Integrating biodiversity net gain in the EIA process

Mihai Coroi and Alan Kirby

Overview

- No Net Loss (NNL) and Net Gain (NG) context

- Problems with demonstrating NNL/NG in traditional EIA

- Proposal for integrating NG in EIA

- Heathrow Expansion Project (HEP) overview & NG approach

- HEP landscape and habitat connectivity analysis

- Conclusions and next steps

Biodiversity NNL and NG

NNL: Negative impacts on biodiversity caused by the project are counter-balanced by mitigation measures so that there is no loss of biodiversity
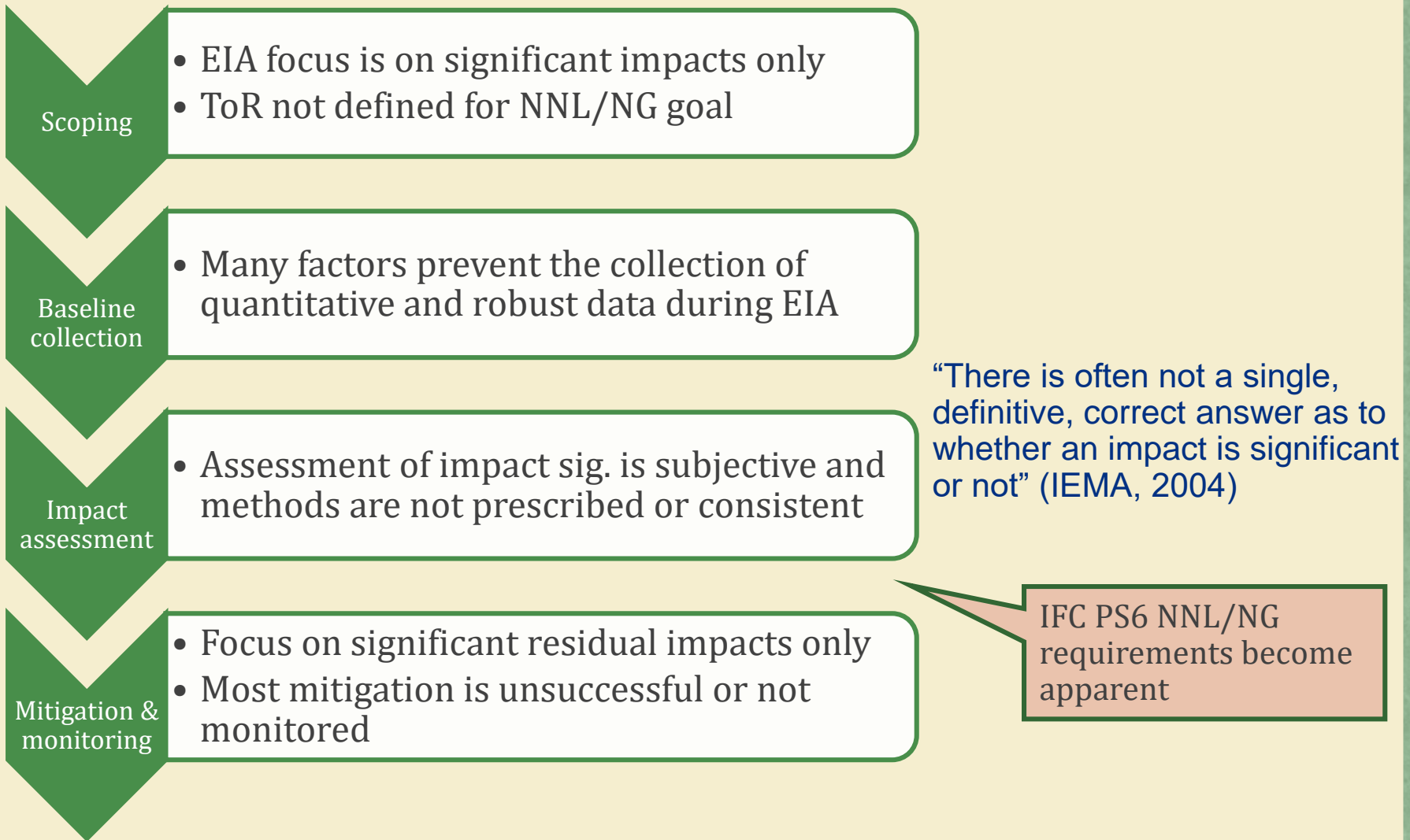
NG: Biodiversity gains from mitigation measures exceed the negative impacts on biodiversity caused by the project (Brownlie & Treweek 2018).
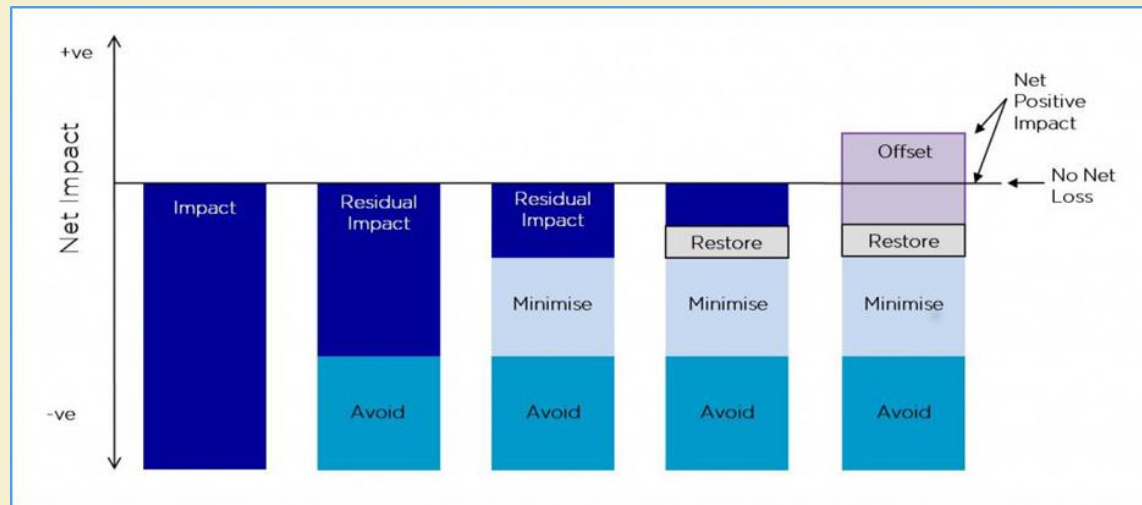
- Relatively recent concepts, developed alongside offsetting
- Ambition or requirement
- Help to deliver sustainable development

