Biodiversity Opportunity Mapping for North Lincolnshire Council

11 June 2019

Achieving more for nature

GLNP

GREATER LINCOLNSHIRE
NATURE PARTNERSHIP

Contents

1. Introduction

In early 2019 the GLNP undertook a short piece of work for North Lincolnshire Council (NLC). This was to create a Biodiversity Opportunity Map (BOM) for the Council area as part of their requirements in producing a new Local Plan. The GLNP was approached because of their expertise in GIS mapping and experience with the Central Lincolnshire BOM.

2. Purpose of maps

North Lincolnshire Council has 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.

---

[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 NLC 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 two stage process. The first was a desktop exercise using data held by the Lincolnshire Environmental Records Centre (LERC, part of the GLNP). This enabled creation of a map with a limited number of biases that can be recreated in other areas and over time in a consistent fashion. The second step was '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.

In addition, to visually simplify the process for users two maps were produced in stage one. 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.

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

No

Is it adjacent to priority habitat?

No

Not part of the ecological network

Yes

Part of the ecological network (light green)

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

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

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

Is it an existing urban area or road?

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

Is it Grade 1 or 2 agri land?

Yes → Not part of the BOM

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

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
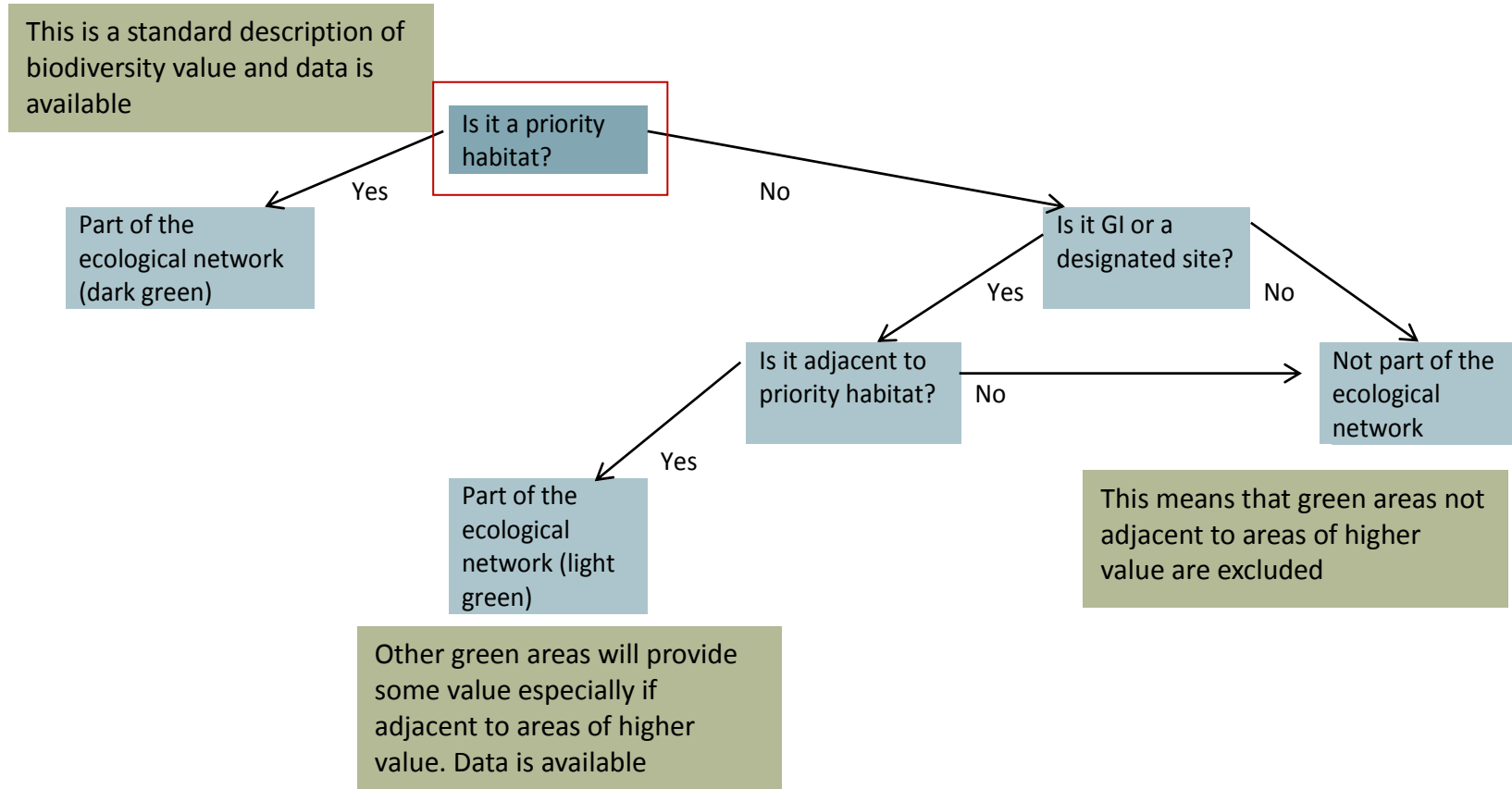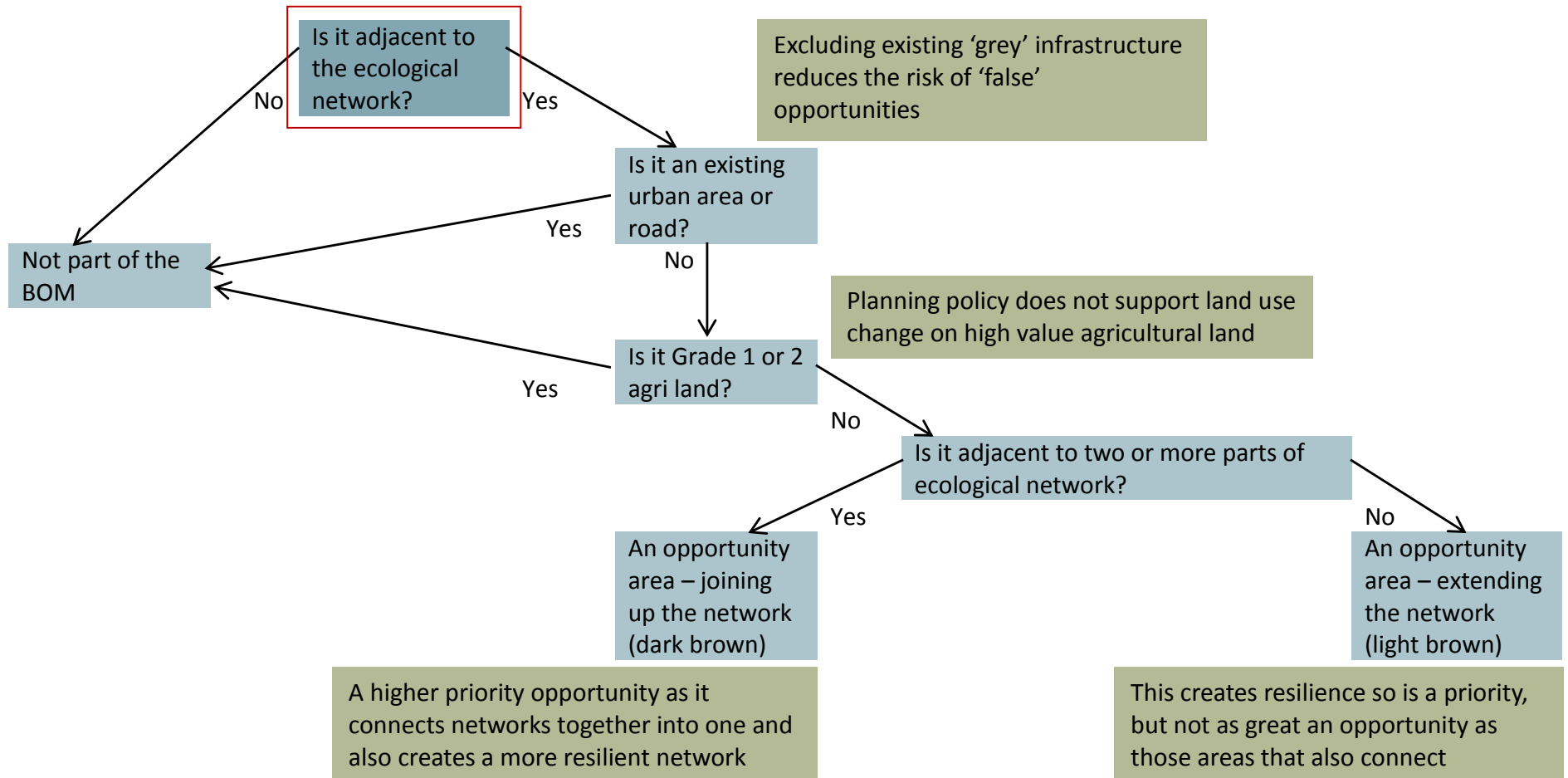
4.1.1. Confidence in the GIS data

