IAIA21

VIRTUAL EVENT

#iaia21

Addressing habitat fragmentation and connectivity in EIA

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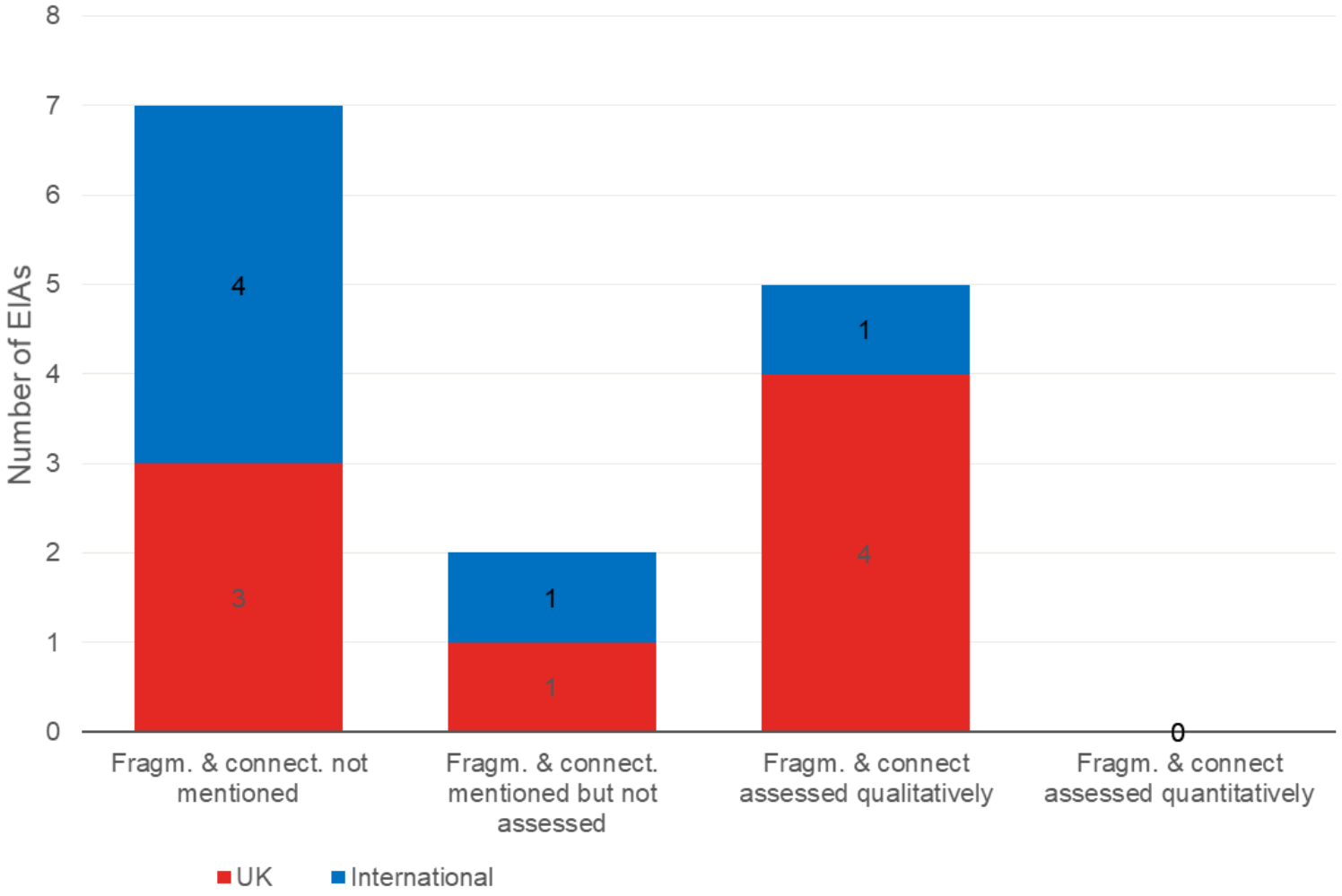
IAIA21 VIRTUAL EVENT