Problems with demonstrating NNL/NG in traditional EIA

Scoping
- EIA focus is on significant impacts only
- ToR not defined for NNL/NG goal

Baseline collection
- Many factors prevent the collection of quantitative and robust data during EIA

Impact assessment
- Assessment of impact sig. is subjective and methods are not prescribed or consistent

"There is often not a single, definitive, correct answer as to whether an impact is significant or not" (IEMA, 2004)

Mitigation & monitoring
- Focus on significant residual impacts only
- Most mitigation is unsuccessful or not monitored

IFC PS6 NNL/NG requirements become apparent

Progress towards BNG

Biodiversity enhancements
- Conservation & enhancement of biodiversity (many policies)
- Enhancement of positive impacts (IAIA 2013)

Biodiversity offsets
- Have the potential to demonstrate BNG on some projects
- Design is complex and laborious
- Technical, programme, political & financial risks

NNL and NG goals

Ambition		Requirement
NNL where project causes irreversible loss (IAIA 2005)	NNL & aspiration for NG (Brownlie & Treweek 2018)	NNL in natural habitat, NG in critical habitat (IFC PS6 2012)
NNL or preferably NG (BBOP 2012)		
Avoid NNL of biodiversity (EIA Directive 2014/52)	Minimise impacts and provide NG (MHCLG 2018)	Proposed mandatory BNG in England (DEFRA 2019)

