

# Wind energy and the landscape

*Making Space for Wind Energy – 9 March 2010*



Campaign to Protect  
Rural England

Wind energy and the landscape

# CPRE's mission statement

“The Campaign to Protect Rural England exists to promote the beauty, tranquillity and diversity of rural England by encouraging the sustainable use of land and other natural resources in town and country.”



# Key issues for wind power

- Climate change and new energy infrastructure
- Urban intrusion and rural tranquillity
- Community engagement



# CPRE and wind power

- Climate change and renewables
- Onshore wind has a role, but not everywhere
- Wind turbines and natural beauty
- Lots of controversy!



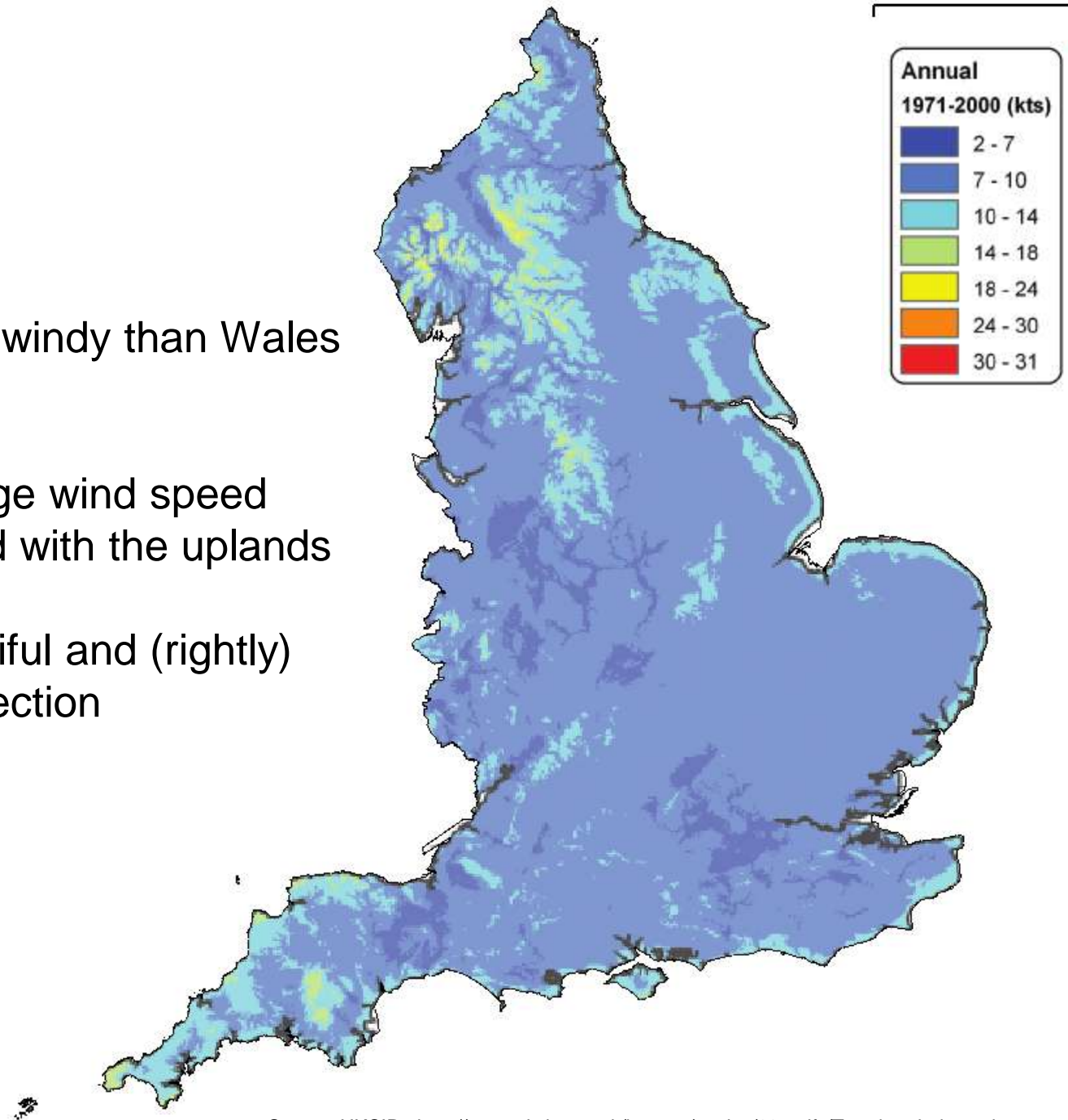
# Why the controversy?