Habitat fragmentation and connectivity in UK & International EIAs



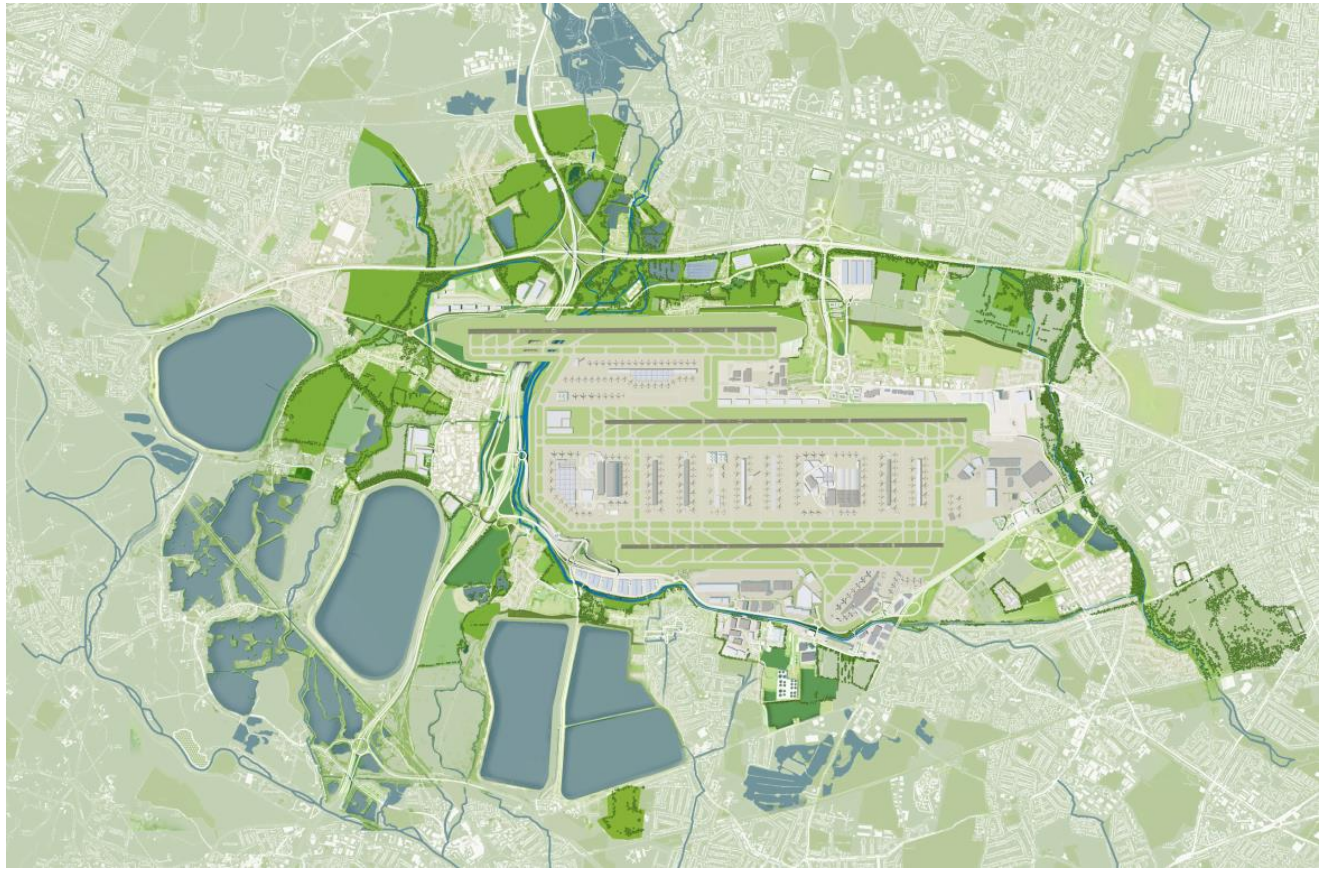
8 UK EIAs

- 3 road schemes
- 1 pipeline
- 1 transmission line
- 1 wind power
- 2 mixed use developments

