partnership would then undertake a spatial analysis of priorities across the broad Better, Bigger, More & Joined-up/'Four C's' principles. Ideally there would also be some level of Natural Capital assessment, to then aid targeting and justification of a funding strategy.

In summary the high-level goals of a Living Landscape project would be:

- All existing protected site management plans to be rigorously reviewed as the basis for implementing systematic monitoring programmes to clearly detect and measure change in a set of fully rationalised conservation objectives.
- All non-statutory (Lawton's Tier 2) sites to be ultimately secured and in positive management.
- Every opportunity for restoring and re-creating Priority habitats to be prioritised by its importance in the network (quantified as proximity to Tier 1 & 2 sites, habitat type and rarity, connectivity function, etc.); with the necessary land management advice scoped and tasked to experienced partnership staff.

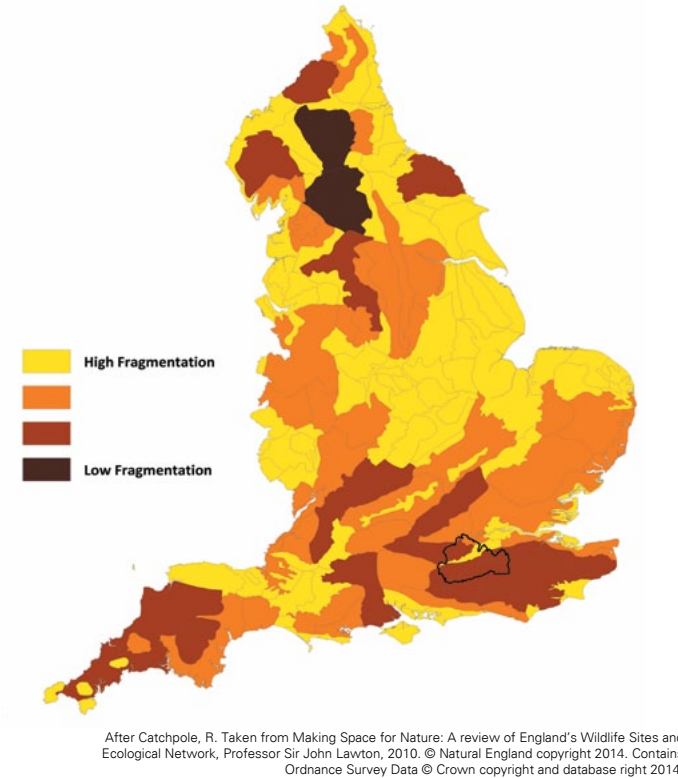
- Groups of locally-based volunteers to be actively engaged in the regular management of project sites, and trained to participate reliably in their monitoring.
- All potential use of the area in outdoor education and site-based interpretation to be actively exploited, and regularly reviewed for new and emerging opportunities.

And finally; although this strategy clearly identifies the need for the targeted approach above, the Trust must also remain committed to a level of operation across the entire county. Potential partners and recipients of management advice from beyond the pilots cannot be disappointed simply because of our current geographic priorities.

The principles and aspirations deciding action within the pilots should also guide us here, however. For example, site management plans would become reviewed to achieve exemplary practice across the board; and land management advocacy would continue some direction on a broad, opportunistic front, but perhaps best organised in the future by land-use sector. Other existing *Living Landscapes*-related programmes will of course also be maintained in the short to medium term.

An Action Plan that will realise these priorities follows as the next chapter. This is cross-referenced with *Making Space for Nature* recommendations, and with the themes and goals of the Trust's strategic 5-Year Plan.

