Northern ToSIA

Assessing sustainability of forest based activities in rural areas of the Northern Periphery

Sustainability impact assessment for the Scottish forest-based sector

A case study in the Cairngorms National Park

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The forest-based sector in a changing world






Globalisation

Changing trade relationships

Shifts in demographics

More complex lifestyle and consumption patterns

Challenging demands for forest products and services



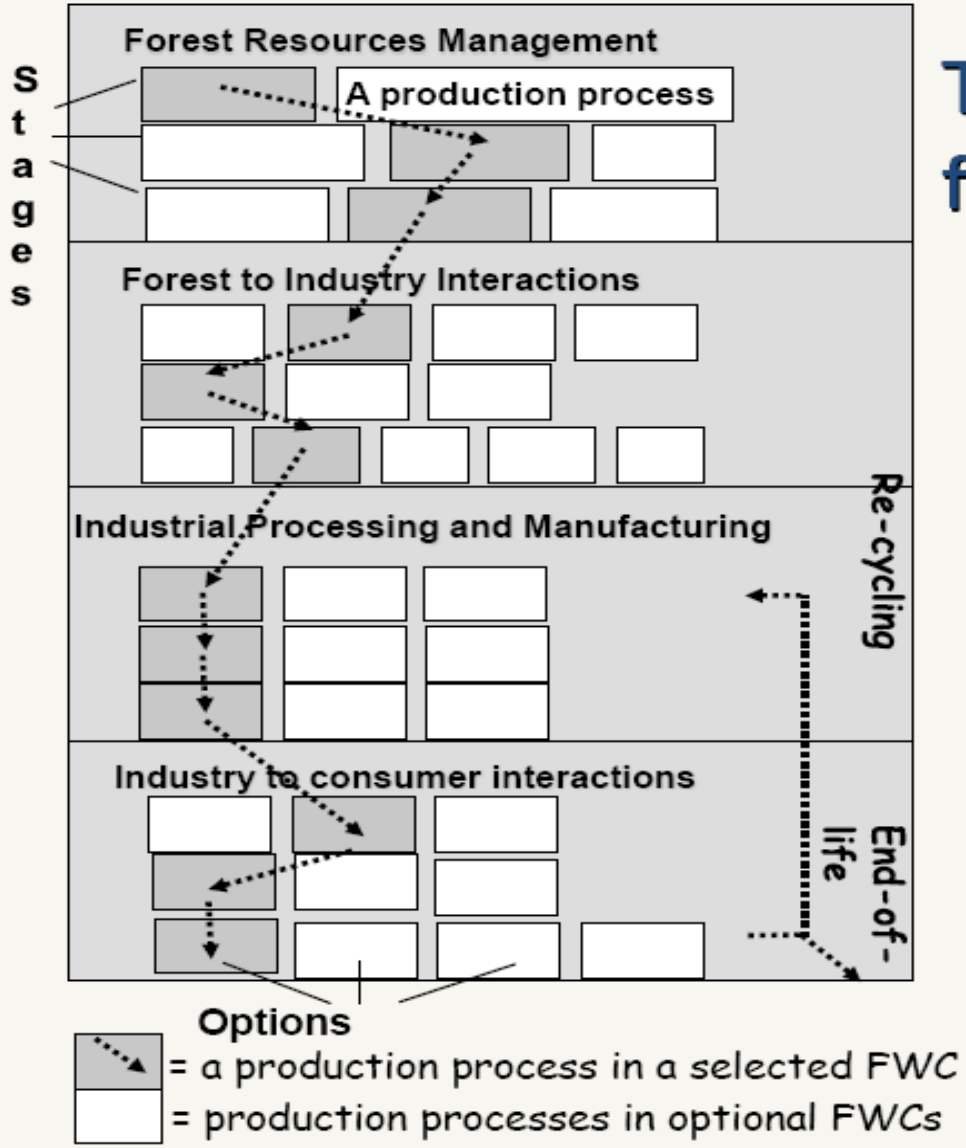



Other recent changes with strategic consequences for the FWC

1. New Native Woodlands;
2. Conversion of conifer plantations on ancient woodland sites (PAWS);
3. Restoration of open ground habitats;
4. Residue and stump harvesting for woodfuel;
5. Establishment of short rotation forestry (SRF) plantations;
6. Construction of wind farms in forests
7. Allowing for likely climate change;

and others….

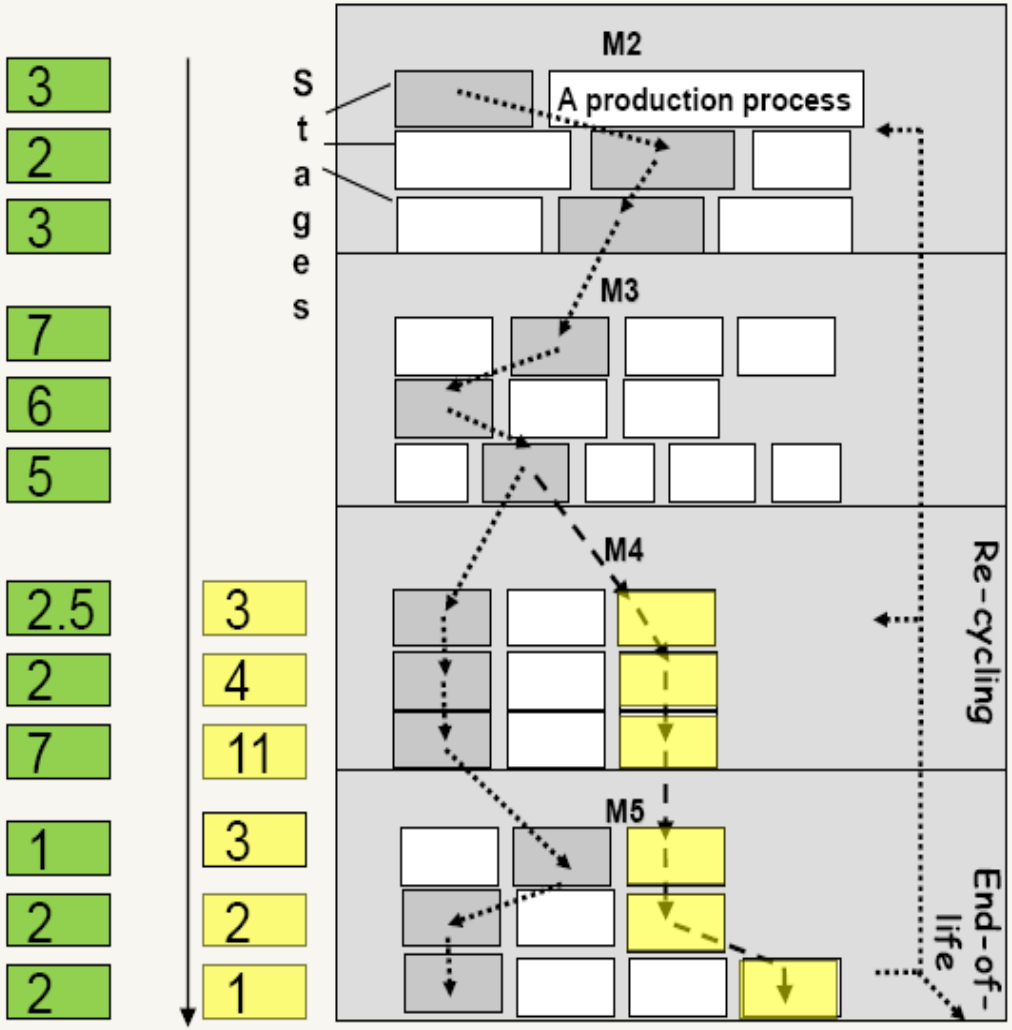
The analytical framework



FWC is a chain of processes

ToSIA application: Compare scenarios

- Identify same indicator for different processes in calculated chains
- Sum up indicators of the same ID in a calculated chain