6 International ESIAs

- 3 hydro power
- 1 wind power
- 1 gas pipeline
- 1 transmission line

Heathrow Expansion Project (HEP)



- Nationally significant infrastructure
- New north-west runway
- Airport supporting facilities
- Associated infrastructure (grey, green, blue)

Completed work:

- EIA Scoping Report
- Comprehensive baseline studies
- PEIR
- Started the Environmental Statement

Project is currently on hold

Phase 1	Phase 2	Phase 3	Phase 4
2026	2030	2035	2050

HEP – why was habitat connectivity analysis needed?

Planning Inspectorate comment:

'...ensure that ecological connectivity is adequately considered and assessed, including effects on the existing connectivity (including hydrological links) and connectivity to and from any proposed offsetting/compensatory habitat to be provided.'

Habitat Fragmentation Impact Assessment	Green Infrastructure Design	Biodiversity Net Gain Calculations

HEP - Collection of data for habitat connectivity analysis

Field Data

- Habitat survey (incl. condition assessment)
- Protected species surveys

Remote Sensing

- LIDAR
- Satellite imagery

Existing GIS Data

- NE Priority Habitat Inventory
- EA River Inventory
- OS Master Map
- Bluesky tree data

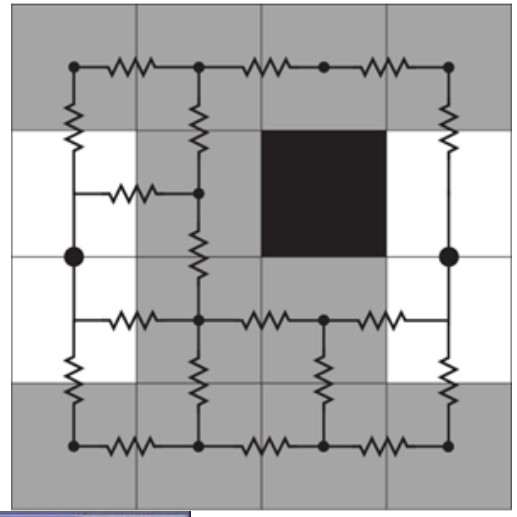
Desk Study

- Literature review
- Biological records

Circuitscape

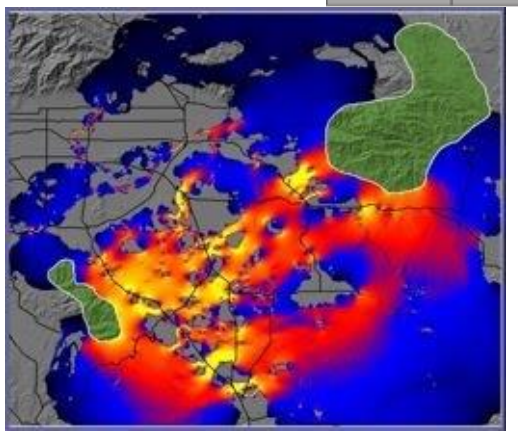
- Software for functional connectivity analysis, used to predict patterns of movement, gene flow, and genetic differentiation among species populations in landscapes

McRae & Shah, 2009



- Based on ‘circuit theory’ and frequently used in conservation/ academic research