Proposal for integrating BNG in EIA

Design inputs & mitigation hierarchy implementation

Scoping

Set BNG goal and use simple/practical metric
Define methods to collect baseline data
Assess how BNG will be delivered
Allocate skilled staff and time/budget for BNG
Maximise social benefits of BNG

Baseline collection

Collect quantitative/robust data to inform metric

Impact assessment

Calculate losses/gains of all habitats using metric
Scrap significance

Mitigation & monitoring

Mitigation to focus on BNG delivery

Decision making

Decisions based on BNG outcome

Heathrow Expansion Project Overview

Figure 3.1: Location plan

- Nationally sig. infrastructure
- New north-west runway
- Airport supporting facilities
- Associated infrastructure (blue, grey, green)
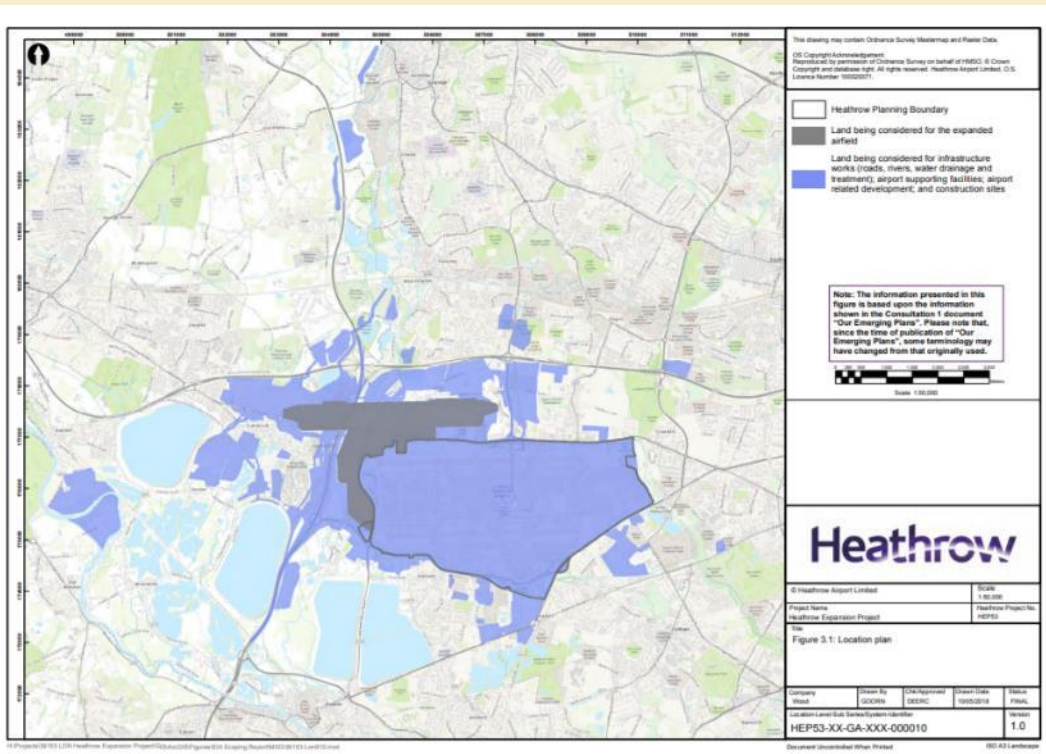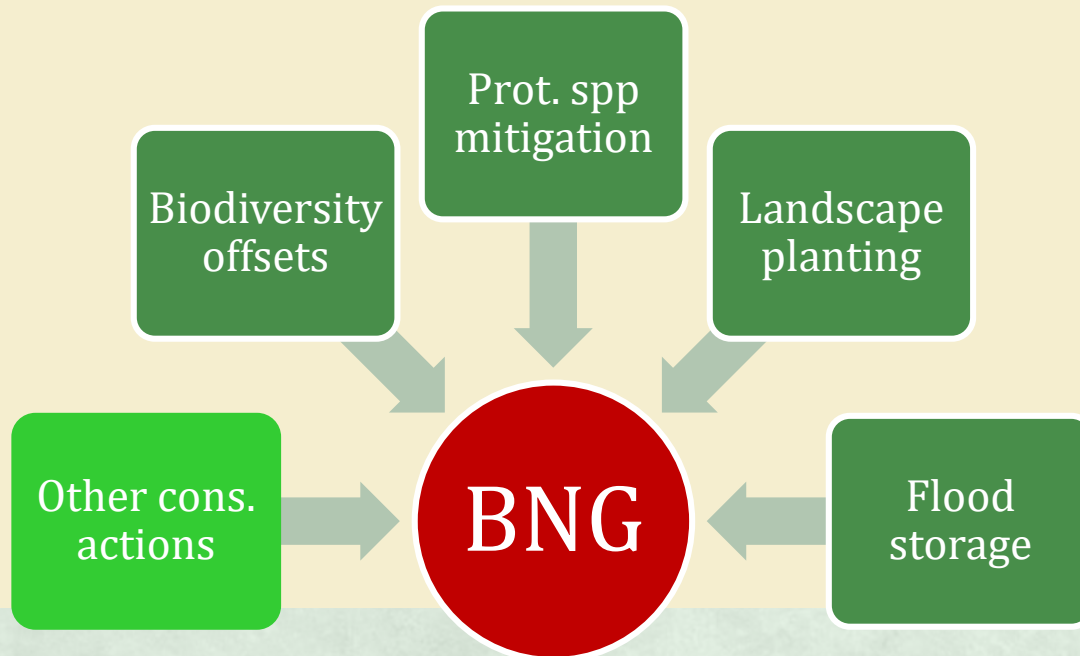
| Scoping report 2018 | PEIR 2019 | ES 2020 | Construction starts 2021/22 | Runway opening 2026 | Construction ends mid-century |