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 NLC has been active in surveying areas of ecological importance over a number of years so 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.

Where polygons were added or removed from the ecological network or opportunity areas following the workshop a note on this has been included in the GIS table. These notes are to identify where the final map diverges from the data and will be useful in the future for replicating the method in the future.

Habitats for the opportunity areas were also suggested at the workshop. This is not based solely on expert opinion and a final decision on which habitats should be represented was made by Andrew Taylor. As this was new information the amount of polygons 'amended' and the detail involved is too detailed to usefully list. Rather the habitat maps should be seen as a product of expert advice.

4.2. Expert proofing

In the second part of the process a workshop was held on the 21 May 2019 at Water's Edge visitor centre to ground truth the maps. The workshop was organised by NLC and invitations sent to a large range of stakeholders in the natural environment sector with knowledge of the North Lincolnshire area. There were 16 attendees at the workshop.

Workshop attendee	Organisation
Charlie Barnes	Greater Lincolnshire Nature Partnership

---

[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.

Chris Barwell	NLC Place Planning and Housing
Kevin Bayes	Humber Management Scheme
Alison Briggs	Environment Officer and Administrator to the Shire Group of IDBs
Laura Carmichael	Environment Agency
Darren Clarke	Humber Nature Partnership
Matt Cox	Lincolnshire Wildlife Trust
Miles Drury	Forestry Commission
Jackie Nicholson	Environment Agency
Matthew Parr	Environment Agency
Mike Pilsworth	RSPB
Fran Smith	Greater Lincolnshire Nature Partnership
Clare Sterling	Lincolnshire Wildlife Trust
Andrew Taylor	NLC Ecologist
Alison Williams	NLC Historic Environment Record
Paul Woodgate	Woodland Trust

Attendees were given a presentation on the method for creating the maps and understood the process. Very few areas were suggested to be added to the maps and similarly, few areas were suggested for deletion. Discussion on the day was primarily around the detail of particular parcels of land or how it could be delivered rather than any issues with the process, what it represented or how it would be used. As such, confidence that the maps represent the real situation is significantly improved. Attendees also suggested a priority habitat type for the opportunity areas should these come forward and this separate map is held by NLC.

5. Timeline

Date	Activity
November 2018	NLC asks if GLNP can produce a BOM for the Local Plan
December 2018	GLNP confirms it is able to produce a map and discussion starts on objectives and methods
January 2019	A method for producing the BOM is proposed by GLNP and agreed by NLC
February 2019	Draft maps are shared with NLC for discussion
April 2019	GLNP and NLC discuss the objectives of the workshop and attendees
May 2019	Workshop held to ground truth the maps
June 2019	Final maps, GIS layers and report on the method supplied by GLNP to NLC

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 NLC for taking a proactive approach to the creation of the maps and looks forward to working with NLC to deliver them and achieve more for nature.

Biodiversity Opportunity Mapping for North Lincolnshire Council

Greater Lincolnshire Nature Partnership
Banovallum House
Manor House Street
Horncastle
Lincolnshire
LN9 5HF

Tel: 01507 528398
Email: info@glnp.org.uk
Web: www.glnp.org.uk

June 2019

Fran Smith and Charlie Barnes