



Contents

Note on status of discussion paper	1
LNPs' role in identifying new and enhancing existing ecological networks	2
Policy background	2
Interim findings of the LNP evaluation.....	3
Area discussed during the thematic workshops	8
Useful publications	10



Note on status of discussion paper

This discussion paper is a draft working document and will be revised.

LNPs' role in identifying new and enhancing existing ecological networks

The purpose of this discussion paper is to provide some 'food for thought' on a topic stakeholders wished to discuss in more depth on the basis of the findings from the Local Nature Partnership (LNP) Phase II Evaluation to date. The evaluation is being delivered by ICF International (ICF) and our associate, Rick Minter, for the Department for Environment, Food and Rural Affairs (Defra). The aim of the evaluation is to examine the implementation and outcomes of LNPs, and support and enable LNPs to work with representatives from other partnerships and organisations to determine the potential to improve coordination between other initiatives.

This paper covers LNPs' potential role in identifying new and enhancing existing ecological networks.

The consultations completed by ICF during the first stage of the evaluation highlighted that the majority of LNPs are either working to support ecological networks, or intend to do so but have not yet started. This includes working with Nature Improvement Areas (NIA) that currently received national funding, and working to identify new locally-determined NIAs. Some LNPs have also been engaged in the delivery of strategic landscape conservation actions as part of the Defra biodiversity offset pilots, and other trials of conservation offsetting at the local scale.

This paper includes a brief summary of policy related to ecological networks in the UK, an overview of the interim findings of the LNP evaluation, the main challenges LNPs encountered related to ecological networks, and examples of how LNPs have successfully undertaken initiatives related to ecological networks. The paper also provides some initial thoughts on the 4 issues suggested by LNPs:

- How can LNPs assume a leadership role through ecological networks?
- How can further exchange of best practice be developed by LNPs?
- What are the baseline evidence requirements for an ecological network?
- How could new types of ecological networks be developed?

Policy background

The strengthening of ecological networks and reversal of habitat fragmentation were identified as key priorities within the 'Making Space for Nature' Review of England's Wildlife Areas chaired by Sir John Lawton. Policy outcomes from the report's recommendations included the establishment of a network of Nature Improvement Areas. There are now 12 NIAs in operation across England and receiving £7.5m of public support. NIAs are typically managed by a range of conservation bodies, but some are also run by Local Authorities and one is run by a group of farmers. NIAs have often provided loci for experimentation with new methodologies or management approaches.

NIAs should contain the components of an ecological network:

- Core areas, such as existing wildlife sites and SSSIs.
- Corridors and stepping stones.
- Restoration zones.
- Buffer zones, reducing pressure on core areas.
- Sustainable management of surrounding land.

Phase II of the Monitoring and Evaluation of NIAs is currently ongoing (2013-2015). Following key outcomes of the First Phase M&E, which included the development of an online recording tool to aid the monitoring of NIA condition, the Second Phase is intended to

provide further refinements to monitoring tools, better integration of data, and specific support to locally-identified NIAs as these emerge.

In addition to NIAs, **there has been a reinforcement of the role of ecological networks within the planning framework in England**, giving greater emphasis to existing and potential networks and the resilience of wildlife and ecosystem services. The National Planning Policy Framework (NPPF), published in 2012, provides a strategic framework to enable sustainable development in the UK. It reflects recommendations from the Natural Environment White Paper and recognises the roles of LNPs, AONBs, and statutory and non-statutory organisations in enhancing the natural environment. As part of the planning framework, the NPPF states that planning policies should identify and map ecological networks and areas identified by local partnerships for habitat restoration and creation.

Local Nature Partnerships have a key role to play in the local delivery of the **Biodiversity 2020 targets**. These have superseded Biodiversity Action Planning as the framework for securing biodiversity within the England Biodiversity Strategy and emphasise the importance of a strategic, landscape scale view of conservation actions as outlined in the Natural Environment White Paper (2011). **Many Local Nature Partnerships have since identified Biodiversity 2020 targets as their organisational goals.**

Through their strategic and influencing roles, LNPs are well-placed to identify and facilitate ecological networks locally, by bringing together evidence and co-ordinating the actions of local partners. There is scope for LNPs to work to enhance delivery of current ecological networks, and also to help in the identification and elaboration of future ecological networks; LNPs have been specifically encouraged to do so.

