

Predicting national ecological flows at a regional scale

(on a local budget)

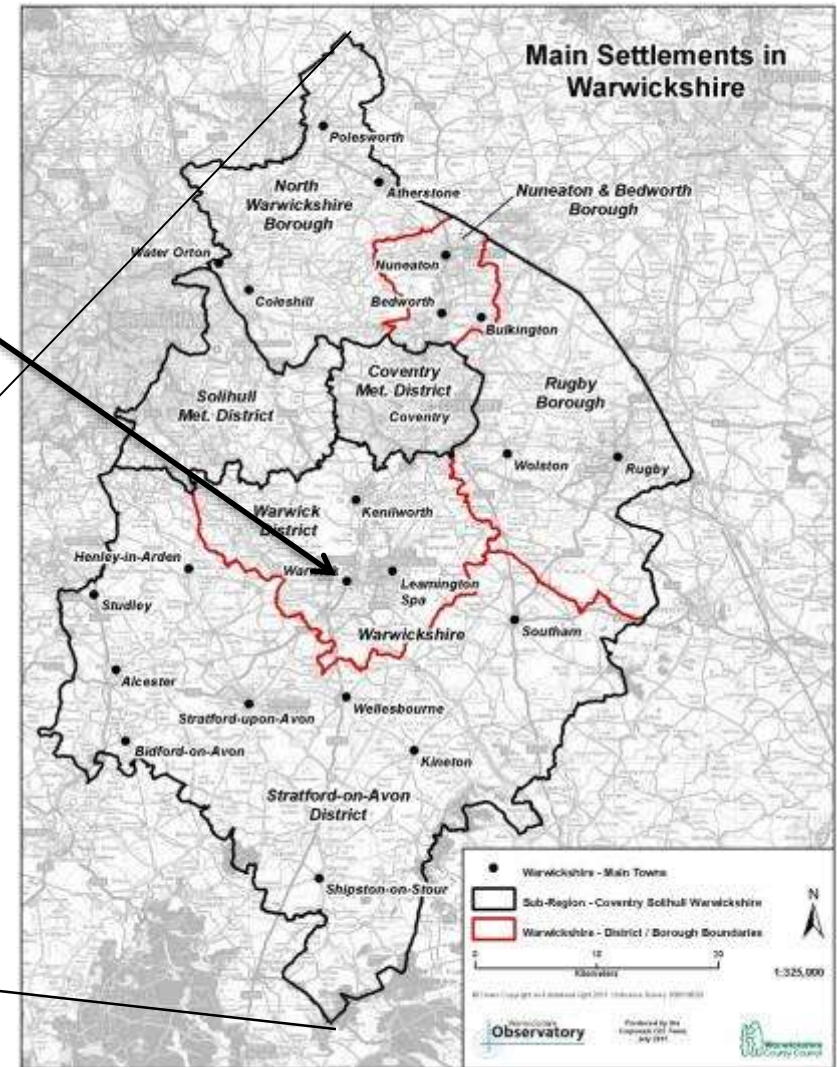
Ben Wood MSc GradCIEEM
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1. Background
2. The problem
3. Methodology
4. Outputs
5. Validation
6. Conclusion

1. Background

Where are we?

WCC Ecological Services



Predicting national ecological flows at a regional scale

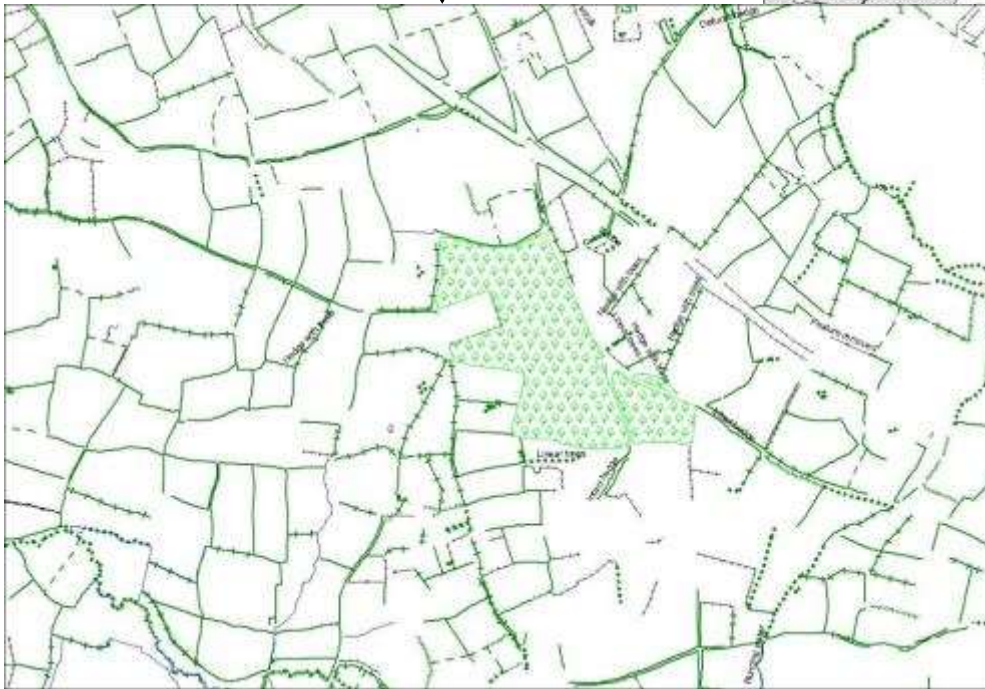
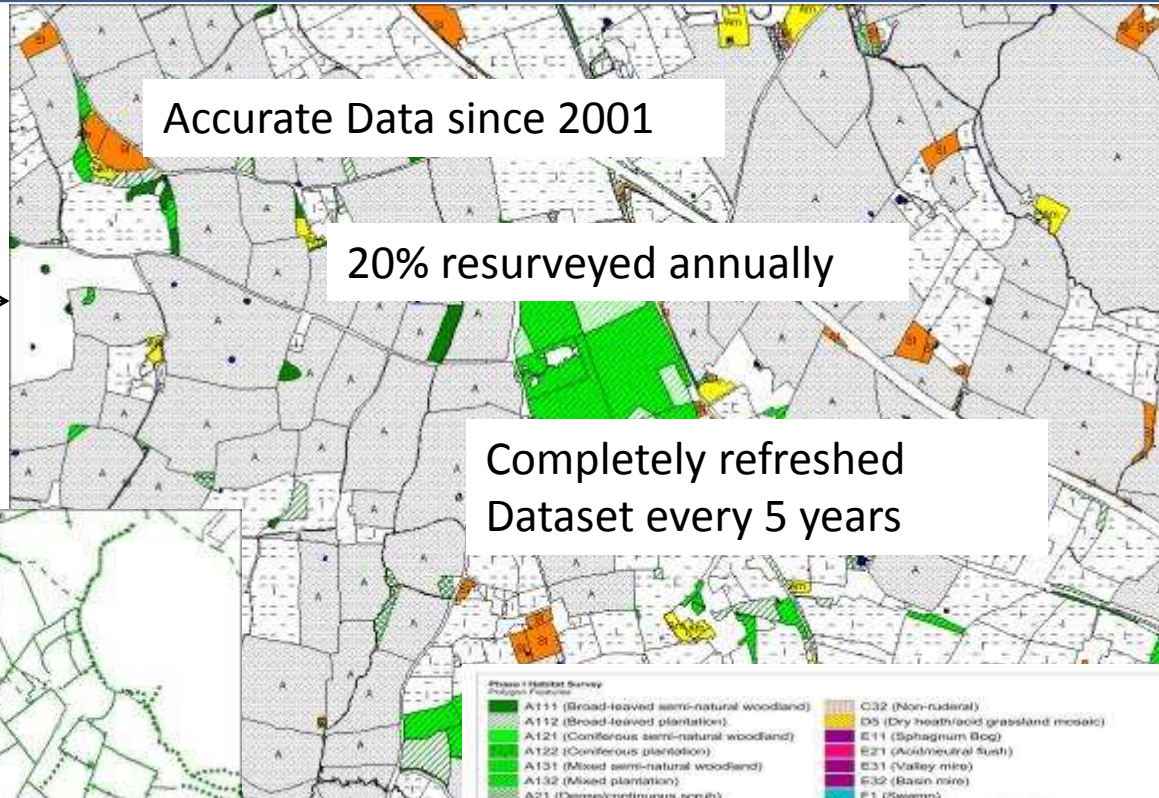
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Habitat
Biodiversity
Audit
&
Wildlife Sites
Project