- wind farms need lots of land
- onshore wind:  
roughly 2 W/m<sup>2</sup>
- conventional power stations:  
roughly 1000 W/m<sup>2</sup>
- 12GW needs 120,000 hectares of  
wind turbines
- location of wind resource



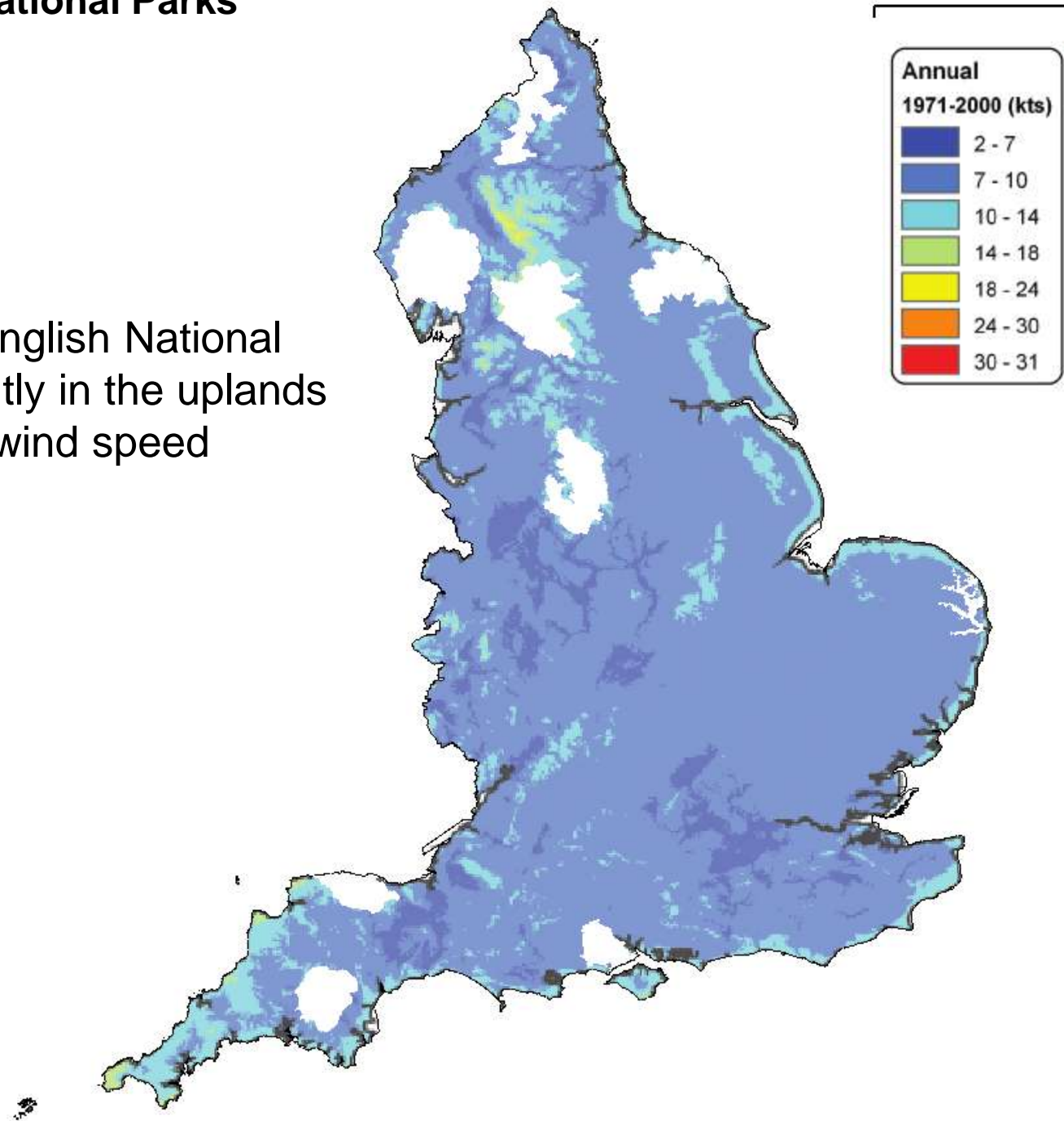
# Wind in England

- England is much less windy than Wales or Scotland
- areas of higher average wind speed are strongly correlated with the uplands
- the uplands are beautiful and (rightly) enjoy substantial protection