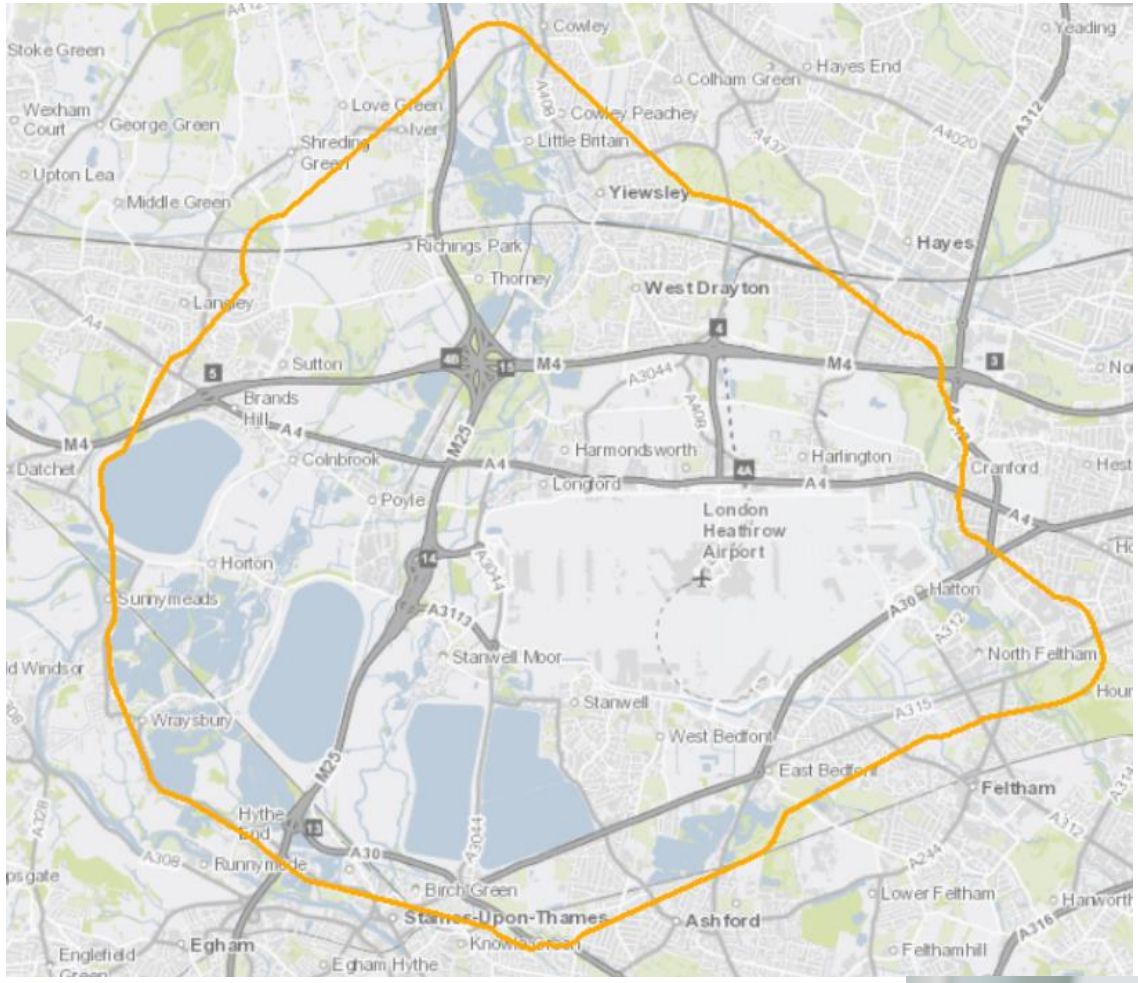
- Uses nodes and habitat resistance values to map the “ease of movement” of species through the landscape



