Biodiversity Opportunity Mapping for Central Lincolnshire authorities

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Achieving more for nature

GLNP

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Contents

1. Introduction

In early 2019 the GLNP created a Biodiversity Opportunity Map (BOM) for North Lincolnshire Council area as part of their requirements in producing a new Local Plan. The GLNP was approached because of their expertise in GIS mapping. This expertise and experience led Central Lincolnshire authorities to undertake the same BOM exercise with GLNP for their area during the refresh of the Local Plan.

2. Purpose of maps

Central Lincolnshire authorities have a multitude of obligations in producing a new Local Plan. In particular the text within the updated National Planning Policy Framework[1] (NPPF) states that:

"174. To protect and enhance biodiversity and geodiversity, plans should:
a) Identify, map and safeguard components of local wildlife-rich habitats and wider 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 national and local partnerships for habitat management, enhancement, restoration or creation; and
b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."

As such all plans produced after the revised NPPF need to include some kind of maps to show current areas of ecological importance (a) and opportunities (b). This paragraph also indicates the need for some kind of monitoring, reporting and even updating of the maps to determine if measurable net gains have been made.

3. Background research

Given rising interest in ecological network mapping and BOM the GLNP undertook research into the methods and presentation of maps in 2017. There are three key messages from this research:

- All the map methods available for scrutiny are different. While there is some consistency in the kinds of data used (e.g. statutory site boundaries) there is no consistency in how these are used or interpreted.

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[1] MHCLG (2019) National Planning Policy Framework

- Most existing maps are not accompanied with a detailed method statement that would allow updates to be made in a consistent fashion.
- The resulting map is primarily dependent on the quality and quantity of data available. Changes to data availability can significantly alter priorities. This includes both mapped GIS data and expert opinion.

Given the purpose of the maps for Central Lincolnshire it was important that the GLNP document the process in detail in order for the maps to be consistently updated over time and when more data becomes available.

In addition, it must be noted that many of the maps researched were created over 10 years ago. Over time the availability of data, expertise and methods have significantly changed.

4. How the maps were created

The creation of the maps was a simple process. A desktop exercise using data held by the Lincolnshire Environmental Records Centre (LERC, part of the GLNP) enabled the creation of a map with a limited number of biases that can be recreated in other areas and over time in a consistent fashion.

In addition, to visually simplify the process for users, two maps were produced. The first map simply identifies existing areas of value that are physically linked. This is in essence an ecological network map and forms a baseline; para 174 (a) of the NPPF. The second map builds upon the first looking at the potential opportunities for biodiversity around the existing network. This is the BOM as it prioritises opportunities and works towards para 174 (b) of the NPPF.

The creation of a BOM also often involves a 'truthing' of the map using local experts. This enables the quality, quantity and interpretation of the data to be proofed against the known conditions on the ground. This step was not undertaken by Central Lincolnshire authorities.

4.1. GIS flow diagram and decision process

As described, each BOM map has a custom process and this is no different. The process and the rationale behind it are described in the two flow charts below.

These maps learn from the experiences of the past and use more recent technology; therefore it is important to highlight two significant differences from previous methods:
- Most network maps attempt to define an ecological linkage through a nominal distance that species could travel. Some maps use figures in the hundreds of metres. While such

distances may be appropriate for some species they are not appropriate for all and do not take into consideration the type of intervening land use or the behavioural ability of species to travel. This map relies upon physically connectivity of the landscape to assume ecological connectivity. While this can be seen as simply a smaller nominal distance we believe it is a more realistic representation and sound basis given the purpose of the maps.

- Most network maps use a buffer approach (as linked with the nominal distance above). This applies an equal distance on all sides of the area of interest and in many cases will overlap with areas that are not practically part of a network or an opportunity. This is particularly the case in urban areas where buffers overlap with existing housing. This map uses MasterMap polygons instead. These polygons have a description of the land use within the data and therefore areas not of value or opportunity can easily be excluded (as described in the flow diagrams). This is a much more practical decision as it enables real areas of potential to be identified and then change measured over time. However, the result can be rather odd looking depending on the size and shape of the polygons.

Diagram 1 – Flow diagram for the ecological network map

This is a standard description of biodiversity value and data is available

Is it a priority habitat?