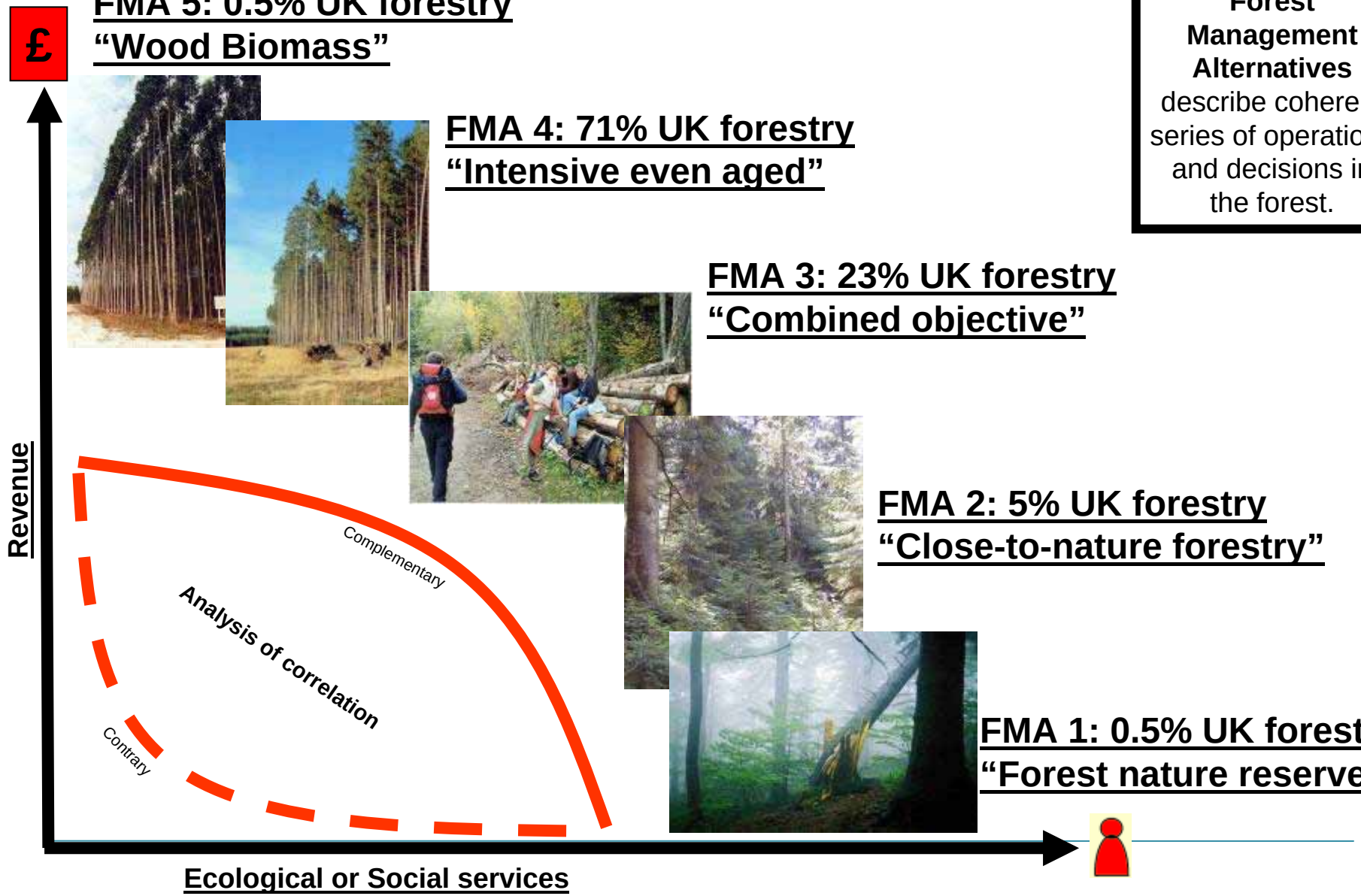


TOTAL 42.5 person hours

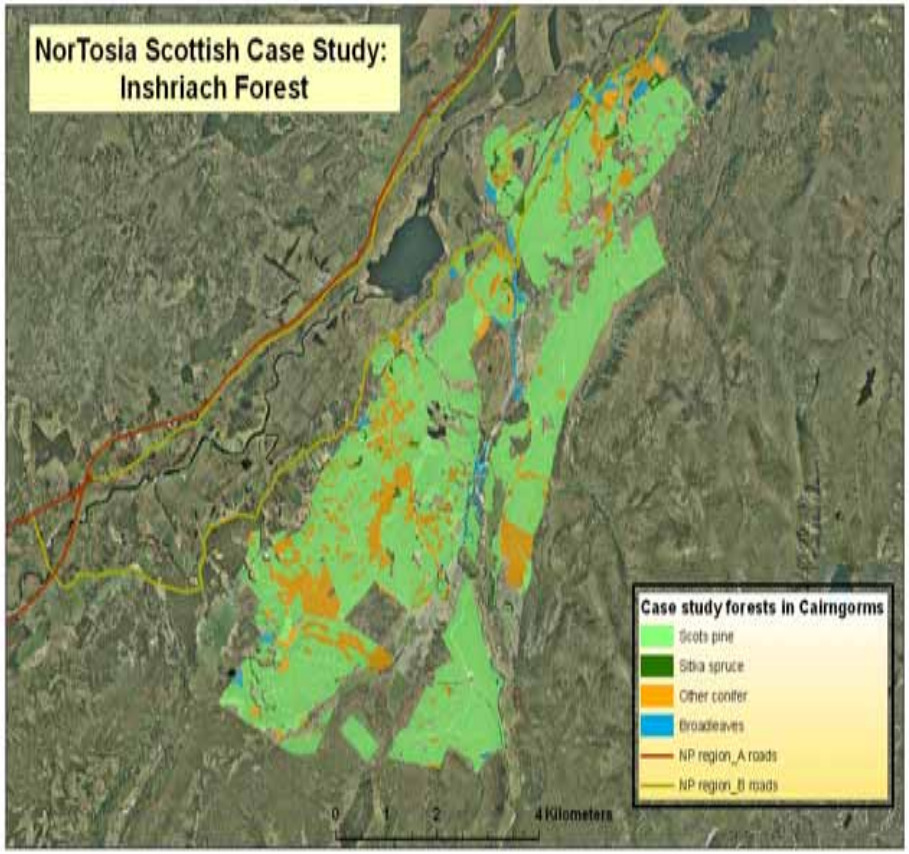
50 person hours

Forest Management Alternatives (FMAs)

Forest Management Alternatives describe coherent series of operations and decisions in the forest.



Inshriach case study



- 3,700 ha with a total harvested volume in 2008 of 10,800 m3 and a mean annual increment of 18,000 m3.
- Mainly even-aged stands with a history of commercial clearfelling.
- Ongoing restoration of native pinewoods by removing exotic conifers and CCF.
- Considerable recreational interest although timber production will remain an objective.
- High numbers of the endangered Red squirrel and Capercaillie.

Inshriach case study

Four Scenarios:

- Business as Usual, i.e. the current management regime.
- Climate change increasing the intensity of biotic threats, along with a parallel target of forested land being restored to broadleaves.
- Restoration of intensive forested areas to a more “natural” system in order to increase both biodiversity and attractiveness for tourism.
- Responding to climate change mitigation policies as woodfuel industries increase their demand for wood chips.

The impact of these scenarios was measured against various sustainability indicators including