Figure 5. National Habitat Fragmentation



⁶ See; *Evaluating Biodiversity in Fragmented Landscapes: Principles* (Forestry Commission, 2005)

⁷ See; *Landscape-scale conservation for butterflies and moths: lessons from the UK* (Butterfly Conservation, 2012)

⁸ See; *Multiscale, presence-only habitat suitability models: fine-resolution maps for eight bat species* (Bellamy, C. et al, 2013)

⁹ See; *The Mosaic Approach: Managing Habitats for Species* (B2020-009), (Natural England, 2013)

¹⁰ See; <http://corridordesign.org>

¹¹ See; *An analysis of accessible natural greenspace provision in the South East* (McKernan et al., 2007)

¹² See; *Improving Health in Cities Using Green Infrastructure: a Review* (Kuppuswamy, 2009)

5. Action Plan

Completion:	>2050	1. Identifying & Protecting Surrey's Local Ecological Network															
	>2020																
	Years 1-5 (2013-18)																
External partners		Internal partners		Lead Directorate		Action		4xCs		Making Space for Nature Recommendations		5-Year Plan Goal/Enabler		LL Strategy sub-theme		LL Strategy theme	
•		SyNP		BEP, SBIC		Develop selection criteria to identify x3 'Pilot BOAs' on which to focus 5-year plan [see Annex A]		1.1.1				G1				1.1	
•		[dependent on BOAs]		BEP		Develop Vision Statement & Action Plans [see Annex B] for x3 selected Pilot BOAs, as <i>Living Landscapes</i> Project Areas (+pNIA?)		1.1.2		3		G1					
•		academic sector		BEP, SBIC		Develop metrics for monitoring 'success' of <i>Living Landscapes</i> Project Areas		1.1.3				G2					
•		SyNP, LAs		BEP		Select & develop x1 pilot Urban BOA case-study, linked to an existing/developing local Green Infrastructure Audit		1.1.4		1, 4, 7		G1					
•		SyNP, LAs		BEP		Extend Urban BOA pilot experience to x5 further urban centres in Surrey (inc. Epsom-Ewell, Guildford, Woking, Leatherhead-Fetcham, Redhill-Reigate)		1.1.5		1, 7		G1					
•		SyNP, academic sector		SBIC, BEP		Commission Natural Capital audit(s) in Surrey for identified AoS		1.1.6		4, 6		G1					
•		SyNP		SBIC, BEP		Complete (all existing) BOA Character Statements, inc. Biodiversity Objectives & Targets, aligned with <i>Biodiversity 2020</i> outcomes/targets		1.1.7		1, 4		G1					
•		SyNP		BEP		Revise ' <i>Biodiversity & Planning in Surrey</i> ' (post-NPPF/Biodiversity 2020)		1.2.1		1, 2, 3, 4, 7, 8, 10, 12, 22		GI		Shaping Local Authority Planning & Development Policy		1.2	

		G1,5	1, 2	1.2.2	BEP		SyNP, LAs	•	•	
			1, 2	1.2.3	BEP	CM	SyNP, LAs	•	•	
		G5	1, 2	1.2.4	BEP, SBIC		SyNP, LAs, NE, EA	•		
			2, 10, 12	1.2.5	BEP		SyLSC, LAs	•	•	•
		G9	1, 2, 7	1.2.6	BEP	P&W	LAs	•	•	
1.3	Influencing Other Regulatory Authority Policy		3, 4, 7, 8, 9, 11, 15, 16, 17, 18, 22, 23	1.3.1	BEP		SyNP, CaBAP, EA, NE, FC	•	•	•
2. Managing & Extending the Ecological Network										
2.1	Influencing land management: Within Living Landscapes Project Areas	G1,5	8, 11, 12, 13, 14, 17, 18, 19, 21, 22	2.1.1	BEP	CM, P&W	[depen- dent on BOAs]	•	•	
		G5	all	2.1.2	BEP	CM, P&W	[depen- dent on BOAs]	•	•	•

