



Cyfoeth
Naturiol
Cymru
Natural
Resources
Wales

Building Resilience – New Policy Drivers for Applying Network Mapping in Wales

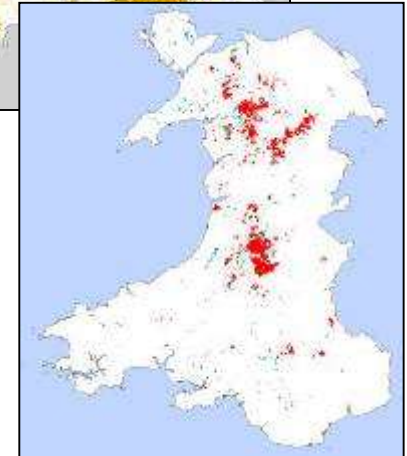
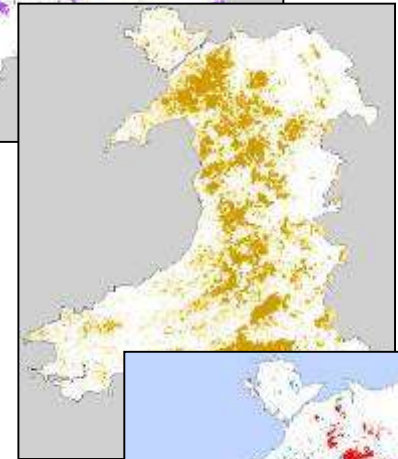
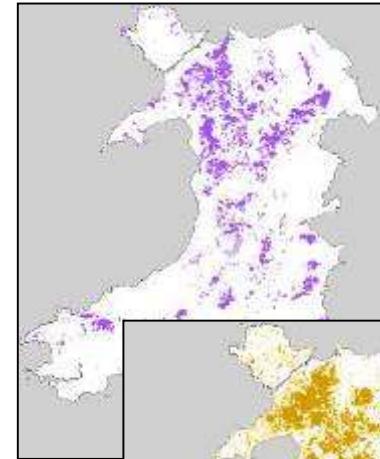


Jim Latham & Jon Rothwell

Condatis Network Meeting
15 March 2016

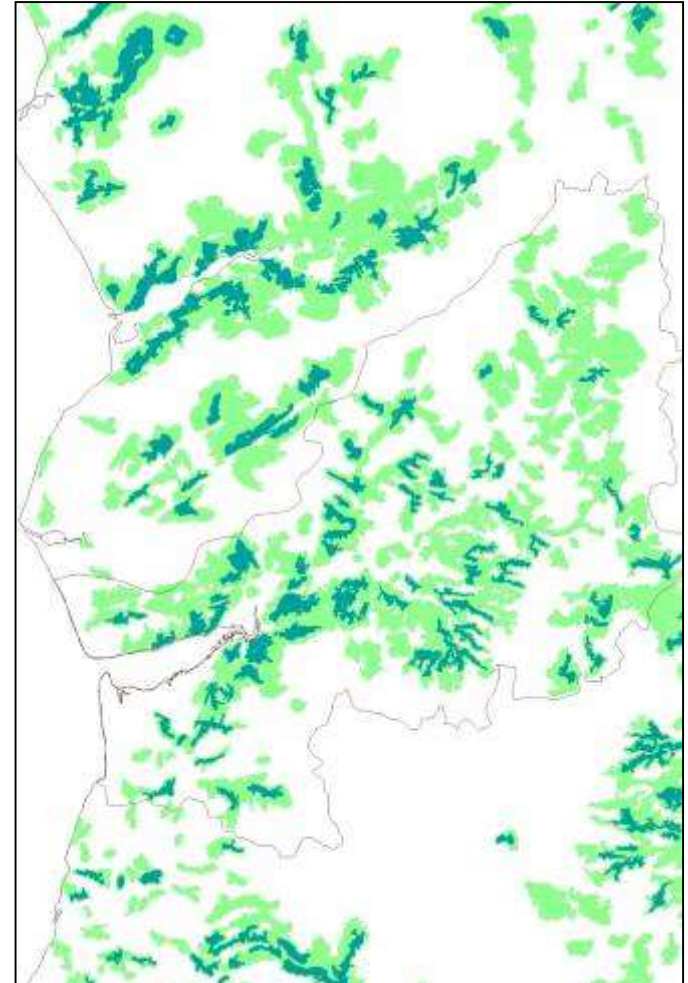
Talk Structure

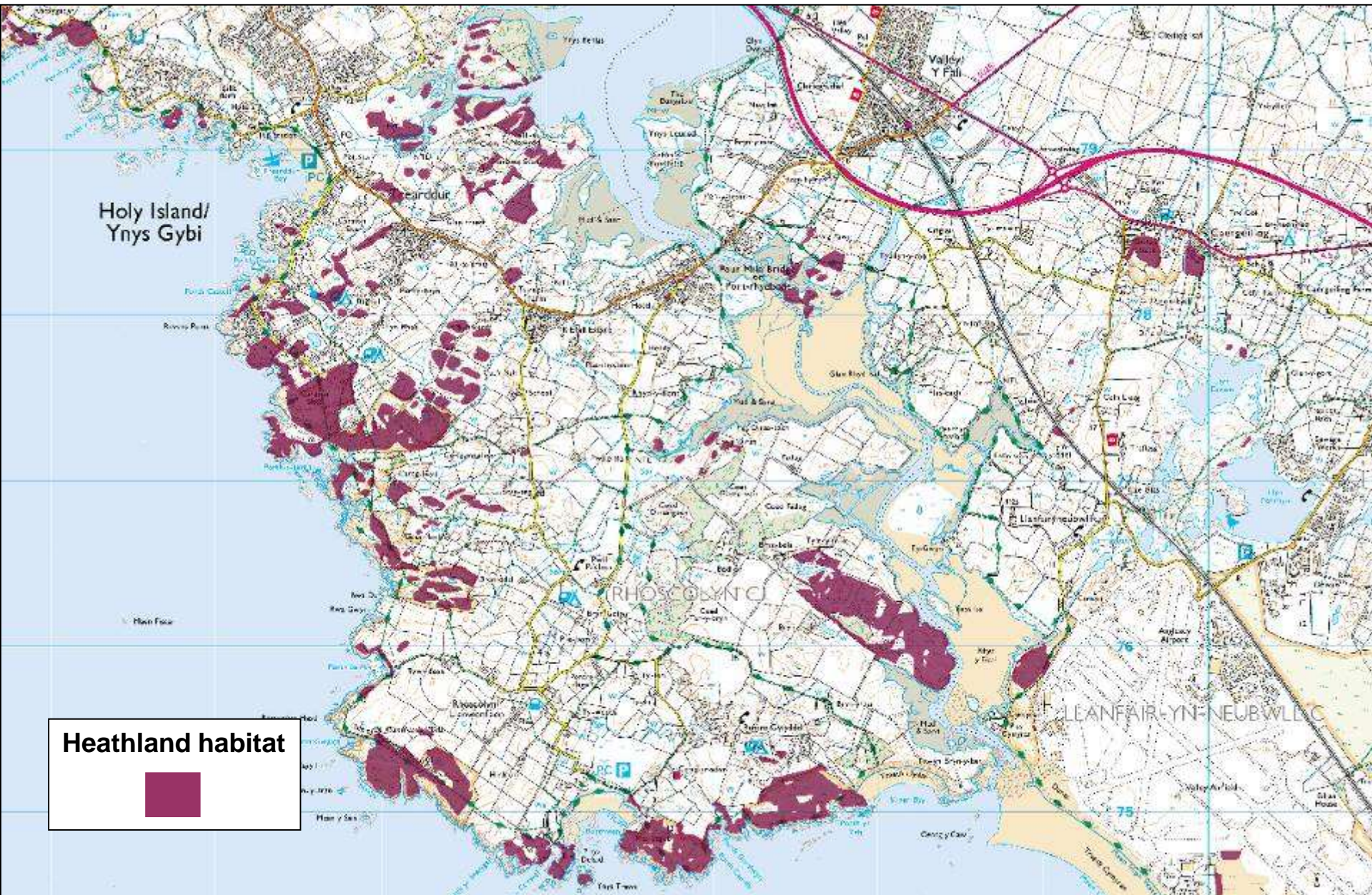
- Network mapping in Wales.
 - Least-cost modelling.
 - Condatis.
 - Applications.
- New policy drivers in Wales.
 - Emphasis on ‘resilience’.
 - A legal basis for connectivity!
- What needs to happen...