Interim findings of the LNP evaluation

The majority of LNPs are either working to support ecological networks, or intend to do so but have not yet started. This includes working with Nature Improvement Areas (NIA) that currently received national funding, and working to identify new locally-determined NIAs and other ecological networks.

As part of their general enthusiasm to share learning about ecological networks, most LNPs are interested in the experience of other LNPs in this area. LNP participants would like to know how other LNPs are interacting with ecological networks, what work they are undertaking together, and what skills and expertise LNPs are drawing upon to enhance local ecological networks.

LNPs can contribute to ecological networks in a variety of ways. Examples from South West England emphasise the ability for LNPs to build on pre-existing networks and to promote greater integration of existing initiatives at a landscape scale. There is some scope for LNPs to engage with parallel activities in the water sector (for example, enhancing links between forestry and land stewardship activities and catchment restoration at a landscape scale). LNPs can play the role of an ‘honest broker’ in this regard, obtaining buy-in and building consensus across stakeholders. Engagement with local authorities, in particular, could be key to the development of ecological networks.

Table 1.1 summarises interim findings from the LNP Evaluation on the key elements of ecological network delivery and the potential role for LNPs at each stage.

Table 1.1 Elements of network delivery, and the role for LNPs

Key elements of network delivery	Potential role for LNPs
Mapping actual and potential habitats, wildlife sites and linkages	Ensuring consistency and reliability of ecological datasets, particularly with regard to the integration of data
Planning for greater connectivity amongst wildlife sites	Providing input into planning consultation and monitoring potential impacts on ecological connectivity
Building consensus amongst local	Consulting local interest groups such as landowners, who

Key elements of network delivery	Potential role for LNPs
stakeholders	may be sceptical about the mapping process
Decision support systems for networks and connectivity	Ensuring effective use of decision-support tools and metrics at the local level
Identifying actual and potential impacts on wildlife sites	Drawing on local and expert ecological knowledge to assess impacts
Data collection and data integration	Promoting the use of standardised monitoring practices and information systems to ensure better comparability of data
Monitoring of wildlife sites and connectivity	Integrating ecological knowledge and understanding of local trends; harmonising evaluation processes

Source: ICF, 2014. *Evaluation of LNPs: Interim Report*

Main successes

The evaluation found that LNPs most frequently worked with the concept of ecological networks as a means to pull together different data and activities, and to add value to these activities. LNPs have been well-placed to contribute to ecological networks such as NIAs in this respect due to their diverse membership and expertise, and links to a range of sectors.

Decision-support tools are often developed as an outcome of development processes for NIAs and ecological networks, and can support public and policy engagement with the network concept and more transparent management, as evidenced by the broad range of stakeholders involved in projects such as the Cheshire Ecological Network. LNPs are well-placed to promote the integration of these tools across a range of activities and communities of interest.

The experience of Biodiversity Opportunity Mapping in the Trent Valley (see Box 2) indicates that scientific methodologies and tools need to go hand-in-hand with local knowledge in a coherent and structured manner. LNPs can support this process through workshops exploring the local applicability of these tools. The Trent Valley example also highlights the importance of finding pragmatic solutions for the design of ecological networks which balance short-term conservation and development needs with more long-term goals.

As the example of Swindon and Wiltshire LNP highlights, networks need to account for multiple spatial scales as well as different temporal scales. LNPs can play an important role in highlighting and linking small-scale and large-scale elements of existing conservation areas within a common strategic framework at the landscape scale. These measures should, as far as possible, provide a link to existing frameworks at the local or regional scale (building on previous work relating to Biodiversity Action Plans, for example).

Obtaining consensus around the desirability of ecological networks is crucial to ensure their long term viability and there are a number of strong examples of LNPs working towards achieving buy-in from traditionally sceptical stakeholders such as landowners. The example of the Marlborough Downs ecological network was cited, where the Local Authority used a combination of informal networking and peer pressure to ensure the engagement of all affected landowners.

Key success factors for LNPs to engage with the development of ecological networks relate to: effective use of data, whether through the integration of existing monitoring activities or the development of new decision-support tools; and, engagement of a range of local communities of interest within the development and maintenance of the network over the long term.