2.2	Direct management of SWT Estate	G4	11, 13, 15, 19, 21	2.2.1	Produce SWT Estate <i>Biodiversity 2020</i> Audit (see Annex C)	BEP, DMU	CM		•	•	
		G4		2.2.2	Evaluate & produce SWT Estate Monitoring Strategy for Priority habitats & Priority species	BEP, DMU	CM		•	•	
		G4		2.2.3	Review individual site Management Plans in response to Monitoring Strategy, ref. NE ‘Mosaic Approach’	CM	BEP	SCC, MoD	•	•	
		G4		2.2.4	Implement necessary revisions to site Management Plans	CM		SCC, MoD	•	•	•
		G4-6		2.2.5	Establish & publicise >1 ‘demonstration sites’ to exhibit exemplary/best management practices	CM	BEP, Marketing	SCC, MoD	•		
		G4		2.2.6	Implement Sustainable Woodland Management policy throughout Estate	CM	BEP, sawmill	FC	•	•	
		G4		2.2.7	Maintain & extend on-Estate Grazing Project activity as appropriate	CM	BEP	Heathland/Downlands CMP	•	•	•
2.3	Reviewing SWT land acquisition policy	G4,5	9	2.3.1	Ensure a robust, criteria-led strategy to respond to land management offers & opportunities, weighted by position/role in ecological network	BEP, CM			•		
2.4	Influencing land management: “Over the Hedge” - a Site Ranger land advisory outreach programme	G5		2.4.1	All sites to map ‘surrounding land-use mosaic’; identify opportunities to influence immediate neighbours & enter into partnership (Pilot x5 Estate sites)	CM	BEP		•		
2.5	Influencing land management: Advocacy by sector/land-use theme	G5	7, 8	2.5.1	Local Authority: advise/use influence on ‘Parks & Open Spaces Forum’	BEP	CM	P&OSF, ALGE	•		

		G5	8, 12	2.5.2	Local Authority: extend contract management services (eg. MVDC, SCC)	CM		ALGE	•	•	
		G1,5	12	2.5.3	SNCI & pSNCI Management: proactively produce Management Briefs for private landowners	BEP	CM	SyLSC	•	•	•
		G4	16	2.5.4	Sustainable Woodland Management: deliver Living Woodlands advisory project	CM, BEP	sawmill	FC, Woodland Trust	•	•	
		G4	15	2.5.5	Grazing Project: proactively extend external conservation grazing services	CM		NT, LAs	•	•	•
			16, 23	2.5.6	Agricultural sector: offer on-farm management advice to benefit biodiversity, linked to post-2014 agri-environment scheme (NELMS)	BEP	CM	WFAP CFE/NFU	•	•	
				2.5.7	RESTORE/NAM: partner SCC regulatory function in management of post-minerals restoration sites	BEP, CM	P&W	SCC, RSPB, mining/waste sector	•	•	
			21	2.5.8a	Non-operational Infrastructure: engage with Highways Agency/SCC Highways Dir. to influence roadside management	BEP	Corporate, CM	HA, SCC	•	•	
			21	2.5.8b	Non-operational Infrastructure: engage with Network Rail to influence lineside management	BEP	Corporate, CM	Network Rail	•	•	
			21	2.5.8c	Non-operational Infrastructure: engage with UK Power Networks to influence way-leave & pipe-track management	BEP	Corporate, CM	UK Power Networks, energy sector	•	•	
			4, 21	2.5.8d	Non-operational Infrastructure: engage with water industry to influence STW, reservoir & pipe-track management	BEP	Corporate, CM	CaBAP, water sector	•	•	

		G5		2.5.9a	Golf industry: establish 'Exemplar partnerships' with x1 or more SNCI golf courses	BEP	Corpor-ate, CM	•	•	
		G1,5		2.5.9b	Golf industry: host 'Living Landscapes for the leisure sector' event	BEP	Corpor-ate, CM	•	•	
				2.5.10	Property maintenance: engage with corporate & business sector	BEP	Corpor-ate, CM	•	•	
				2.5.11	Promote private wildlife gardening, through distributing resource packs, talks, www. content, Award scheme	P&W	BEP, Comm-unications	•	•	
2.6	Collaborative Living Landscapes Project activity with neighbouring Trusts/ partners			2.6.1	Remain open to <i>Living Landscapes</i> workstreams initiated by neighbours on cross-border landscape-scale conservation projects	BEP	CM, P&W	•	•	
				2.6.2	Work with TWT <i>Living Seas</i> initiative where appropriate	BEP	Comm-unications	•	•	
3. Interpretation & Education										
3.1	SWT Estate interpretation & visitor engagement	G6		3.1.1	Review SWT Estate on-site interpretation & signage	CM	BEP, Comm-unications	•	•	
		G6 E1		3.1.2	Publish new SWT Estate Nature Reserves Guidebook; link with www. content, visitors' app. etc.	BEP, Comm-unications	CM	•	•	
		G6		3.1.3	Elevate www. profile of SWT Estate; (eg. Ranger activity videos)	CM, Comm-unications	BEP	•	•	