Yes → Part of the ecological network (dark green)

No → Is it GI or a designated site?

Yes → Is it adjacent to priority habitat?

No → Is it GI or a designated site? → No → Not part of the ecological network

Is it adjacent to priority habitat? → No → Not part of the ecological network

Yes → Part of the ecological network (light green)

Other green areas will provide some value especially if adjacent to areas of higher value. Data is available

This means that green areas not adjacent to areas of higher value are excluded

Diagram 2 – Flow diagram for the BOM

Is it adjacent to the ecological network?

No → Not part of the BOM

Yes → Is it an existing urban area or road?

Excluding existing 'grey' infrastructure reduces the risk of 'false' opportunities

Yes → Not part of the BOM

No → Is it Grade 1 or 2 agri land?

Planning policy does not support land use change on high value agricultural land

Yes → Not part of the BOM

No → Is it adjacent to two or more parts of ecological network?

Yes → An opportunity area – joining up the network (dark brown)

No → An opportunity area – extending the network (light brown)

A higher priority opportunity as it connects networks together into one and also creates a more resilient network

This creates resilience so is a priority, but not as great an opportunity as those areas that also connect
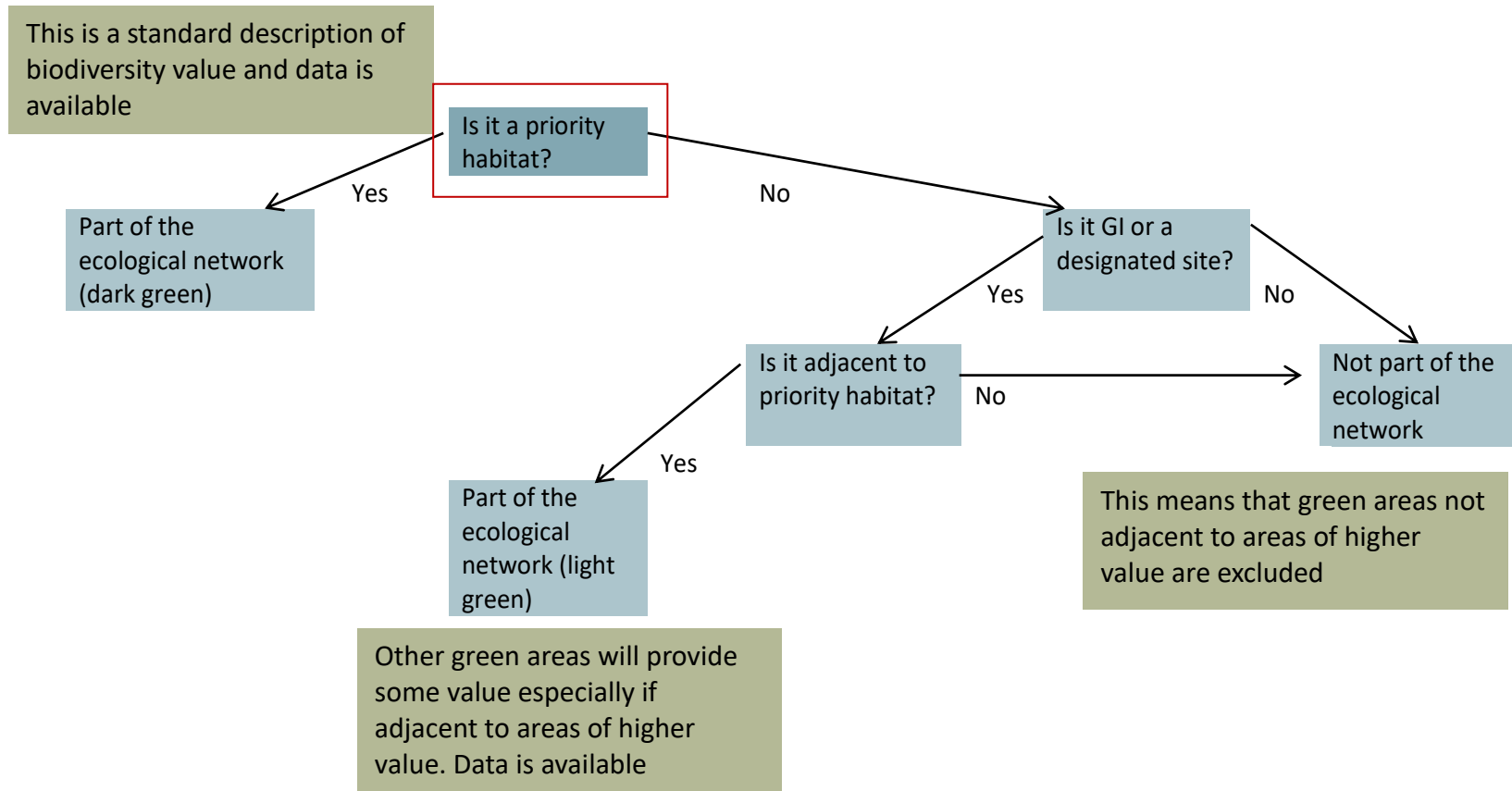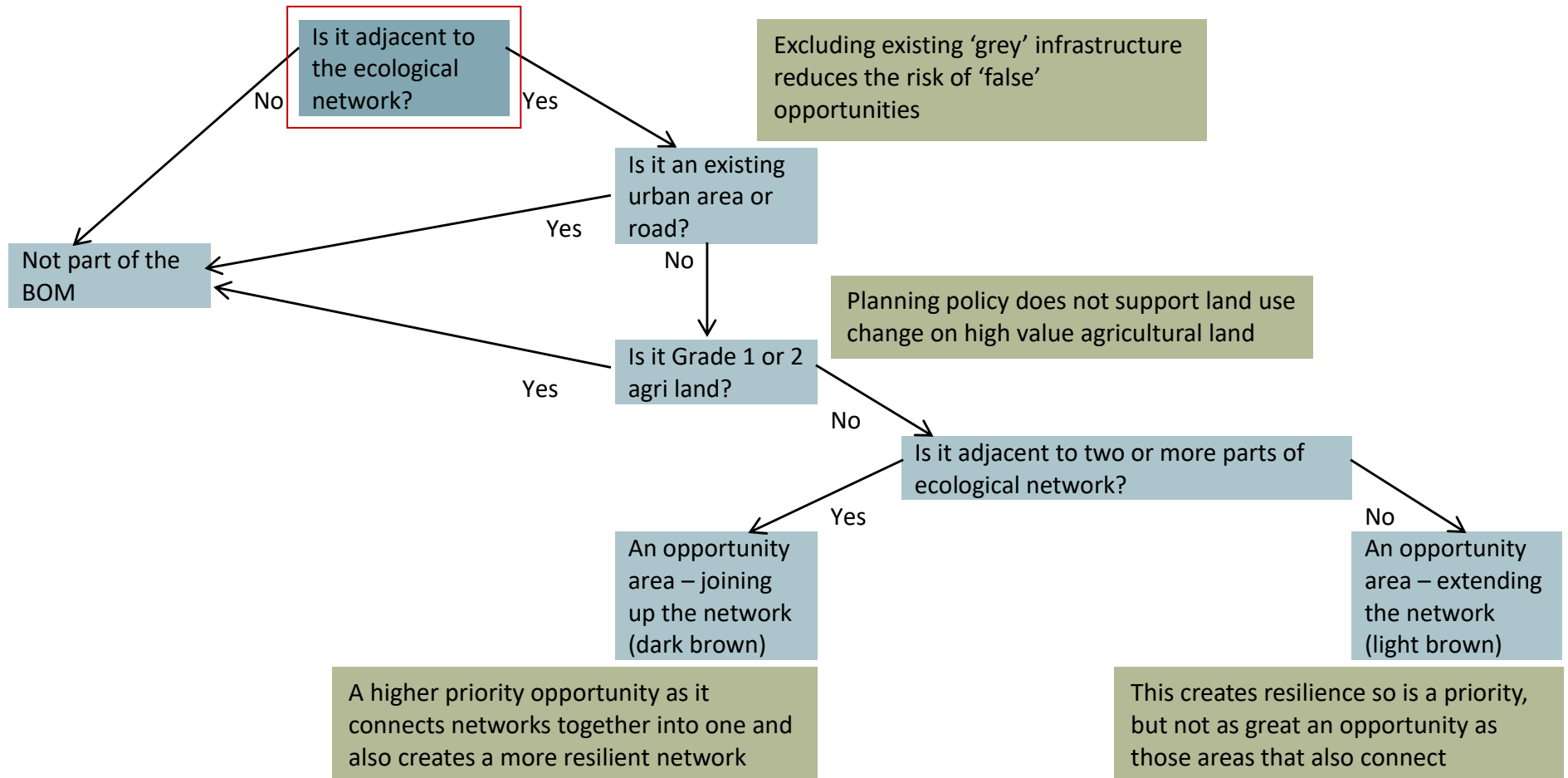
4.1.1. Confidence in the GIS data