Examples of success

Examples of effective LNP engagement have built on previous initiatives, either at the county level (Cheshire's LIFE pilot project) or regional level (Link2Nature's use of the Southwest Rebuilding Biodiversity Methodology). There is a need to consider how LNPs could promote

greater engagement with the network concept in the absence of an existing policy framework or data infrastructure - **transferability of knowledge and tools are key points for discussion** in this regard. The proliferation of standards and monitoring frameworks are issues that most LNPs are grappling with

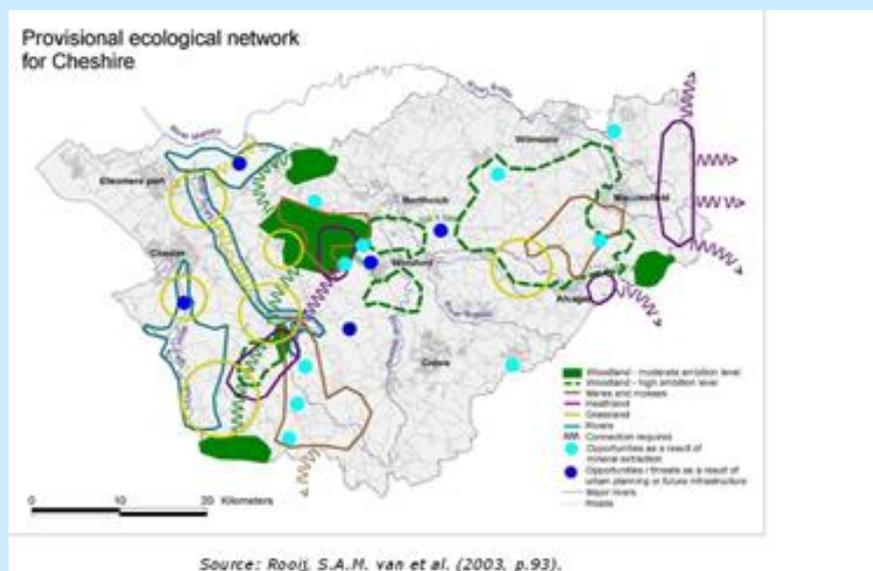
Box 1 Planning for connectivity: Cheshire Ecological Network

Many official policy documents relating to ecological networks point to the early example of implementation of ecological networks in Cheshire, which is an outcome of a major European project with input from Dutch research and consultants with technical expertise in the creation of ecological networks. Cheshire LNP is now taking this work forward, building on previous initiatives and innovations at the county level.

The Cheshire EONet project (1993) was delivered by Cheshire County Council Environmental Planning Service with the support of a wide range of rural agencies, landowners and farmers, community groups and individuals. Financial support was provided by the EU's LIFE facility, and it is envisaged that the Cheshire Ecological Network will encompass 4000 hectares of new and restored peatlands, heathlands, moorlands, meadows and wetlands. One outcome of the initial programme was a decision-support tool (the EONet monitoring tool). In addition, the network concept was incorporated into Regional Planning Guidance and Community Strategy (prior to the integration of networks within the NPPF). There is thus a strong institutional and technical background associated with the delivery of ecological networks in Cheshire.

The first stage of this project involved representatives from Natural England and representatives from local councils and universities through the development of a project group. This group then developed more refined maps so as to apply for LIFE funding. Following the successful allocation of LIFE funding for the project, the consortium broadened to include utility companies, regional development agencies and specialist consultancies. Later, land use planners, statutory agencies and conservation bodies were presented with alternative scenarios for implementation. Data and capacities were thus built up over time in an iterative fashion.

A key element of the Cheshire Ecological Network is to **make explicit the links between biodiversity and social and economic benefits**. This includes the integration of the network concept into farming, forestry, land regeneration, and restoration of mineral workings and landfill sites. Socio-economic benefits from the project were outlined in 2004, and it was established that significant improvements to job creation, quality of life and wealth creation could be realised through the creation of the Cheshire Ecological Network. For example, **over 550 jobs are expected to arise in the farming sector over 20 years through diversification of management practices**. Based on experiences from the EONet project, such evidence is essential to build the necessary support and engagement across policymakers and communities to deliver effective networks and to ensure their viability over the long term.