		G6	17	3.1.4	Promote & exploit Estate use as 'eco-tourism'; offer special interest small group/ personal visits	BEP, CM	P&W, Comm-unications	•	•	corpor-ate sponsor
		G4,6 E9		3.1.5	Establish 'Friends' site groups to extend capacity for immediate community engagement, volunteering etc.	CM	P&W	•	•	
				3.1.6	Incorporate a strong 'story-telling' element in use of estate for interpretative events	P&W	CM	•	•	
		G6 E5		3.1.7	Establish a demonstration property exhibiting 'building for biodiversity'	Proper-ties	BEP	•	•	trade sponso-rs
3.2	Education Centres	G7		3.2.1	Establish x2 new Visitor/Education Centres associated with flagship sites (eg. Chobham Common NNRR)	TLT	P&W, CM	•	•	LAs, develo-pment sector
3.3	Outdoor learning	G8		3.3.1	Up-scale outdoor learning via engagement with After-school clubs	P&W		•	•	SCC, private educati-on sector
		G8		3.3.2	Initiate engagement with children's out-of-school (eg. Cubs/Brownies) & Holiday activity clubs	P&W	Fundraising, 'Wildlife Watch'	•	•	eg. Barracu-das
3.4	Community engagement (generic)	G2,9 E1,2,4		3.4.1	Establish clearer understanding of <i>Living Landscapes</i> mission across SWT, through; induction/training programme of all staff (inc. membership recruiters)	BEP, Comm-unications	all	•	•	TWT
		E1		3.4.2	Produce generic <i>Living Landscapes</i> powerpoint presentation for use by all staff	BEP	Comm-unications	•	•	
		E1,3		3.4.3	Capture all staff <i>Living Landscapes</i> innovation via clear, responsive, positive reporting line	TLT, Comm-unications	all	•	•	
				3.4.4	Vehicle fleet livery make-over to reflect <i>Living Landscapes</i> mission	Comm-unications	BEP, P&W	•	•	corpor-ate sponsor

Annexes

Annex A

Selecting Pilot Biodiversity Opportunity Areas/Living Landscape Projects	
Level 1	<div>1.1 Significance to regional ecological network ‘highway’ (inc. NBCCVM classifications)</div> <div>1.2 Tier 1 Sites profile:<div>1.2.1 proportion of total BOA area</div><div>1.2.2 condition assessment profile</div></div> <div>1.3 Tier 2 Sites profile:<div>1.3.1 proportion of total BOA area</div><div>1.3.2 positive/negative management profile</div></div> <div>1.4 Tier 3 Sites profile: in/out of AONB/AGLV</div> <div>1.5 Surrey Habitat Framework profile: proportion of Priority habitats beyond Tier 1 & 2 Sites</div> <div>1.6 Priority species profile</div>
Level 2	<div>2.1 Public : Private land ownership ratio</div> <div>2.2 SWT land management profile*<div>2.2.1 proportion of total BOA area</div><div>2.2.2 qualitative reputational ‘handle’</div><div>2.2.3 other SWT activity, eg. <i>Living Landscapes</i>, P&W</div></div> <div>2.3 Other ENGO management profile (eg. Woodland Trust, RSPB)</div> <div>2.4 Existing cross-sectoral partnership profile (eg. CaBA partnerships)</div>
Level 3	<div>3.1 Natural Capital profile: knowledge & evidence of</div>
Tier 1	SSSI (inc. SAC & SPA)
Tier 2	LWS (SNCI), Ancient woodland
Tier 3	AONB, SDNP
*	Includes farm tenancies