Phase 1 - Polygon →

Phase 1 - Linear ↙

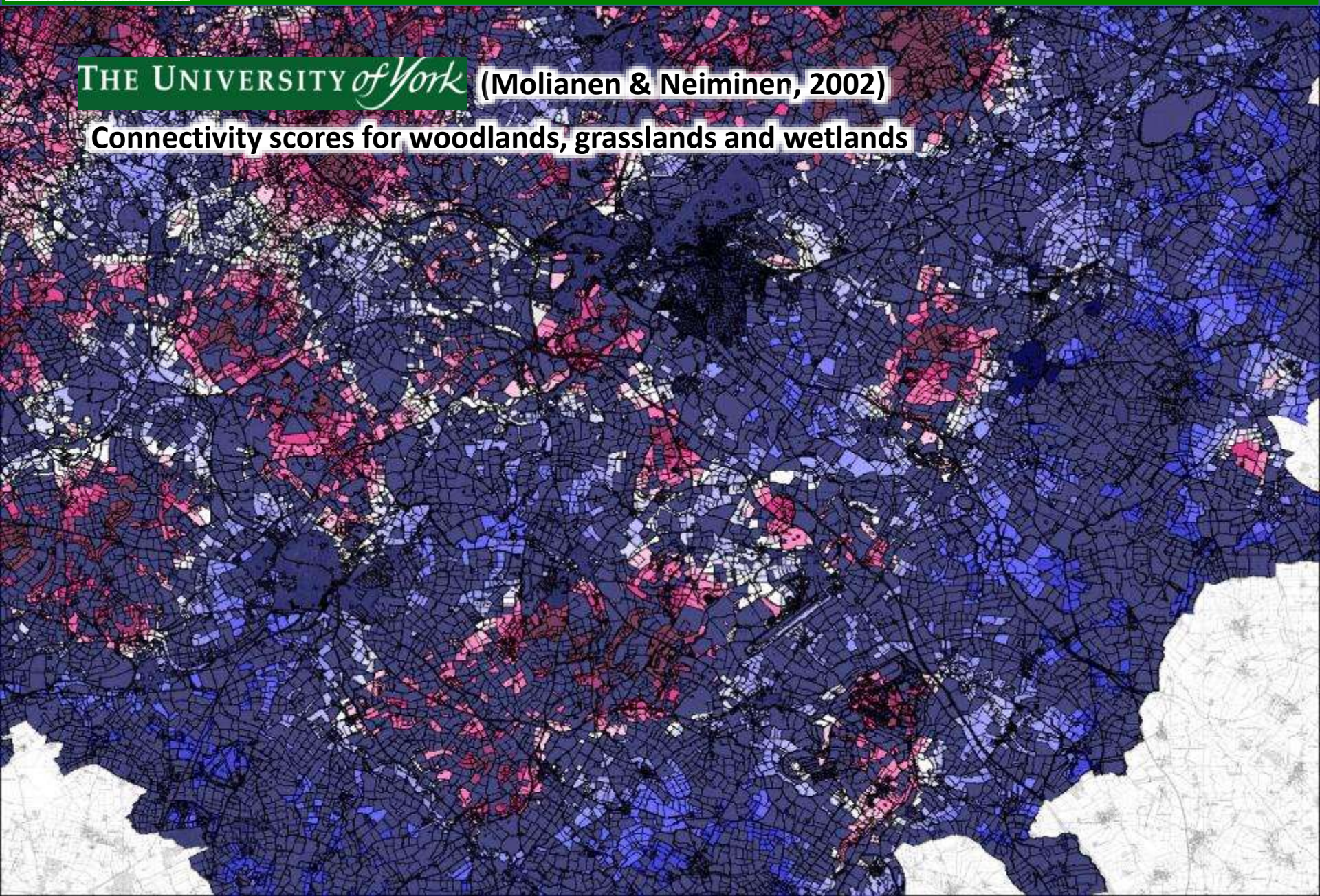


Phase 1 Habitat Survey Polygon Features	
A111 (Broad-leaved semi-natural woodland)	C32 (Non-ruderal)
A121 (Broad-leaved plantation)	D5 (Dry heath/acid grassland mosaic)
A121 (Coniferous semi-natural woodland)	E11 (Sphagnum bog)
A122 (Coniferous plantation)	E21 (Acid/neutral flush)
A131 (Mixed semi-natural woodland)	E31 (Valley mire)
A132 (Mixed plantation)	E32 (Basin mire)
A21 (Dense/continuous scrub)	F1 (Swamp)
A22 (Scattered scrub)	F22 (Inundation vegetation)
A31 (Broad-leaved parkland/scattered trees)	G1 (Standing water)
A32 (Coniferous parkland/scattered trees)	G2 (Running water)
A4 (Recently felled woodland)	G21 (Quarry)
A5 (Orchard)	G22 (Spoil)
B11 (Unimproved acidic grassland)	G23 (Mine)
B12 (Semi-improved acidic grassland)	G24 (Refuse tip)
B21 (Unimproved neutral grassland)	J11 (Arable)
B22 (Semi-improved neutral grassland)	J112 (Allotments)
B31 (Unimproved calcareous grassland)	J12 (Set-aside)
B32 (Semi-improved calcareous grassland)	J12 (Amenity grassland)
B4 (Improved grassland)	J13 (Ephemeral/short perennial)
B5 (Marsh/marshy grassland)	J14 (Introduced shrub)
B6 (Poor semi-improved grassland)	J36 (Buildings)
C11 (Continuous bracken)	J4 (Bare ground)
C31 (Tall ruderal)	K (Unclassified)

Phase 1 Habitat Survey Linear Features	
A21 (Linear Scrub)	J23 (Hedges with Trees)
A3 (Linear Trees)	J231 (Native Species Rich Hedge with Trees)
G1 (Standing Water)	J24 (Fence)
G2 (Running Water)	J26 (Wall)
F1 (Inland Cliff)	J26 (Dry Ditch)
J21 (Intact Hedge)	J27 (Boundary Removed)
J211 (Native Species Rich Intact Hedge)	J29 (Earth Bank)
J22 (Defunct Hedge)	

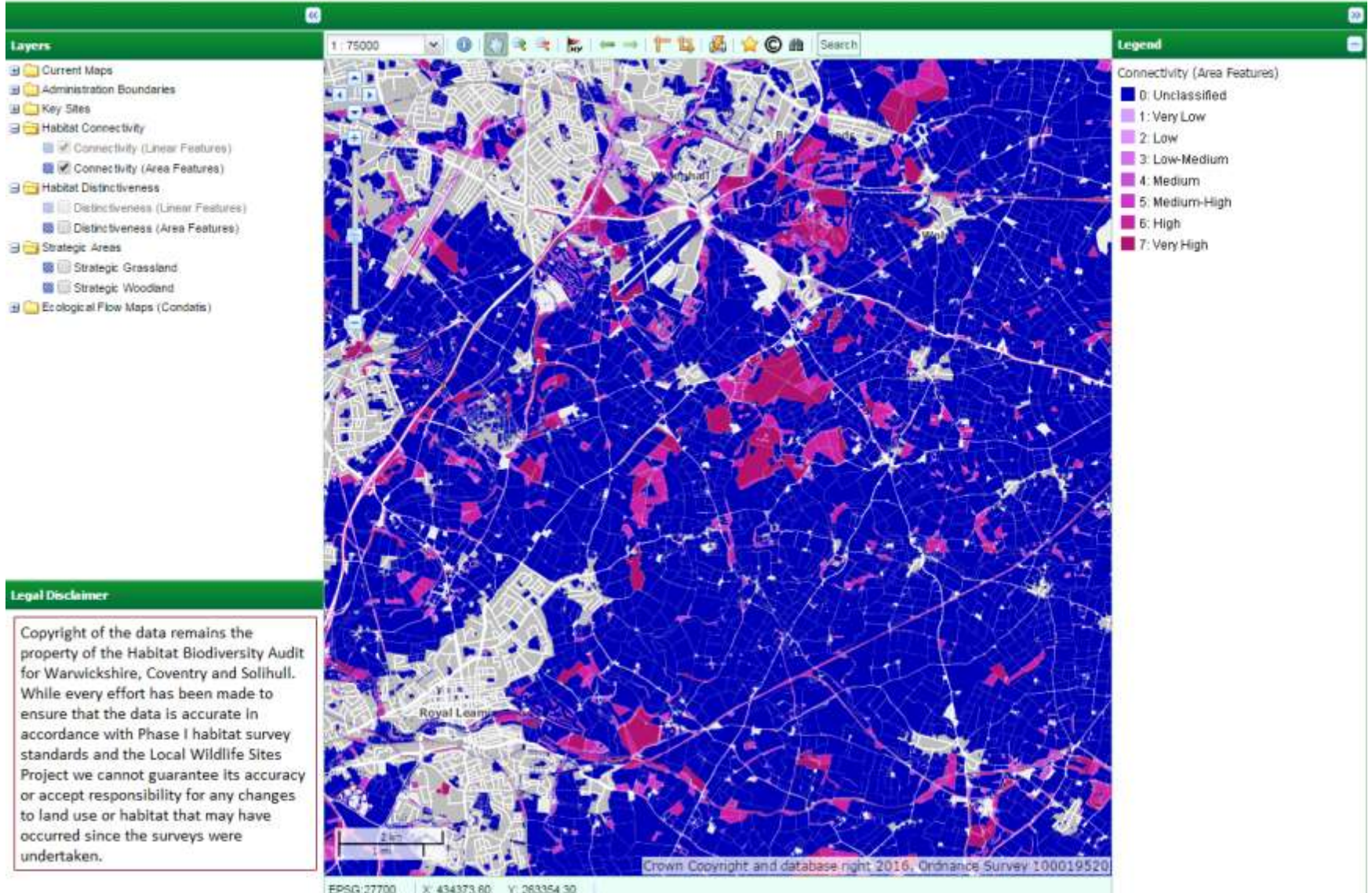
THE UNIVERSITY of *York* (Molianen & Neiminen, 2002)

Connectivity scores for woodlands, grasslands and wetlands



maps.warwickshire.gov.uk/greeninfrastructure

Warwickshire Green Infrastructure



2. The problem

How do we identify whether connective routes are of Local or National Importance?

