

# Managing landscape change

Using metric, descriptive and experiential data

**Chris Bolton. Principal Specialist, Landscape**  
Natural England

*Evidence Based Decisions for UK Landscapes,  
17th-18th September 2018, Cambridge*

- **About 'Landscape'** - challenge for 'modellers' to build in the social and qualitative context – recognising the holistic concept of 'Landscape' (European Landscape Convention)
- **Landscape change monitoring** - practitioner perspective on role of:
  - Landscape Character Assessment
  - Surveillance and Monitoring
  - Remote sensing change detection
- **Capturing people's cultural values**
  - Experiential/perceptual data

# What makes Landscape?



# What makes Landscape character?

A distinctive mix and pattern of natural and cultural attributes making one landscape different to another...



**Experiential and cultural values**

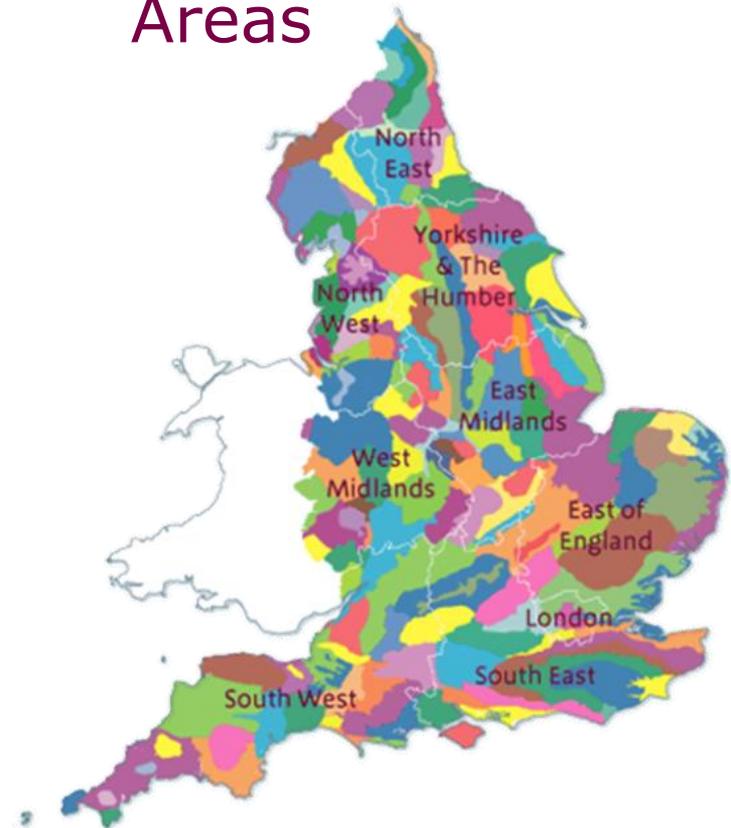
**Cultural heritage**

**Land use**

**Biodiversity**

**Geology, soils & water**

...159 distinct National Character Areas



# A widely accepted definition of Landscape.....



“An area as perceived by people whose character is the result of the action or interaction between natural and/or cultural factors”

(European Landscape Convention (CoE, 2000))

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- Natural, Rural, Urban, Peri-urban, Inland Waters, Marine
- Outstanding and well as everyday or degraded landscapes
- Landscapes recognised in Law and Policy
- **Landscape Quality Objectives** for Protection, Management, Planning
- **General public - participation of in decision-making**
- **Identify landscapes, their characteristics and the forces and pressures transforming them**

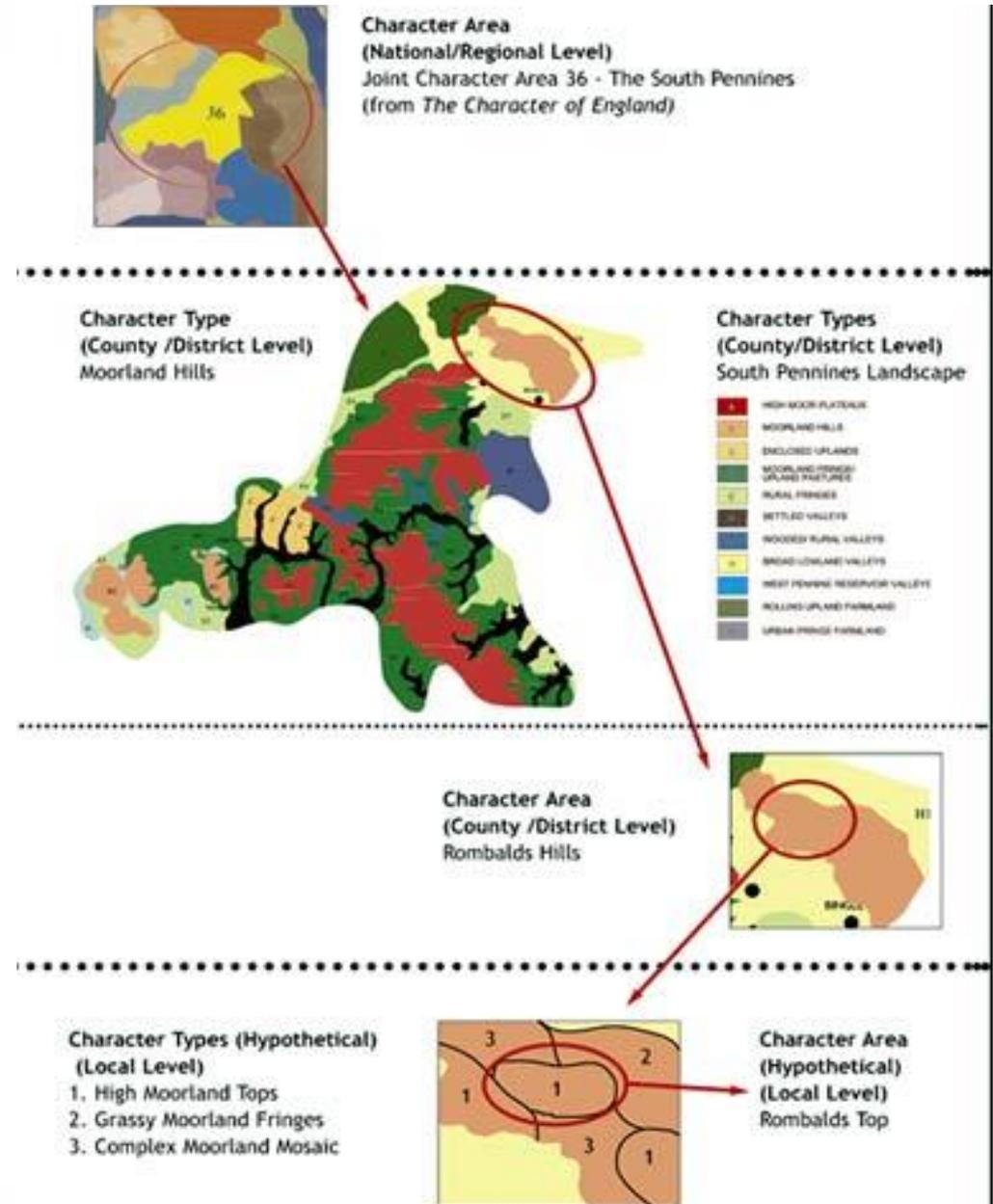
# NCA as an overarching framework

National Character  
**Areas**

Landscape Character  
**Types**

Character **Areas**

Character **Types**



National Character  
Area profile:

# 46. The Fens

Introduction & Summary

Description

Opportunities

Key facts  
and data

Landscape  
change

Analysis

Supporting documents



[www.gov.uk/natural-england](http://www.gov.uk/natural-england)



**SEO 3: Plan for the creation of new coastal landscapes in the Wash area that are adapted and resilient to the impact of climate change, for the benefit of people and wildlife.**

**For example, by:**

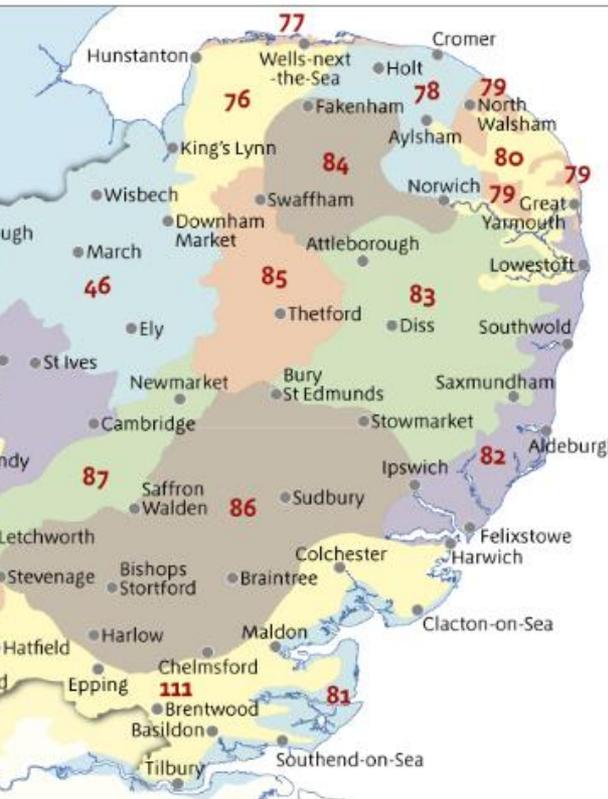
- Seeking opportunities to reinstate Intertidal salt marshes through realignment from arable to extensively grazed salt marsh, in line with the Wash Shoreline Management Plan.
- Seeking opportunities to create grazing marsh, reedbed and salt marsh throughout the Fens to compensate for losses of these habitats at the coast as a result of climate change and associated isostatic adjustment-induced sea-level rise, or where work carried out has damaged habitat.
- Seeking opportunities to identify and monitor key coastal active process sites.
- Replacing habitat lost from the coast through the East of England Regional Habitat Creation Programme.
- Planning for provision of permissive and definitive access (including the coastal access path) to increase opportunities for people to visit the Fens using sustainable transport methods.



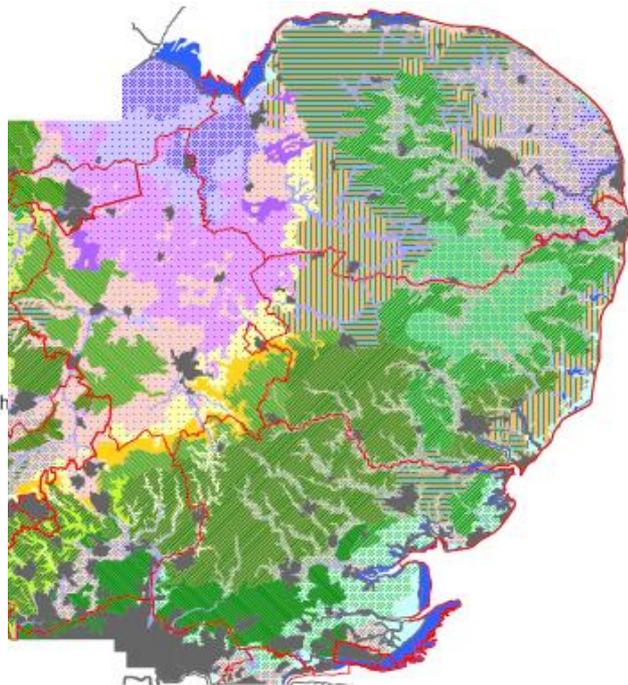
Realignment at Freiston Shore.

# Landscape and Seascape Character Assessment – Descriptive evidence to support local plans and decision-making

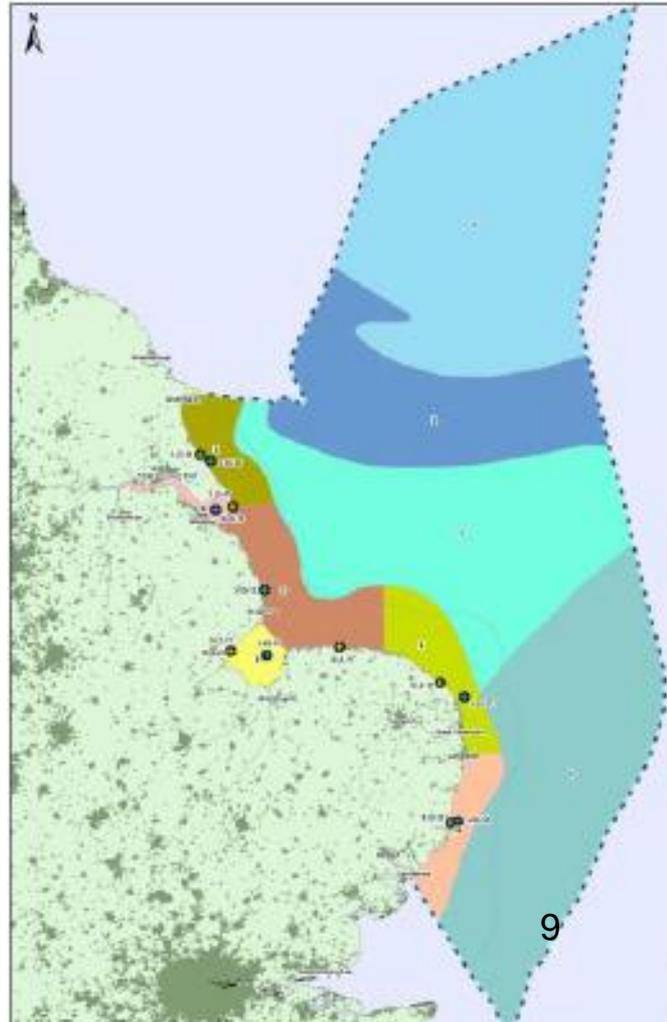
East of England National Character Areas