Source: Rooij, et al. (2003)

Box 2 Decision support systems: Trent Valley Biodiversity Opportunity Mapping

The GIS Habitat Network Model developed by the National Forest Company is based on the permeability of different habitats to the movement of species. It uses a “generic focal species” to represent each of four habitat networks (woodland, grassland, heathland and wetland), and every Phase 1 habitat that is mapped is assigned a permeability value for each of the four generic species. The permeability values are based on the work of Roger Catchpole at Natural England and but can be modified to reflect local conditions/circumstances.

The Model then uses “least cost analysis” to calculate how far the generic focal species can move from its core habitat, with species moving further through more permeable habitats than through less permeable ones; for example, the woodland focal species can move well through habitats that are similar to woodland, such as scrub, but not through habitats which are very different to woodland, such as arable farmland or grassland. Therefore, core habitats that are surrounded by more permeable habitats will allow for stronger networks than those separated by impermeable ones. Where areas of core habitat become linked, these are referred to as Habitat Networks. To assist in the interpretation of this data, Habitat Networks have been placed into different categories depending on their size (which is the size of the Habitat Network, not the size of the core habitat contained within the Habitat Network), so that large Habitat Networks (containing areas of well-connected habitats) can be distinguished from small Habitat Networks (representing isolated and fragmented areas of habitat).

Stakeholder workshops were held in April and June 2013, during which participants were asked to annotate the Habitat Network maps for each of the four habitat types, for two timescales- a 10-year period and a 50-year period. This highlighted opportunities for ‘short-term’ and ‘long-term’ network elements, reflecting alternative ecological timescales but also the influence of different management actions over time.

Box 3 Mapping actual and potential habitats: Link2Nature (Swindon and Wiltshire LNP)

Swindon and Wiltshire LNP represents a highly successful example of how LNPs can engage with multiple interests and organisations to contribute to ecological networks across a diverse range of geographical settings.

Strategic Nature Areas have been developed across the Southwest, using available biodiversity data, local expert knowledge and the Southwest Wildlife Trust’s Rebuilding Biodiversity methodology, a science-based framework for identifying viable target areas for priority habitats and creation of a robust ecological network. Building on this approach, **Landscape Biodiversity Areas** have been developed from the previous Wiltshire and Swindon Biodiversity Action Plans, and work alongside existing initiatives in the counties such as the RSPB’s Futurescapes Project, the Environment Agency’s work relating to the Water Framework Directive and catchment-sensitive farming, as well as three AONBs covering 44% of the county.

The basis of LBAs is to identify specific opportunities for landscape-scale conservation actions (including Nature Improvement Areas) within these wider areas, as well as areas of alignment and conflict between existing areas. This underlines the need for multiple scales of analysis within the identification and development of ecological networks. In addition, LBAs are utilised to propose restoration or buffer zones within large-scale planning applications for development- ensuring alignment with existing ecological networks.

Efforts are undertaken by Link2Nature to promote **standardised monitoring methodologies** such as Butterfly Conservation’s Butterfly Transects or BTO’s Bird Atlas, so as to ensure the best collection protocols are followed and that data gathered can be analysed against data collected anywhere. In addition, the local Biodiversity Records Centre has over 1 million records- advanced filtering and monitoring of this data is undertaken to identify reliable long-term datasets which can be used to analyse trends in species and ecosystems.

Targeted use of agri-environment schemes, such as Land Stewardship Agreements are a key example of how engaging agricultural stakeholders can help strengthen the long-

term viability of networks. In the Nene Valley NIA, for example, over 1500ha of land has been entered into High Level Stewardship (HLS) agreements so as to strengthen the ecological network.