Strategic level connectivity data at a National or Regional scale

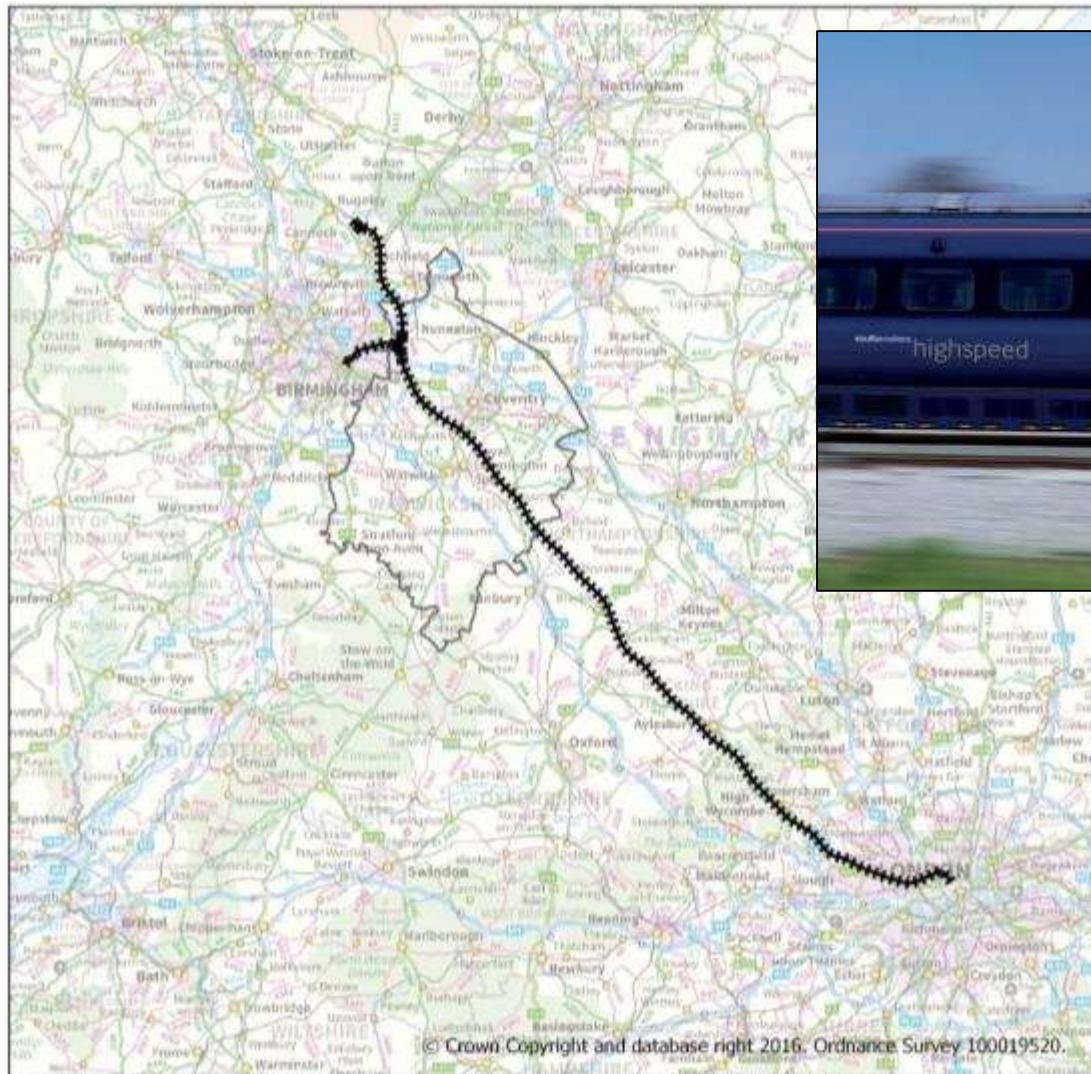
But how can a Local Authority quickly produce this sort of predictive mapping at a regional scale?



Condatis

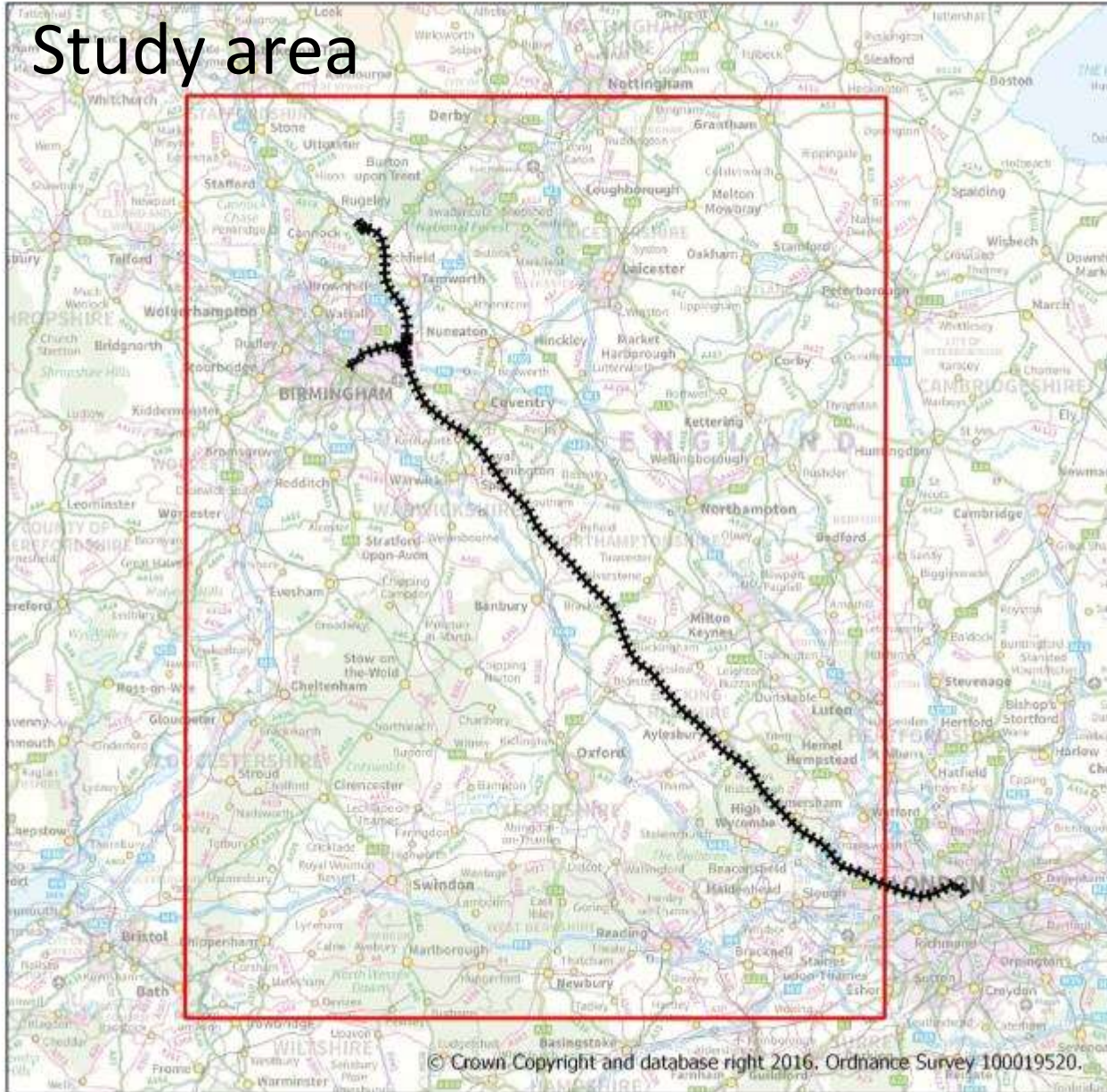
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3. Methodology

Study area



Additional data sourced from:



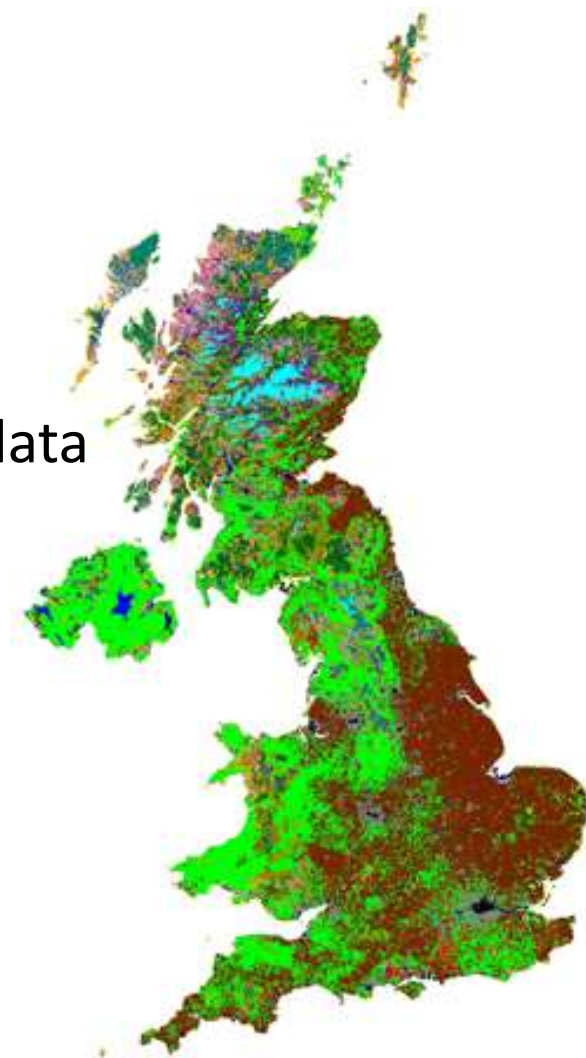
Missing data within study area:

- Leicestershire
- Nottinghamshire
- Gloucestershire
- Parts of Worcestershire
- Parts of Oxfordshire

Information gaps identified by spot-checking data sets with OS mapping and aerial photography



Land Cover Map 2007
(LCM2007)



Preparing the data using QGIS:



Scenario List

0: RasterAll4Percent

Map Parameters Solution

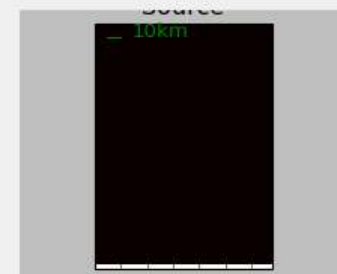
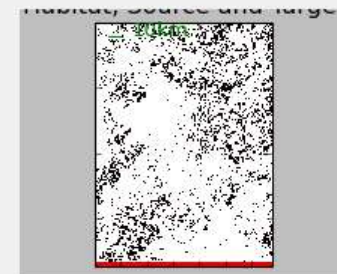
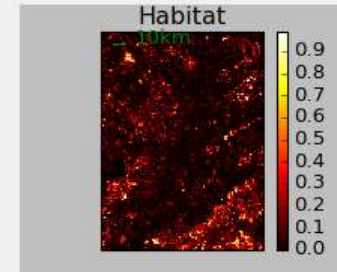
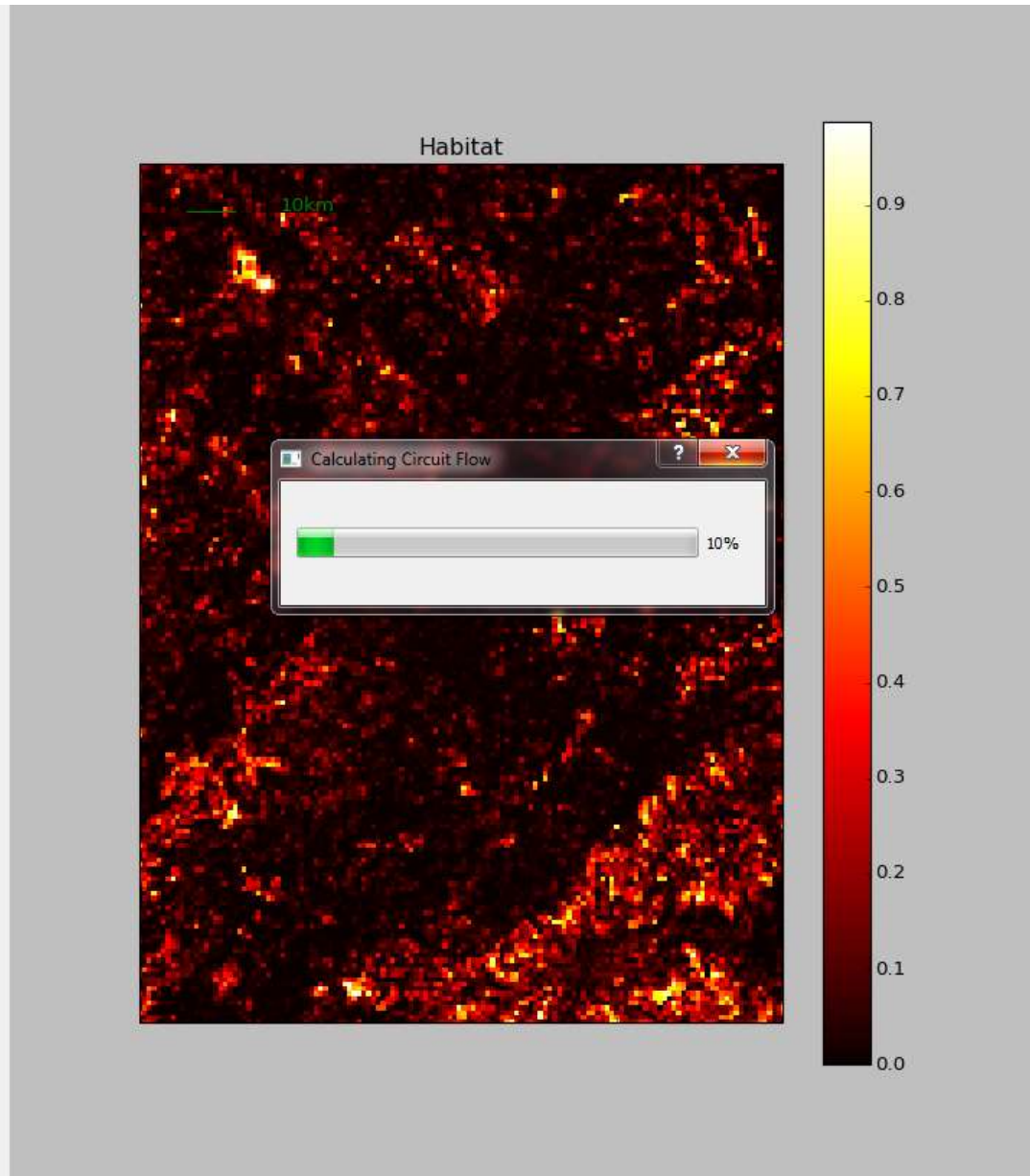
Kernel

Dispersal

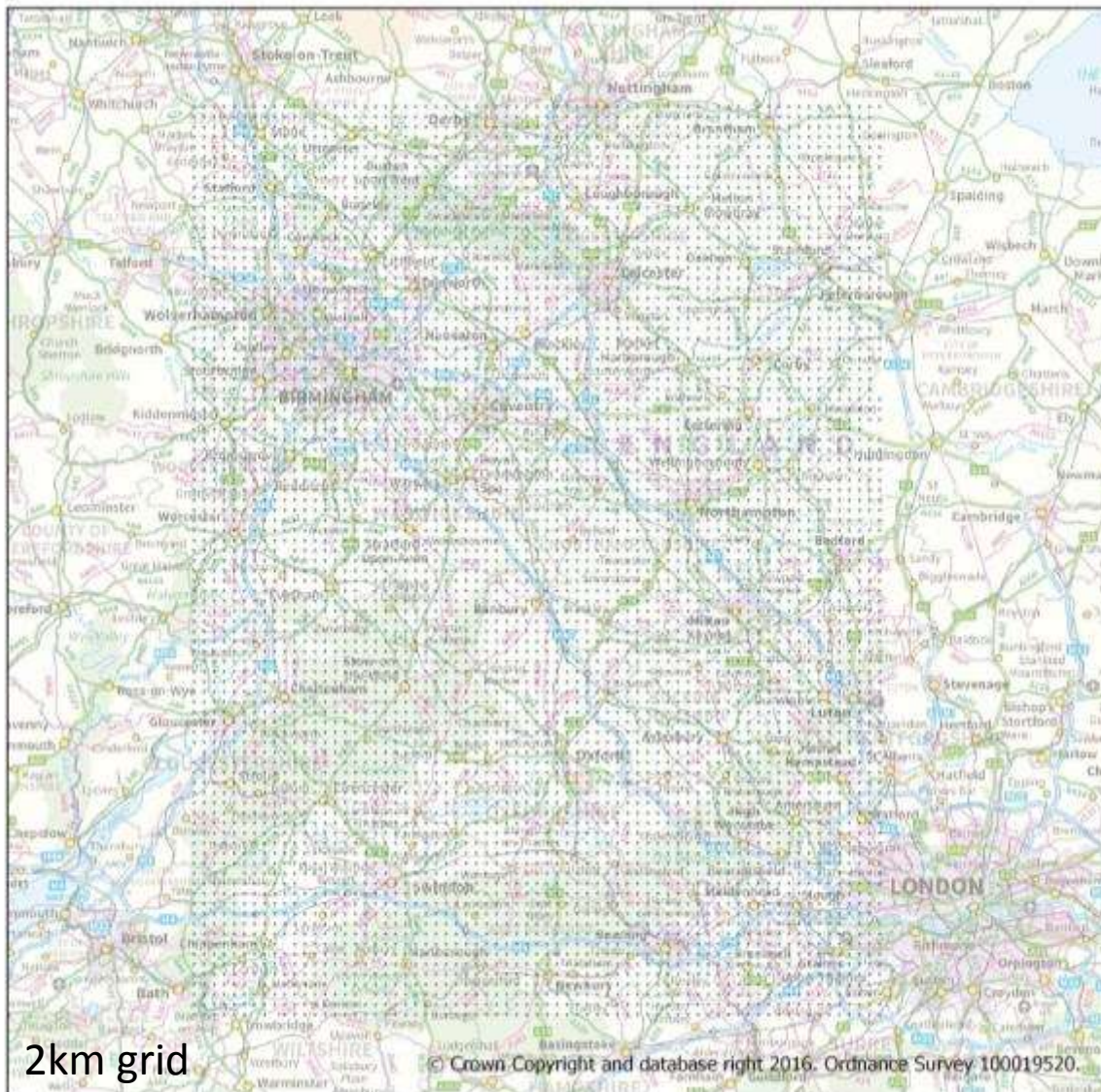
R

Power Plots

Bottlenecks Thresh

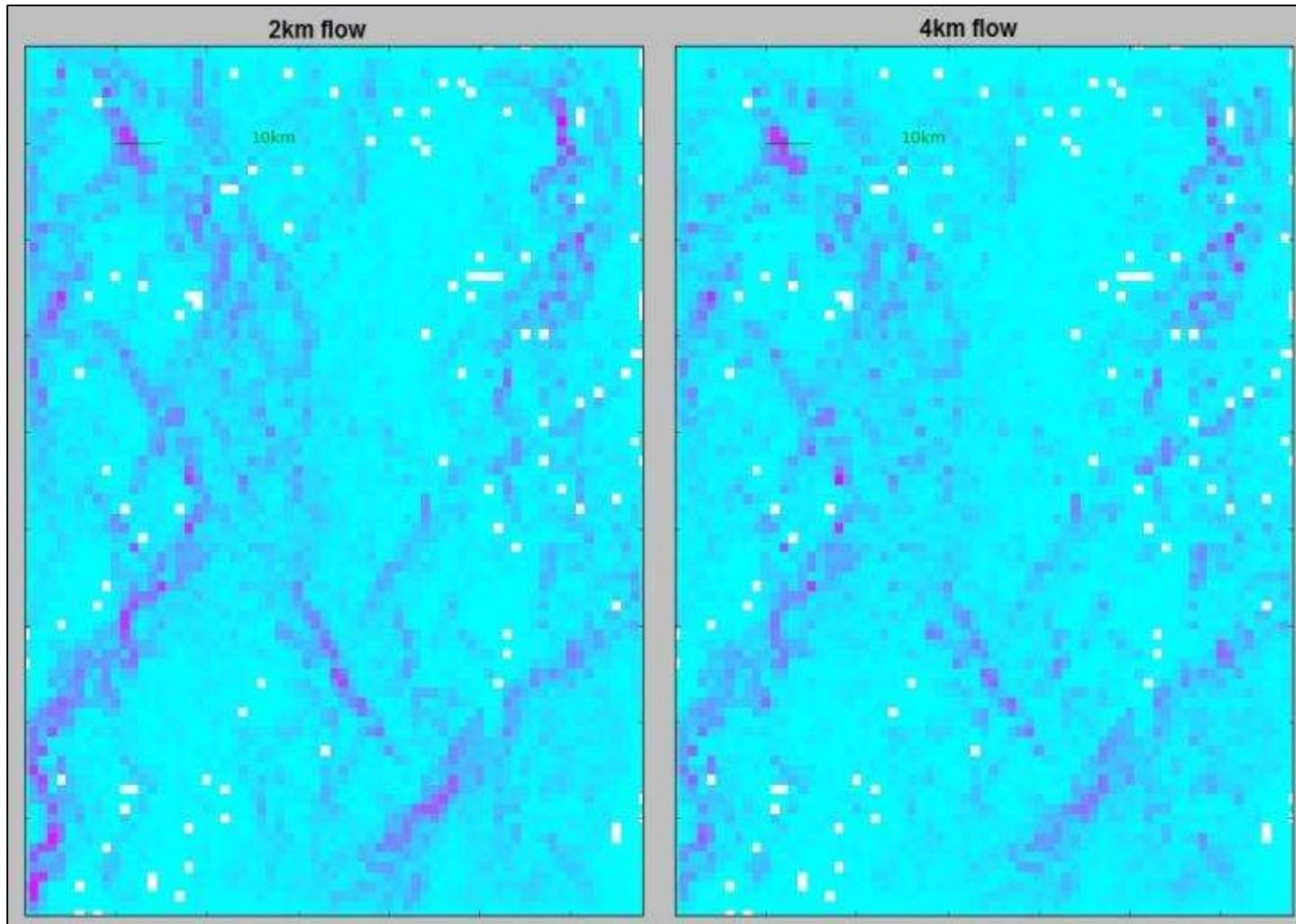


Preparing the data using QGIS:

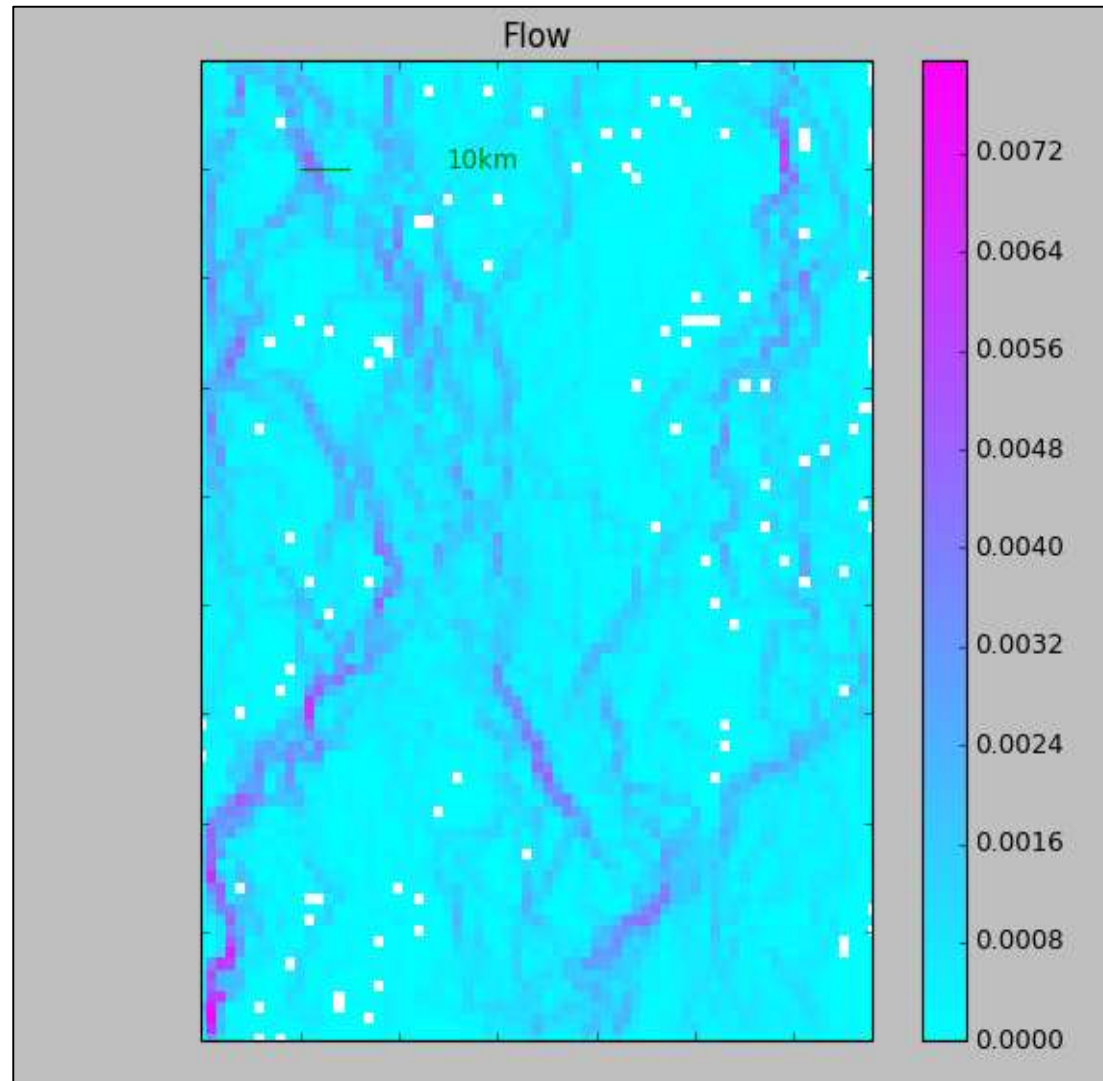


4. Outputs

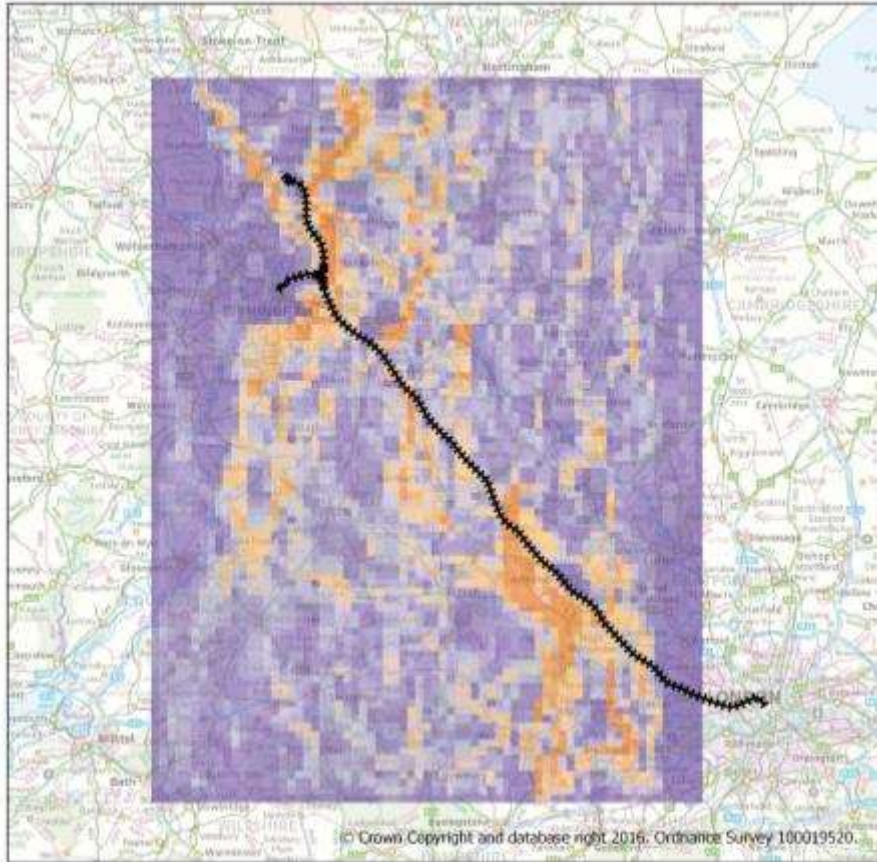
Condatis flow outputs:



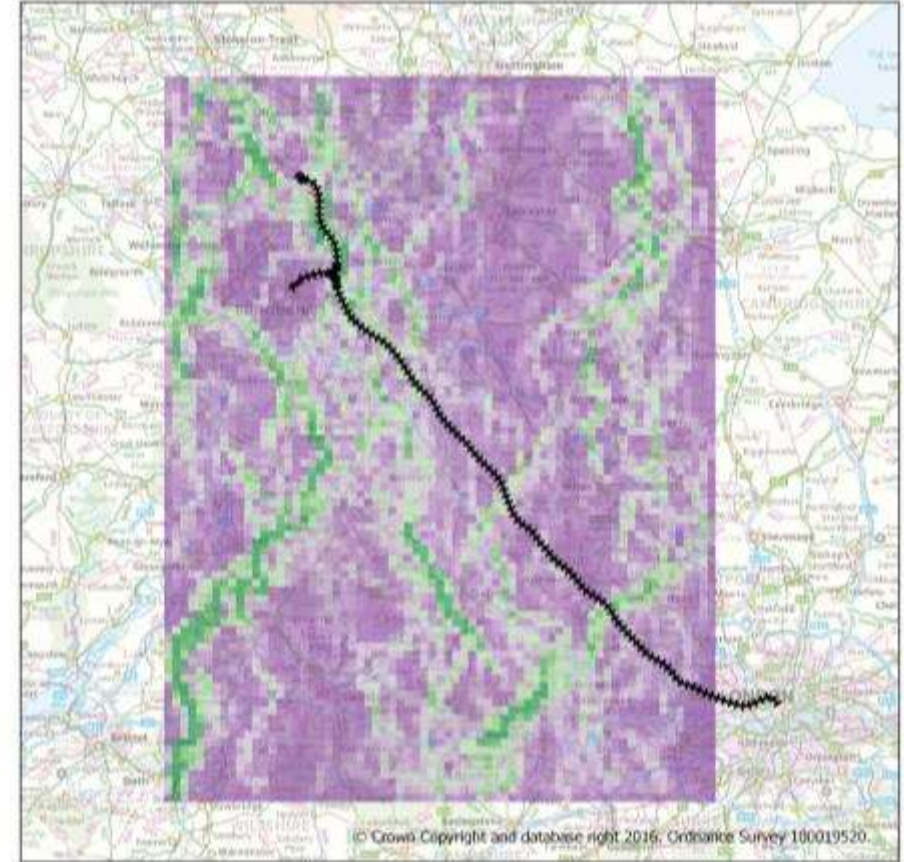
Condatis flow outputs: 1km flow



Condatis flow outputs:

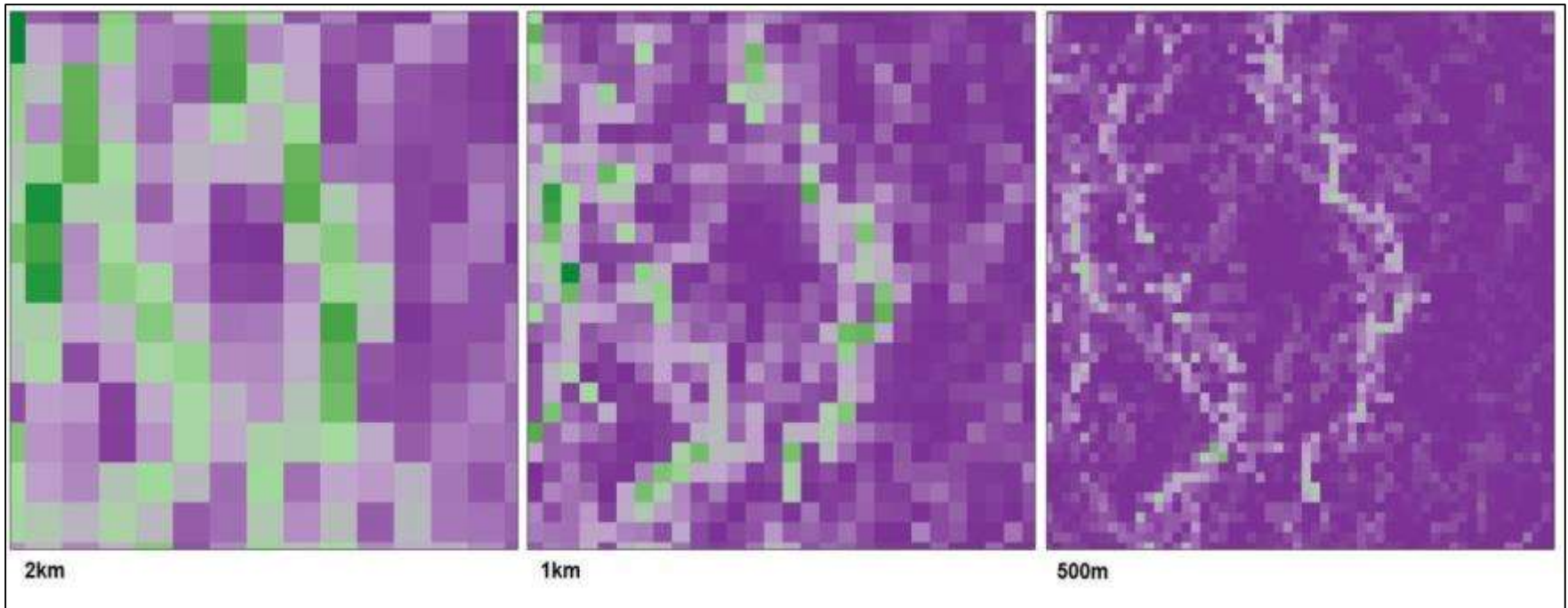


Grassland



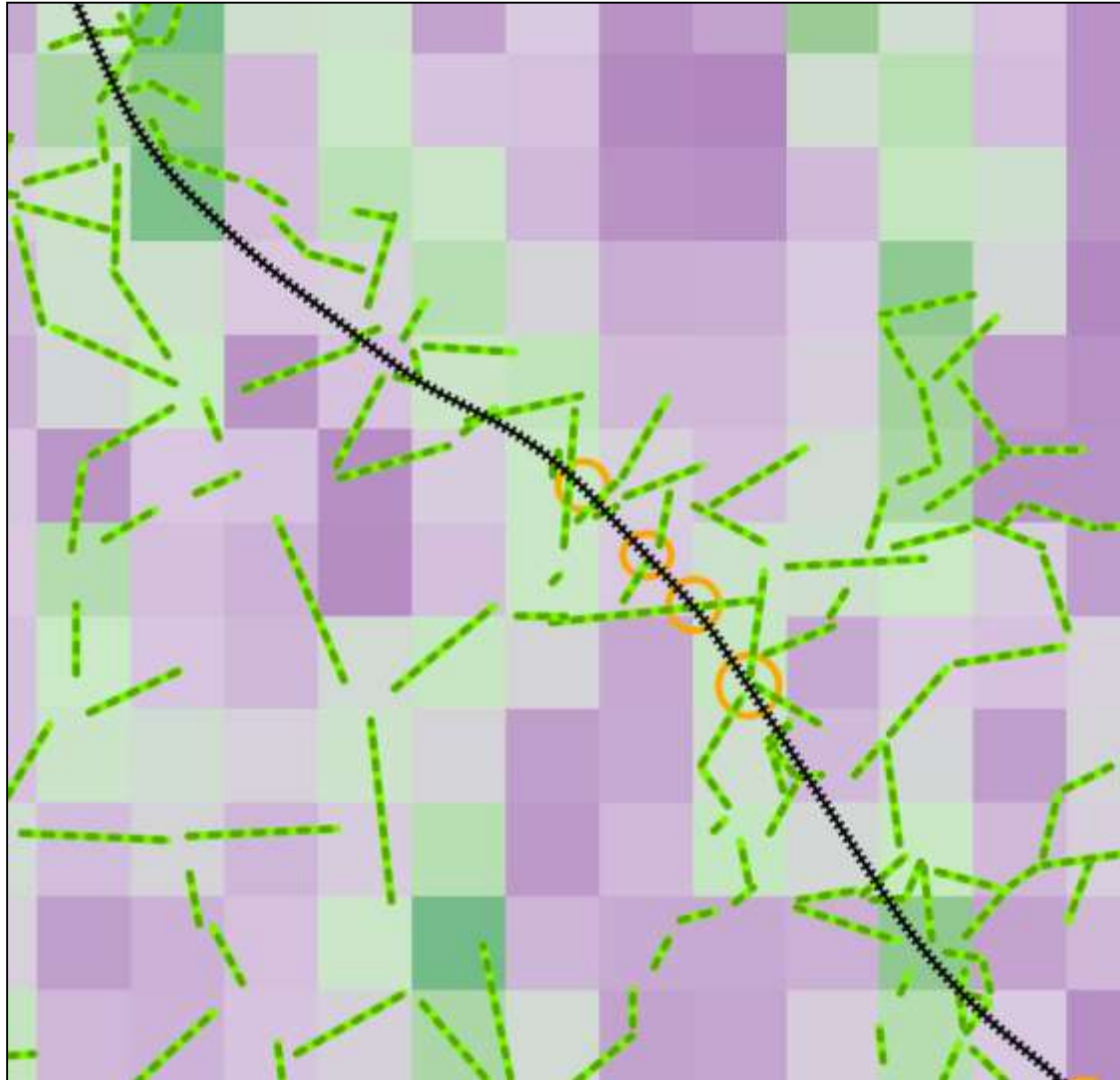
Woodland

Condatis flow outputs: 1km flow



5. Validation

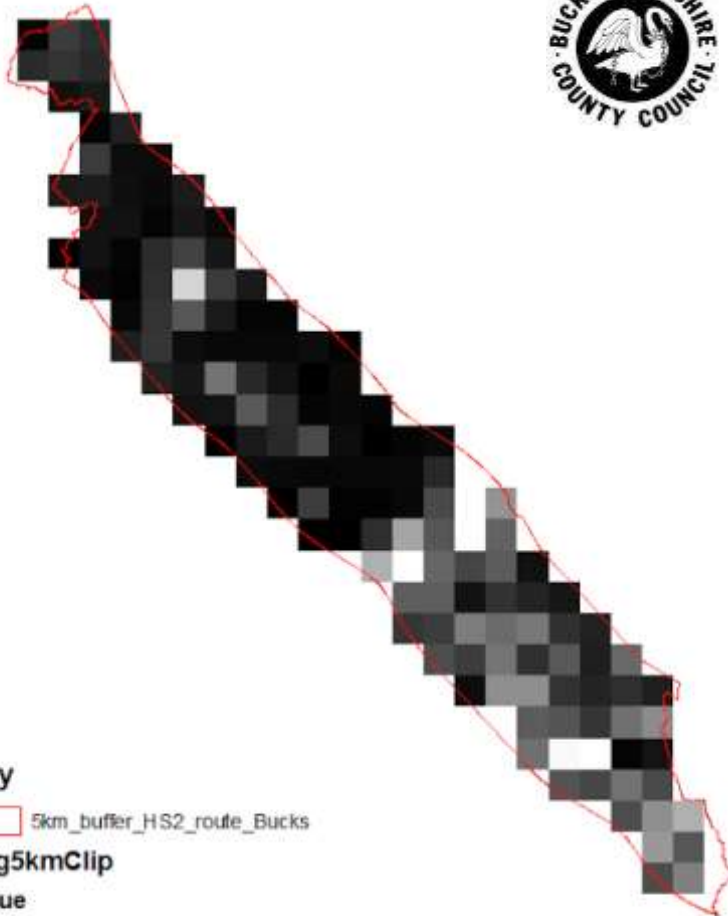
A validation exercise:



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Ecological flows for Buckinghamshire County Council
as predicted by Circuitscape (BCC exercise)