Gross Value Added

Greenhouse Gas Emission and Carbon Stock

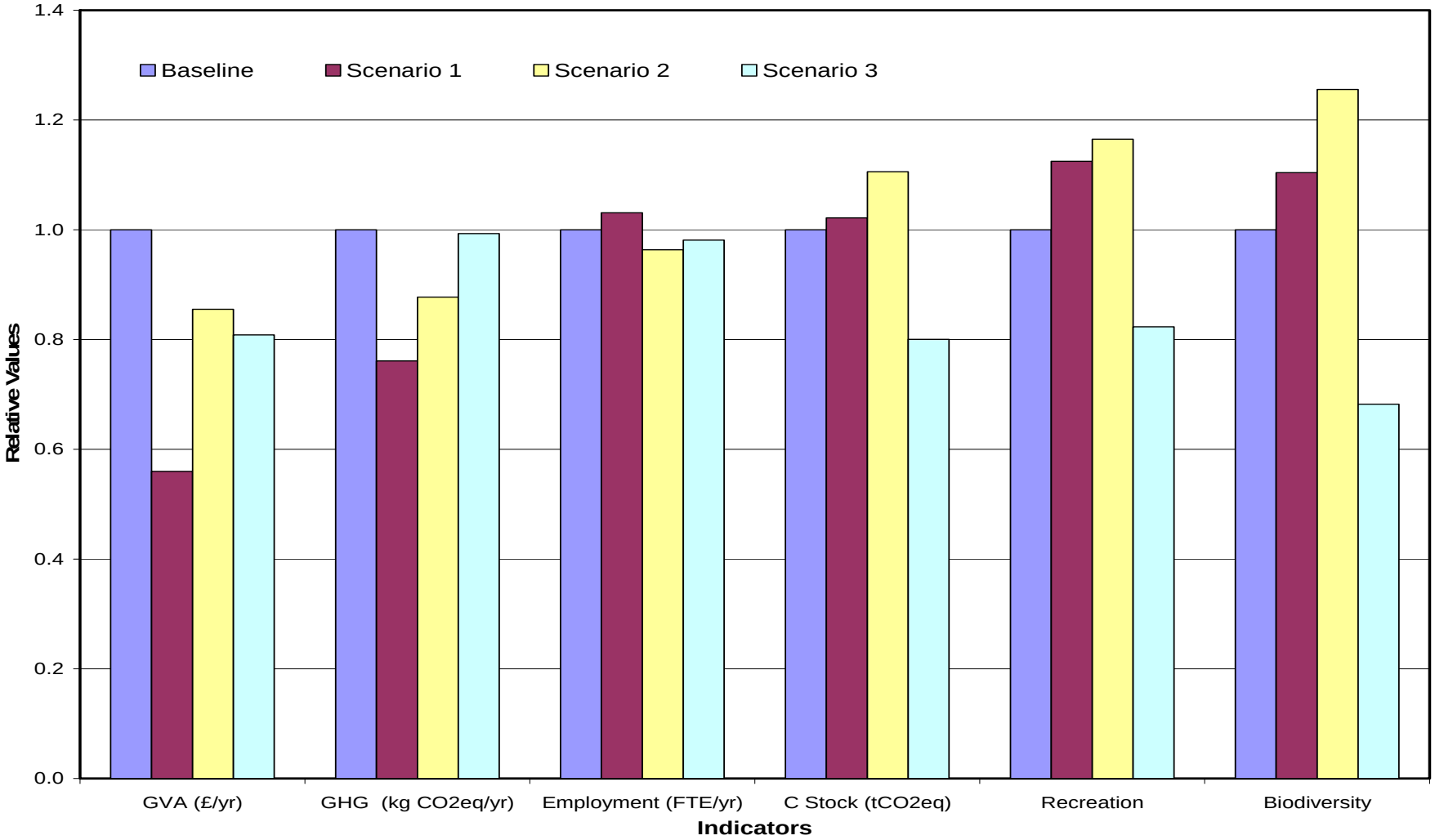
Forest Biodiversity

Employment

Recreation

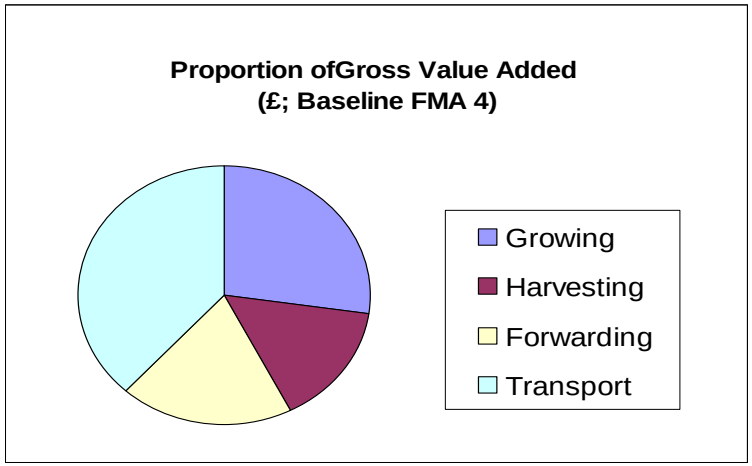
Case study results

Relative values of key indicators for 3 scenarios in comparison to the Baseline (current management)

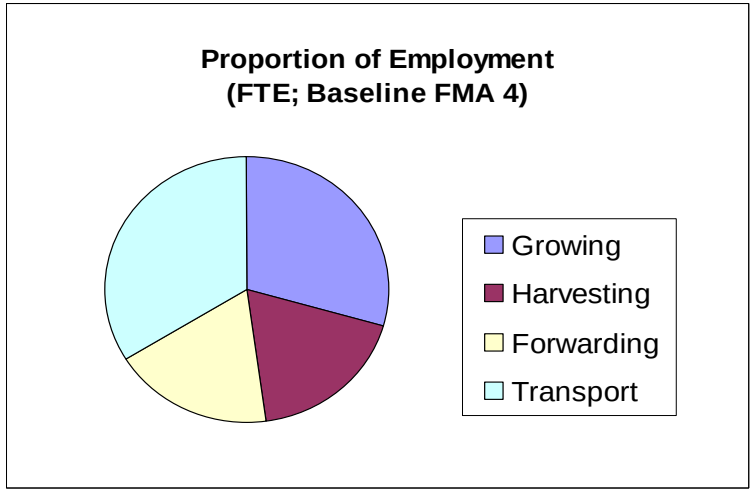


Indicators by process

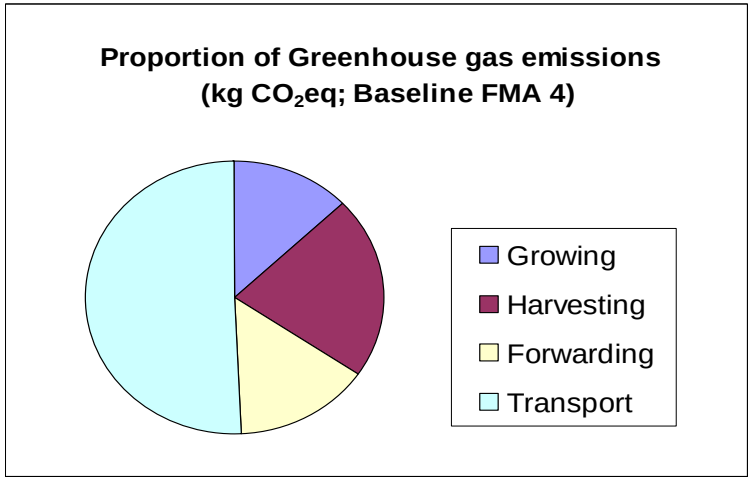
GVA values by process for Baseline FMA 4.



Employment values by process for Baseline FMA 4.



GHG values by process for Baseline FMA 4.



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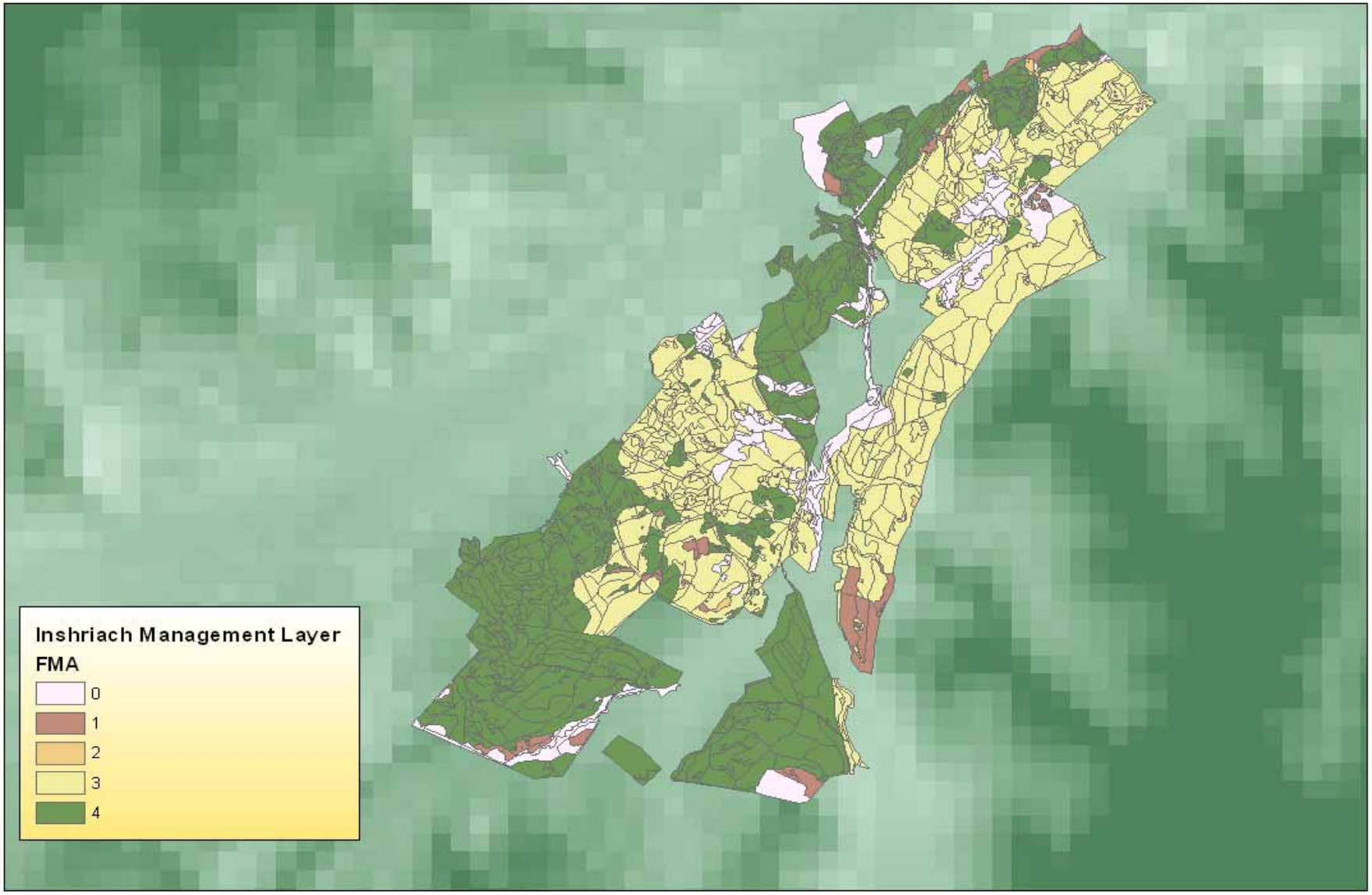
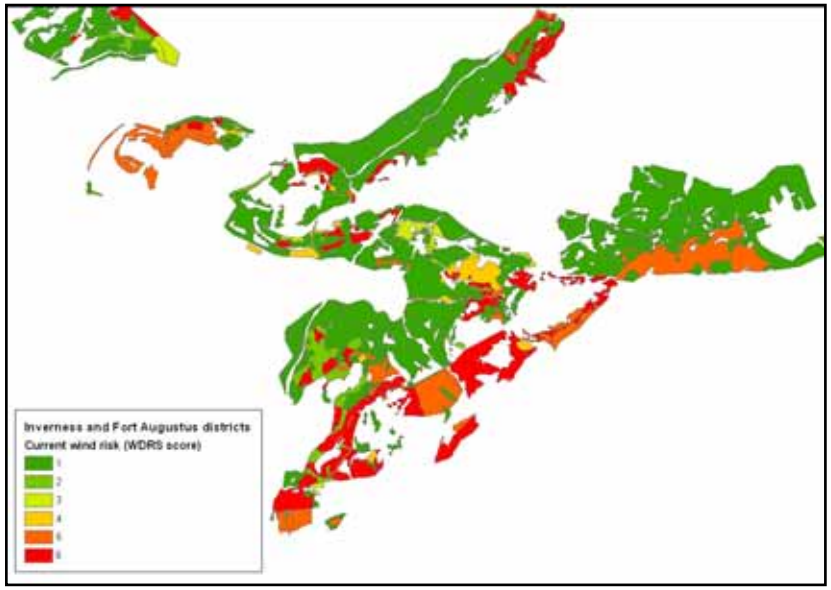
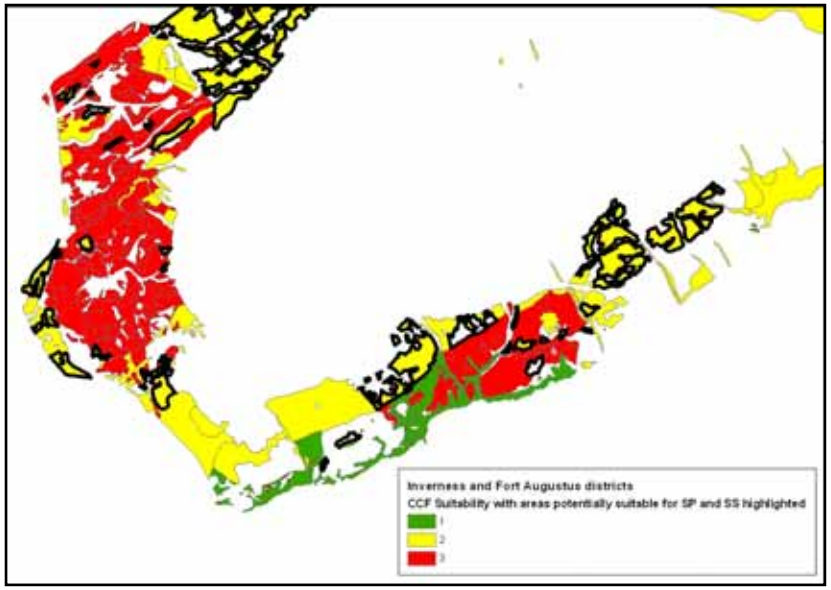