East of England Landscape Framework

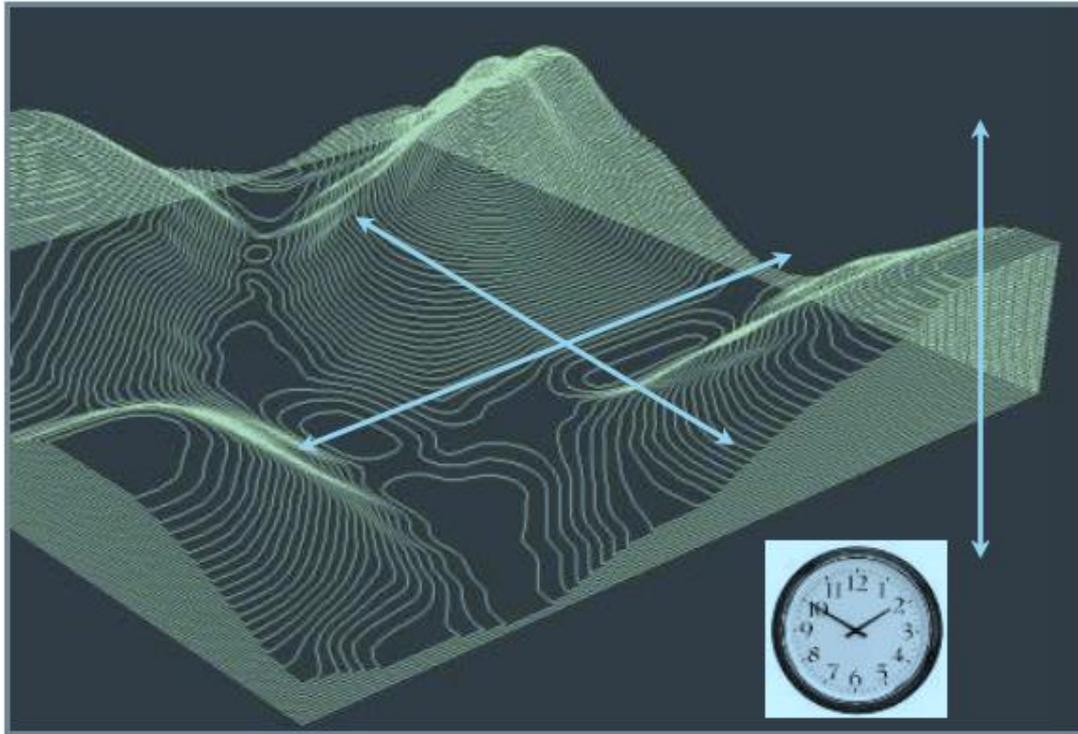


Seascape characterisation: MMO areas 3 AND 4



# Detecting and measuring landscape change

**Fourth dimension...** Landscapes change over time

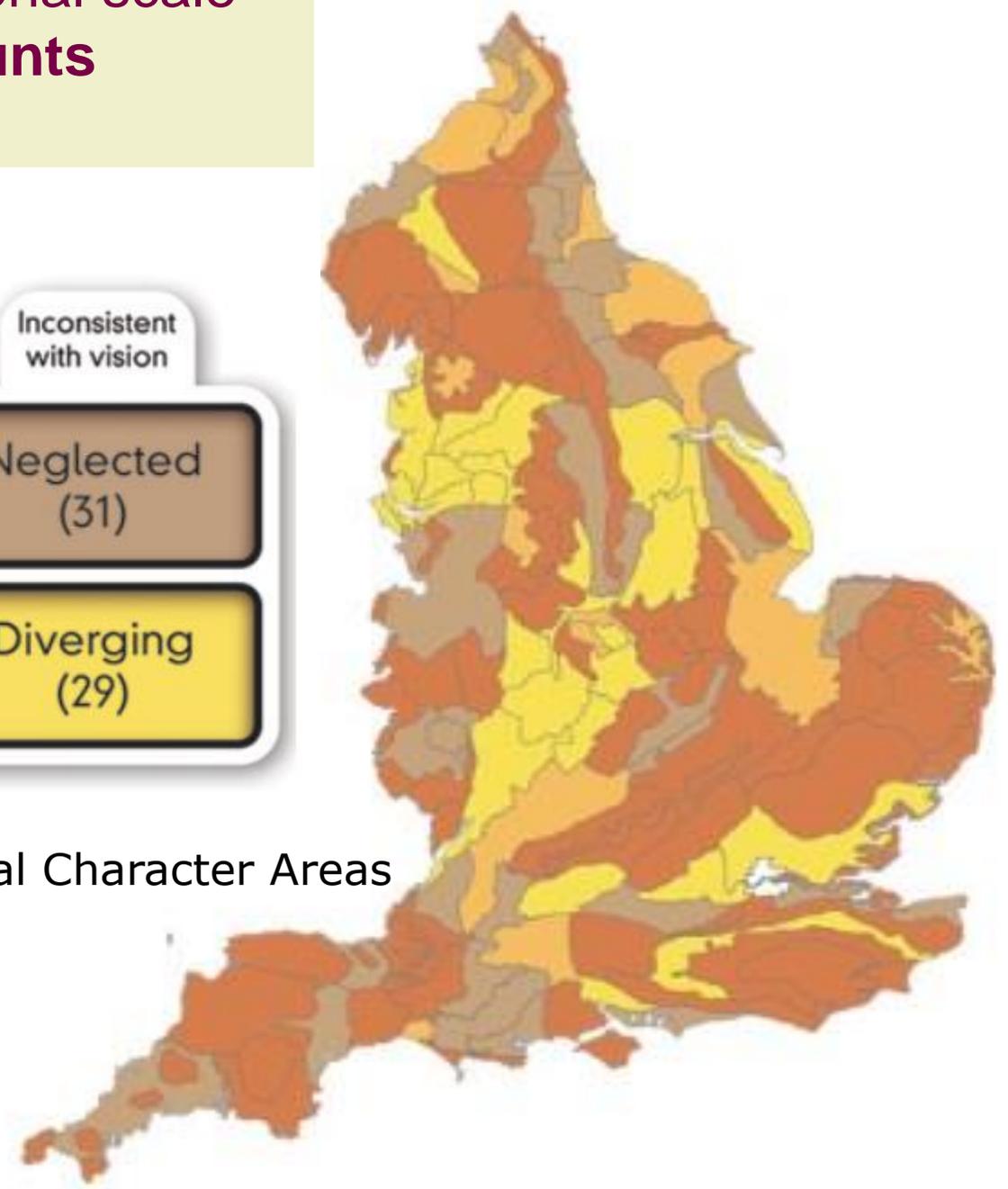


**Fifth dimension..** People's perceptions also change

# Broad Surveillance – national scale Countryside Quality Counts Indicator (1999 – 2003)

	Consistent with vision	Inconsistent with vision
Stable	Maintained (80)	Neglected (31)
Changing	Enhancing (16)	Diverging (29)

Findings for the 159 National Character Areas  
(Haines-Young, R, 2007)