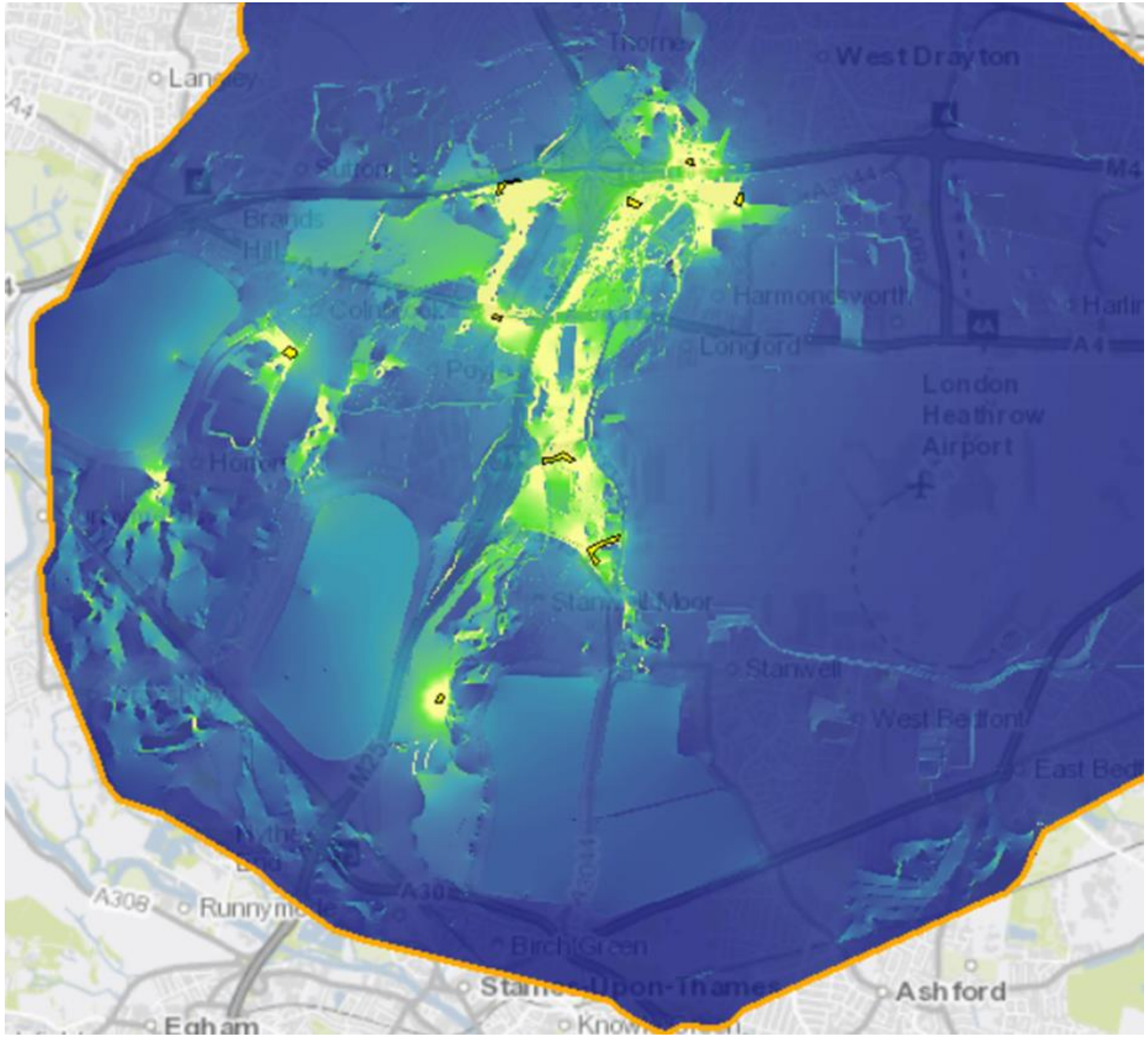
HEP - habitat connectivity analysis

- Study area was much larger than the project area of influence
- Landscape scale approach

Species analysed :
- 4 bat species
- 2 reptile species
- Badger
- Otter
- Kingfisher
- Coarse fish assemblage