Integrating spatial analysis with models

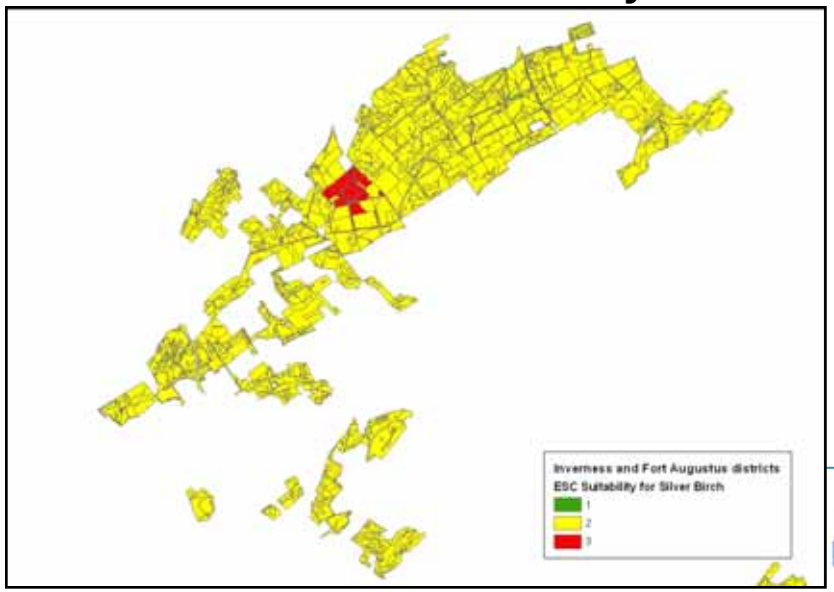
Wind Risk



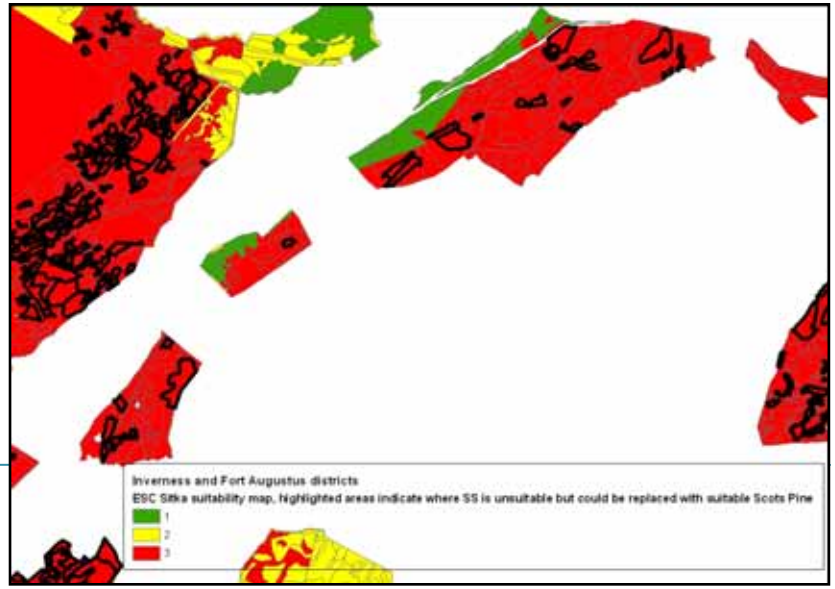
CCF Suitable Scots Pine/Sitka



Silver Birch Suitability



Sitka unsuitable/ Scots Pine suitable



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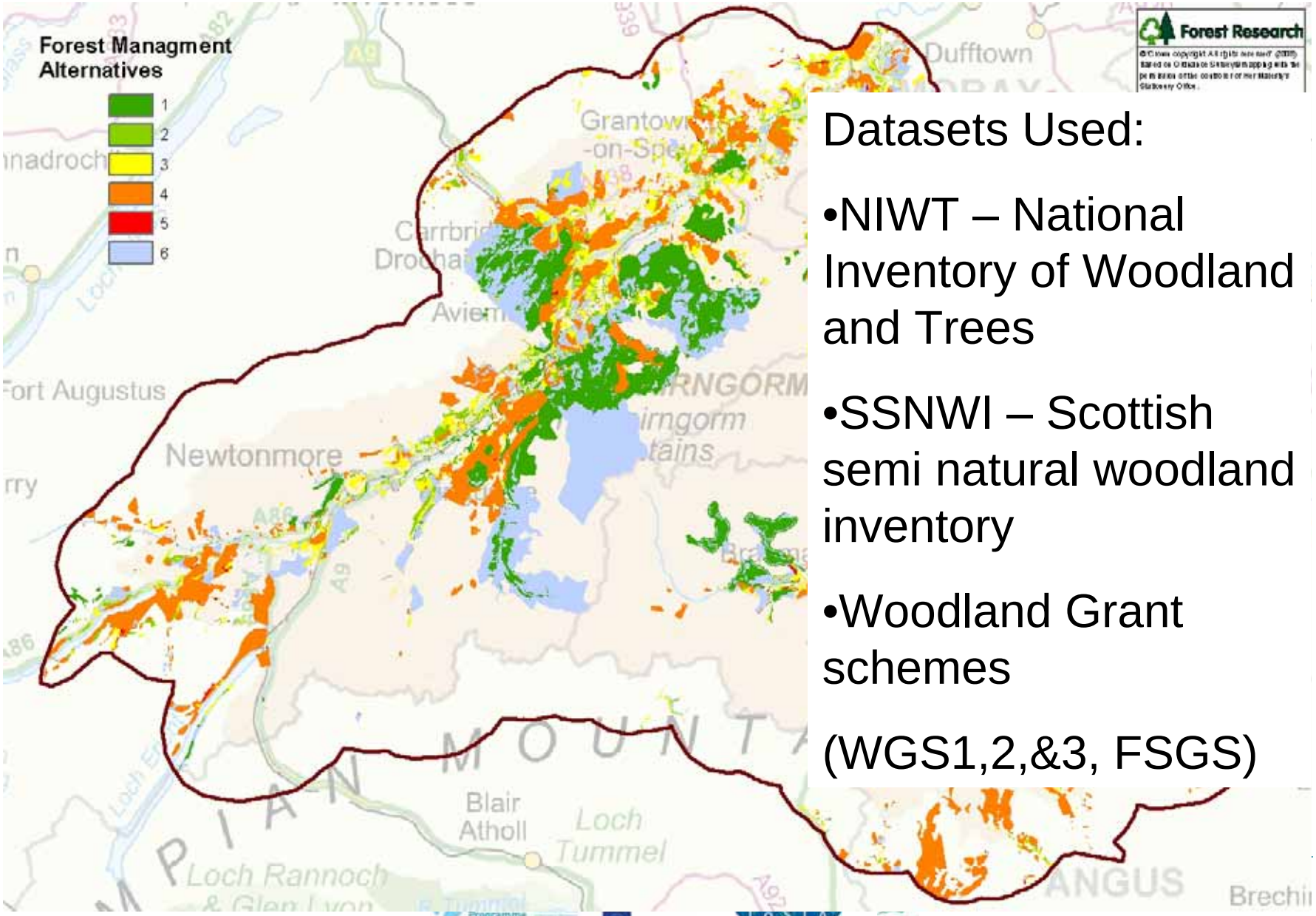

Datasets Used:

- NIWT – National Inventory of Woodland and Trees
- SSNWI – Scottish semi natural woodland inventory
- Woodland Grant schemes

(WGS1,2,&3, FSGS)