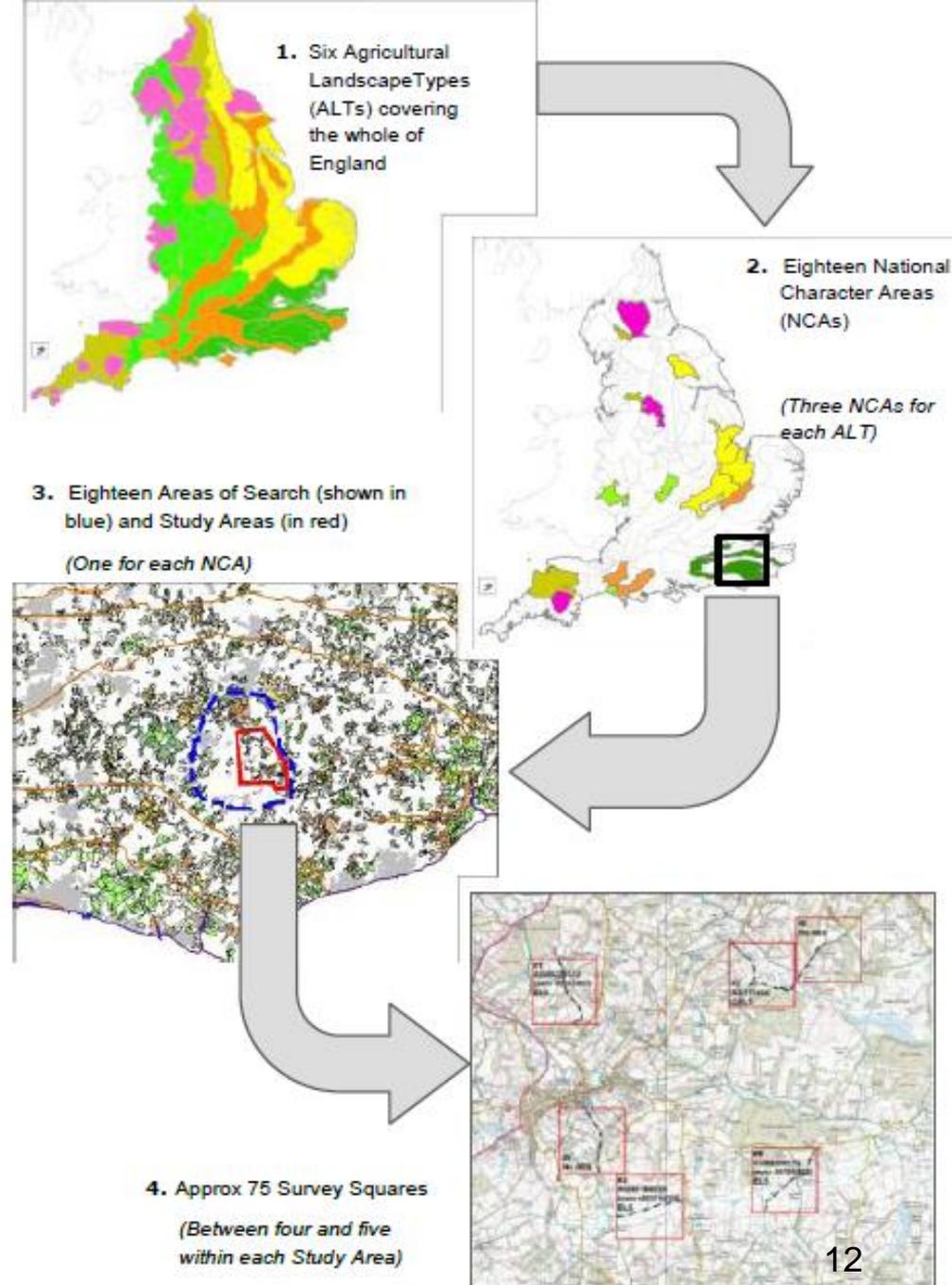


# Measuring the effects of Environmental Stewardship on landscape character

**6 Agricultural Landscape Types: ALTs** for strategic analysis of uptake

**18 pilot NCAs with study area** analysis of uptake against stock of landscape features.

**4-5 sample areas** sample areas for field survey of ES options

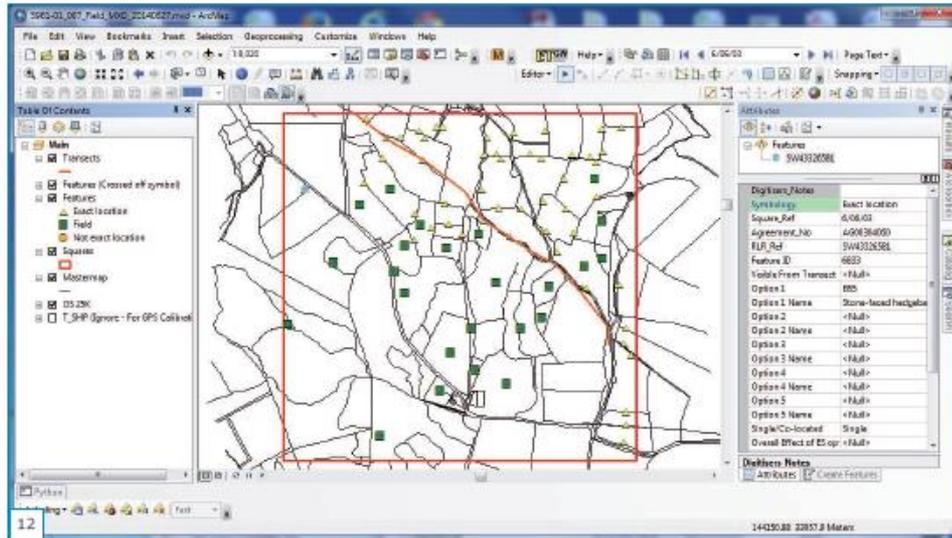


# Rapid field survey: increased coverage to make findings more robust

Looking forward to future monitoring requirements, and based on the experiences of the original fieldwork, a rapid field survey method has been developed and is now being rolled out nationally across a large sample of 300 survey squares. This streamlined approach maintains the core questions of the original field survey, but uses new tablet technology to collect a range of mainly quantitative information to offer a comprehensive 'broad and shallow' survey. The findings from the new Rapid Survey approach will be calibrated by the 'narrow and deep' survey findings from this initial contract. It is intended that the simpler approach now being trialled will be used by Natural England personnel to repeat surveys in-house over time to establish a consistent and long-term monitoring programme.