Agri-environment schemes can be instrumental in establishing a link between conservation interests and rural livelihoods. Nonetheless, the focus of these agreements remains largely on farm-level interventions and there are few incentives for farmers to act cooperatively, as recommended within the Lawton Review. LNPs can play a key coordinating role in this regard, identifying the specific 'building blocks' of agri-environmental agreements that would be needed to contribute to greater ecological coherence. This could then form the starting point for agri-environmental payments to landholders, or a coordinated action to strengthen the financial viability of these activities, such as the proposal for a local NIA. Main challenges

Interviews with LNP representatives indicate that the main challenge for LNPs encountered when engaging with ecological networks is ensuring adequate exchange of information and best practice prior to the identification of new networks. In particular, there is a need to consider strategic alignment with current or planned networks, developments that may impact on the future resilience of any network, as well as long-term ecological and climatic trends that could influence the viability of the network. Often, **scoping of potential networks is robust from an ecological perspective but pays insufficient regard to issues surrounding social acceptance and local engagement**- these have proven to be key success factors for many existing networks and will influence long-term viability of the network elements. Hence, LNPs have a key role to play in engaging relevant local partners and interests.

There is a need for greater engagement with the Ecosystems Approach within the design and management of networks, to ensure coherence with national-level policy drivers and to identify trade-offs and synergies between conservation goals and local social and economic priorities. There remains a widespread perception that ecological networks are primarily a restriction or barrier to local growth and economic development, and this can result in concern or even resistance amongst local stakeholders. In particular, the initial NIA designation process was cited by discussion group participants as being interpreted as 'designation by stealth' amongst local economic interest. Great care will need to be taken when consulting on future ecological networks to avoid these perceptions.

Cheshire Ecological Network provides a good practical example of addressing socio-economic concerns within ecological planning. However, indirect links have been forged to socioeconomic considerations in other network projects. For example, the England Habitat Network has been used as part of a public benefits scoring system in the Northwest region to inform land use decisions, and has also been used within the Thames Gateway project as an element within Green Infrastructure planning.

Barriers

- Different participants fear that LNPs **lack credibility and support** from some of their members to play an important role in the mapping of ecological networks;
- They also stated that there could be **conflict between the interest of the LNPs' members and the interest of the LNP as a whole**. There might also be cases of conflicting initiatives;
- An additional risks perceived by the participants is the **lack of continuity of partners and projects**. The loss of important expertise at local level due to LNP members leaving their posts or retiring was also highlighted. This does not apply to ecological networks only but was perceived as a general risk;
- Finally the **lack of effective and strategic planning** in the LNP was perceived as a barrier for their work;
- The common **interpretation of ecological networks as a barrier to local growth** and development can result in concern or even resistance amongst local stakeholders;

- Similarly, the somewhat **opaque process for initial NIA designation** has led to a perception that these represent ‘designation by stealth’ for environmental purposes: great care will need to be taken when consulting on locally-defined NIAs for this reason;
- Conversely, attempts by LNPs to focus ecological networks on socio-economic or Green Infrastructure outcomes **may distract from delivery of Biodiversity 2020 objectives**.

Opportunities

- Given their composition, LNPs could play a key role in the **definition of the needs of their local areas in terms of ecological networks mapping**. They could assess whether the existing tools are fit for purpose and advise on their use. They could also ensure that the right people are engaged in the mapping process;
- As already highlighted, LNPs could play an important role with regard to the **landowners’ engagement** in the ecological network. The example of the Marlborough Downs NIA was mentioned. There, the local authorities used informal networking and peer pressure to ensure the participation of all the local landowners;
- The **possibility to engage with local Agents** was also mentioned. They are considered as key in the development process but there was a big interrogation about their readiness to dedicate time and effort to ecological networks;
- LNPs can play a **key role in raising awareness by highlighting successes** of their partners in areas relevant to ecological networks (eg. Green Infrastructure);
- Participants noted the possibility to link ecological networks to contemporary concepts in planning and development circles (eg. place-shaping and resilience agendas) thus contributing to the mainstreaming of the concept;
- The participants also recognised that LNPs could play a **key role in the transfer of knowledge to the younger generation**. This is similar to one of the LEPs’ priorities and synergies could therefore be identified in this field. This could take the form of schemes encouraging senior LNPs members to mentor new staff. Such initiative would prevent loss of institutional memory. More broadly LNPs could play a role in highlighting the loss of practical skills in the field of environmental management.

Area discussed during the thematic workshops

The four issues listed below were identified by LNPs as issues they would like covered during the thematic evaluation. Each issue was considered during the thematic workshops.

How can LNPs assume a leadership role through ecological networks?