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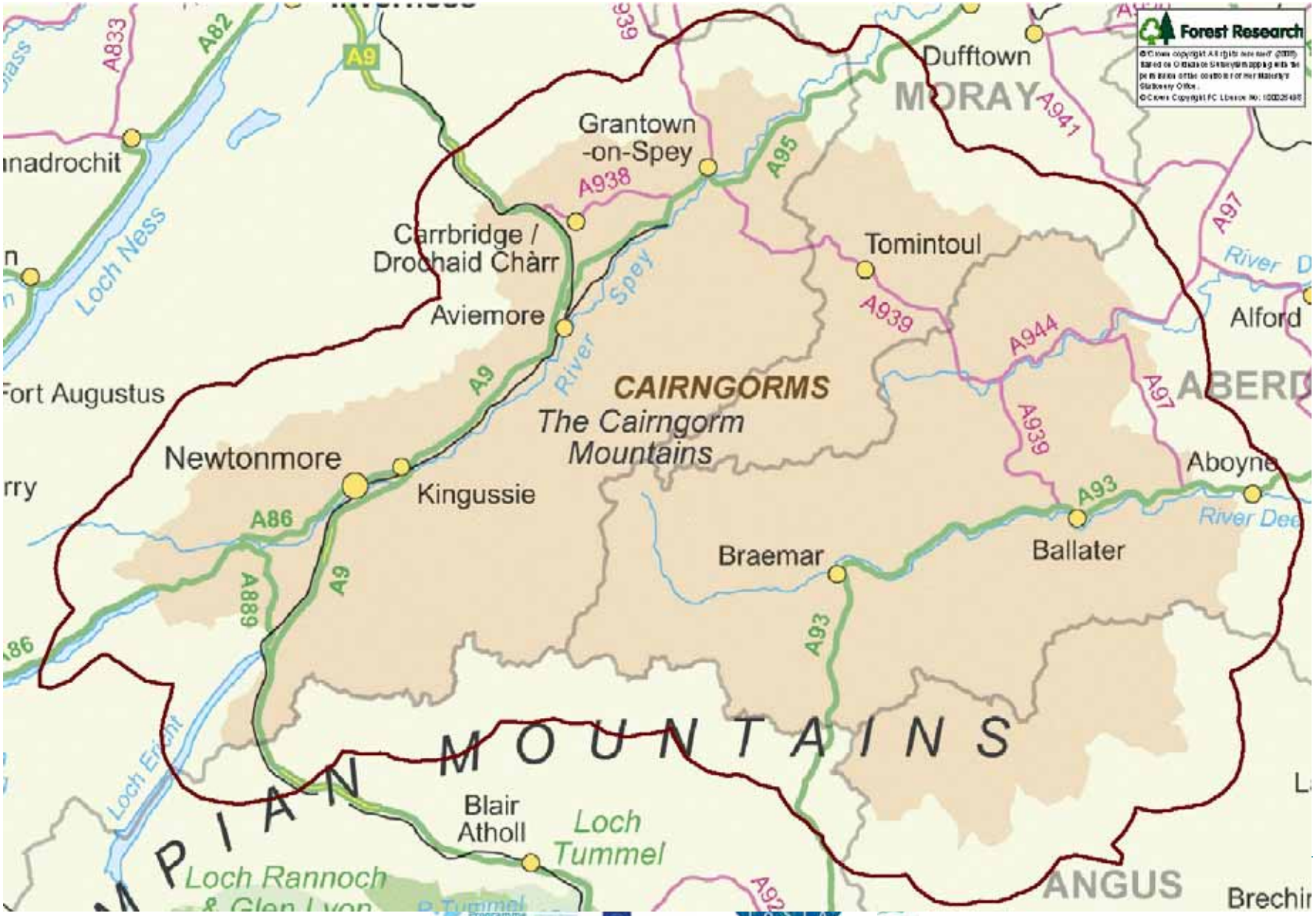

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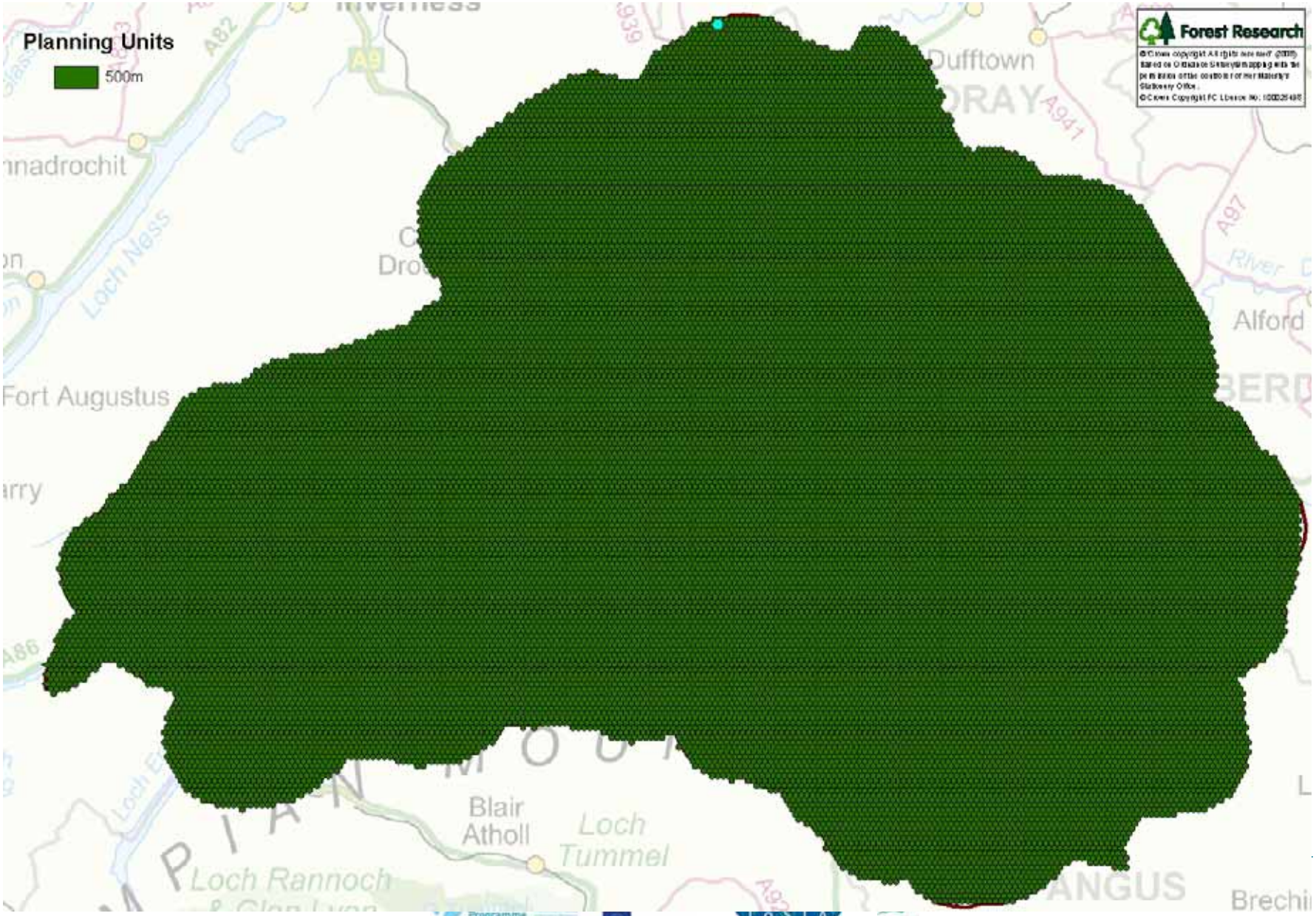

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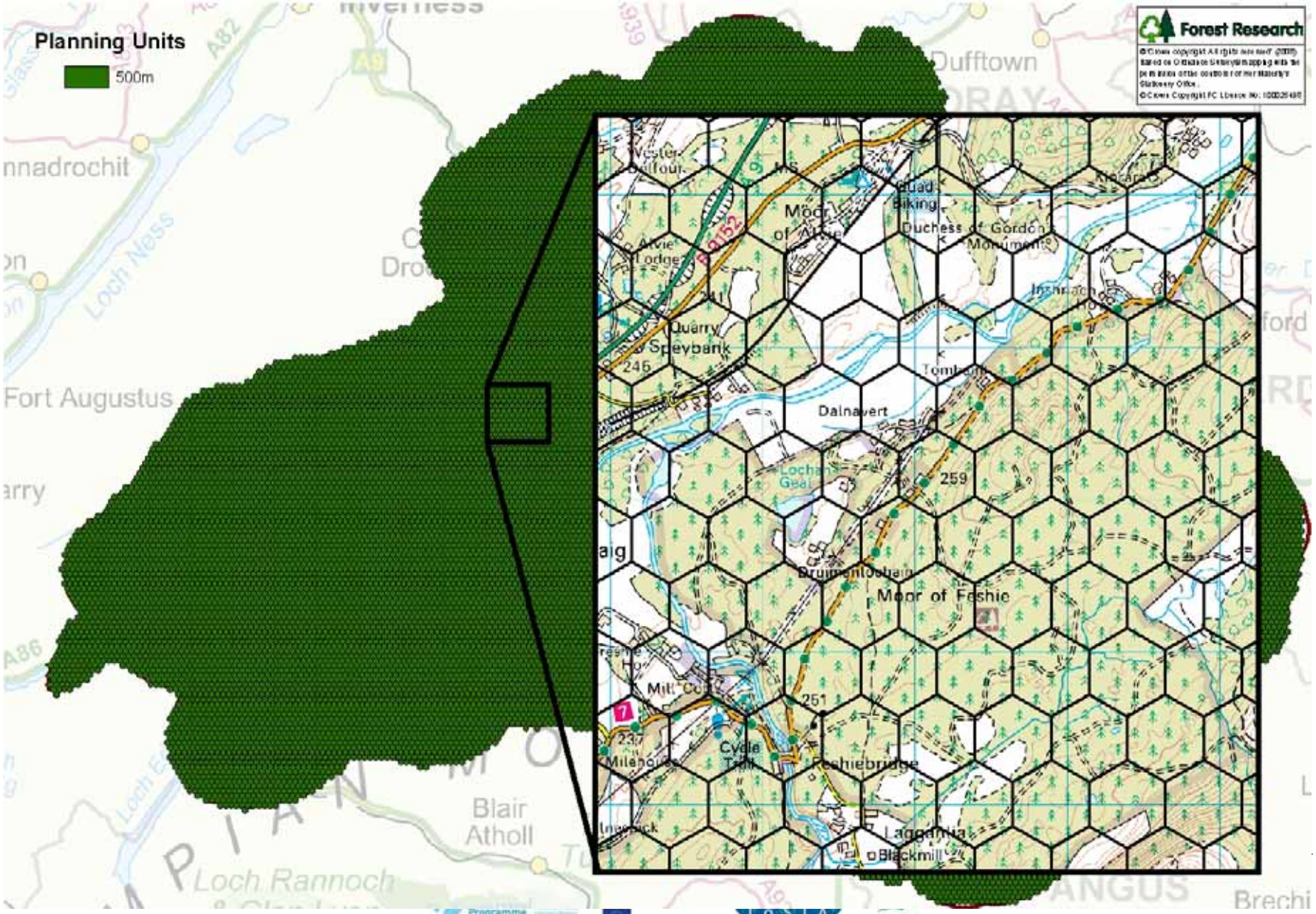