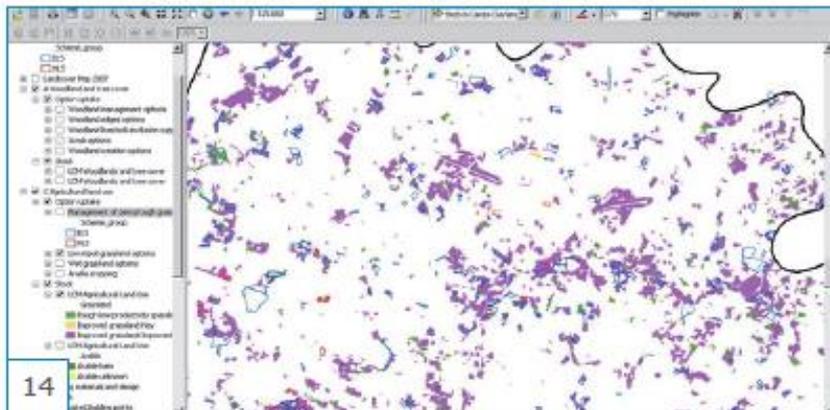


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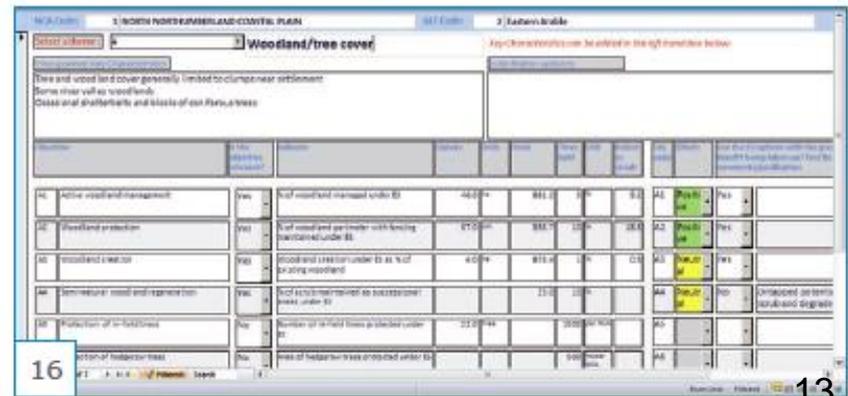


12. GIS data applied to each surveyor on a tablet for data capture in the field

## Spatial modelling of grassland options uptake



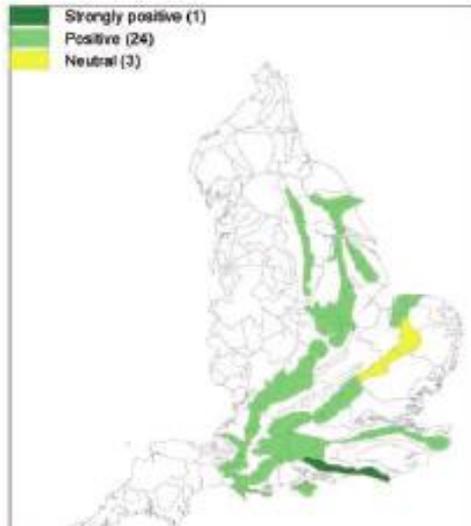
14. NCA 88 Low input grassland options overlaid onto LCM grassland stock categories



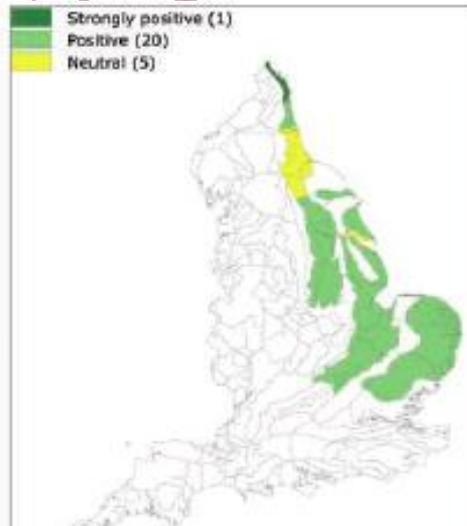
16

16. Indicators and thresholds database screenshot showing assessment for woodland/tree cover in NCA 1

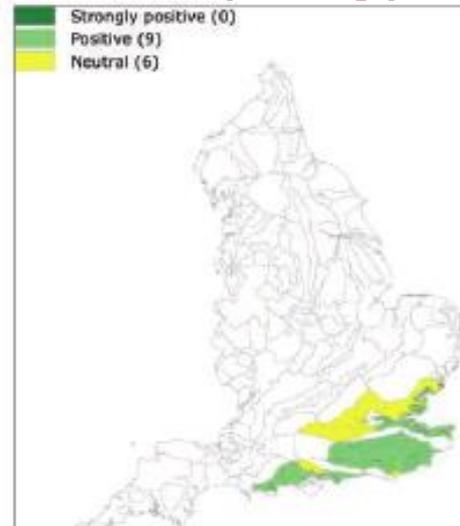
# Results: effect of Environmental Stewardship on landscape character 2013 (by Agricultural Landscape Type)