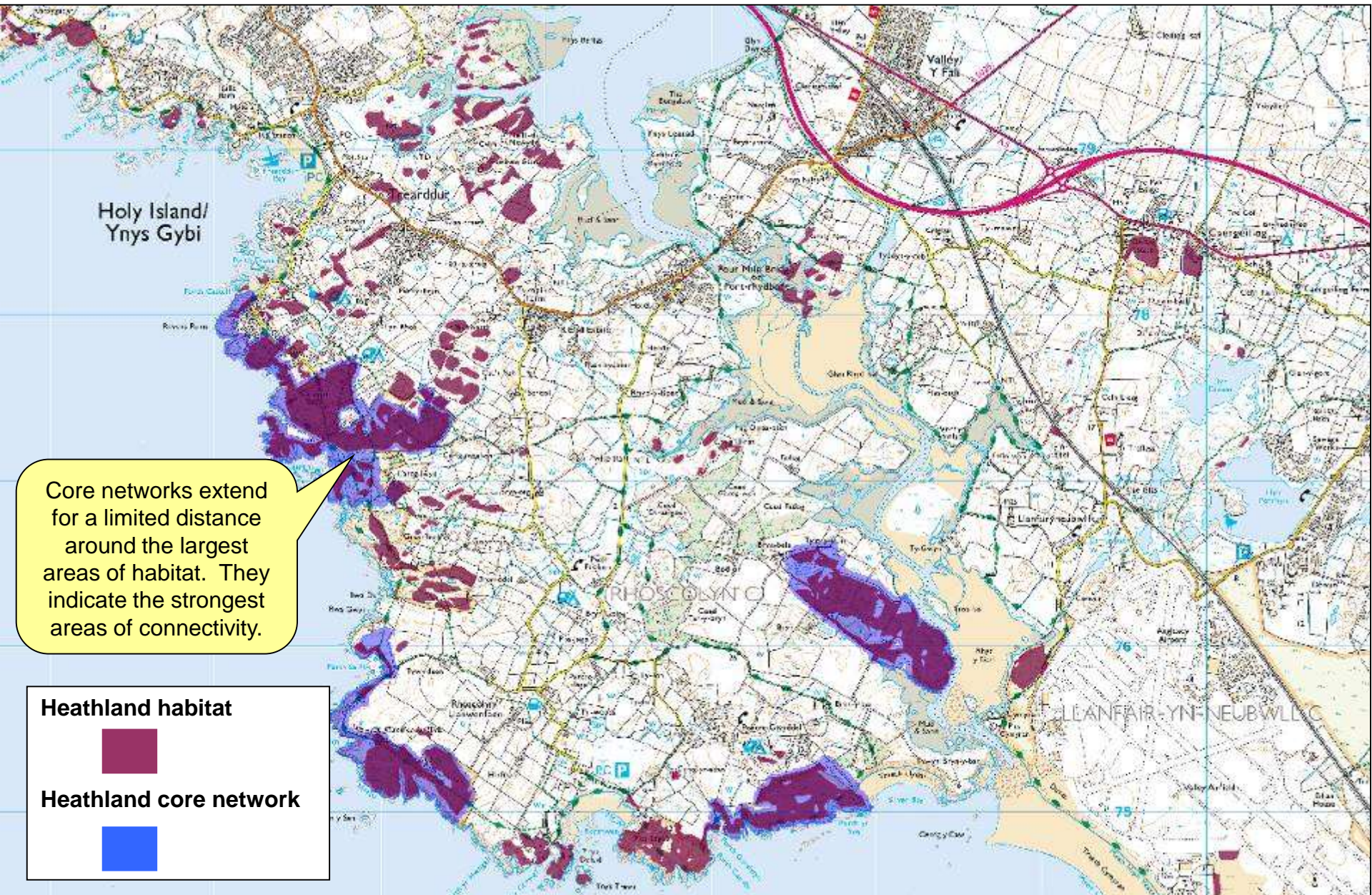
Network Mapping

- Least-cost modelling from Forest Research 'BEETLE' (2003 -).
- CCW (now NRW) acquired 'Network Tool' (2010).
- Refined mapping for woodland, heathland, grassland, fens and bogs.
- Investigation of network parameters – introduction of 'local' networks.





From: Latham, J., Sherry, J. & Rothwell, J. (2013). *Ecological connectivity and biodiversity prioritisation in the terrestrial environment of Wales*. CCW Staff Science Report No. 13/3/3



Holy Island/
Ynys Gybi

Core networks extend for a limited distance around the largest areas of habitat. They indicate the strongest areas of connectivity.

Heathland habitat



Heathland core network



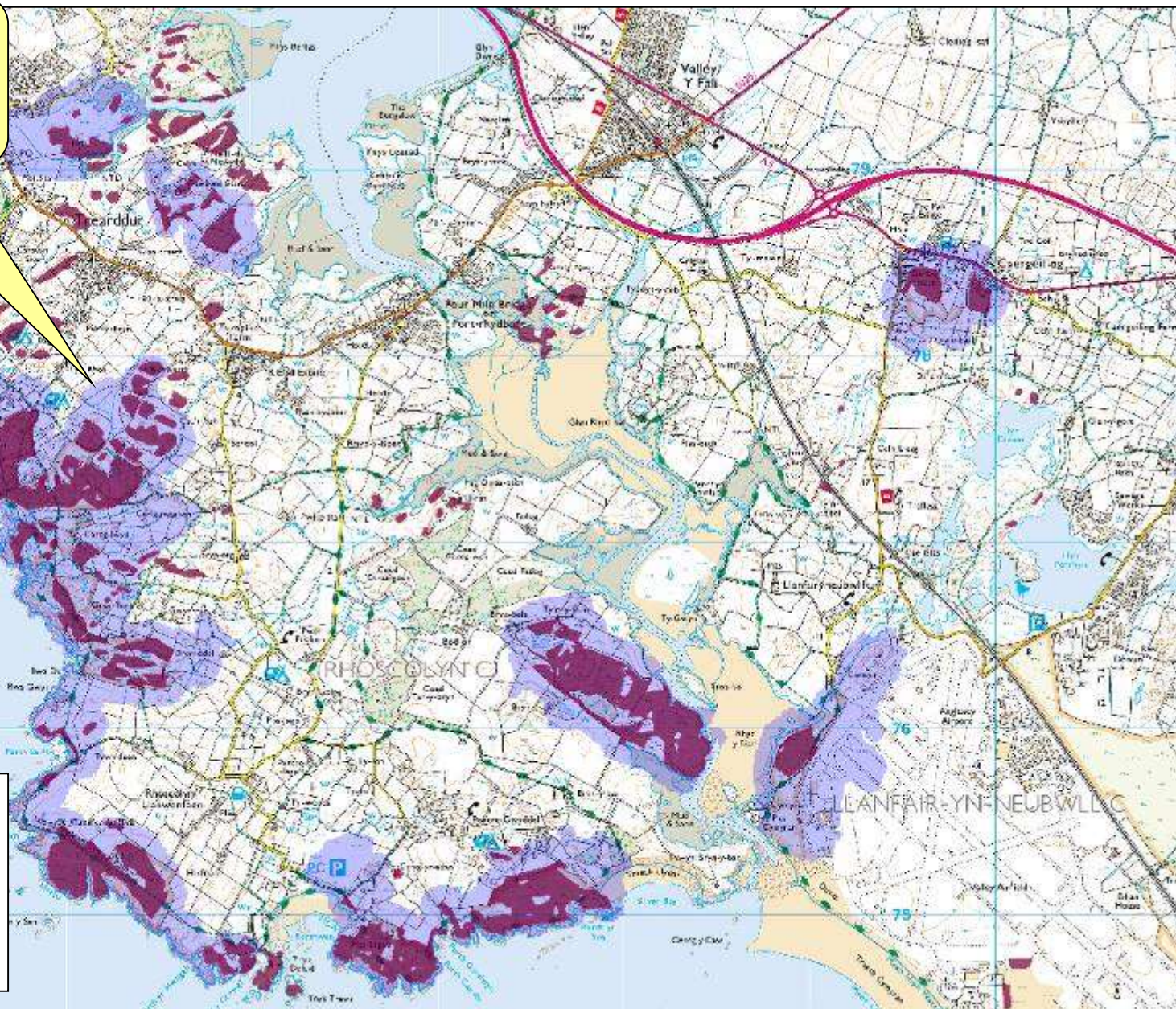
Focal networks can be extensive and join many habitat patches, but are relatively weak areas of connectivity

Holy Island/
Ynys Gybi

Heathland habitat



Heathland focal network



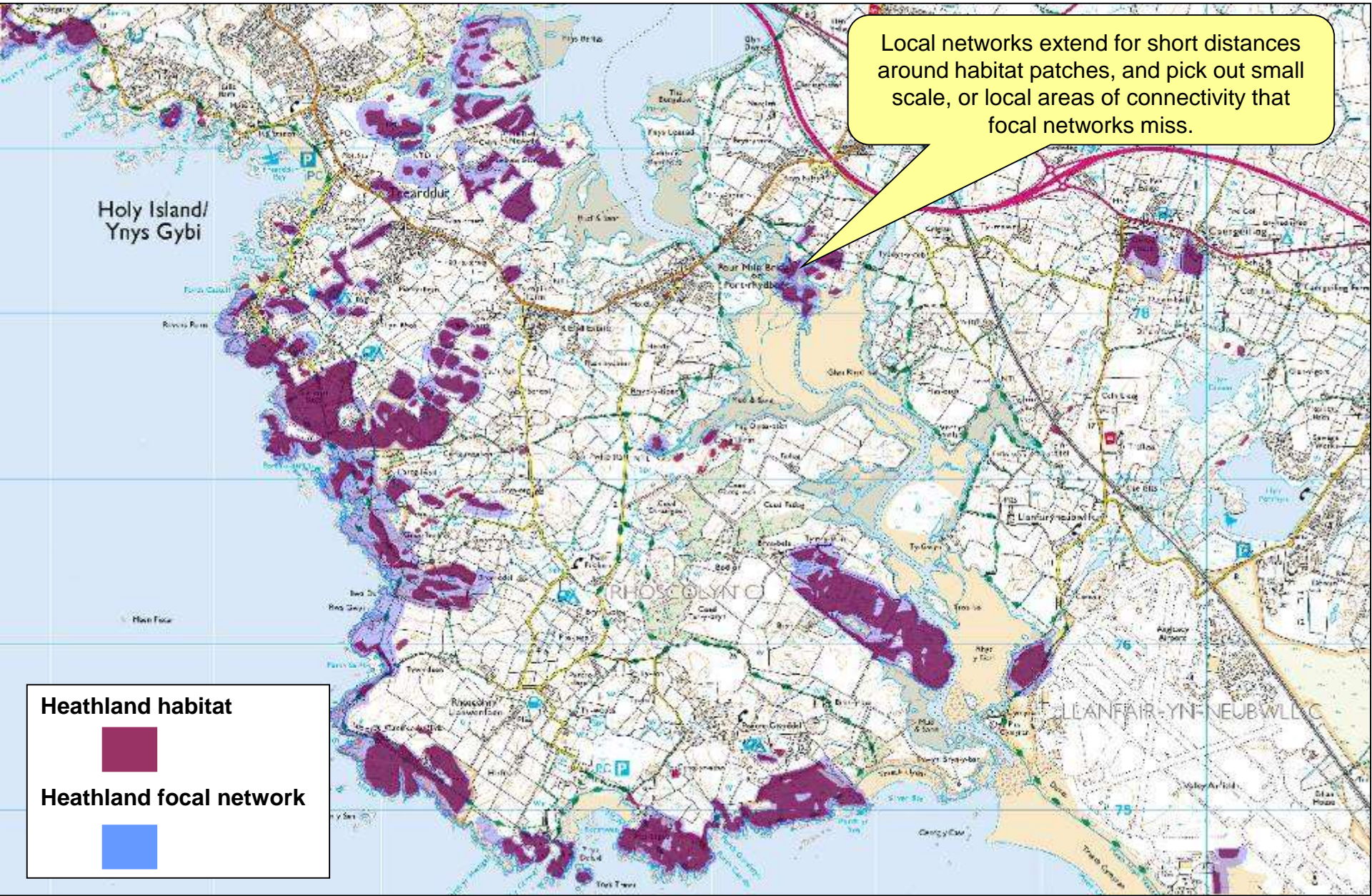
Local networks extend for short distances around habitat patches, and pick out small scale, or local areas of connectivity that focal networks miss.