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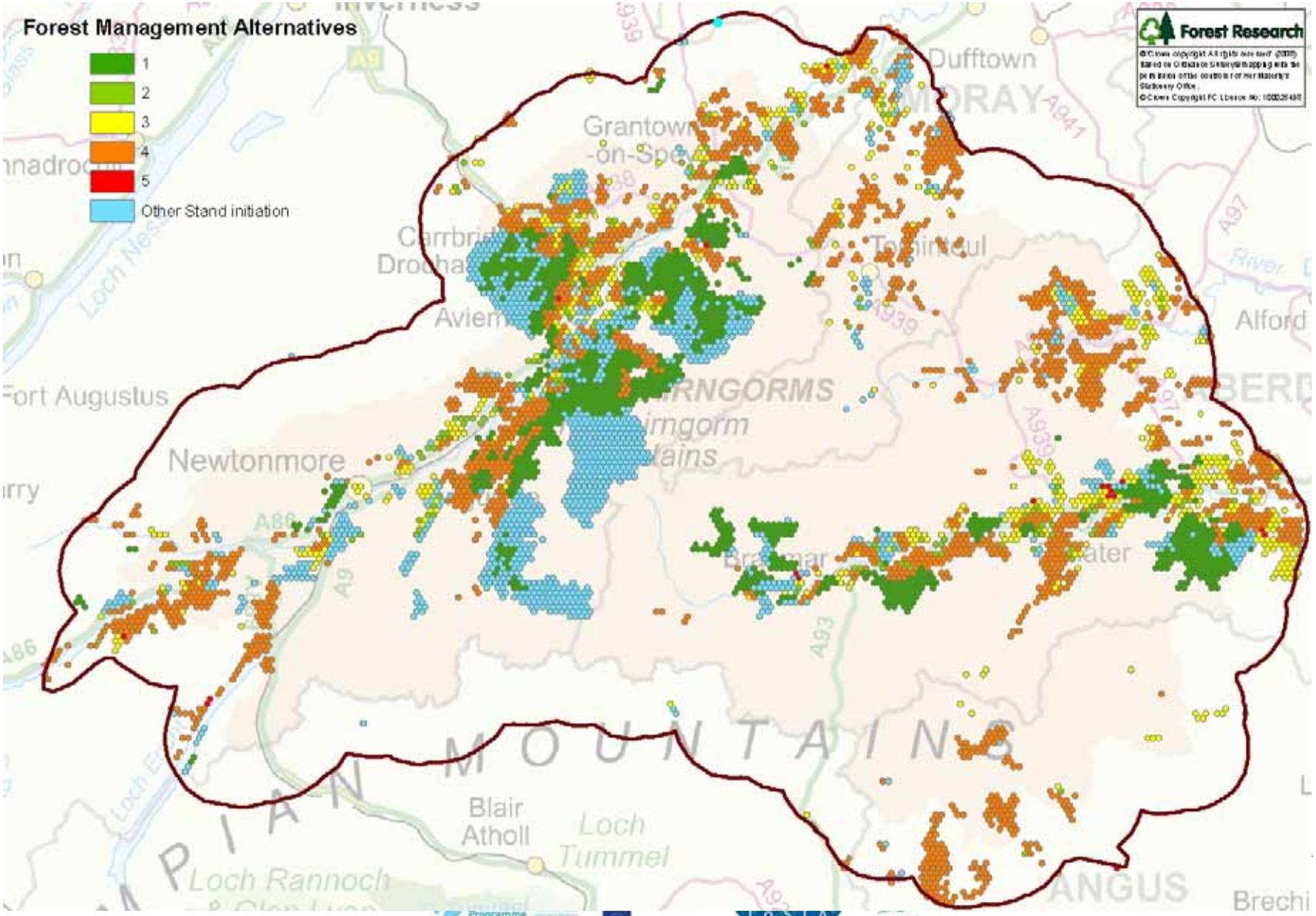

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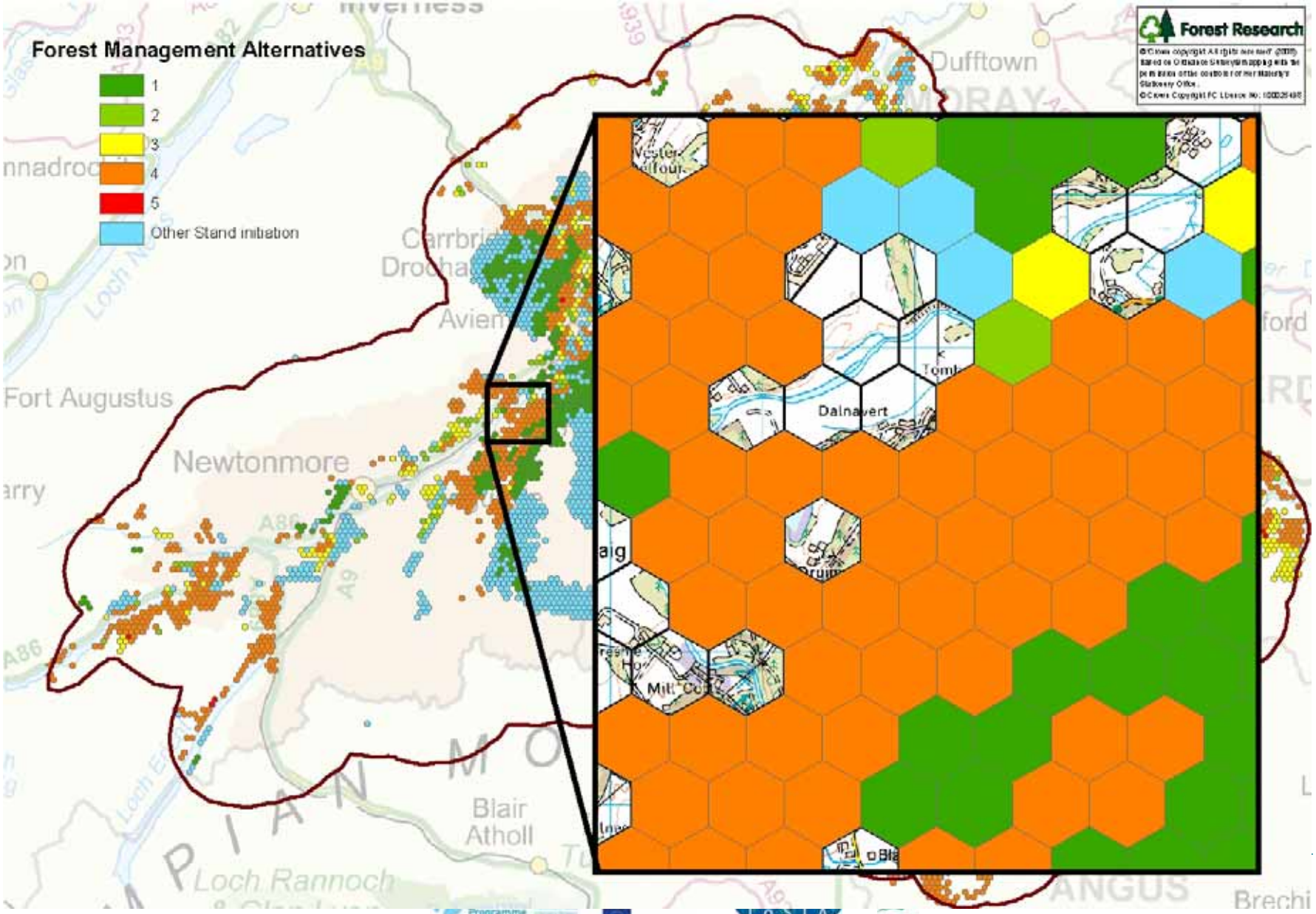
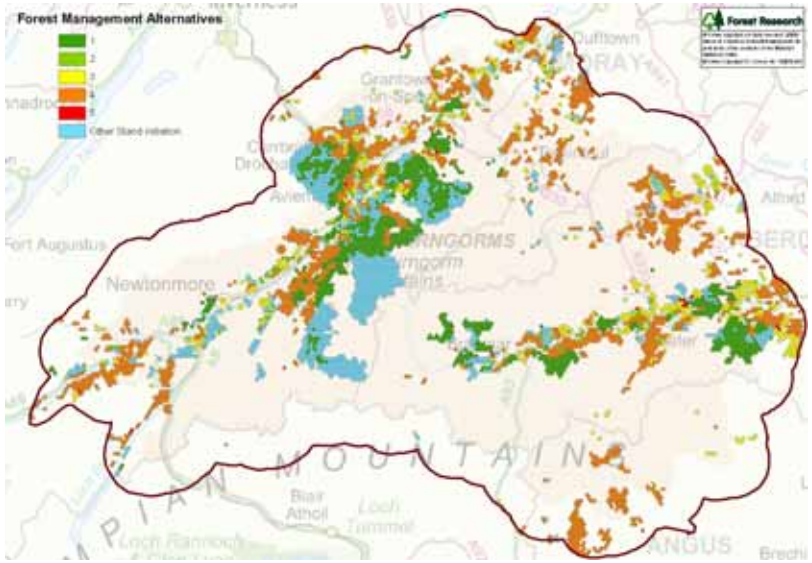
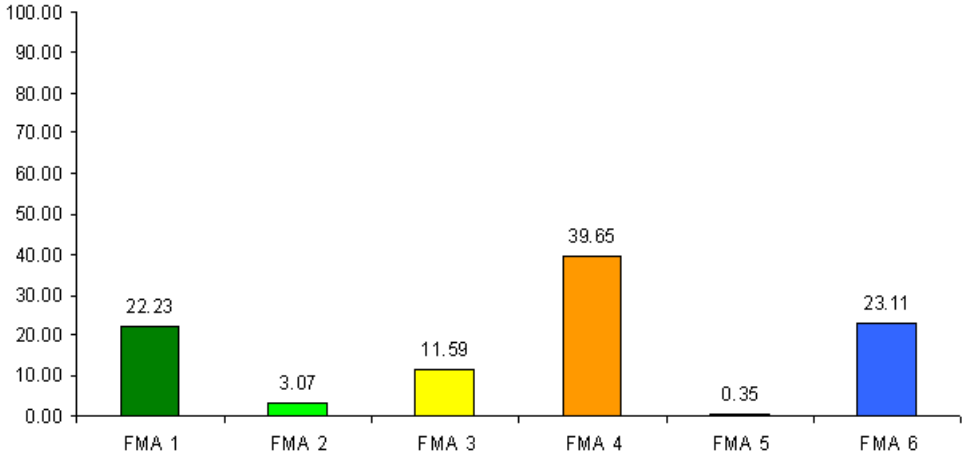