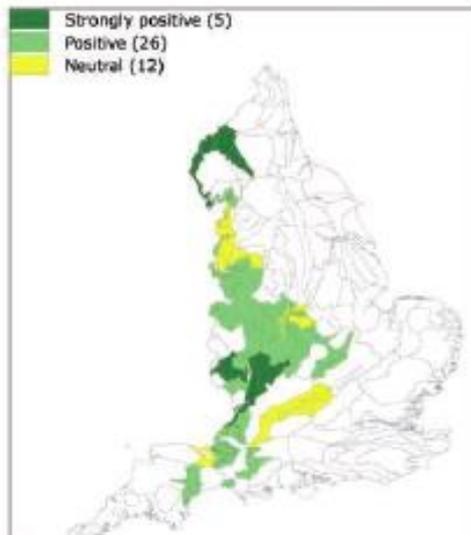
Chalk & limestone



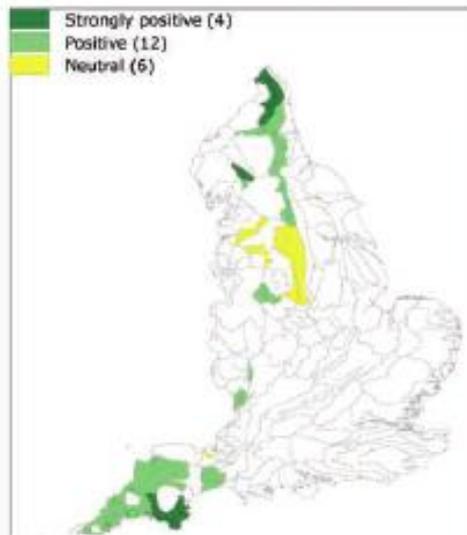
Eastern Arable



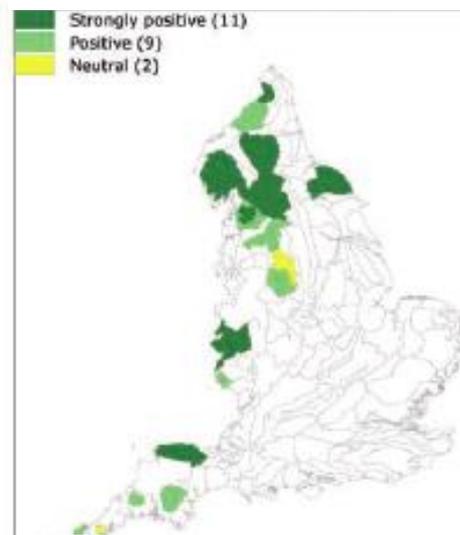
SE Wooded



Western Mixed



Upland Fringe

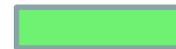


Upland

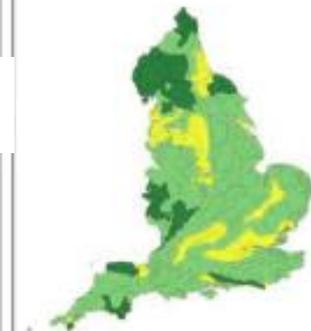
Strongly positive



Positive

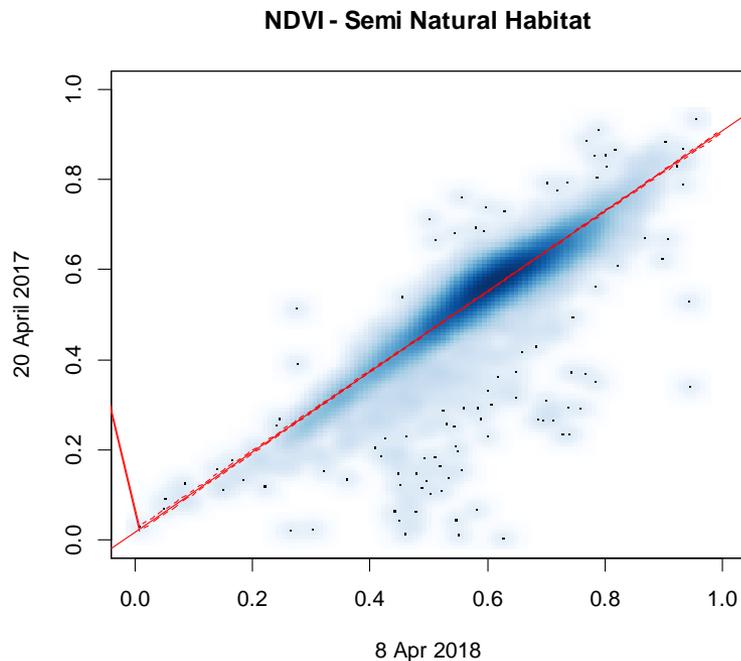


Neutral



# Remote sensing – habitat change detection in sites designated for wildlife conservation

- Under development in Natural England
- Uses freely available 10m<sup>2</sup> resolution imagery
- Potential for wider landscape surveillance of landscape change
- Focus: detecting upland land management practices (burns, cutting)
- Includes detecting Normalised Difference Veg Index (NDVI) values



2017



2018



NDVI



# Remote sensing – habitat change detection in sites designated for wildlife conservation

## Challenges:

- Quantifying and evaluating the significance of change you are interested in can be a complex process.
- Consider models:
  - ‘Possible Worlds’ – identify the plausible/likely changes
  - ‘Anomalous Change’ – identify outliers from the norm
- Eliminate ‘noise’ (e.g. seasonal variations)
- Technical issues – pixel alignment and transformation errors

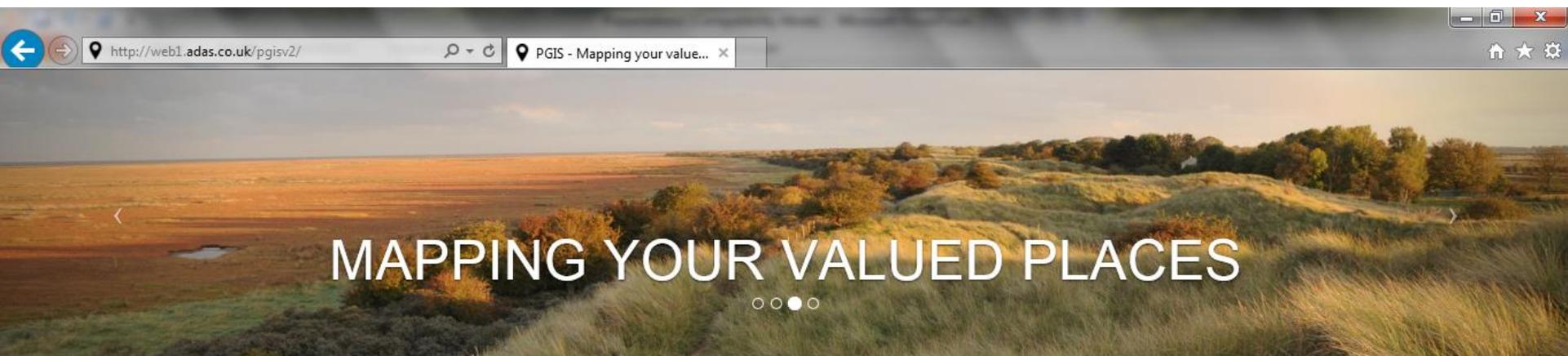


*Sentinel 2 images showing variation in framing*

- Scale – perhaps most suited to local change detection.
- Flagging changes for further validation by site visit

# Measuring and mapping people's cultural values

## Participatory GIS Tool



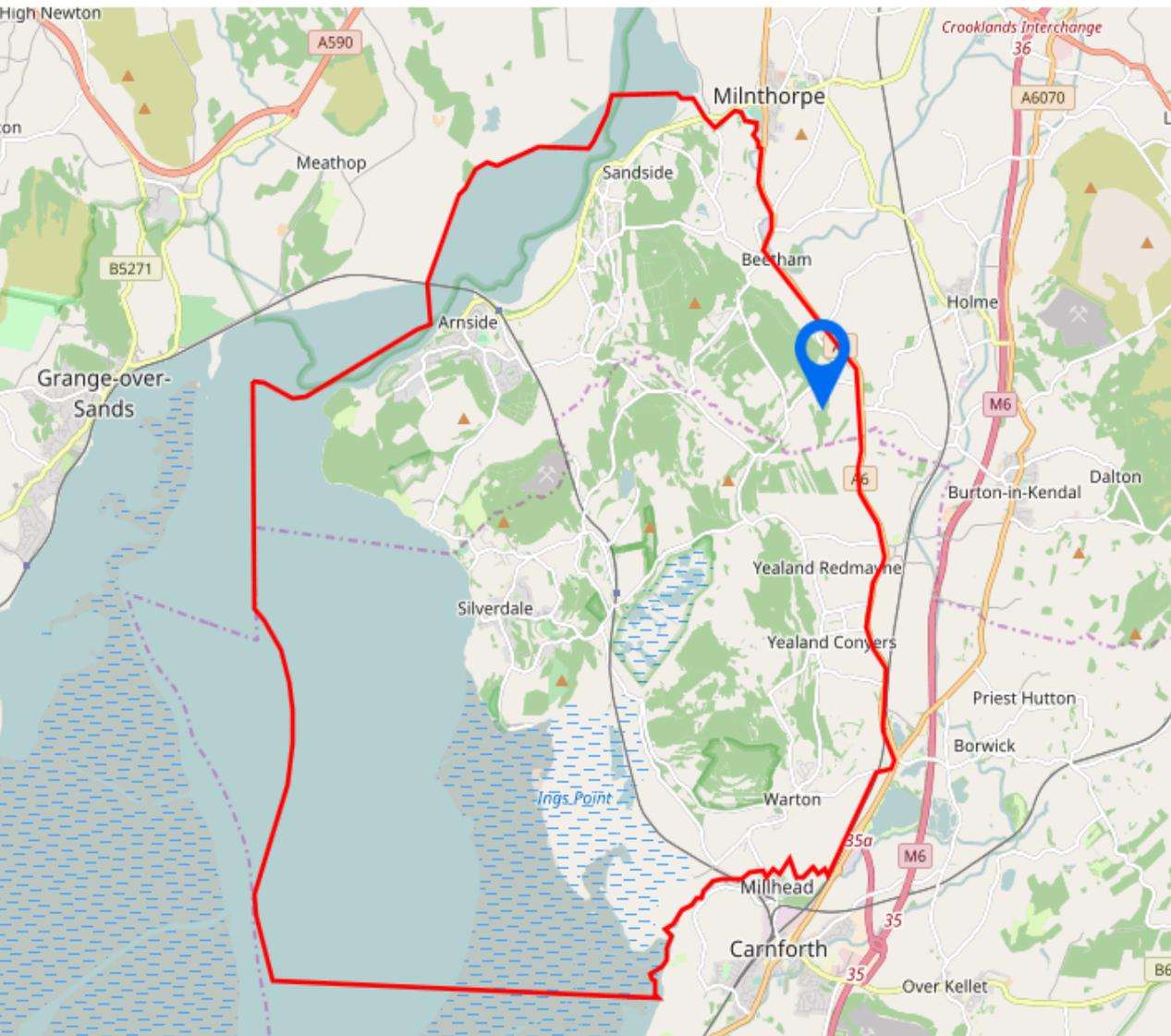
People use and value their local landscapes for a variety of reasons and get many different benefits from them. The purpose of this web tool is to understand the places you go, what you value and what benefits you experience and enjoy when you are there. It may be an opportunity for recreation, or the opportunity to see nature and wildlife, or gain emotional benefits such as inspiration, tranquillity, or a sense of belonging or history – or a combination of these. It may simply be a place or landscape with a unique character or a beautiful view you enjoy.