Work undertaken to engage the public with NIAs suggests the concept of ecological networks resonates strongly with the wider public. For example, three NIAs recorded over 1000 hours of volunteering in their first year of operation, and the CONNECT project (Humberhead Levels NIA) resulted in an additional 5,000 hours of volunteer time. Such voluntary activities have a strong relevance given the unfunded status of most LNPs. LNPs could draw on their diverse membership to help develop new forms of public participation, helping to engage people with the natural environment through the channel of ecological networks.

In particular, LNPs can play a key role in the transfer of environmental knowledge to younger generations through the medium of ecological networks, by strengthening the focus of LNPs on skills and training for young people. This could also take the form of schemes encouraging senior LNP members to mentor new staff and volunteers, preventing the loss of institutional memory. More broadly LNPs could play a role in highlighting the loss of practical skills in the field of environmental management, and promote ecological networks

As an advocate for the environment within business and local economic decision-making, as well as a conduit for a range of local conservation interests, LNPs are well placed to contribute to the identification of new, ecological networks. In particular, LNPs could provide

the role of a broker to facilitate discussions and exchanges between interested parties and development of consortia

LNPs contribution to ecological networks could be developed further through:

- The use of thematic 'best practice' events (similar to the event on grasslands management hosted by North Devon NIA).
- The development of supplementary planning and decision-support guidance tools that could be applied more broadly.
- Collaborative communication and research exercises with local universities, schools and agricultural colleges, potentially leading towards bids for research grants.

LNPs could play a crucial role in communication around ecological networks- if they build credibility over time and make sure the right people are talking to the right audiences. LNPs could have a role to play in integrating existing initiatives (e.g. the RSPB's Living Landscapes, the Environment Agency's Catchment Based Approach) under the concept of a local ecological network. Doing so would help all parties realise efficiencies of scale in monitoring and management, and also provide the necessary scale and experience to bid for national or EU funding- as the example of Cheshire Ecological Network demonstrates.

How can further exchange of best practice be developed by LNPs?

LNPs are the natural link between national and local networks for exchange of best practice, and have a key role in assessing the applicability, in terms of relevance and quality, of nationally and regionally produced information. They can also provide a link with local conservation interests to disseminate information and best practice. In particular, LNPs can play a key role in raising awareness by highlighting successes of their partners in areas relevant to ecological networks, such as green infrastructure.

There has been engagement and knowledge sharing between NIAs: two NIA best practice events have been held, an online discussion forum has seen increasing uptake, and an NIA forum has been held. Such opportunities for peer exchange provide a valuable means for sharing best practice relating to some of the complex issues surrounding ecological networks. Often, the challenge for those involved in the development of ecological networks is how to make effective use of existing data and monitoring activities, and how to decide what types of data to use. For example, some LNPs and Wildlife Trusts are engaged in the development of decision-support tools to simplify the process for developing local ecological networks, combining national-level data with local information that can be 'plugged in'. These tools can significantly reduce the time and resource investments for LNPs in developing ecological networks, but in the absence of original workshops or consultations, care should be taken in the selection of data, to ensure important local priorities or opportunities are not missed. During the thematic workshop the point was repeatedly raised about the large number of tools that currently exist but are sometimes underutilised due to a lack of awareness or knowledge. LNPs have a key role to play in ensuring the right tools are applied appropriately. The concept of ecological connectivity requires a clear and transparent understanding of the links between landscape-scale actions and national-scale priorities under Biodiversity 2020. LNPs could provide a link between local and national priorities in this respect, by working towards harmonisation of standards for monitoring and reporting (for example, through promotion and capacity-building in the use of national or international standards) as well as coordinating the development of 'decision-support tools capable of integrating different forms and geographies of data (for example, considering local socio-economic pressures alongside ecological drivers).

Workshop participants noted the possibility to link ecological networks to contemporary concepts in planning and development (e.g. place-shaping and resilience agendas), helping to mainstream the concept of ecological networks. However, participants also noted that focussing too heavily on socioeconomic outcomes could detract from delivery of Biodiversity 2020 objectives, a core operational remit for many LNPs. In practice, it is likely that both agendas should be balanced by LNPs depending on local conditions.