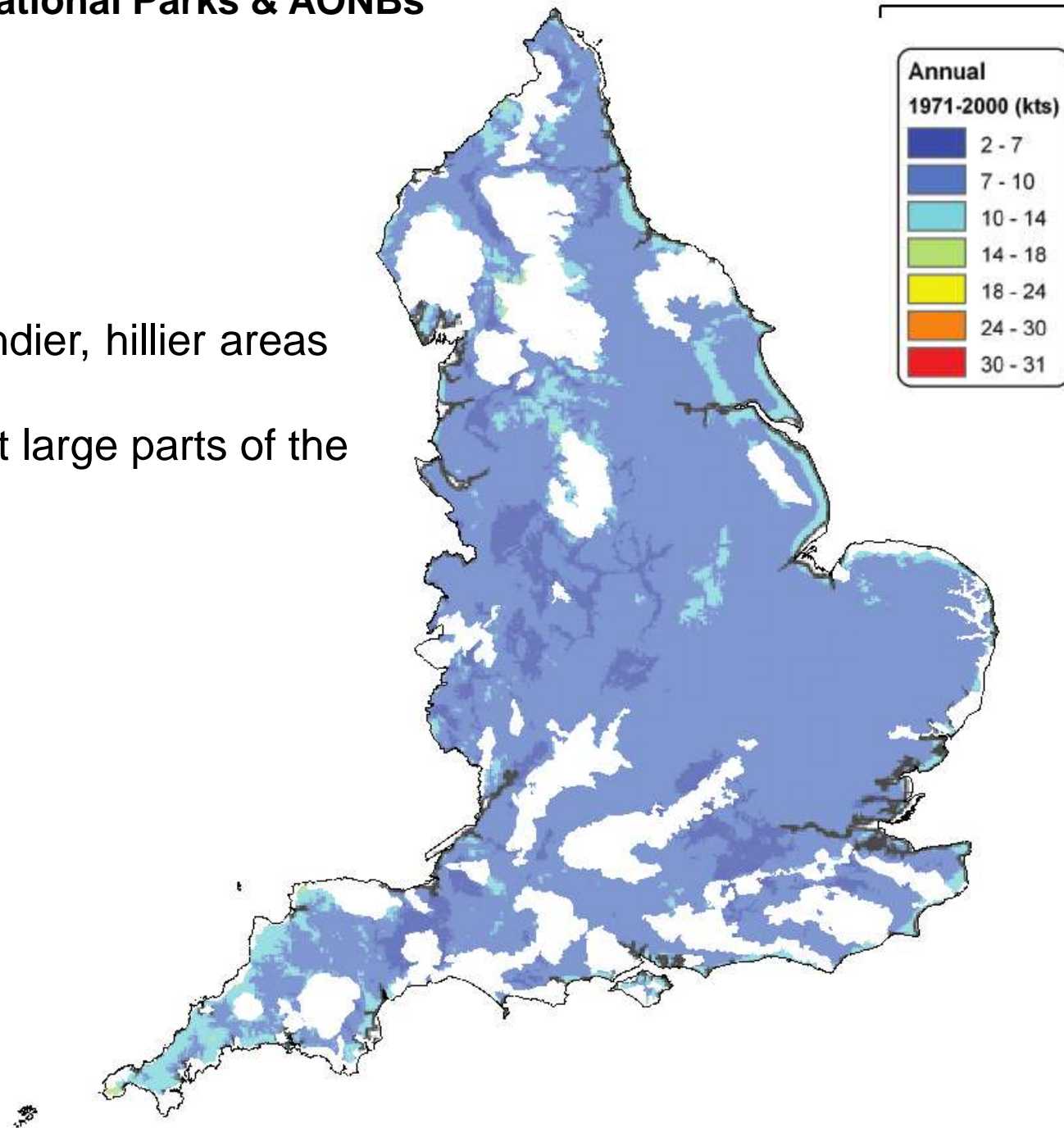
# Wind in England excl. National Parks

- No surprises here – English National Parks are predominantly in the uplands and have the highest wind speed