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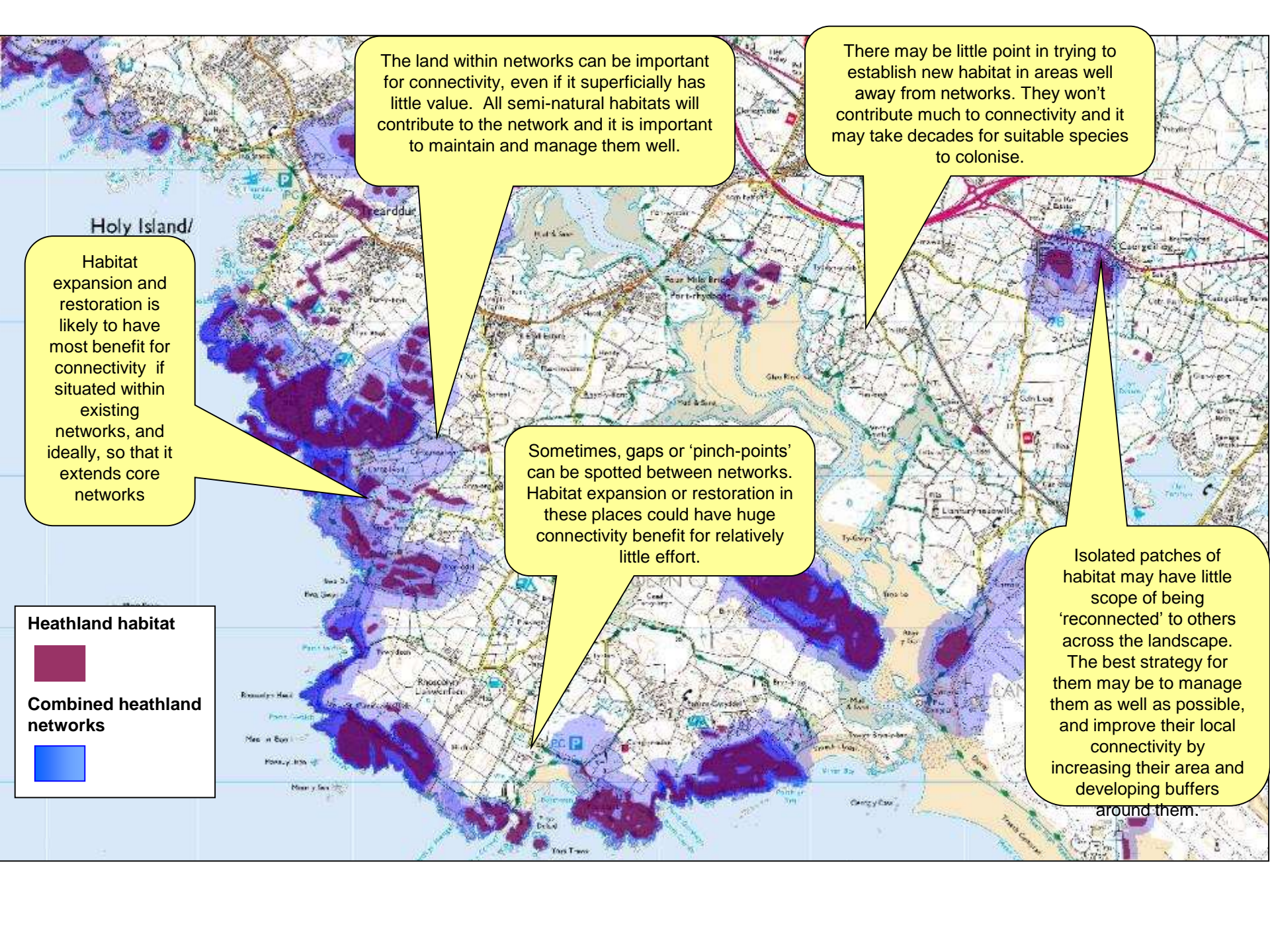
Heathland habitat



Heathland focal network







The land within networks can be important for connectivity, even if it superficially has little value. All semi-natural habitats will contribute to the network and it is important to maintain and manage them well.

There may be little point in trying to establish new habitat in areas well away from networks. They won't contribute much to connectivity and it may take decades for suitable species to colonise.

Habitat expansion and restoration is likely to have most benefit for connectivity if situated within existing networks, and ideally, so that it extends core networks

Sometimes, gaps or 'pinch-points' can be spotted between networks. Habitat expansion or restoration in these places could have huge connectivity benefit for relatively little effort.

Isolated patches of habitat may have little scope of being 'reconnected' to others across the landscape. The best strategy for them may be to manage them as well as possible, and improve their local connectivity by increasing their area and developing buffers around them.