Annex B

Developing an Action Plan for a Pilot BOA/Living Landscape Project Area			
Action		Who?	Resources
1	Preparation & partnership		
1.1	Stakeholder map for BOA(s)	SWT	LAs, Defra family, Land Registry
1.2	Host Stakeholder event(s) to identify a partnership/establish leadership & governance	SWT	
1.3	Establish BOA/Living Landscape Project partnership Vision , inc. high-level ‘mission’	Lead partner /Elected Chair, SBIC	BOA Character Statements
1.4	Produce BOA/Living Landscape Project partnership Memorandum of Understanding (partnership agreement)	Lead partner/Elected Chair	<i>Wey Landscape Partnership model</i>

1.5	Identify funding sources & contributors; set goals	SWT	appointed Fund-raising Officer; Corporate sponsor
2	The Action Plan		
2.1	Establish Aims, Objectives & Success monitoring metrics	Partnership Steering Group, SBIC	BOA Character Statements
2.2	Evaluate & prioritise action: Reviewed management of existing protected areas to achieve Biodiversity 2020 outcomes for Priority habitats & species	Partnership Steering Group; through a Land Management Advisory Working Group	BOA Maps & Statements, <i>Biodiversity 2020</i> ; UKBAP
2.3	Evaluate, target & prioritise action: Priority habitat restoration & creation & Priority species recovery opportunities	Partnership Steering Group; through a Land Management Advisory Working Group	BOA Maps & Statements, Biodiversity 2020; UKBAP
2.4	Develop Biodiversity Off-setting opportunity site register for BOA(s)	Partnership Steering Group; through a Land Management Advisory Working Group	Biodiversity Off-setting metrics guidance
2.5	Evaluate, target & prioritise action: Public engagement opportunities & strategy	Partnership Steering Group; through a People & Wildlife Working Group	
2.6	Evaluate, target & prioritise action: Natural Capital valuation strategy	Partnership Steering Group, SBIC	NESA, Natural Capital Committee, LEPs
3	Accounting/Networking		
3.1	Establish robust Monitoring Strategy, linked to reliable progress metrics	Partnership Steering Group; through a Research & Monitoring Working Group	
3.2	Establish user-friendly Reporting Strategy, linked to MoU/governance & internal contact system	Partnership Steering Group ; through all Working Groups	
3.3	Maintain external contact(s) with neighbouring/fellow partnerships to continually review strategy & Action Plan	Partnership Steering Group/Chair	
3.4	Funding applications as appropriate	Partnership Steering Group/Chair	eg. HLF Landscapes; Life+

Annex C

Reviewing SWT site management plans to deliver Biodiversity 2020 outcomes	
1. Research	
1.1	Undertake Priority habitat audit
1.2	Undertake Priority species audit
1.3	Identify overlap with Protected/other important (eg. RDB) species
1.4	Research evidence of best practice for management of relevant Priority habitats/species
2. Evaluation	
2.1	Consider SSSI citations (HLS commitments & notified features)
2.2	Consider Priority habitat restoration/re-creation opportunities
2.3	Consider Priority species recovery opportunities
2.4	Consider other contractual expectations, eg. access etc.
2.5	Consider predictable climate change impacts
3. Rationale & Prioritisation	
3.1	Adjust Management prescriptions/habitat treatment as necessary
3.2	Set up monitoring programme

6. References & Further Reading

(Excluding referenced footnotes in the main document).

Chapter 1.

A Living Landscape for Surrey (Surrey Wildlife Trust, 2010)
A Living Landscape for the South East (Wildlife Trusts in the South East, 2006)
A Living Landscape: A call to restore the UK’s battered ecosystems, for wildlife and people (The Wildlife Trusts, 2006)
5-Year Plan 2013-2018 (Surrey Wildlife Trust, 2013)
Making Space for Nature: A review of England’s Wildlife Sites and Ecological Network (Defra, 2010)
The Natural Choice: Securing the value of nature (HM Government, 2011)
Biodiversity 2020: A strategy for England’s wildlife and ecosystem services (Defra, 2011)
UKNEA: Synthesis of the Key Findings (UK National Ecosystem Assessment, 2011)
European Union Directive 2000/60/EC “Establishing a framework for the Community action in the field of water policy” (EU Water Framework Directive 2000)
Water for Life (HM Government, 2011)
Catchment Based Approach: Improving the quality of the water environment (Defra, 2013)
National Planning Policy Framework (DCLG, 2012)
Lost life: England’s lost and threatened species (Natural England, 2010)

Chapter 2.