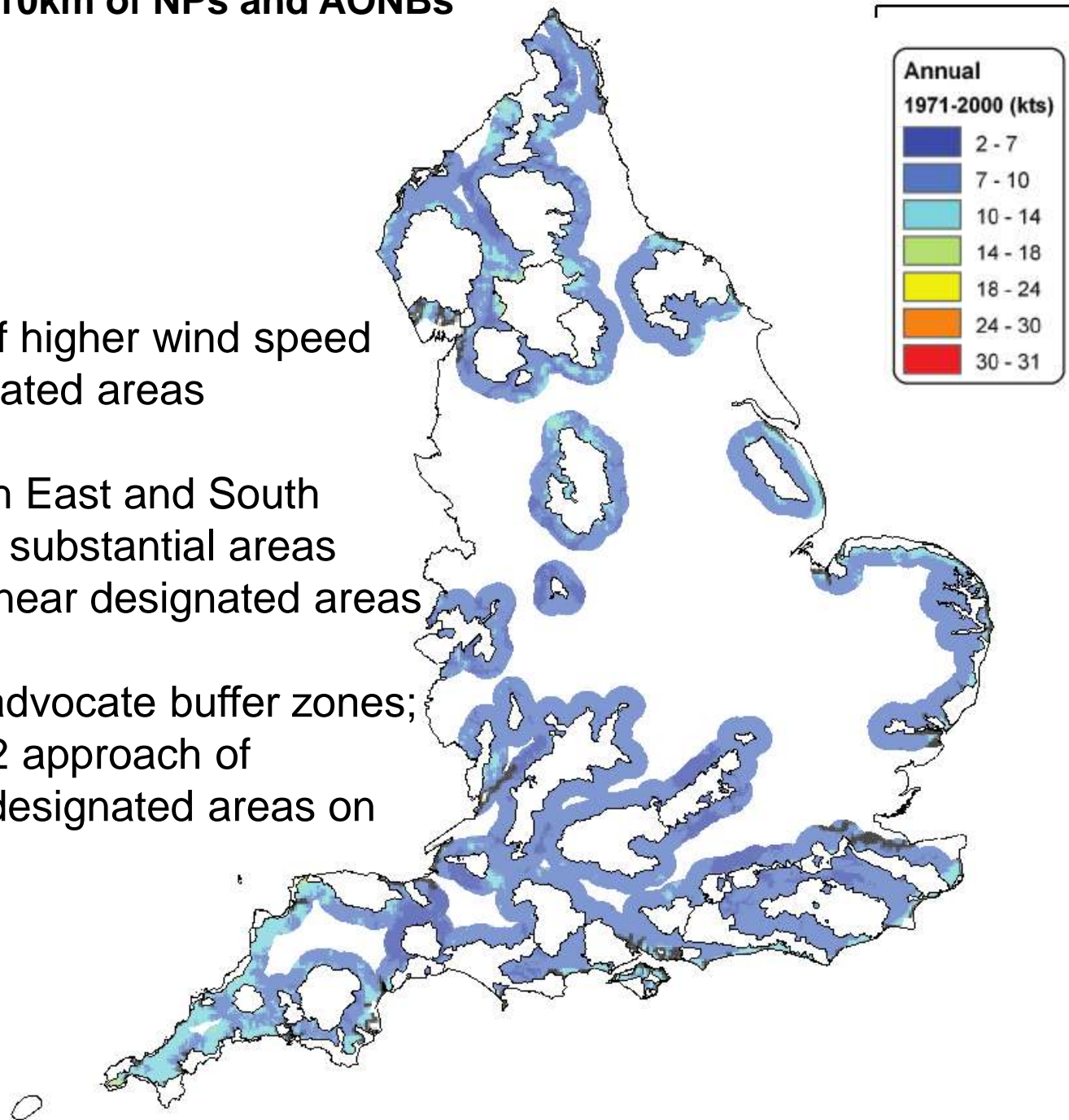
# Wind in England excl. National Parks & AONBs

- AONBs are also in windier, hillier areas
- Interesting to note that large parts of the South East are AONB



# Wind in England within 10km of NPs and AONBs

- Significant amounts of higher wind speed areas are near designated areas
- The North West, North East and South West, especially have substantial areas of higher wind speed near designated areas
- Note: CPRE doesn't advocate buffer zones; we support the PPS22 approach of assessing impact on designated areas on a case by case basis