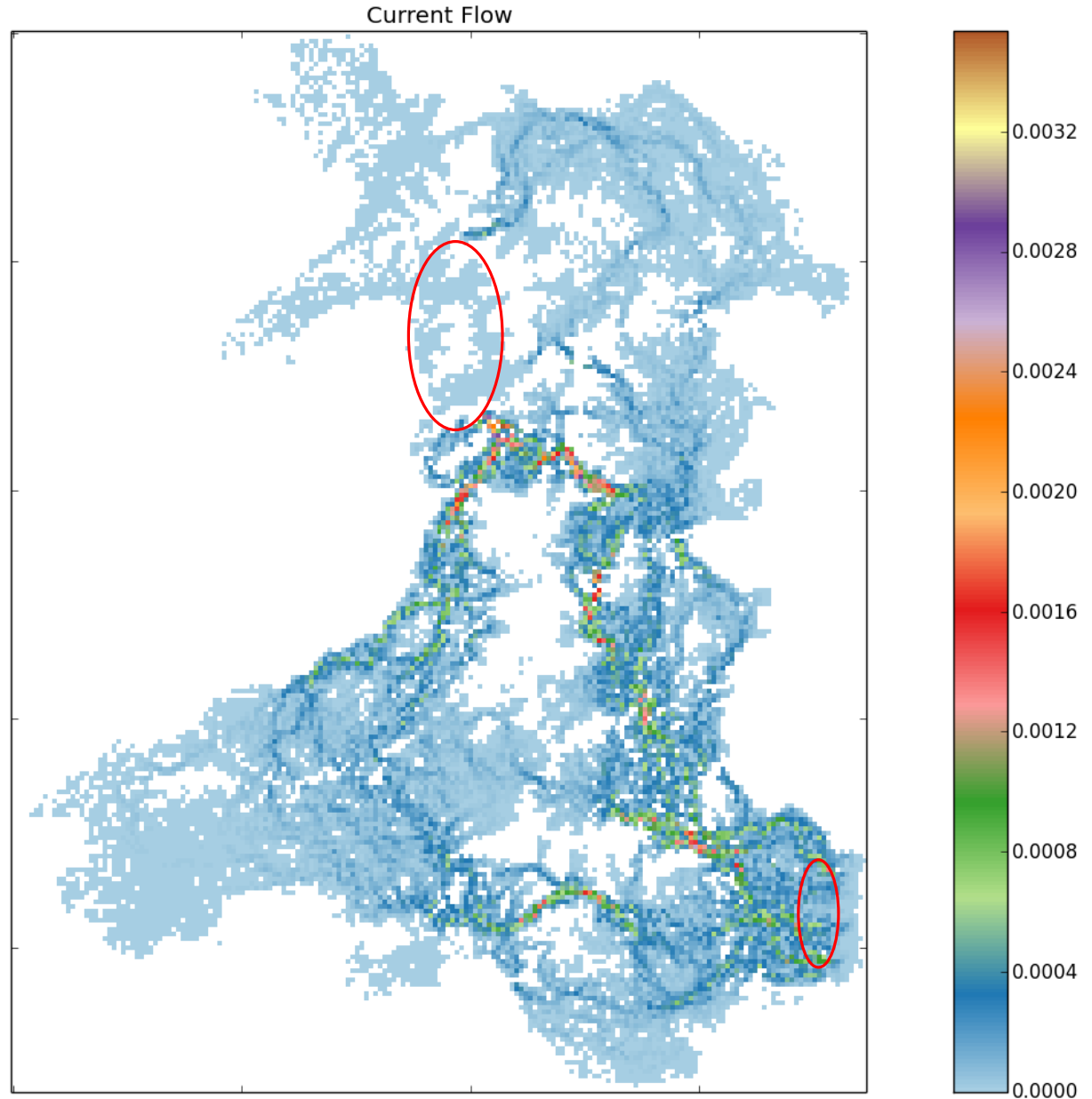
Heathland habitat



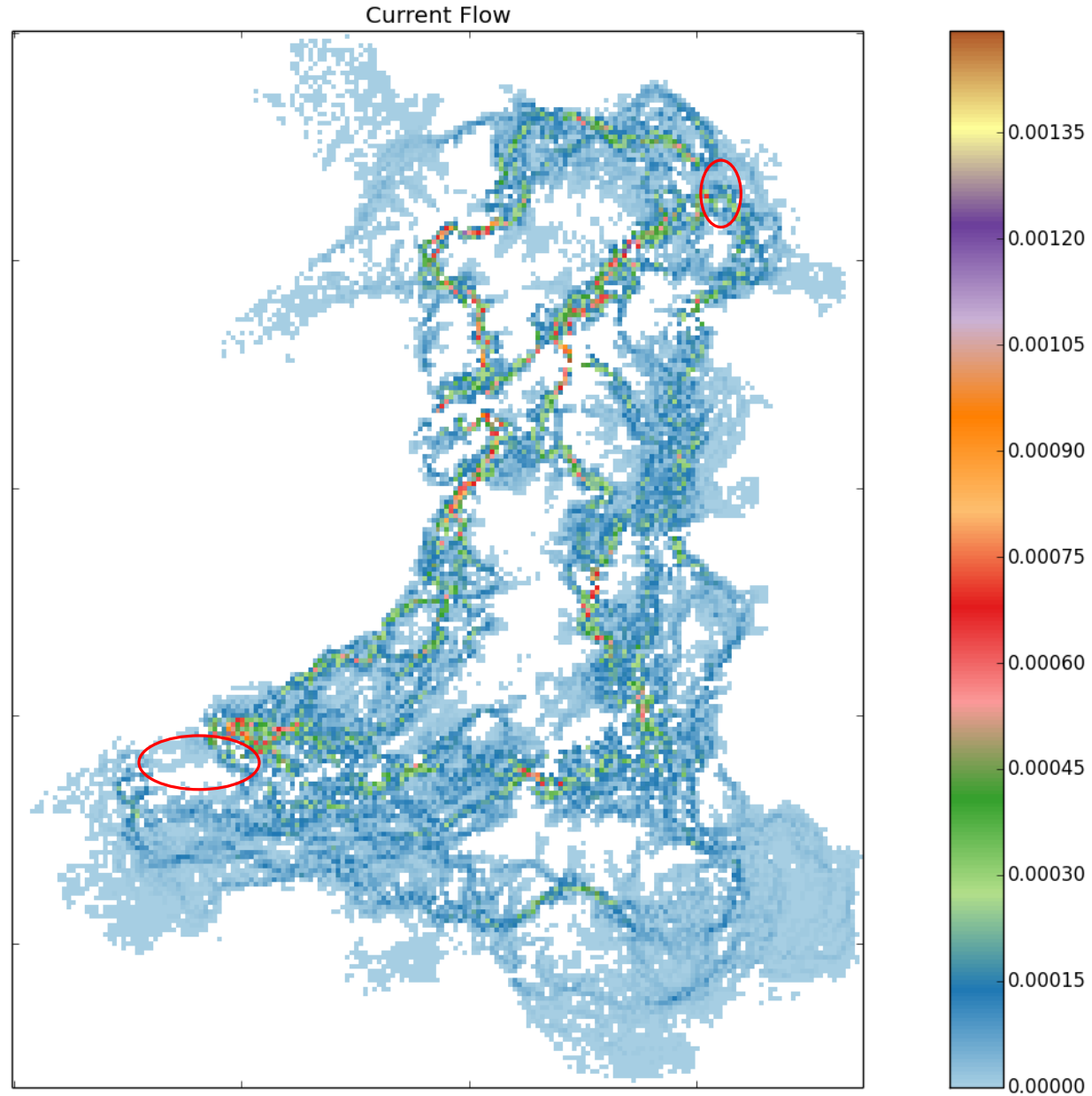
Combined heathland networks

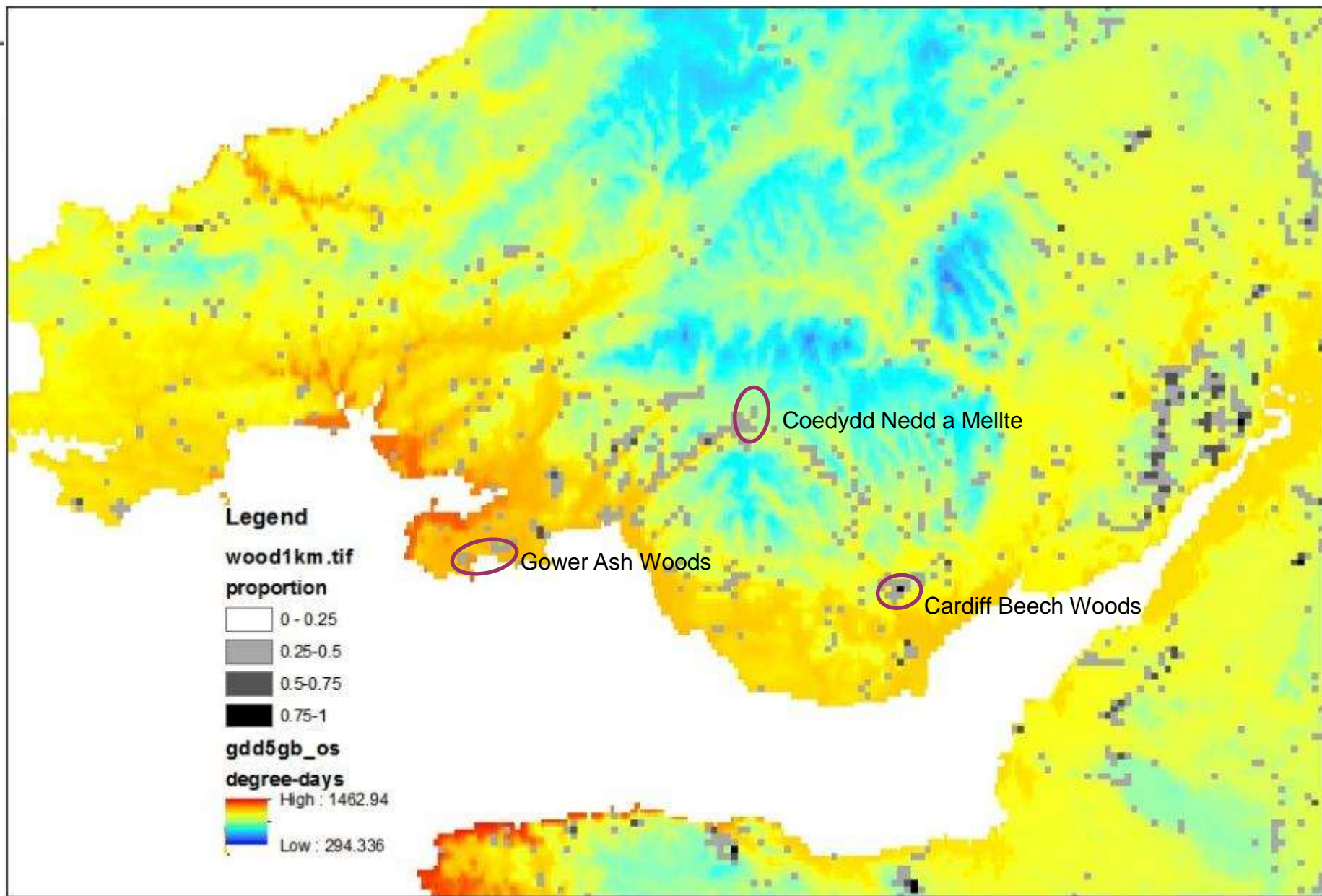


Condatis
Exploring potential
species 'flow' between
woodland SACs



Condatis
Exploring potential
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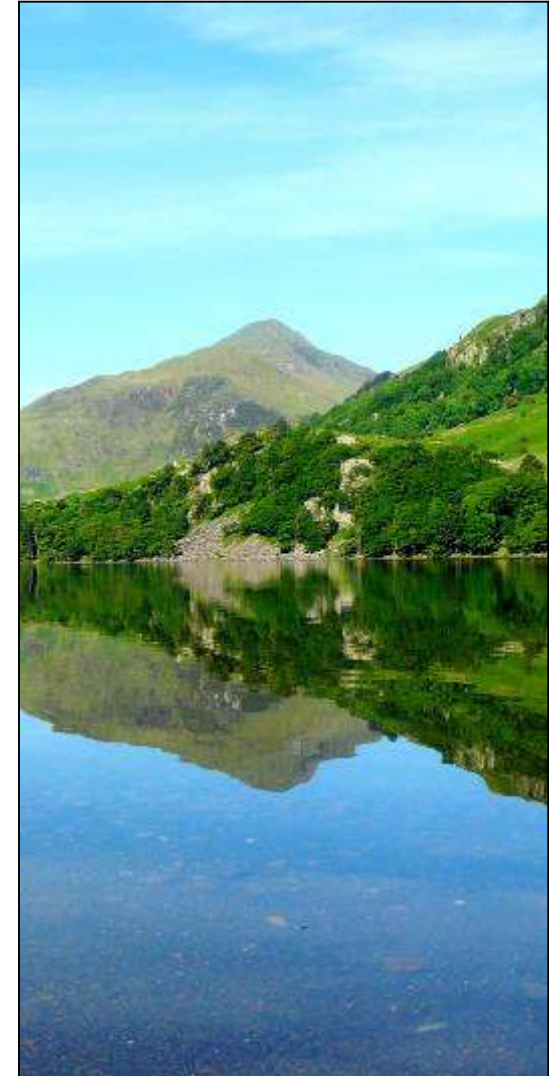




South Wales showing temperature and three woodland SACs that might be useful case studies

Applications of Network Mapping

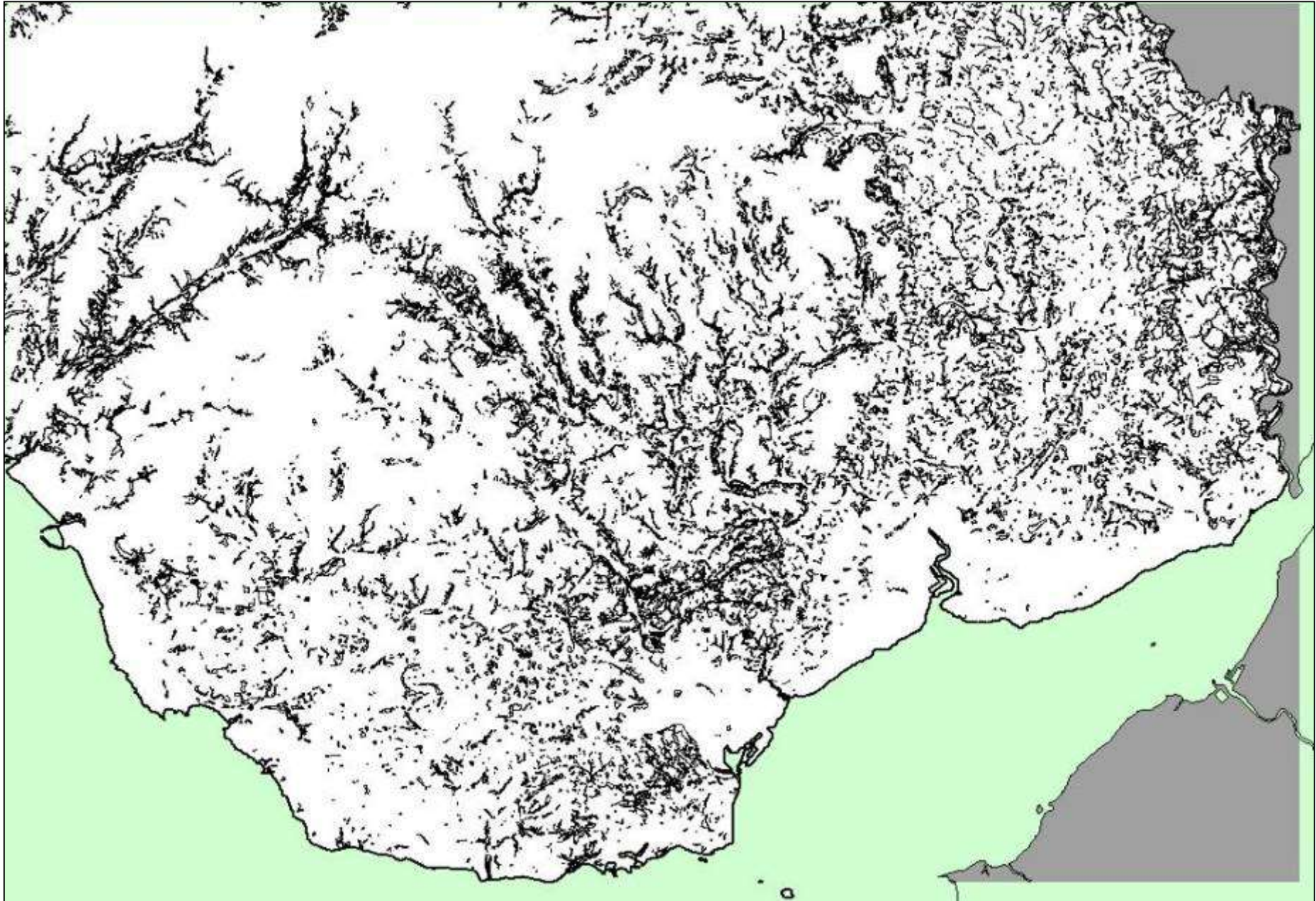
- Forestry:
 - Woodland Grant Scheme.
 - Glastir woodland management.
 - Glastir woodland creation – opportunity map.
- Agri-environment targeting.
- SSSI selection and justification.
- Case-work – assessing site value.
- Criteria in grant applications.
- Use by NGOs in various projects.
- ‘Priority mapping’.