Connectivity analysis study area: 8523 ha



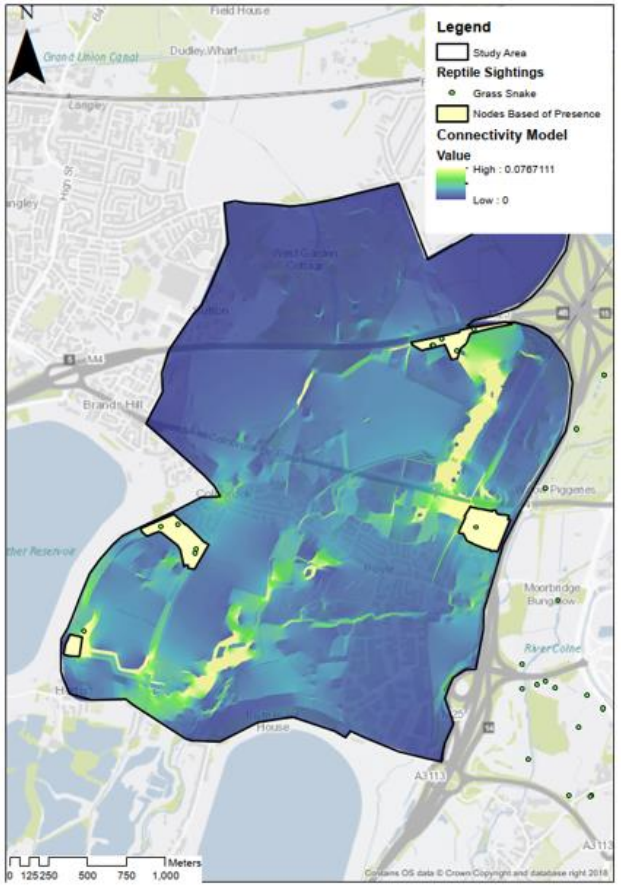
Habitat connectivity baseline: Grass snake (*Natrix helvetica)*

Data used in the model:

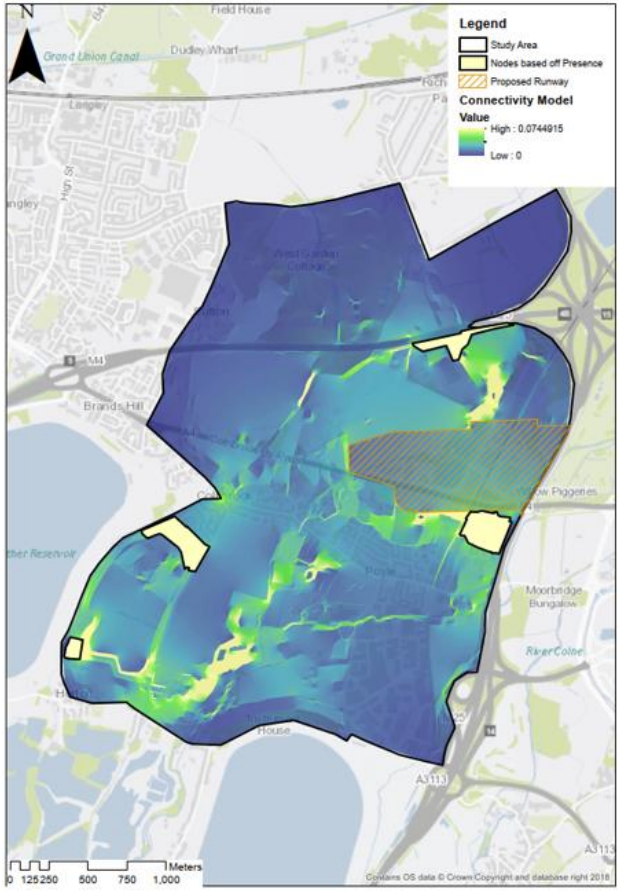
- Habitat survey
- Reptile refugia surveys
- Research on habitat preference
- Expert opinion