National Character Areas - defining England’s natural boundaries (Natural England)
The National Adaptation Programme - Making the country resilient to a changing climate (HM Government, 2013)
Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013 (Climate Change Committee, 2013)
National Biodiversity Climate Change Vulnerability Model (Natural England)

Chapter 4.

South East Biodiversity Strategy (South East England Biodiversity Forum, 2009)
Evaluating Biodiversity in Fragmented Landscapes: Applications of Landscape Ecology Tools (Forestry Commission, 2007)
Evaluating Biodiversity in Fragmented Landscapes: The Use of Focal Species (Forestry Commission, 2007)
The evidence base for ecological networks: lessons from studies of woodland fragmentation and creation (Forestry Research, 2013)
Accessible Natural Greenspace Standard (Natural England)
Blackwater Valley Accessible Natural Greenspace Standard study (SBIC, unpub.)
Natural Childhood (National Trust, 2012)
Last Child in the Woods: Saving Children from Nature-Deficit Disorder (Louv, R. 2005)

Appendices

Appendix i

Making Space for Nature: Recommendations

1. Identifying and protecting England’s ecological network 1.1 Planning a coherent and resilient network

- Recommendation 1.** Local authorities should ensure that ecological networks, including areas for restoration, are identified and protected through local planning. Government should support local authorities in this role by clarifying that their biodiversity duty includes planning coherent and resilient ecological networks.
- Recommendation 2.** Planning policy and practice should:
- Continue to provide the strongest protection to internationally important sites and strong protection from inappropriate development to SSSIs.
 - Provide greater protection to other priority habitats and features that form part of ecological networks, particularly Local Wildlife Sites, ancient woodland and other priority BAP habitats.

1.2 Ecological Restoration Zones

- Recommendation 3.** Ecological Restoration Zones (ERZs) need to be established that operate over large, discrete areas within which significant enhancements of ecological networks are achieved, by enhancing existing wildlife sites, improving ecological connections and restoring ecological processes. We further recommend:
- ERZs should be proposed and implemented by consortia of local authorities, local communities and landowners, the private sector and voluntary conservation organisations, supported by national agencies.
 - To start and support this process, and recognising current financial constraints, we also recommend resources be provided, which can be accessed through a competition, to implement 12 ERZs in the next three years.

1.3 Identifying and protecting ecosystem services

- Space for water*
- Recommendation 4.** Public bodies and statutory undertakers planning the management of water resources should:
- make space for water and wildlife along rivers and around wetlands;
 - restore natural processes in river catchments, including in ways that support climate change adaptation and mitigation; and
 - accelerate the programme to reduce nutrient overload, particularly from diffuse pollution.

- Space for dynamic coasts*
- Recommendation 5.** Authorities responsible for measures to reduce the risks from coastal erosion and flooding should do so in ways that enhance ecological networks where possible. This can be achieved by taking full account of the natural dynamism and functioning of the coast, thereby allowing wildlife and habitats to move and evolve.

- Space for carbon storage*
- Recommendation 6:** Government should produce a strategy to ensure that we protect and secure multiple benefits from our carbon-rich soils and peatlands, and maximise their contribution to ecological networks.
- Natural spaces for people*
- Recommendation 7.** Responsible authorities should take greater steps to reconnect people to nature by enhancing ecological networks within urban environments, including wildlife-friendly management of green spaces, and by embedding biodiversity considerations in the need to adapt to climate change.