Key

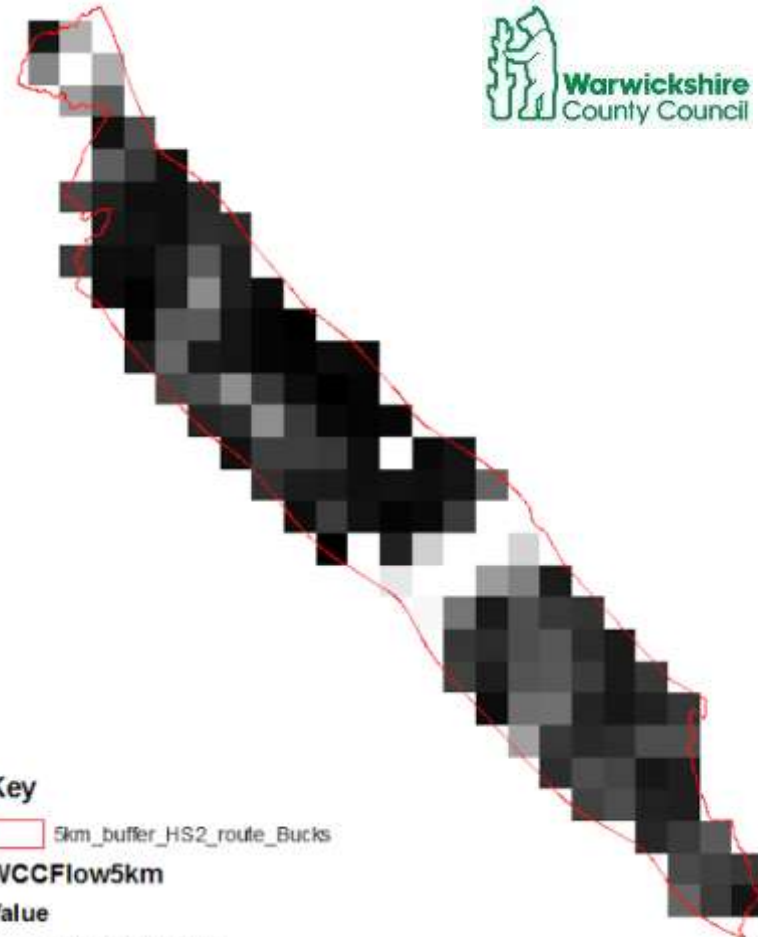
 5km_buffer_HS2_route_Bucks

agg5kmClip

Value



Ecological flows for Buckinghamshire County Council
as predicted by Condatis (South to North, WCC exercise)

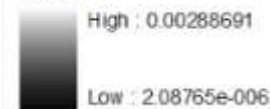


Key

 5km_buffer_HS2_route_Bucks

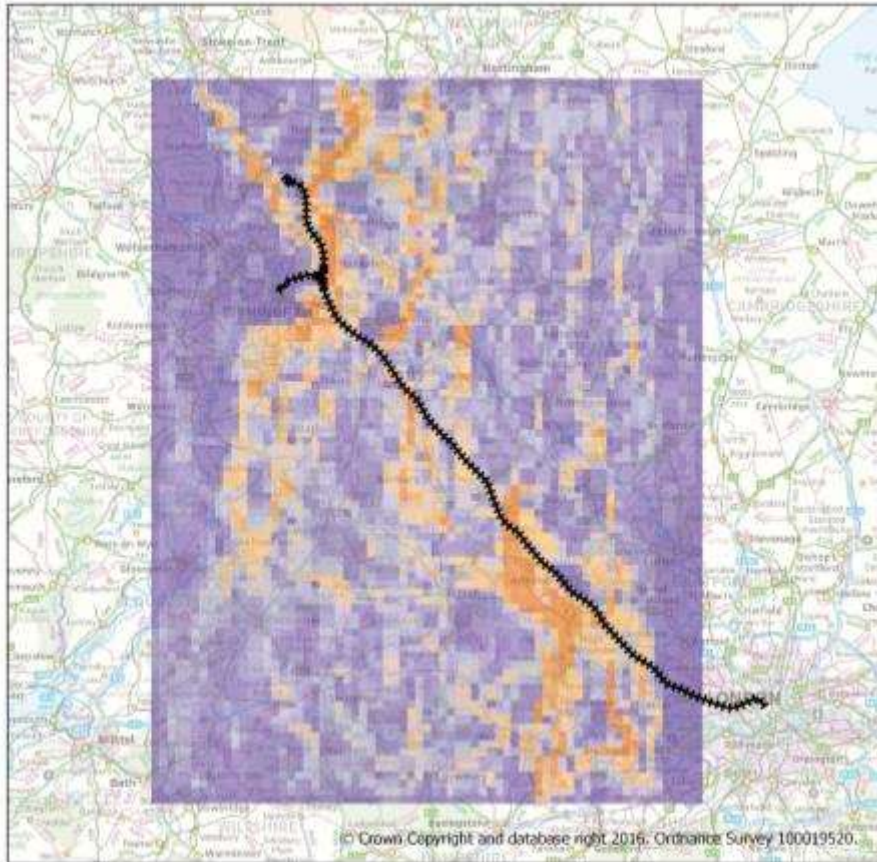
WCCFlow5km

Value

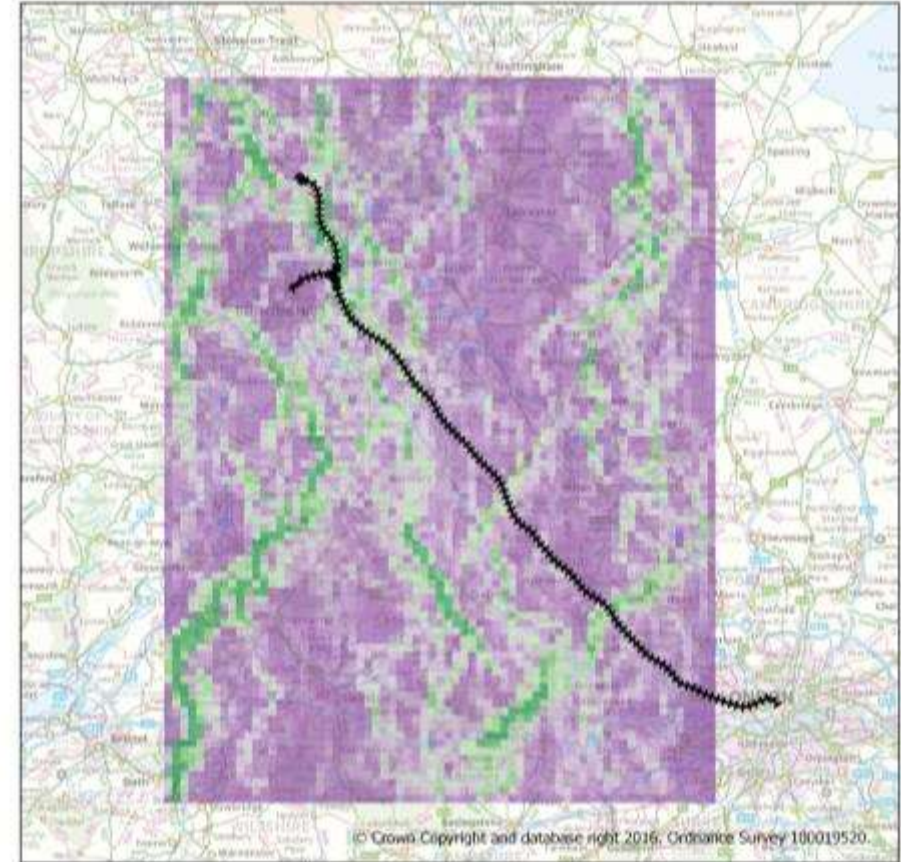


6. Conclusions (and some limitations)

Condatis flow outputs:



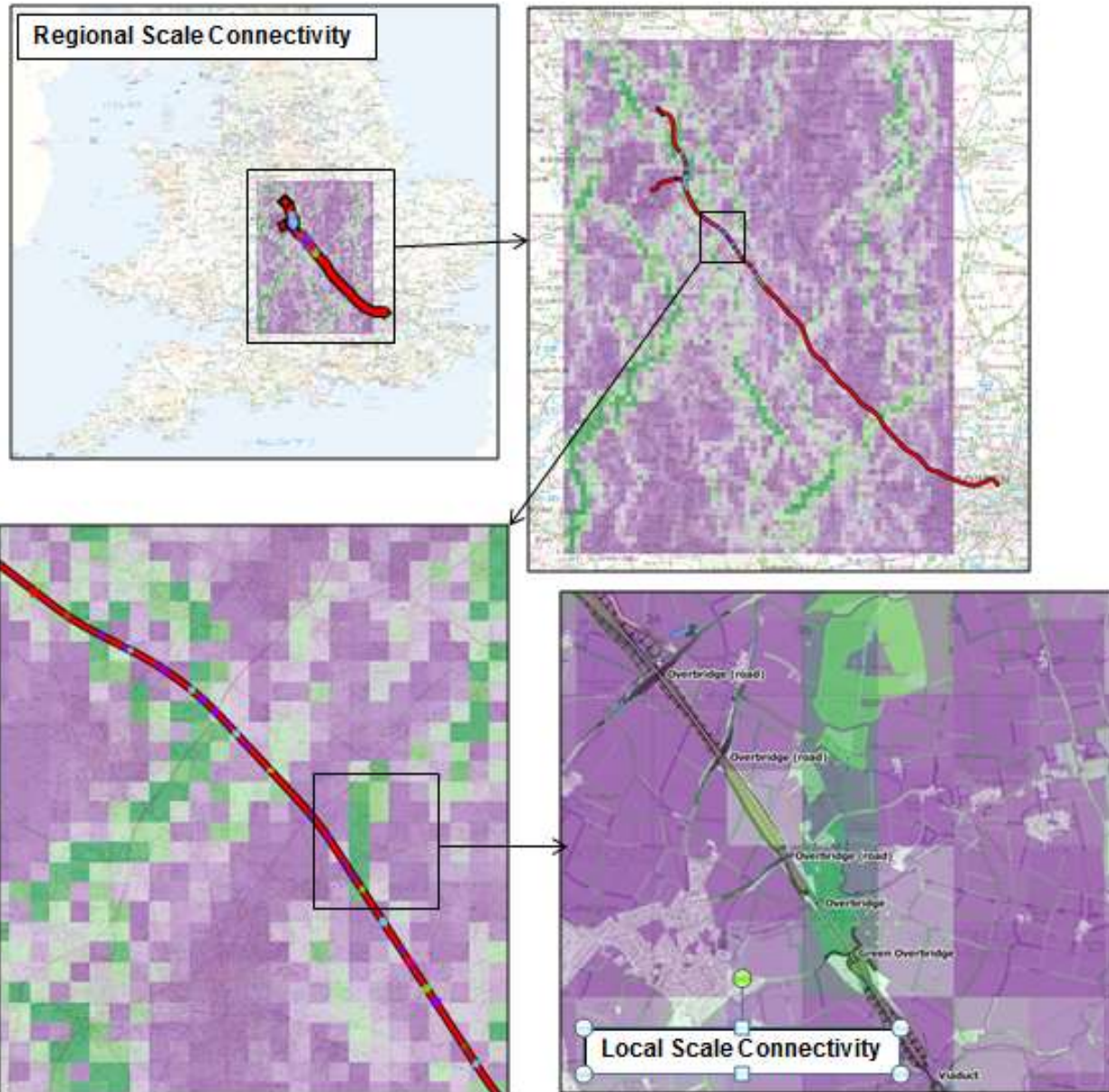
Grassland



Woodland

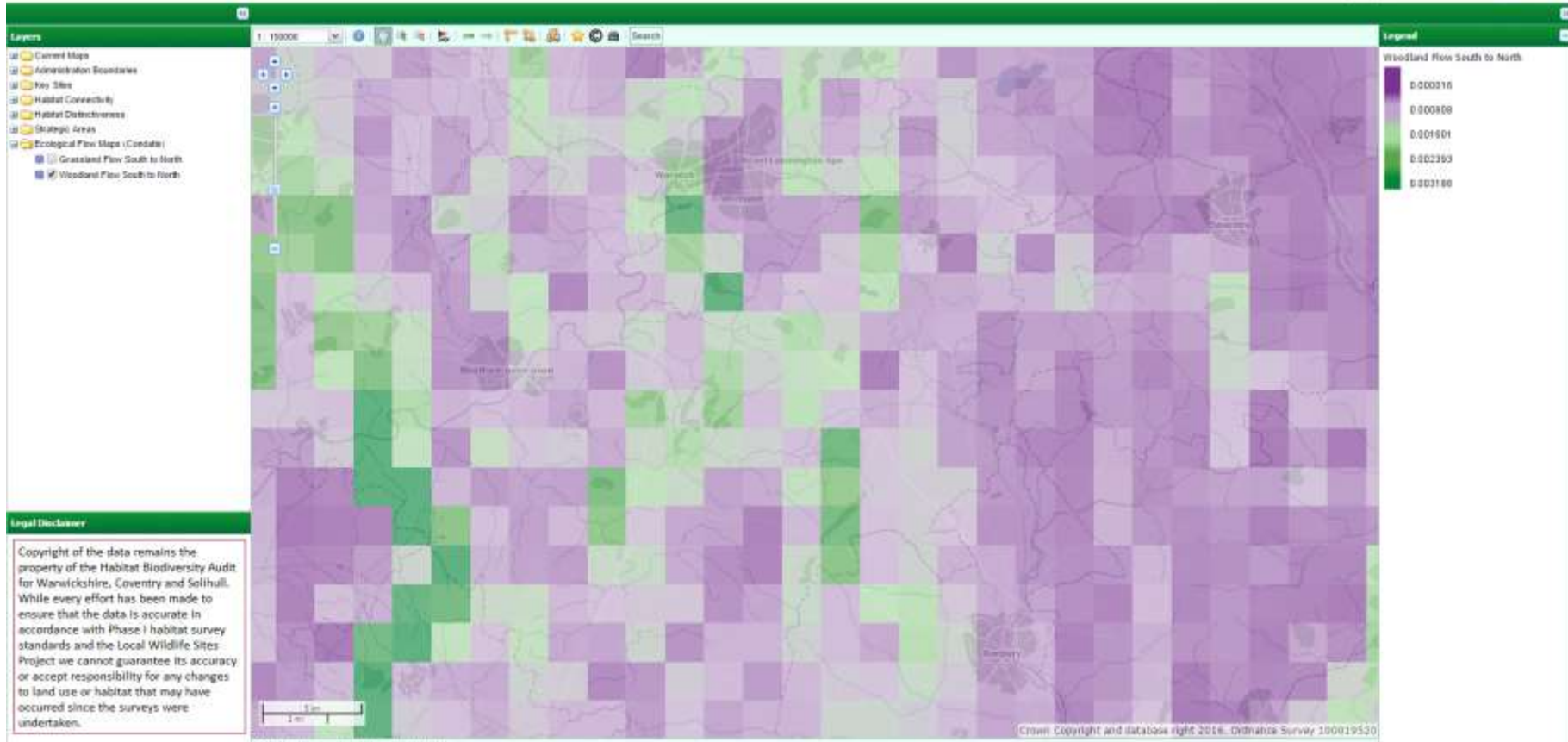
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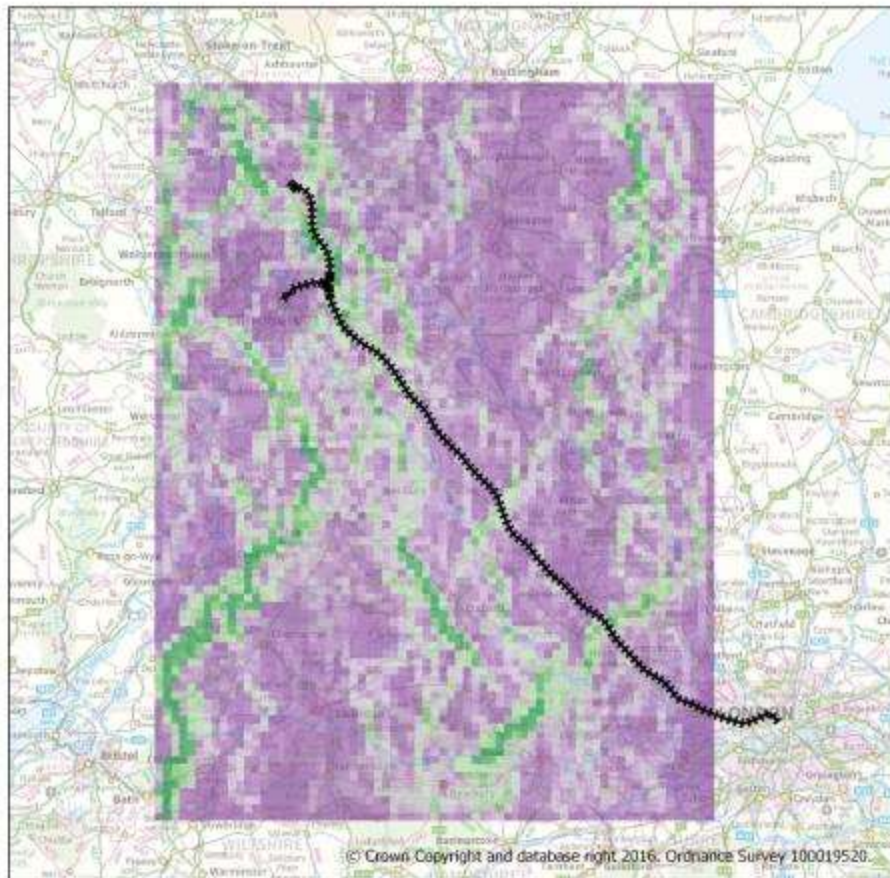


Warwickshire Green Infrastructure

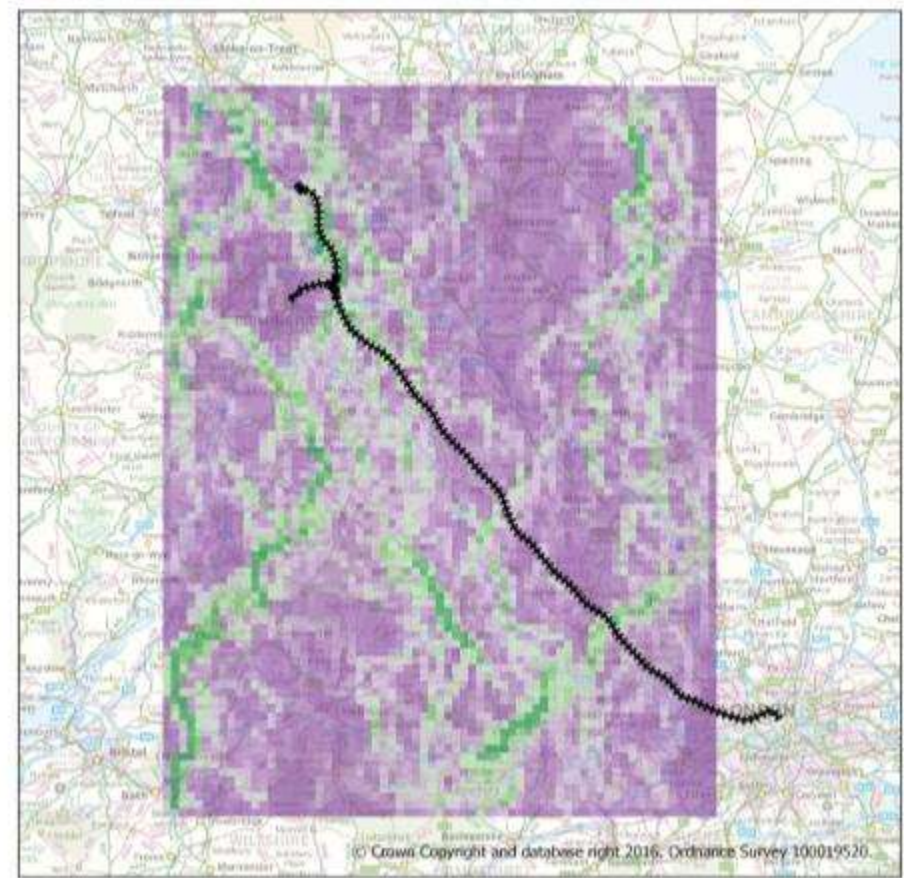


Changes in woodland flow resulting from HS2 works and landscaping

Before



After



A few limitations...



A few thoughts

- Hardware or software limitations?
- OK as a illustrative tool but output values need to be standardised for decision making
- External factors (i.e. surrounding landscape) need to be considered
- Ideas for future use of Condatis
 - Use 'dropping' to identify sites or parcels for enhancement
 - Prioritising enhancements from Biodiversity Offsetting

COMMENTS AND SUGGESTIONS MOST WELCOME
Thanks for listening!