Current Forest Management Alternatives





Forest Management Alternative	Description	% of woodland
1	Forest nature reserve	22
2	Continuous cover forestry	3
3	Multiple objective forestry	12
4	Intensive even age forestry	40
5	Biomass forestry	0
6	Other Stand Initiation	23

Scenario 2 – Biodiversity and Tourism

- Increase biodiversity and tourist value.
- Restore intensive areas to a more natural system.
- Even age decreases and replaced by continuous cover.

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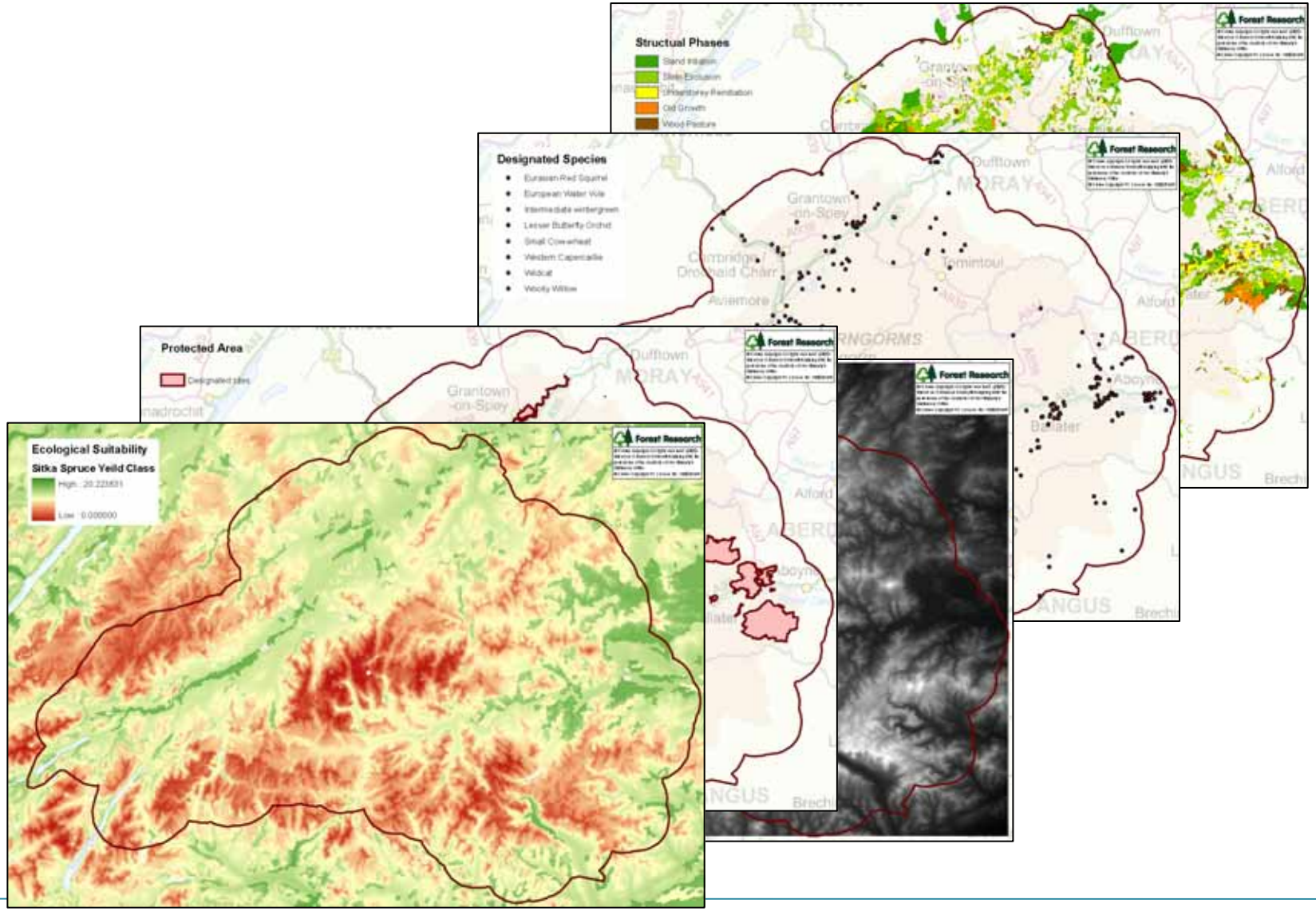

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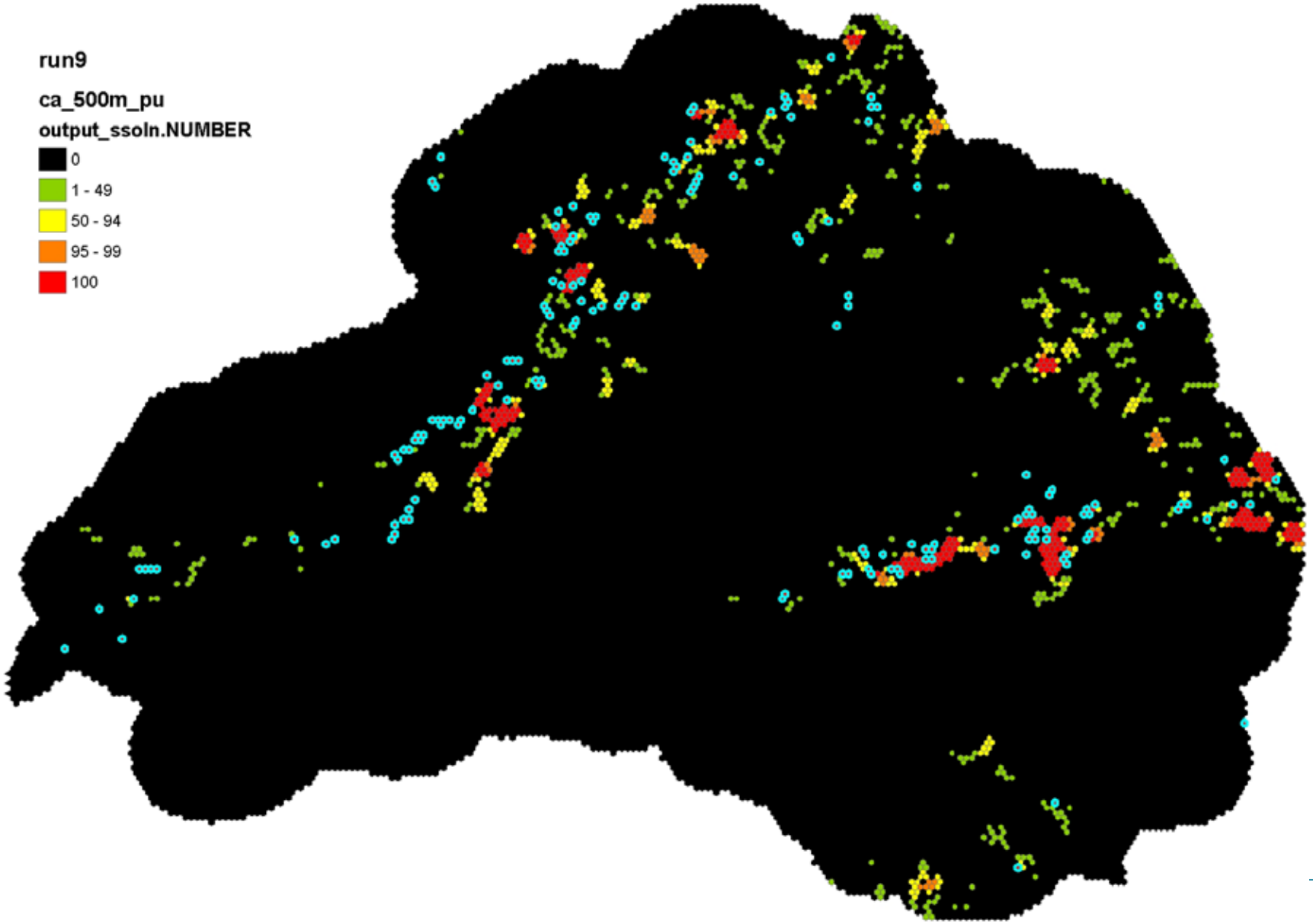