Please read through the introductory page before choosing a location map from the menu. It will then ask you to place a series of pins to identify the places you go and what is of value to you. You will be able to add further comments and have the option of uploading photographs of your valued places.

The information collected and mapped will help to better understand what people value in their local landscape so that it can be considered when making decisions about landscape and nature conservation or other types of landscape change.

START





Info

What do you value this place for? \*

(please tick a maximum of 3 reasons)

- Recreation
- Views
- Local history
- Beauty
- Learning
- Tranquillity
- Wildlife

Do you come to a precise spot or a general location? \*

- Precise location
- General location

How often do you visit this place? \*

Please select from the drop down list ▼

Why do you value this place?

Please type here

If you wish to add a photograph of your valued place or edit your comments at a later date, click 'SAVE' and then click on the pin that you placed on the map



# People can record why they value a place and their text is linked to pin locations

The views are beautiful. Many paths to the top. Freedom for the kids to run and play. Personal history makes me feel peaceful when I go there alone to sit.

Unusual geology, stillness of the trough, the ferns and mosses and the peacefulness and beauty of the limestone and woodland.

Arnside tower - crumbling castle...childhood venue when my great uncle climbed to the top

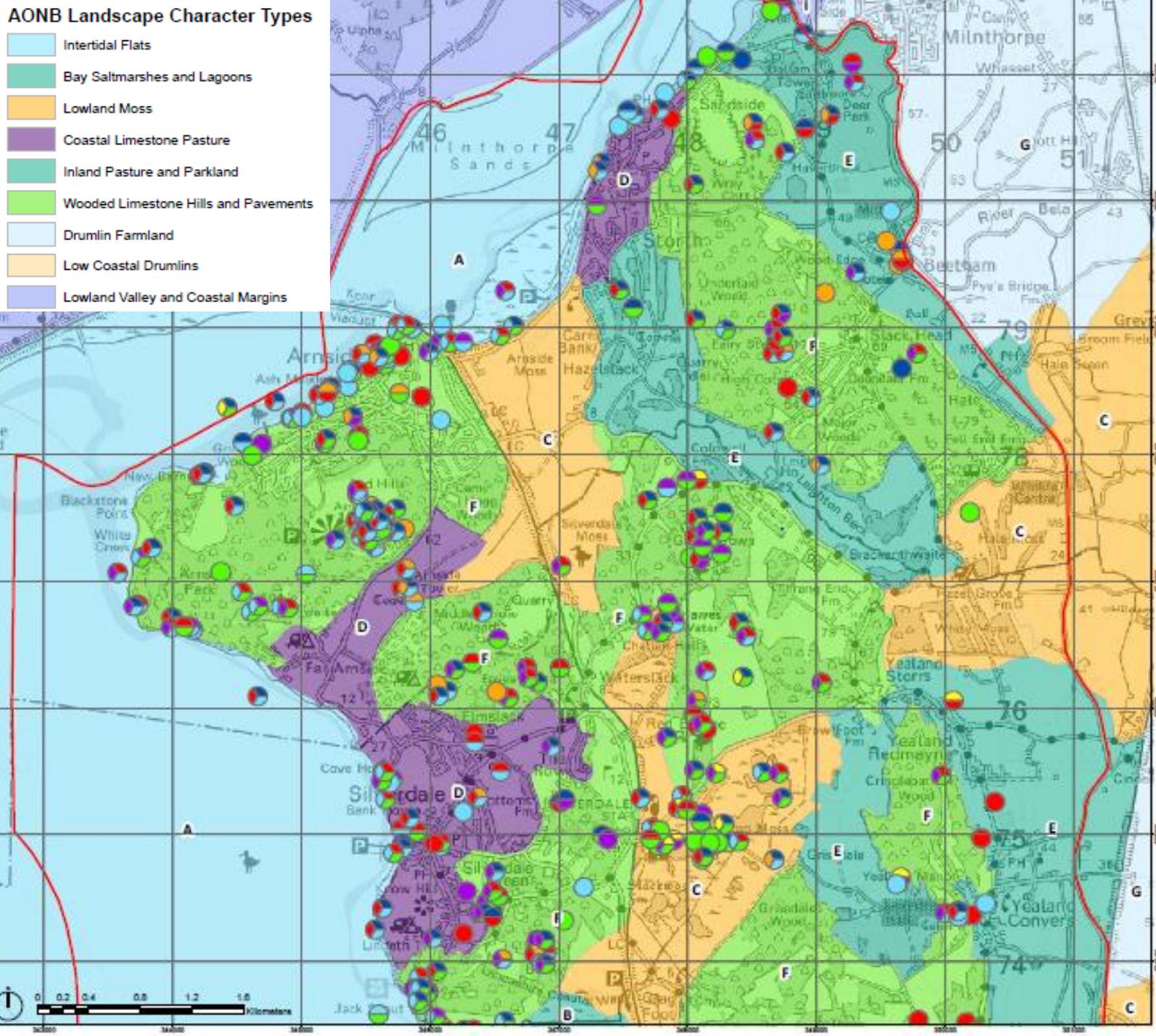
Great sense of history and heritage, traditional community

The promenade at Sandside commands magnificent views, backed by the pine and yew trees on their rocky ridge, which are emblematic of this special place

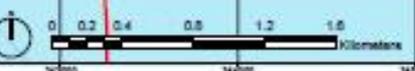
Rare orchids, other wildlife, beauty and tranquillity. Ability to walk a long way without being on roads. the lady's slipper orchids are mind blowing.