Habitat connectivity analysis for grass snake

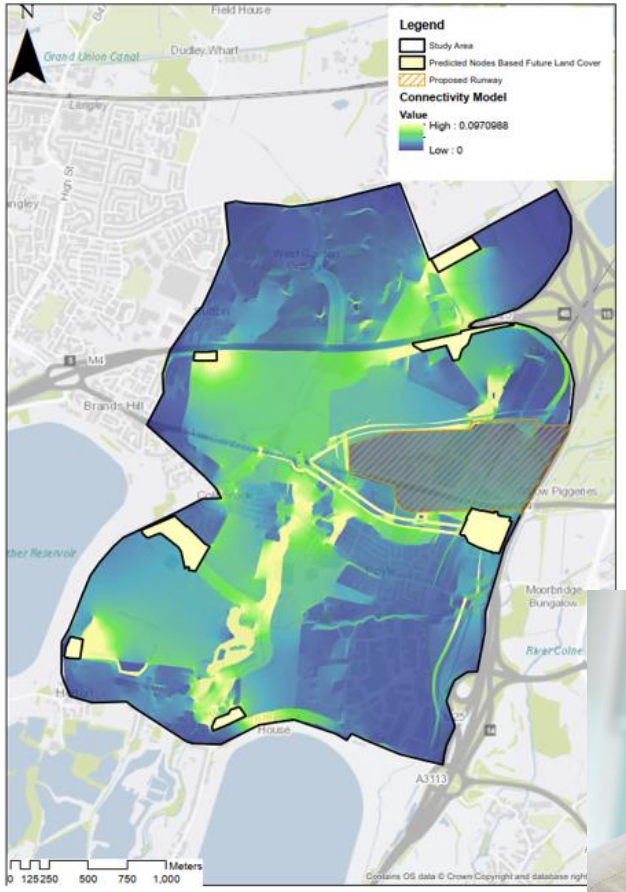
Baseline



Project without mitigation

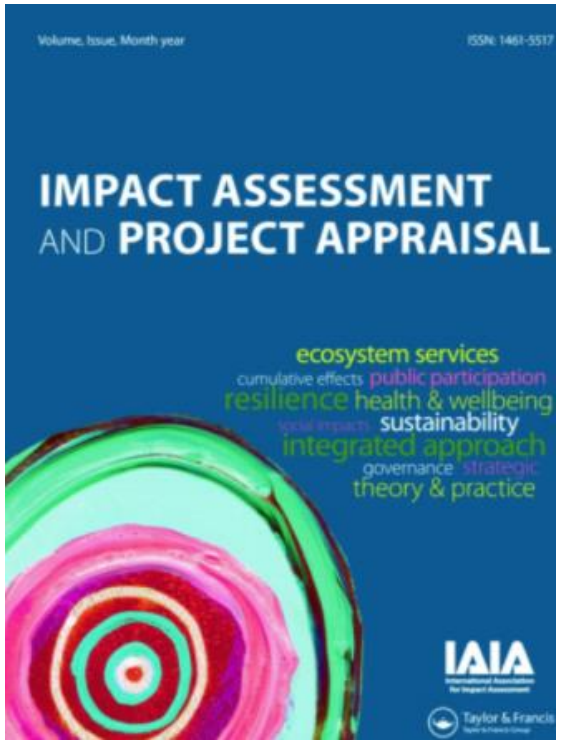


Project with mitigation



Future research on ecological connectivity in EIA

- Comparison of remote sensing techniques to inform connectivity analyses at different scales
- Monitoring actual vs. predicted connectivity
- Functional connectivity vs. structural connectivity
- Ecological connectivity vs. connectivity for people



Special Issue:
Advancing the Consideration of Ecological Connectivity in Environmental Impact Assessment

Manuscript deadline: 26 June 2021

Let's continue the conversation!

Post questions and comments via chat in the IAIA21 platform.

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