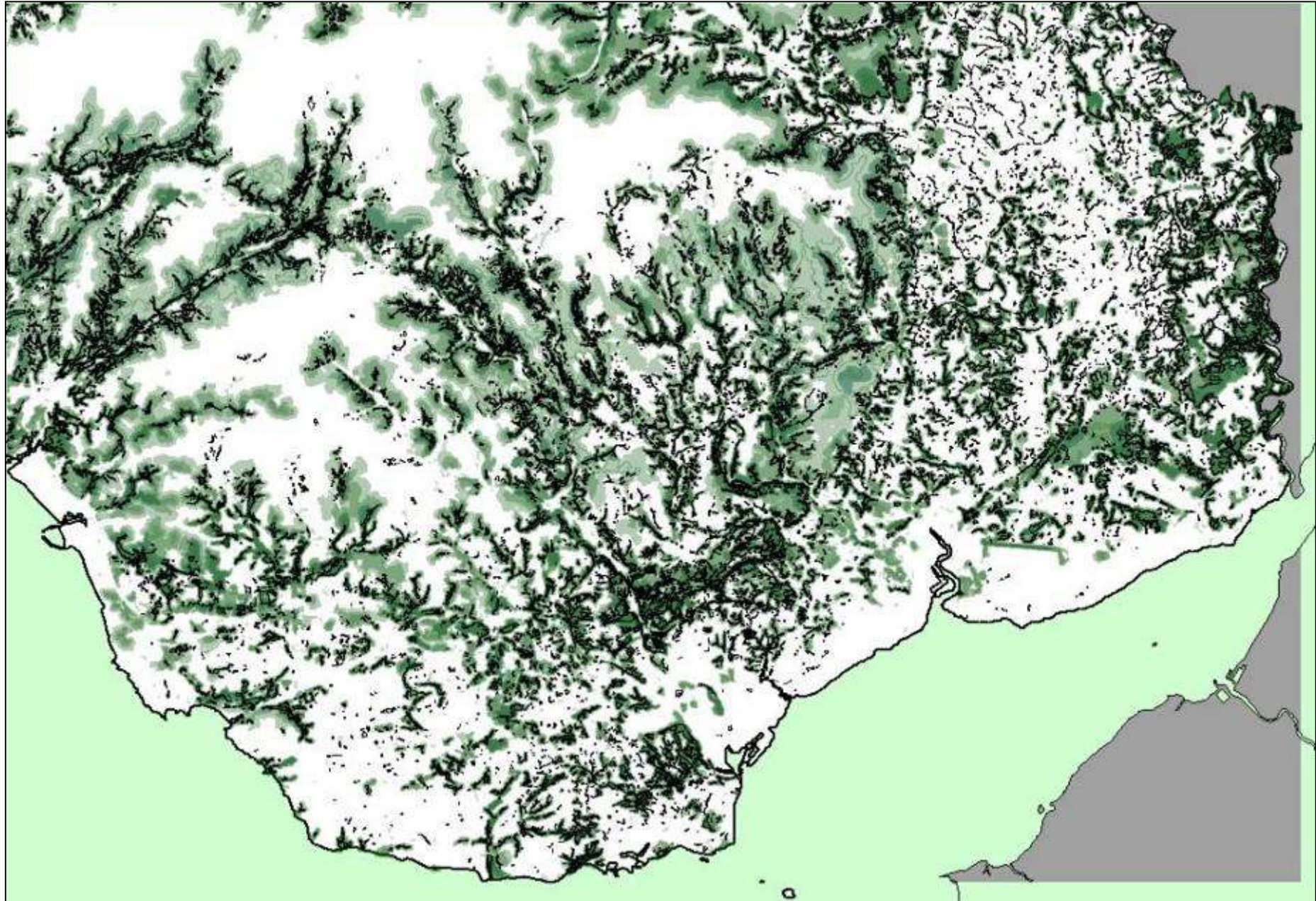
Prioritising Networks



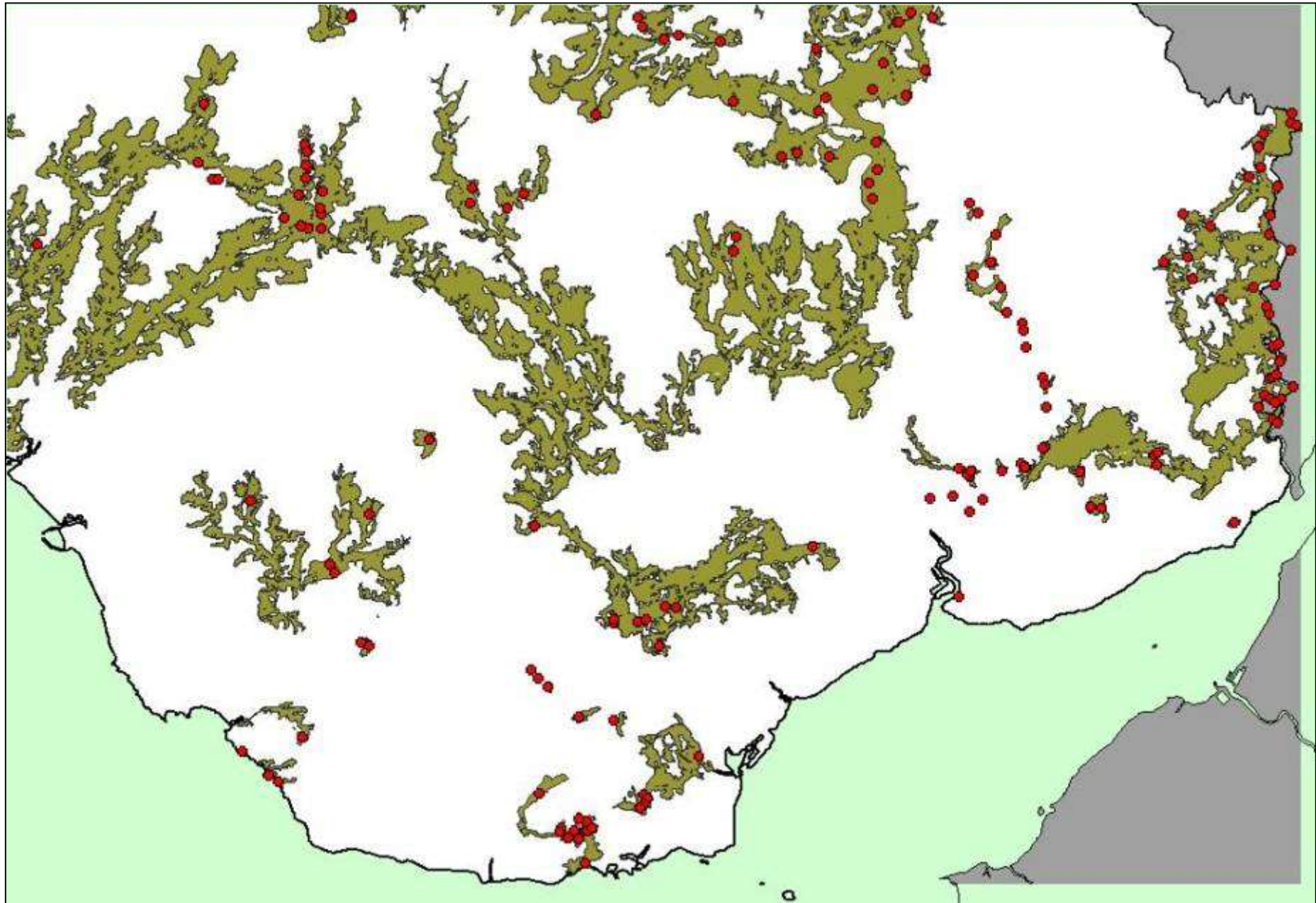
Broadleaved Woodland



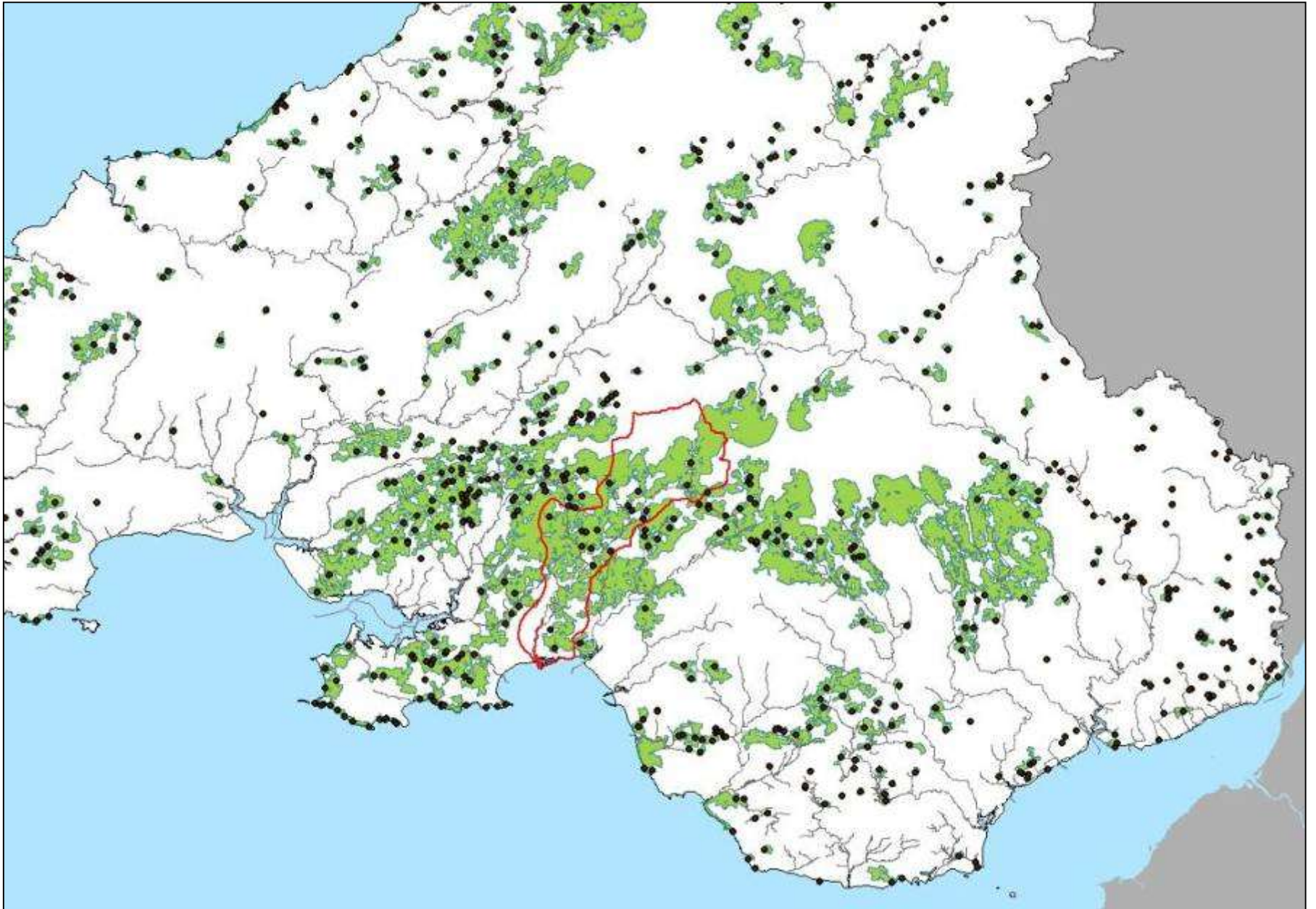
Broadleaved Woodland and Connectivity