Heathrow Expansion Project
BNG approach

- Voluntary BNG goal before EIA scoping
- Implementation of mitigation hierarchy
- Bespoke BNG methodology and metric
- Like-for-like or better habitats
- Improved connectivity & multifunctional use
- Stakeholder engagement

Biodiversity offsets

Prot. spp mitigation

Landscape planting

Other cons. actions

BNG

Flood storage

Heathrow Expansion Project
BNG metric

Habitat distinctiveness	Score
High	6
Moderate	4
Low	2
Negligible	0

BU lost = habitat area x distinctiveness x current condition

Habitat condition	Score
Good	3
Moderate	2
Poor	1

BU gained = $\dfrac{\text{(habitat area x distinctiveness x target condition)} - \text{(habitat area x distinctiveness x current condition)}}{\text{delivery risk x temporal risk x spatial risk}}$
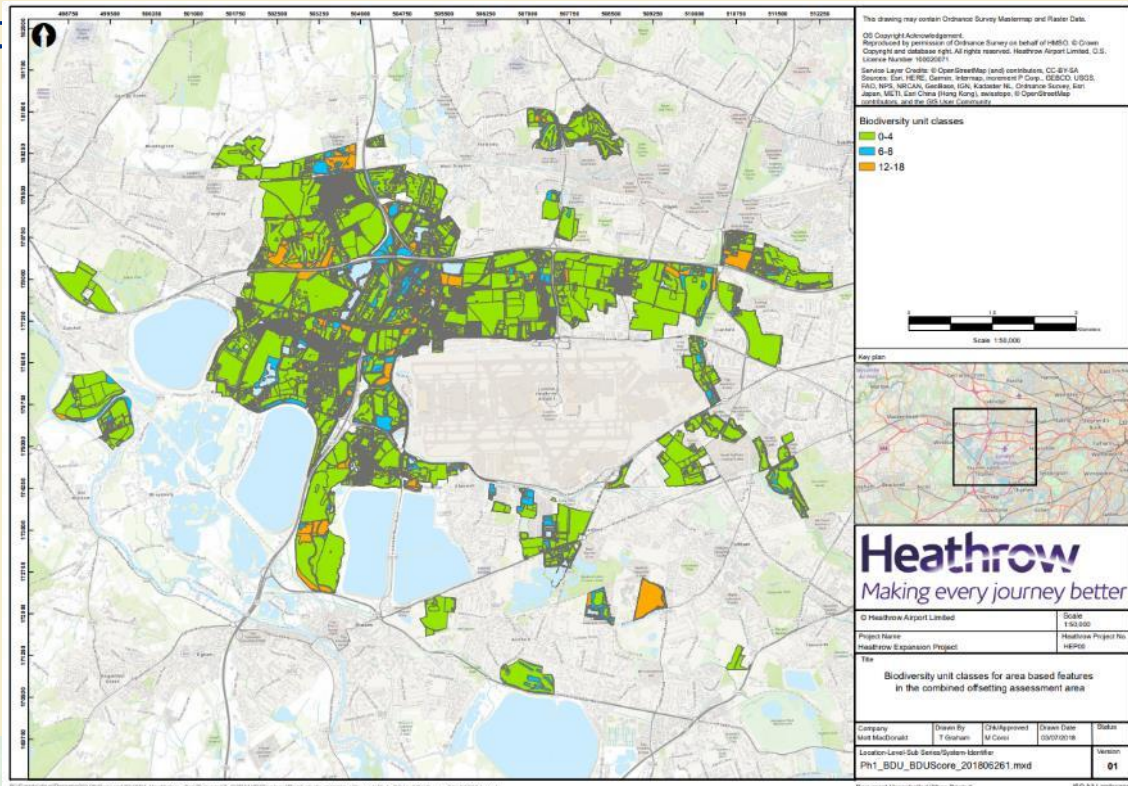
Difficulty of habitat creation / restoration	Multiplier
Very high	10
High	3
Medium	1.5
Low	1

Years to target condition	Multiplier
5	1.2
10	1.4
15	1.7
20	2.0
25	2.4
30	2.8
32+	3

Offset location	Multiplier
Local policy priority area	1
Neighbouring districts	2
Neighbouring counties	3
England	4

Heathrow Expansion Project
# BNG delivery progress

- BNG strategy and method statements
- Collected baseline data from 2/3 of study area (2017-2019)
- Ongoing inputs to masterplanning
- Loss calculations at different design stages
- Habitat prescriptions
- Stakeholder engagement

Heathrow Expansion Project
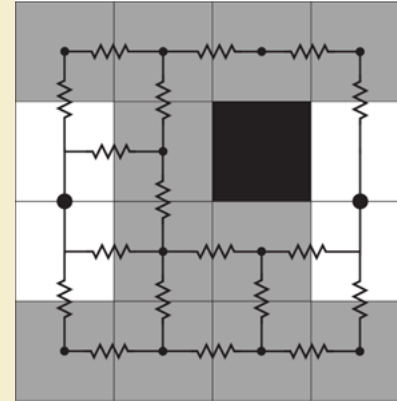## Analysis of landscape and habitat connectivity