- 1.4 Protecting and managing elements of the network in public ownership**
- Recommendation 8.** Public bodies owning land which includes components of England’s current or future ecological network should do more to realise its potential, in line with their biodiversity duty. Further, before disposal of any public land, the impact on the ecological network should be fully evaluated. Where such land is identified as having high wildlife value (existing or potential) it should not be disposed of unless its wildlife value is secured for the future.
- 1.5 Protection through designation or purchase**
- Recommendation 9.** The government should ensure that the remaining areas of high conservation value that currently are not well protected are effectively safeguarded.
- Recommendation 10.** When determining the boundaries of designated sites, responsible authorities should take better account of the need to support underpinning ecological processes and of anticipated environmental change.
- 2. Managing components of the ecological network**
- 2.1 Managing designated wildlife sites**
- Recommendation 11.** The recent progress in improving the management of SSSIs must be sustained, with the aim of moving the condition of sites from ‘recovering’ to ‘favourable’. Investment in the management of the SSSI series must be maintained.
- Recommendation 12.** Local authorities should take responsibility for the identification and monitoring of Local Wildlife Sites and the management of LWS must be improved.
- Recommendation 13.** Responsible bodies should revise conservation objectives for SSSIs and other wildlife sites to respond to the effects of climate change - in particular by aiming to enhance habitat diversity and support underpinning ecological processes, whilst taking account of the requirements of current species and habitats.
- 2.2 Managing protected landscapes**
- Recommendation 14.** In view of the opportunity presented by their existing statutory remits, in National Parks and AONBs:
- (a) favourable condition of SSSIs should be achieved as quickly as possible;
 - (b) non-SSSI semi-natural habitat should be brought under management equivalent to SSSI standards; and
 - (c) other land should be managed so as to enhance connectivity.
- 2.3 Managing ecological networks through incentive schemes**
- Managing wildlife sites through Environmental Stewardship*
- Recommendation 15.** The Higher Level Scheme of Environmental Stewardship must be retained and properly resourced as the single most important tool for maintaining and expanding the most significant areas of priority habitat and populations of priority species. Consideration should be given to improving the quality of advice and putting longer term agreements in place to ensure sustained ecological benefits, while retaining the buy-in of land managers.
- Recommendation 16.** A new type of Environmental Stewardship scheme is needed, particularly to help buffer sites and establish stepping stones and ecological corridors. This should be simple to administer, be available in key areas, and provide support for high cost but relatively simple management measures.
- 2.4 Habitat management and enhancements through payment for ecosystem services**

Recommendation 17. The government should promote economic approaches that will favour conservation management by stimulating the creation of new markets and payment for ecosystem services, to ensure that the values of a wider range of ecosystem services are taken into account in decisions that affect the management and use of the natural environment.

2.5 Providing integrated advice and support for management of the network

Recommendation 18. Government needs to establish a consistent, integrated and long-term expectation of land managers to deliver parts of the ecological network. In doing so, consideration should be given to:

- providing more readily available, high quality advice; and
- developing the Defra Whole Farm Approach to provide an opportunity for those managing land to enter into a 'Whole Farm Plan' which integrates all aspects of a farm's environmental and productive potential, simplifies regulation, increases transparency and gives long term commitments to both farmer and the public.

3. Establishing new components of the ecological network

3.1 Establishing new wildlife sites through habitat creation and restoration

Recommendation 19. Habitat creation by government and its agencies, grant-giving trusts, businesses and the voluntary sector requires greater focus on the needs of ecological networks, in particular the need to contribute to Ecological Restoration Zones.

Recommendation 20. Government should consider extending tax incentives to encourage landowners to make long-term commitments to the creation of new wildlife habitats that benefit ecological networks.

3.2 Improving connections for wildlife

Recommendation 21. Public bodies and other authorities responsible for canals, railways, roads, cycle ways and other linear features in the landscape, should ensure that they better achieve their potential to be wildlife corridors, thereby enhancing the connectivity of ecological networks, and improving opportunities for people to enjoy wildlife.

3.3 Biodiversity offsetting and developer contributions

Recommendation 22. If a formal system of biodiversity offsets is to be introduced, pilot schemes should be established to test and refine its operation, to ensure it meets the conditions we have set out for a safe and effective system.

4. Improving the countryside

4.1 Entry Level Stewardship

Recommendation 23. The design and delivery of the Entry Level Scheme of Environmental Stewardship needs to be improved, in particular to ensure key options are taken up in appropriate combinations over a sufficient area. Delivering a more effective ecological network may require refinements to the schemes, such as rewarding farmers who act cooperatively.