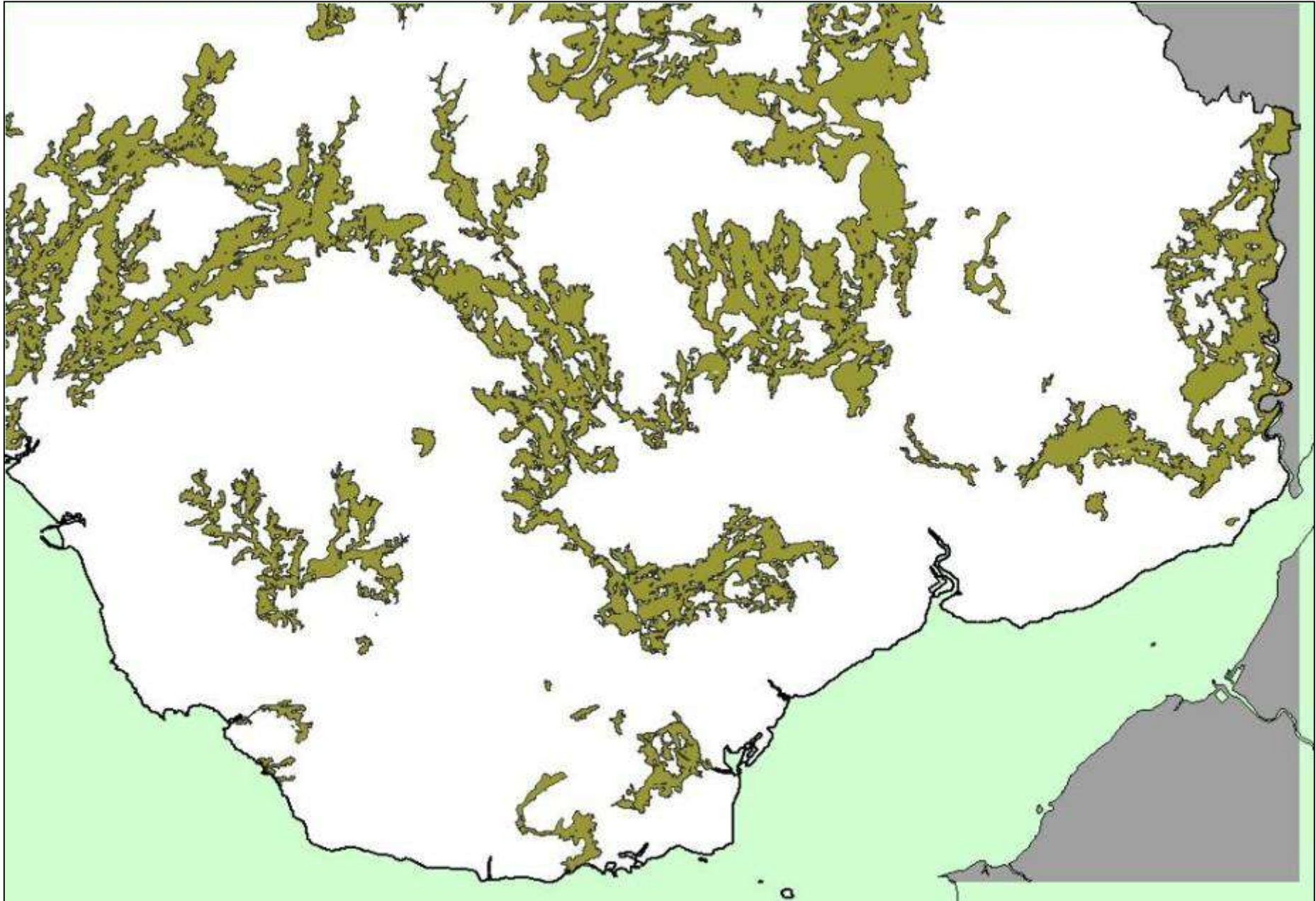
A Priority Layer for Broadleaved Woodland



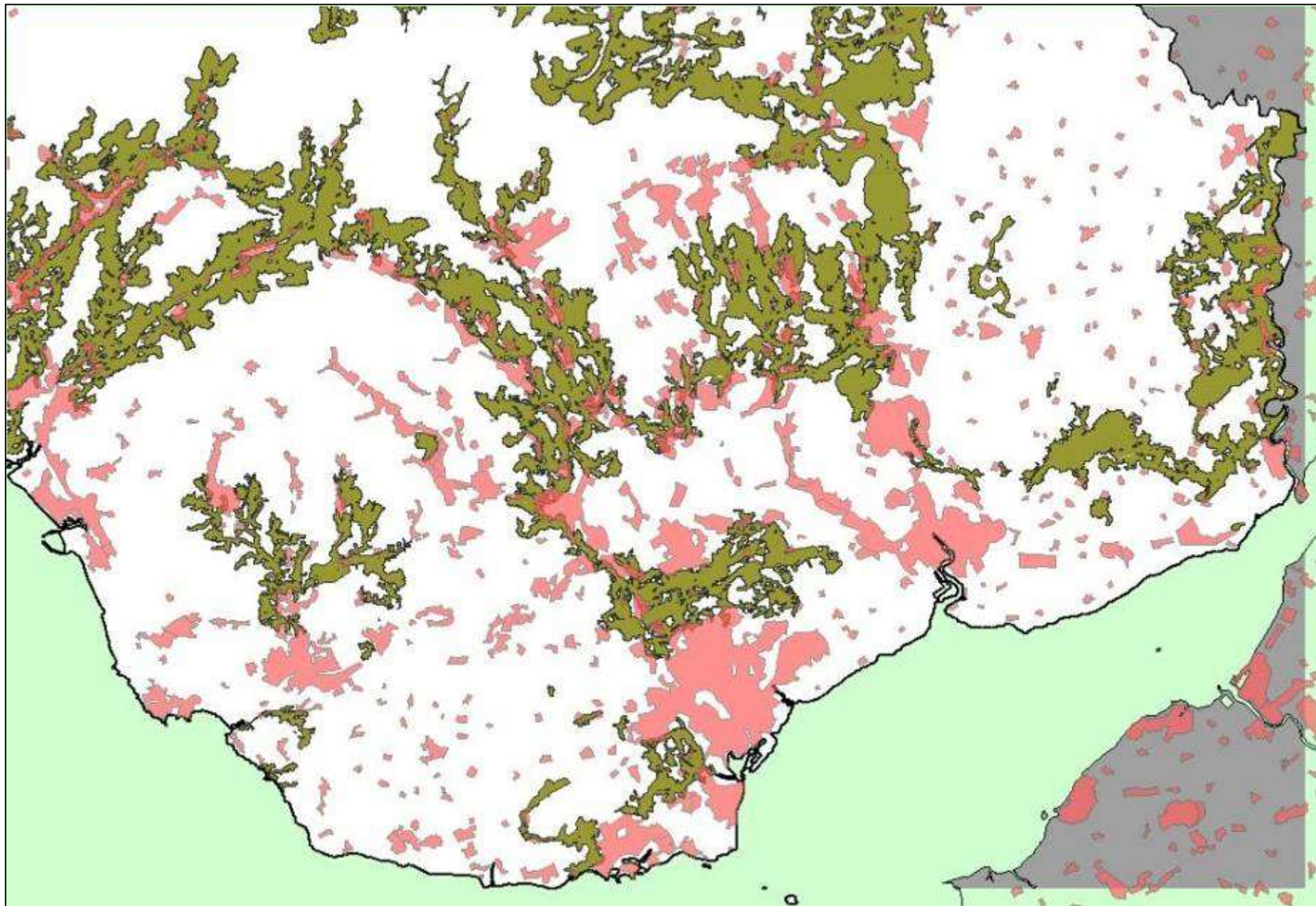
Unimproved lowland grassland Priority Networks