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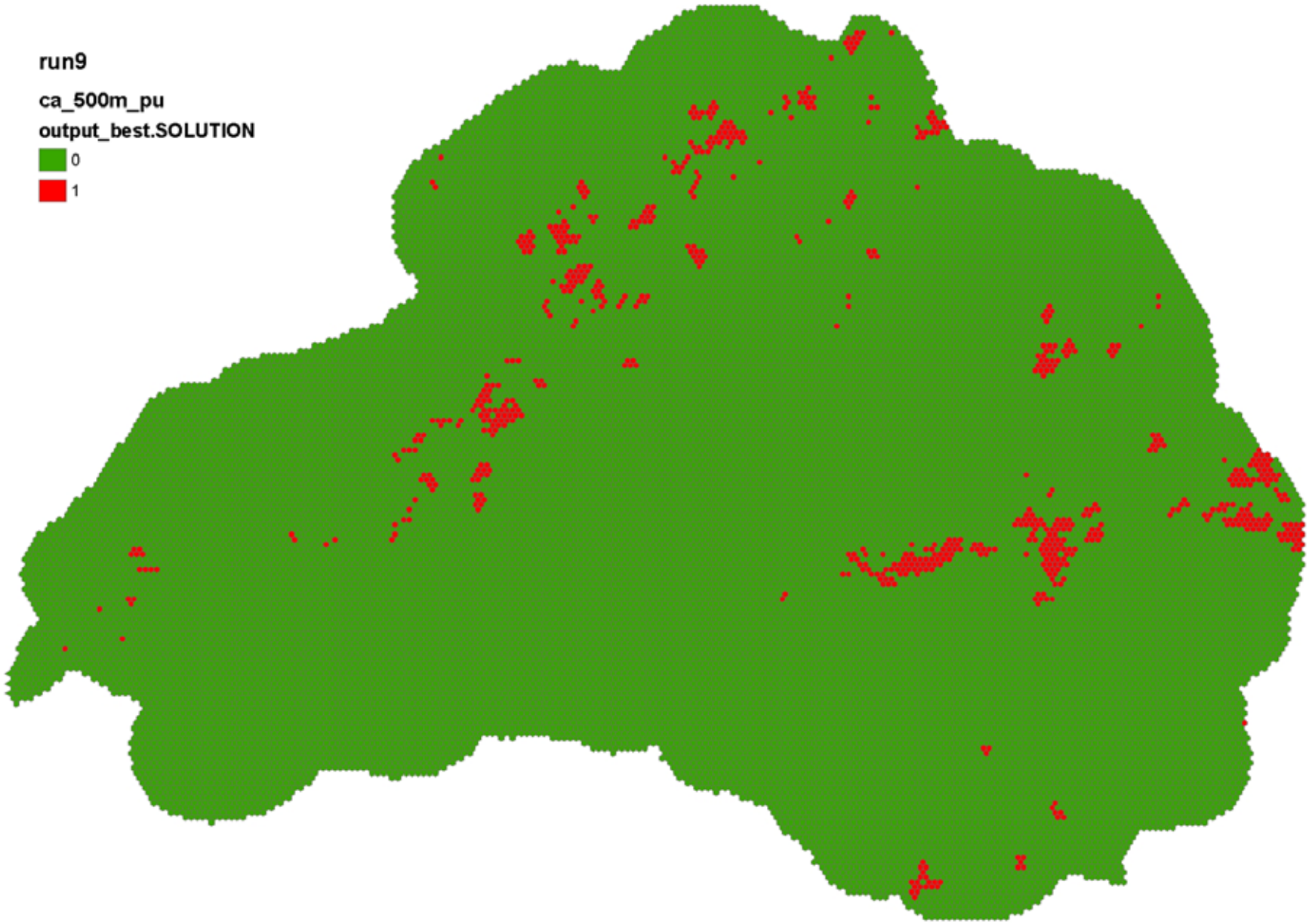

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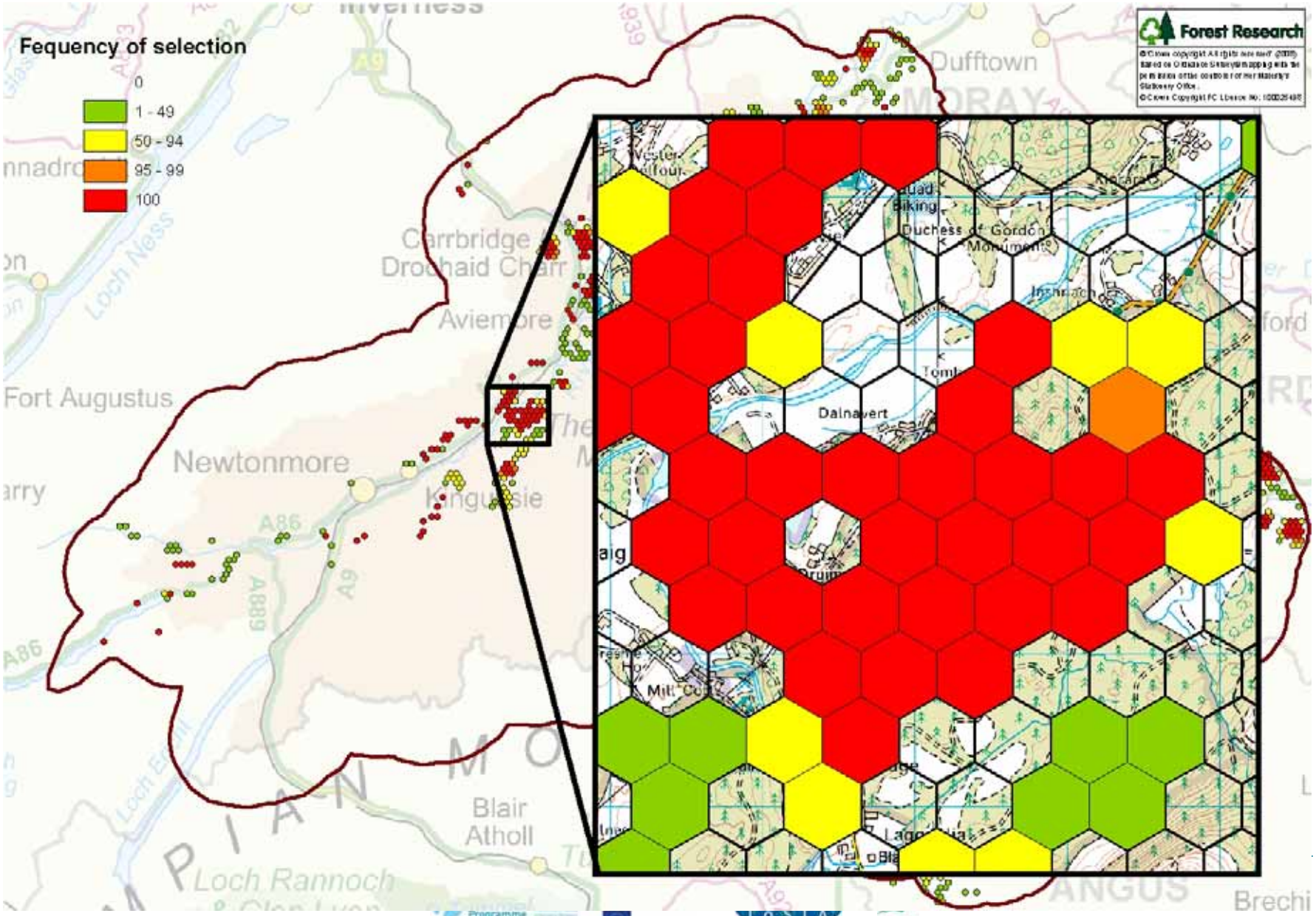

Next steps in NorToSIA

- Expand ToSIA methodology throughout the Cairngorms National Park
- Visualise sustainability indicators spatially
- Develop Recreation and Biodiversity/Connectivity indicators using landscape modelling techniques
- Engage with stakeholders to evaluate results and impacts of scenarios as well as to validate the outputs of the approach
- Investigate how the approach would be incorporated into planning

Thank you!