4.2 Achieving good environmental standards

5. Monitoring and evaluation

Recommendation 24. The Secretary of State for the Environment, Food and Rural Affairs should be advised on progress against recommendations in this report after two years, with a full evaluation of the outcomes for England's ecological network after five years.

Appendix ii

Guiding Principles for Biodiversity in Climate Change Adaption

1. Conserve existing biodiversity

The richness of future biodiversity in a changing world will depend on the diversity we conserve today.

1a Conserve Protected Areas and other high quality habitats

These areas will remain important because they have characteristics, eg. low-nutrient soils, which will favour high biodiversity.

1b Conserve range and ecological variability of habitats and species

It is impossible to predict which places will continue to have a suitable climate for a given species or habitat. By conserving the current range and variability we will reduce the probability of all localities being lost, although some losses will be inevitable.

2. Reduce sources of harm not linked to climate

Climate change is one of many threats to biodiversity and by reducing other sources of harm we will help natural systems maintain their biodiversity in the face of climate change.

3. Develop ecologically resilient and varied landscapes

By ensuring landscapes remain varied, and allowing space for physical processes to take place, we will increase their ability to retain biodiversity.

3a Conserve and enhance local variation within sites and habitats

Maintaining diversity in the landscape, eg. vegetation, altitude, slope and patterns of water flow, will increase the chances that species whose current habitat becomes inhospitable will be able to spread locally into newly favourable habitats.

3b Make space for the natural development of rivers and coasts

Changing rainfall patterns and rising sea levels will affect our rivers and coasts. By allowing natural processes of erosion and deposition to take place we will increase the potential for wildlife to adapt naturally to these changes.

4. Establish ecological networks through habitat protection, restoration and creation

Some species will need to move a considerable distance from their current locality if they are to survive climate change. Creating new habitats, restoring degraded ones, or reducing the intensity of management of some areas between existing habitats, will encourage this.

5. Make sound decisions based on analysis

Adopt an evidence-based approach, which recognises that biodiversity is constantly changing.

5a Thoroughly analyse causes of change

Not all change will be due to climate change and by thoroughly analysing the causes of change we will identify those situations where climate change adaptation is needed.

5b Respond to changing conservation priorities

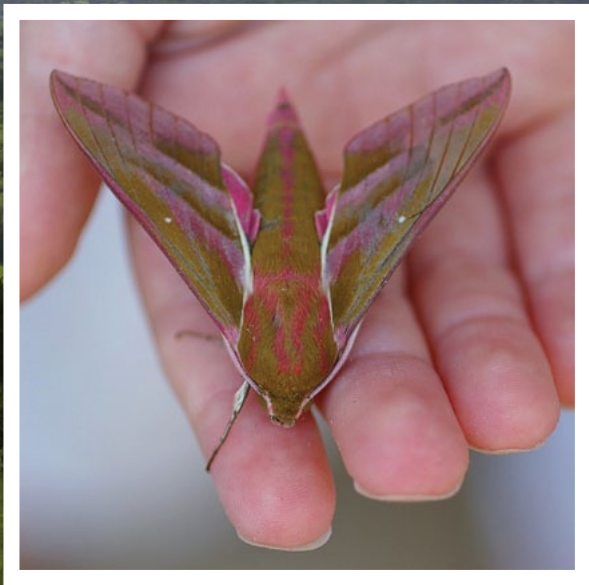
Regularly review conservation targets to ensure resources are directed towards genuine conservation priorities as some species increase, others decline and habitats change in character.

6. Integrate adaptation and mitigation measures into conservation management, planning and practice

When reviewing conservation management plans, consider the impacts of climate change, eg. more frequent summer fires and floods, and make changes as appropriate. Where they can be identified, reduce release of greenhouse gases to the atmosphere.



“ Surrey Wildlife Trust’s Living Landscapes Strategy sets out a clear plan to achieve a coherent & resilient ecological network within our county over the coming decades...”



Surrey Wildlife Trust, School Lane,
Pirbright, Woking, Surrey GU24 0JN
Enquiries: 01483 795440
Email: info@surreywt.org.uk



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