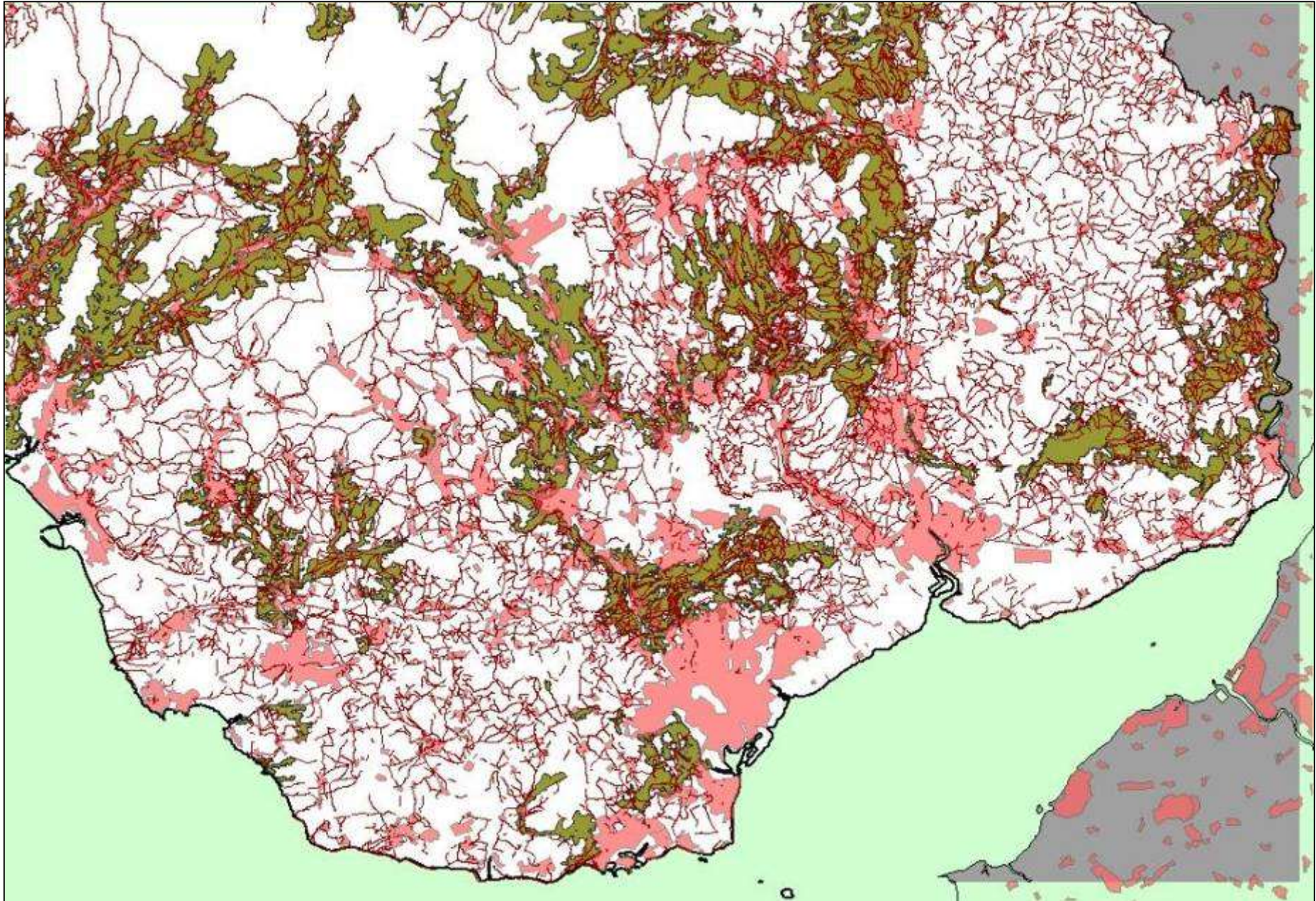
A Priority Layer for Broadleaved Woodland



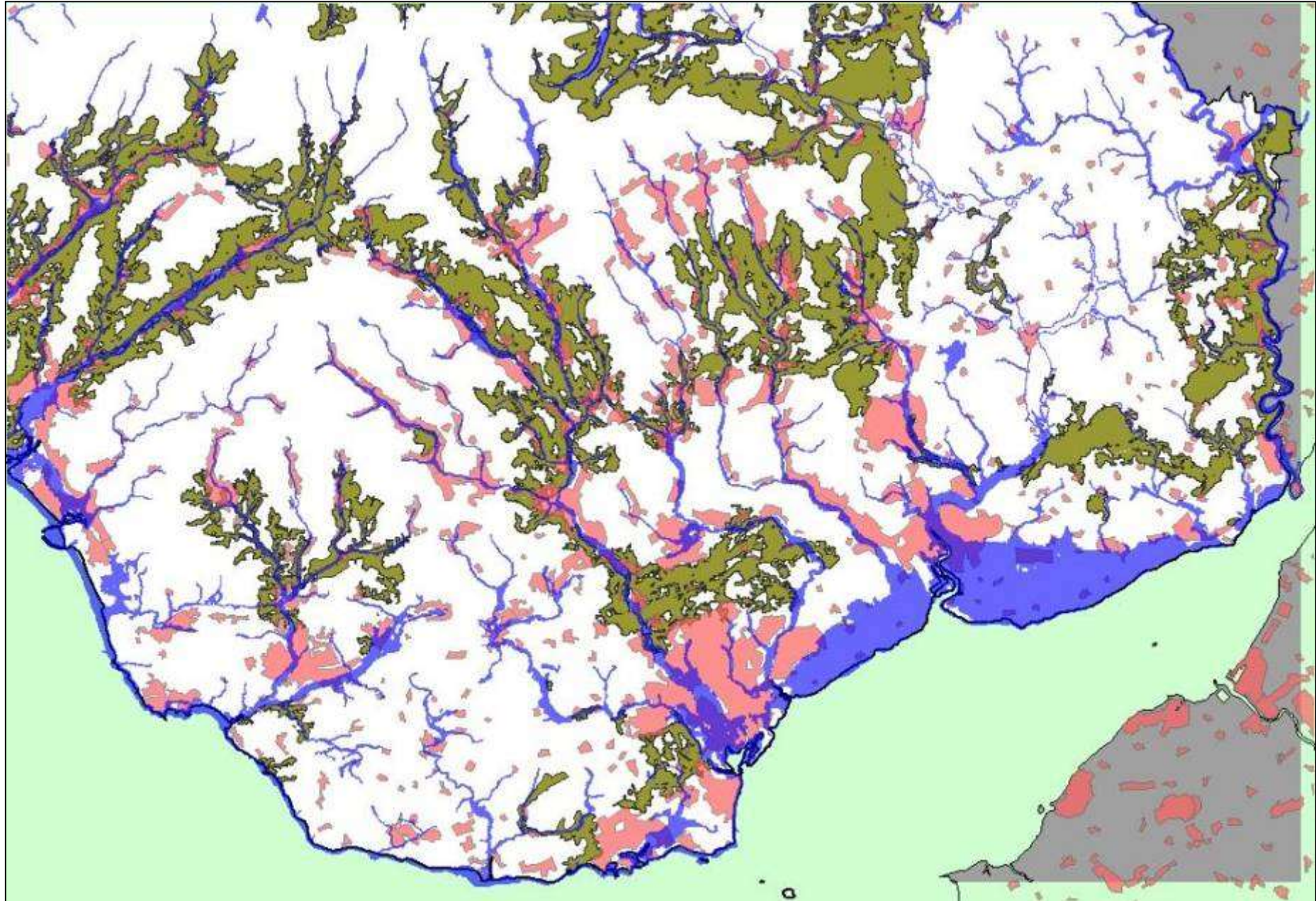
Broadleaved Woodland Priority Layer and Urban Areas



Urban Areas and Public Rights of Way



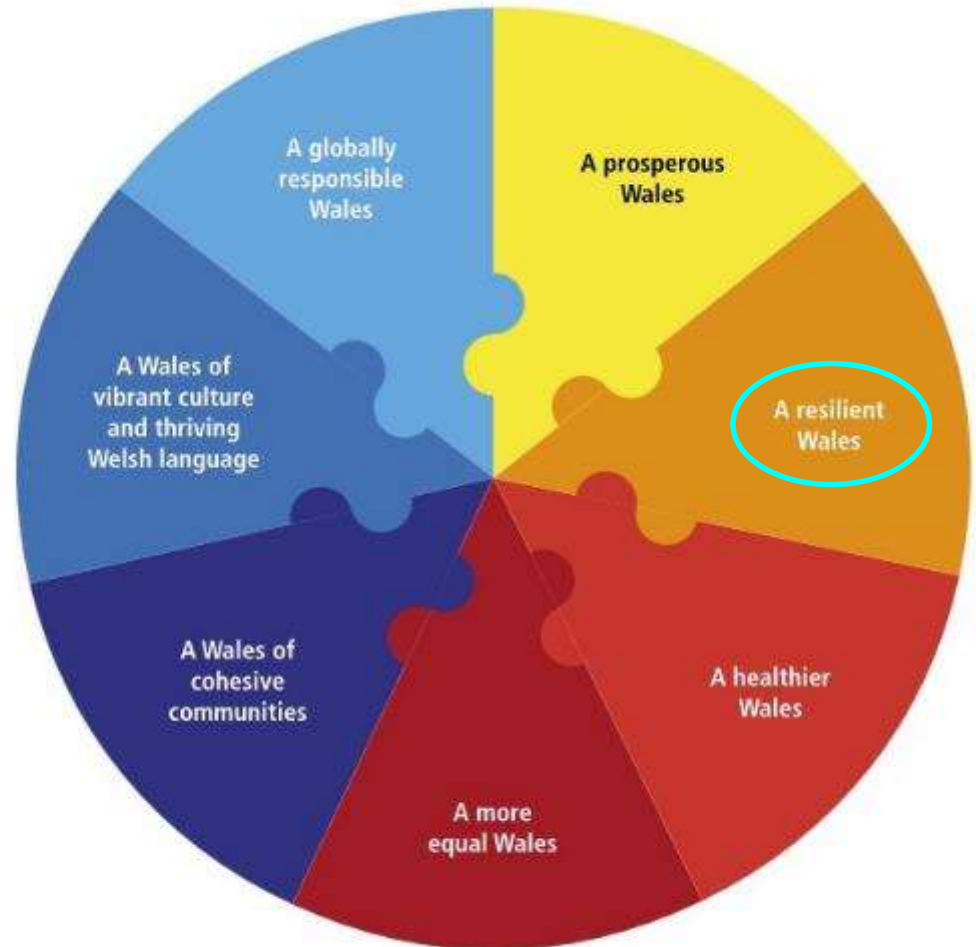
Broadleaved Woodland Priority Layer and Floodmap



Well-being of Future Generations (Wales) Act (2015)

“About improving the social, economic, environmental and cultural well-being of Wales, now and in the future.”