Given that changes in data can significantly alter the maps it is important for the GLNP to describe our confidence in the data:

- Very high confidence – that the maps represent the data provided. I.e. that the method described has been followed correctly.
- High confidence – that the habitat data mapped by GLNP reflects the ecological conditions at the time of mapping. I.e. if the maps show Priority Habitat we are confident it is Priority Habitat.
- High confidence – that the greenspace mapping taken from OS MasterMap is accurate and relatively complete.
- Medium confidence – that the ecological networks represented are the total resource. The data held is from specific surveys and projects, there has been no complete survey of the area. As such it is likely that areas of ecological importance are missing from the maps. However, given surveying of areas of ecological importance over a number of years we do not expect any large or significant areas to have been missed. Expert opinion is particularly important here.
- Low confidence – that the mapped statutory sites reflect the ecological conditions. Any statutory site without habitat data has simply been mapped as 'greenspace'. Given the designation it is likely to meet Priority Habitat status. It is simply that we do not have the data to confirm this. Expert opinion is particularly helpful here.

4.1.2. Technical GIS data

The production of the maps was via SQL in Mapinfo. The exact SQL code uses the names of our datasets and would therefore not be helpful to replicate here. Instead a generic description of the datasets used is given below for replication purposes.

Dataset	Classification	Notes
GLNP Priority Habitat data	Priority Habitat	Overrides any other classification
GLNP non-Priority Habitat data	Non-Priority Habitat	
SSSI	Non-Priority Habitat	
LWS	Non-Priority Habitat	
Ramsar	Non-Priority Habitat	
SPA	Non-Priority Habitat	
SAC	Non-Priority Habitat	
LNR	Non-Priority Habitat	
LWT reserves	Non-Priority Habitat	
MasterMap	Non-Priority Habitat	'Natural' features that the GLNP

		have not determined to be cultivated land
MasterMap	Cultivated land	'Natural' features that the GLNP have determined to be cultivated land

A 1m buffer was applied to all data to resolve any mapping inaccuracies.

Ecological networks are formed of parcels of Priority Habitat within a matrix of non-Priority Habitat where the greenspace touches the Priority Habitat itself or through other non-Priority Habitat.

Cultivated land with an agricultural land classification grade 3[2], 4, or 5 that touches an ecological network is considered to be an opportunity for creation alongside other 'natural' features in MasterMap. Where these touch two or more ecological networks they are also considered as opportunities to join up networks.

5. Timeline

Date	Activity
September 2019	GLNP promotes the North Lincolnshire BOM to Partners and discussed the BOM with City of Lincoln Council. Discussions begin around the cost and timeline for production of a Central Lincolnshire BOM using a consistent methodology to the North Lincolnshire BOM
October 2019	Central Lincolnshire confirms it would like to go ahead with a BOM and a GI map and allocates funding
November 2019	Final maps, GIS layers and report on the method supplied by GLNP to Central Lincolnshire authorities

6. Conclusions

Overall the GLNP believe the supplied maps are a good representation of the existing ecological networks and the priority for future action. The method used can be replicated elsewhere and in the future ensuring consistency. The GLNP commends Central Lincolnshire authorities for taking a proactive approach to the creation of the maps and looks forward to working with them to deliver on them and achieve more for nature.

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[2] For planning purposes agricultural land grade 3 is divided into 3a (considered high value agricultural land and change of land use is not supported) and 3b (lower value agricultural land where change of land use is supported). However the data only identifies land as '3'. Soil sampling and testing is required to determine if an area is 3a or 3b.

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