- Impact assessment (fragmentation)
- Identification of areas for habitat creation & restoration
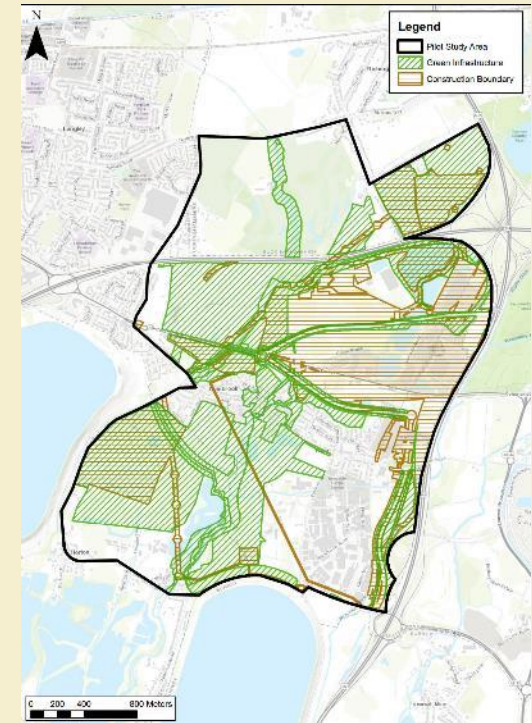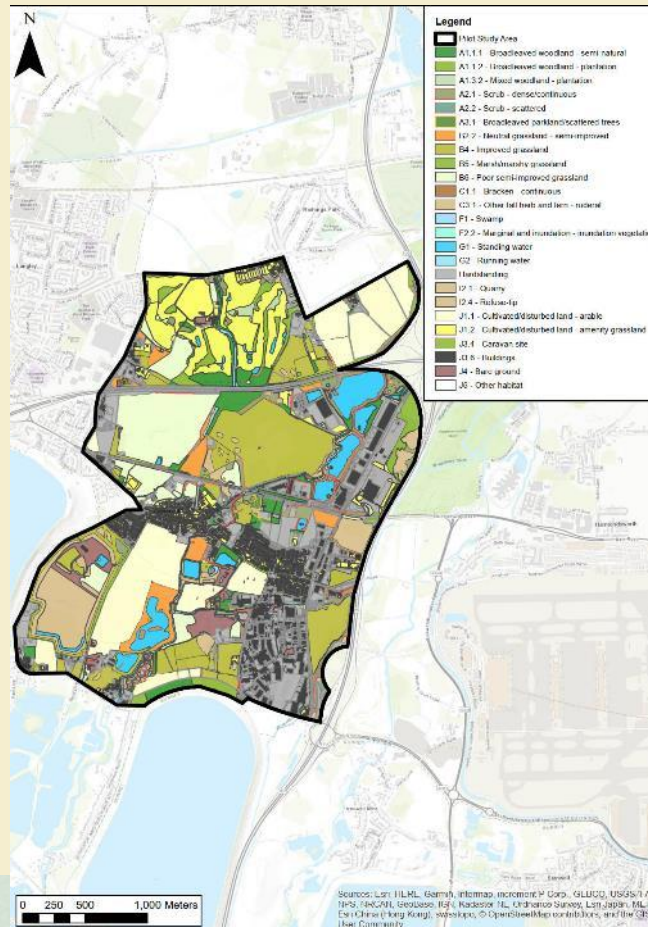
Pilot study area:
800 ha

Circuitscape

McRae & Shah, 2009

- Analysis of functional connectivity

- Software based on 'circuit theory'