Welsh Ministers
Local Authorities
Local Health Boards
Public Health Wales NHS Trust
Velindre NHS Trust
National Park Authorities
Fire and Rescue Authorities
Natural Resources Wales
The Higher Education Funding Council for Wales
The Arts Council of Wales
Sports Council of Wales
National Library of Wales
National Museum of Wales



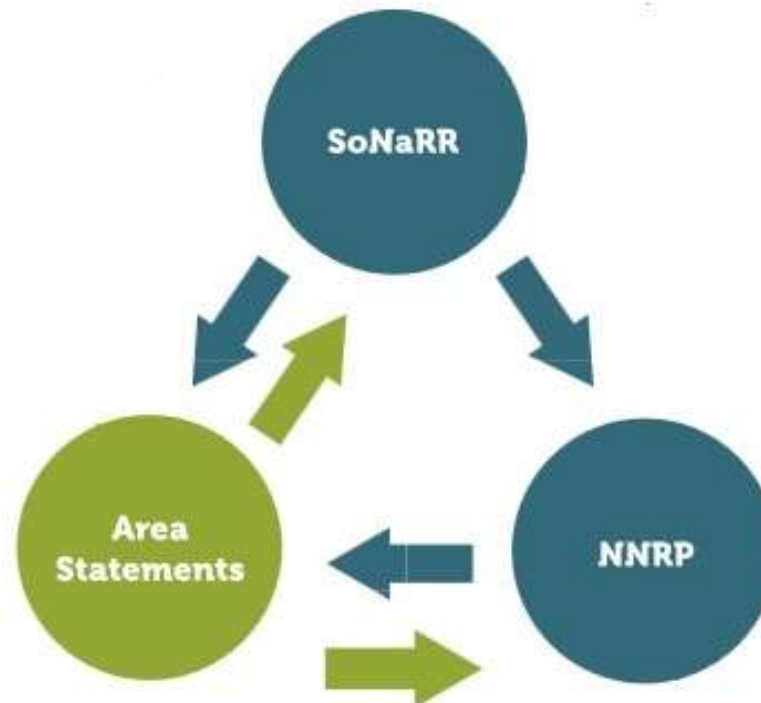
Well-being of Future Generations (Wales) Act (2015)

Well-being Goal: A resilient Wales:

“A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).”

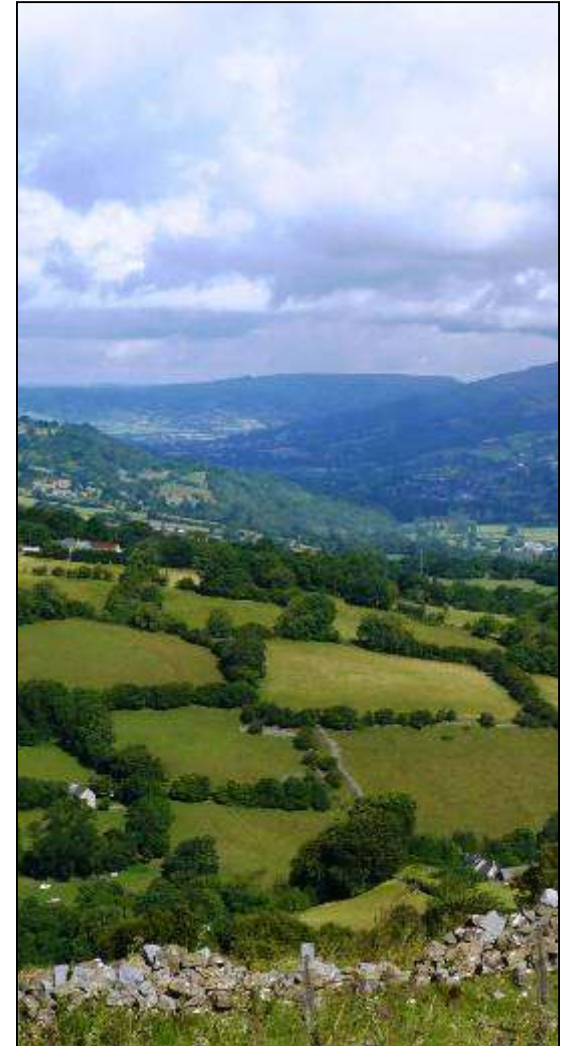
The Environment (Wales) Bill

“...will put in place the legislation needed to plan and manage Wales’ natural resources in a more proactive, sustainable and joined-up way.”



‘Resilience’ and The Environment Bill

- SoNaRR, NNRP and Area Statements explicitly have to consider *biophysical resilience*.
- Public bodies will have a duty to “*promote the resilience of ecosystems.*”
- Nature Recovery Plan has Objective to “*Restore degraded habitats to increase the resilience of our natural environment ...*”



So, what is Resilience?!

- Popular concept – extensive literature with numerous definitions and sub-categories.
- **The capacity to deal with disturbance through resistance, recovery or adaptation.**
- A challenge to describe/measure even within a contained system, let alone at a Wales-level.

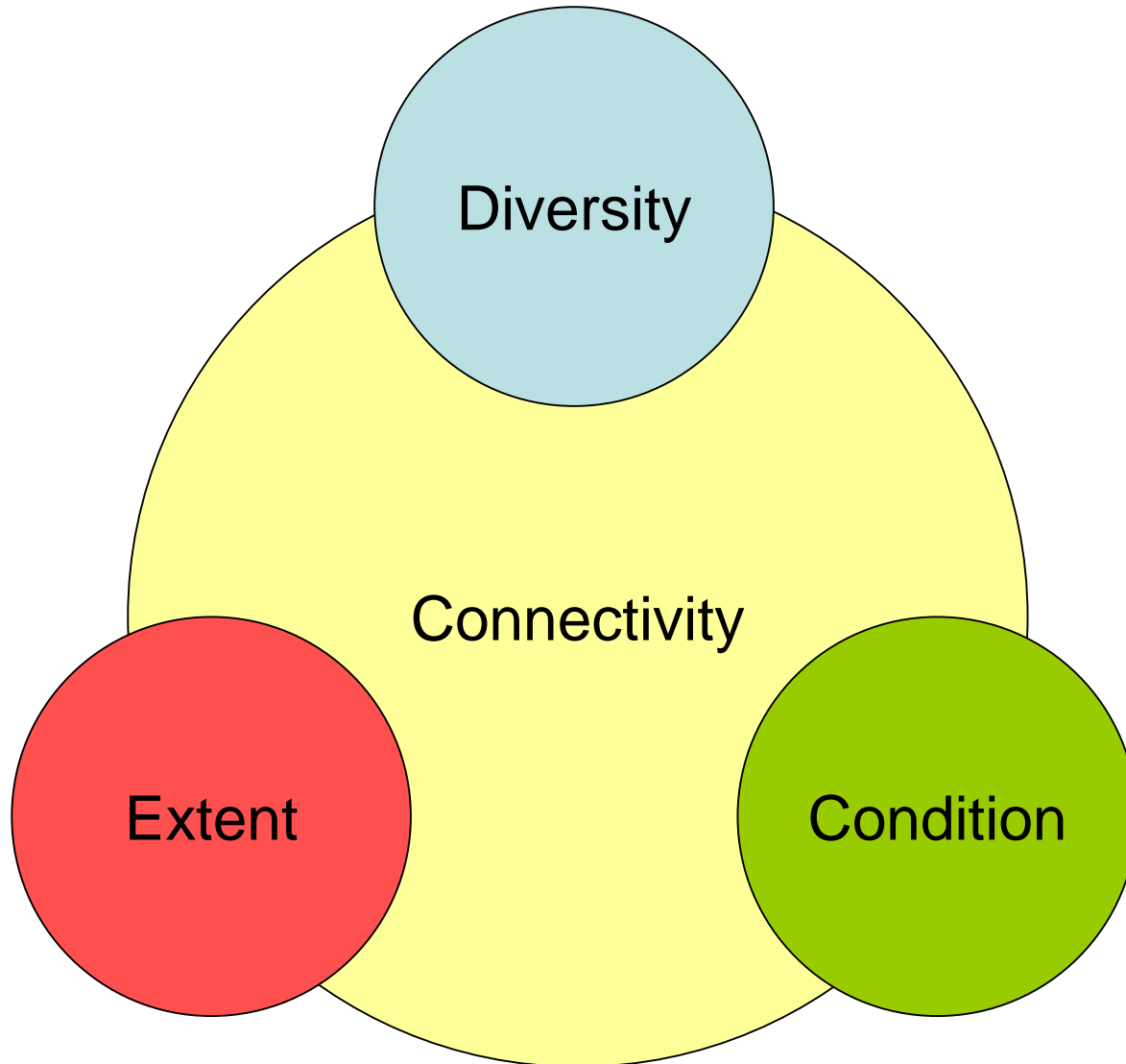


A Pragmatic Approach...

- Can identify ‘disturbances’:
 - Habitat loss, fragmentation
 - Pathogens
 - Climate change, extreme weather
 - Pollution (air or water)
 - Invasive species
 - Over/under grazing
 - Ecosystem Services
- Direction of improvement is often obvious.
- Can identify underlying requirements to *build* resilience.



Building Resilience



Where Next?

Summary

- Public duty to 'Build Resilience' with major contribution from connectivity.

But how?

- Delivery through Area Statements.
- Methods for decision-making.
- Data and guidance.
- Stakeholder engagement.



Diolch
Thank you