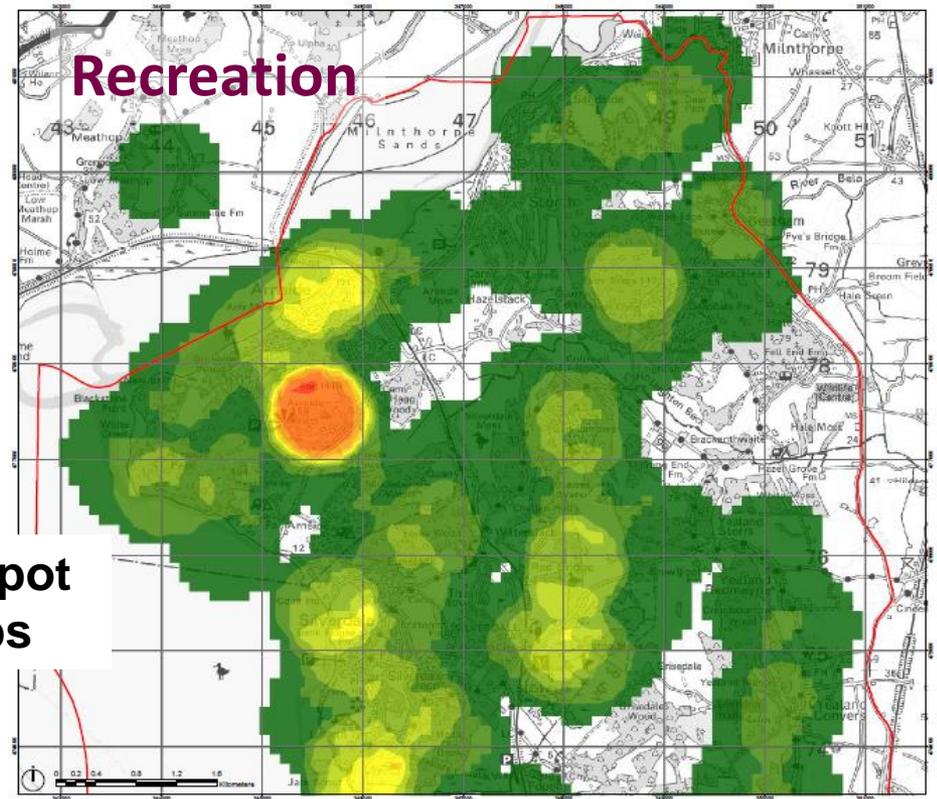
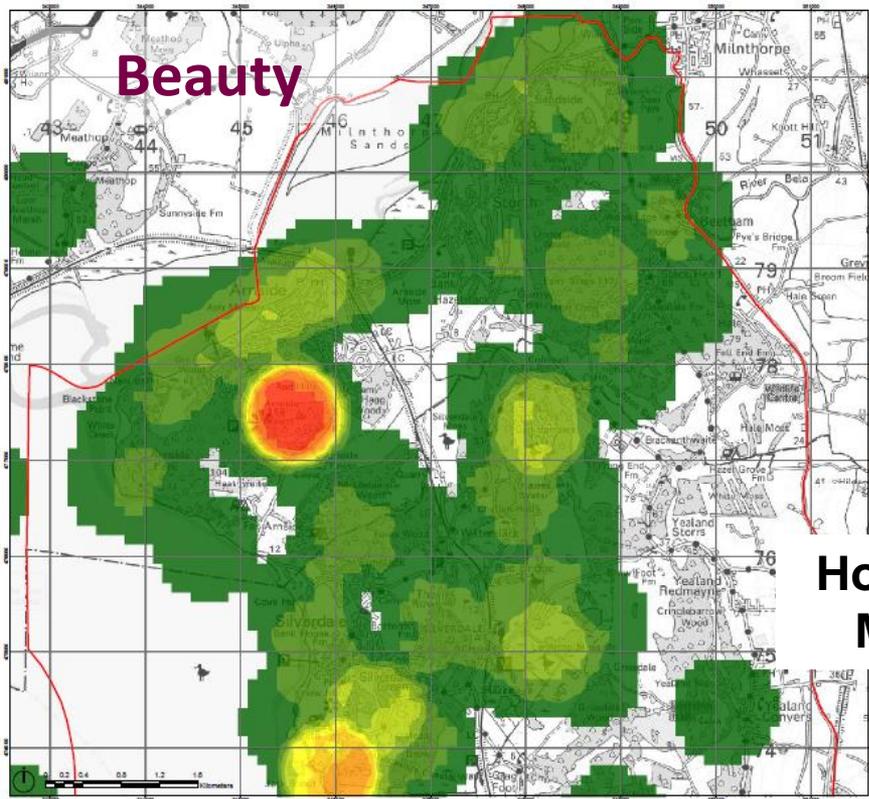
# AONB Landscape Character Types

- Intertidal Flats
- Bay Saltmarshes and Lagoons
- Lowland Moss
- Coastal Limestone Pasture
- Inland Pasture and Parkland
- Wooded Limestone Hills and Pavements
- Drumlin Farmland
- Low Coastal Drumlins
- Lowland Valley and Coastal Margins

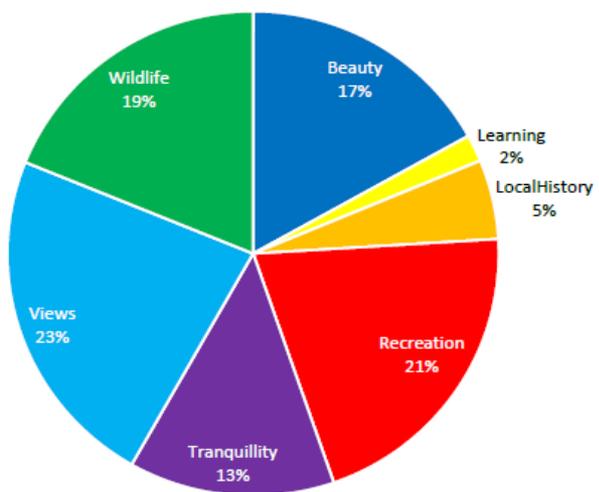


- 
- Beauty
- Learning
- Local History
- Recreation
- Tranquillity
- Views
- Wildlife





## Hot Spot Maps



What places are valued for overall

Each pin placed	%
Valued for 1 cultural service	21%
Valued for 2 cultural services	18%
Valued for 3 cultural services	61%

People valued places for multiple reasons

# Landscape as context for bringing quant/qualitative data together



To create resilient landscapes by strengthening landscape character and optimising value and benefits for people.

## **Work at a range of scales?**

- Providing the national 'big picture' as context for local initiatives
- Combine a range of techniques

## **Pool data and findings – an observatory for landscape change?**

- National stats datasets and indicators readily available
- Local data are variable in quality and availability.
- Thresholds of change more applicable in context of 'a place'
- Qualitative/cultural data more meaningful in context of 'a place'

**In England, the National Character Area profiles provide a starting point for collaboration and joint decision-making.**