- Uses resistance values to map the "ease of movement" of species

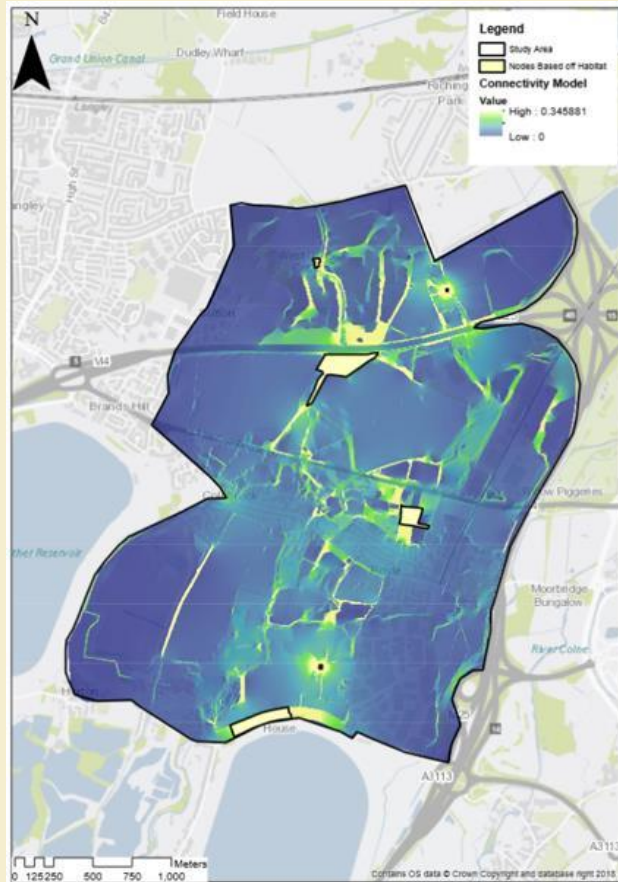- Allocation of nodes based on presence of species and/or optimal habitat

Brown long-eared bat (*Plecotus auritus*)
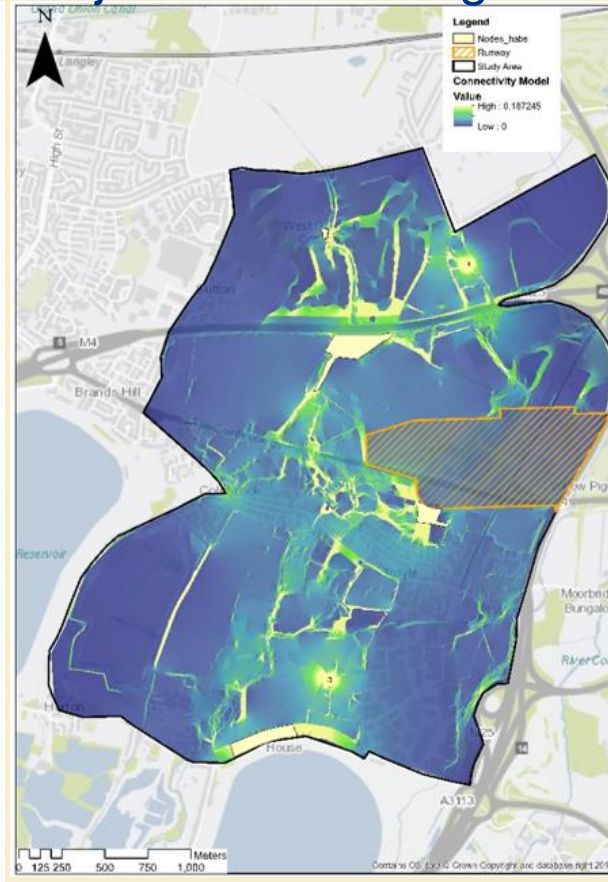
Data used in the model:
- Habitat survey
- Building & tree inspection
- Emergence/re-entry surveys
- Transect surveys
- Radio tracking