What are the baseline evidence requirements for an ecological network?

LNPs are typically the local holders of detailed ecological datasets, which can indicate long-term trends in species populations and habitats and provide the basis for establishment of an ecological network. In the LNP discussion group, participants highlighted a range of ways in which LNPs can contribute to the mapping of ecological networks:

- LNPs could provide an overview of existing mapping approaches and possible advantages or disadvantages (for example: single-species mapping, multi-species mapping, mapping based on different layers or criteria, or opportunity mapping).
- LNPs could provide advice on how to apply these approaches in practice and how they could be combined (for example, drawing on expert judgement).
- LNPs could identify gaps in existing approaches and opportunities to address these.
- LNPs could ensure that all existing data are actually used by local stakeholders.
- LNPs could then ensure engagement and buy-in from all members in decisions relating to identifying and establishing ecological networks.

Experience from existing projects highlights the need to evaluate a broad evidence base when assessing and developing ecological networks. LNP links to local planning professionals and developers could be utilised effectively. In particular, the importance of socio-economic and climate change influences on the integrity of ecological networks, but there is also a more fundamental question of how to integrate data. Existing examples often adopt a multi-level approach, combining large-scale landscape units with more precise data on specific species and habitats, but a lack of standardised datasets and monitoring processes can create issues in the use of this data. Geographical Information Systems can correct for some of these issues but many users lack the appropriate geo-statistical abilities to align data with geographical conditions. Development of guidance or exchange of best practice relating to these processes would be beneficial at the national scale, and could be coordinated or disseminated by LNPs.

How could new types of ecological networks be developed?

Most existing ecological networks in the UK focus on a limited range of terrestrial habitats. There is a need to extend development and implementation to other types of habitat such as freshwater, coastal and marine environments so that patterns of connectivity can be more clearly understood and more effectively managed. In the case of freshwater bodies, for example, there may be significant potential to align LNPs with the EA's catchment-based approach and ongoing Integrated Catchment Management Pilots from a perspective of ecological networks. Thinking creatively about such 'blue-green' linkages could help to identify new opportunities for strengthening ecological coherence as well as new partners and communities of interest in the water and marine environment. **Within Dean Park NIA, £2.1m has been secured from the Catchment Restoration Fund for water quality improvements.**

Useful publications

Most literature relating to design and management of ecological networks focuses on either policy-side drivers, or ecological analysis and management aspects. Comparatively little attention is paid to the 'day-to-day' aspects of maintaining an ecological network (for example, addressing issues such as public engagement and volunteering). This gap may be addressed by increasing the exchange of experiences between NIAs, and between LNPs managing ecological networks.

Potentially useful publications include:

- **Making Space for Nature: A Review of England's Wildlife Areas** (2010)¹, or the 'Lawton Review', provides a good introduction to ecological and policy issues relating to the management of ecological networks in an English context. It identifies the 'building blocks' needed to construct an effective ecological network, which it regards as the starting points for analysis of potential networks.
- **Guidance on the Maintenance of Landscape Connectivity Features of Major Fauna and Flora** (IEEP, 2007)² provides an introduction to some of the scientific issues surrounding the design of ecological networks, as well as potential impacts of climate change on the integrity of existing networks and links to EU policy drivers.
- **The Current Status on the Practical Implementation of Ecological Networks in England** (Natural England, 2008)³ reviews a range of issues surrounding the implementation of ecological networks- including issues surrounding capacities and policy coordination. Although many of the frameworks it addresses have been superseded, it provides a useful overview of practical and management issues relevant to ecological networks.
- **Monitoring and Evaluation of Nature Improvement Areas** (Collingwood Environmental Planning, 2013)⁴ reviews experience of NIA implementation across England, highlighting particular areas of success measured against NIA Thematic Areas. It also outlines barriers that would need to be addressed within the Second Phase of NIA Implementation- which could point to the potential coordinating role of LNPs.

¹ <https://www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today>

² http://ec.europa.eu/environment/nature/ecosystems/docs/adaptation_fragmentation_guidelines.pdf

³ <http://www.ecologicalnetworks.eu/documents/publications/ken/EnglandKENWP2.pdf>

⁴ <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/funding/nia/monitoringandevaluation.aspx>