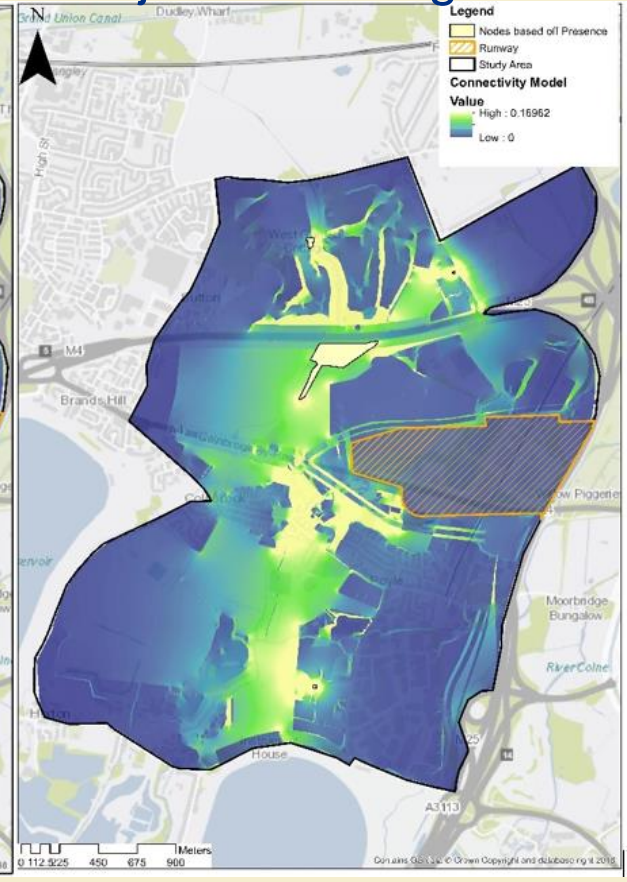# Landscape and habitat connectivity for brown long-eared bat

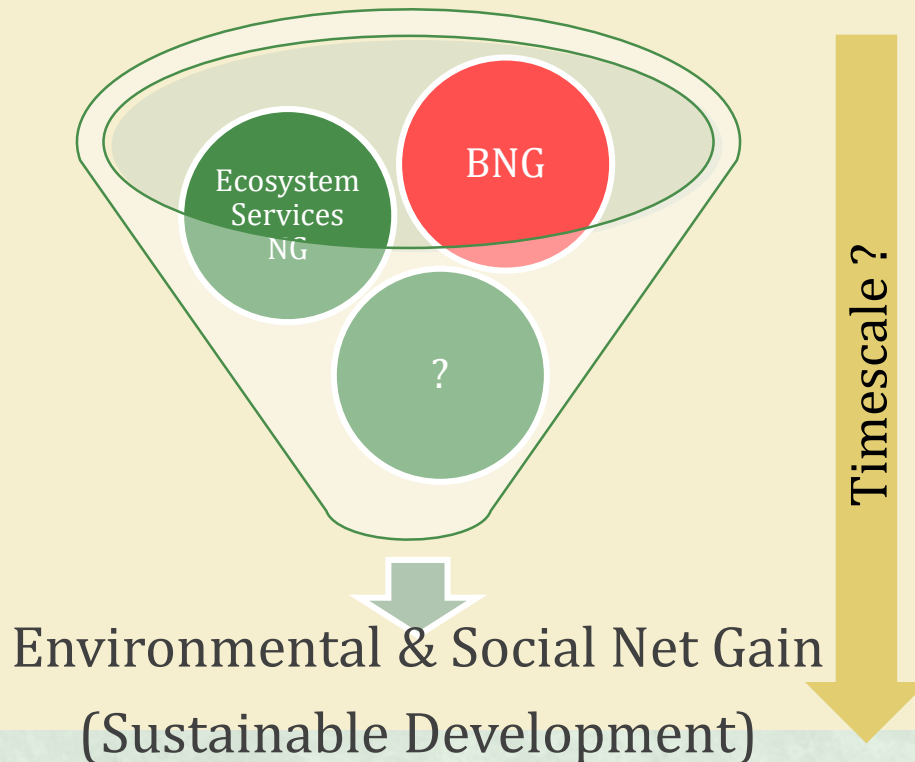**Baseline**   **Project without mitigation**   **Project with mitigation**

Conclusions and next steps

- Early adoption of BNG goal in EIA

- Use of habitat-based metric on all projects

- Use of analytical tools to make EIAs more robust

- Outcome-focussed EIA process and decisions

'Revolutionary evolution'?

Ecosystem Services NG

BNG

?

Timescale ?

Environmental & Social Net Gain
(Sustainable Development)

Thank You!

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