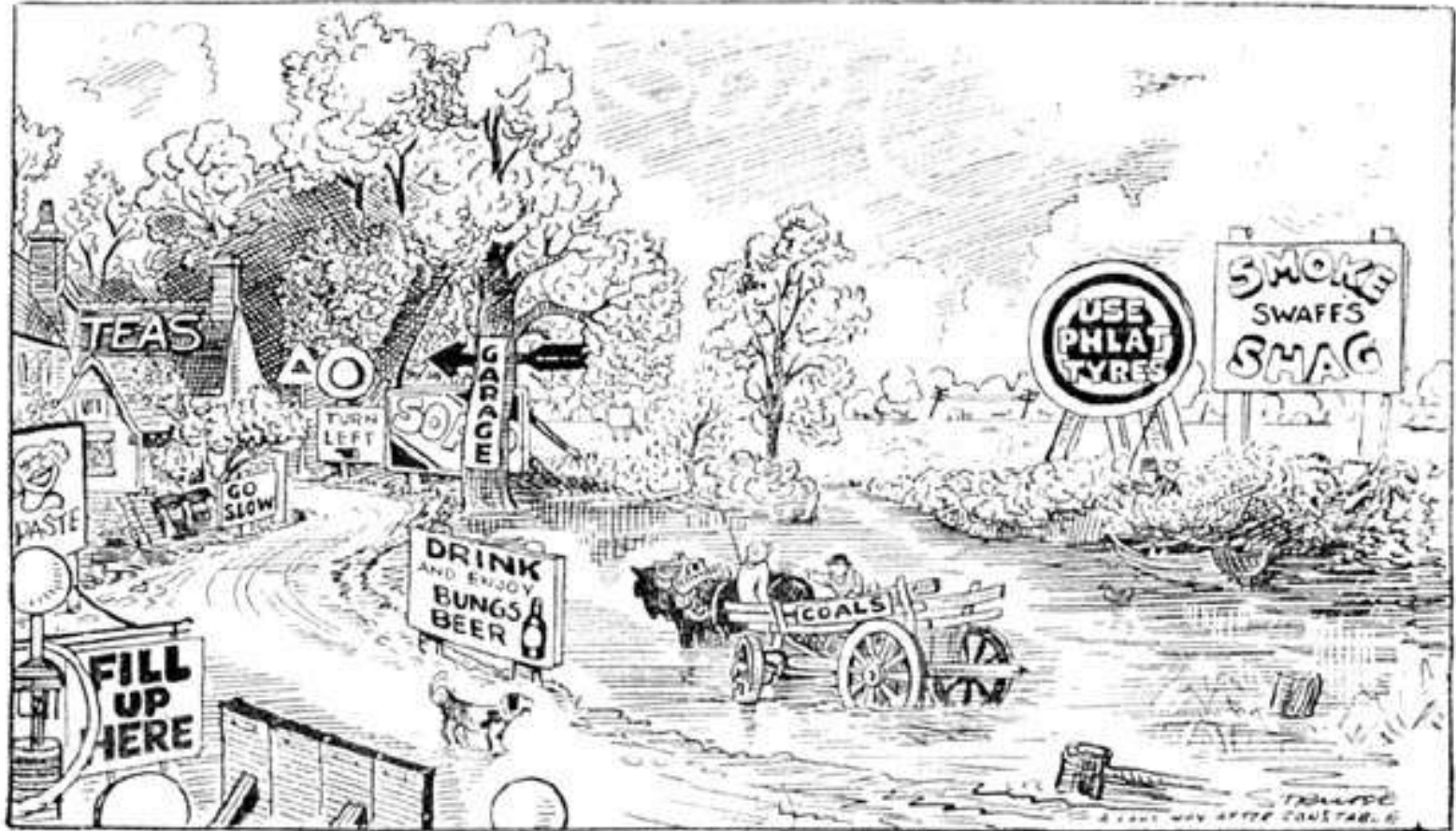


# Tranquillity and intrusion

- What does CPRE's tranquillity mapping show us?
- areas which the public values
- detailed assessment, based on 50 factors
  
- Intrusion
- earlier, simpler methodology which is still useful
  
- Relationship with the planning process



# SAVE THE COUNTRYSIDE



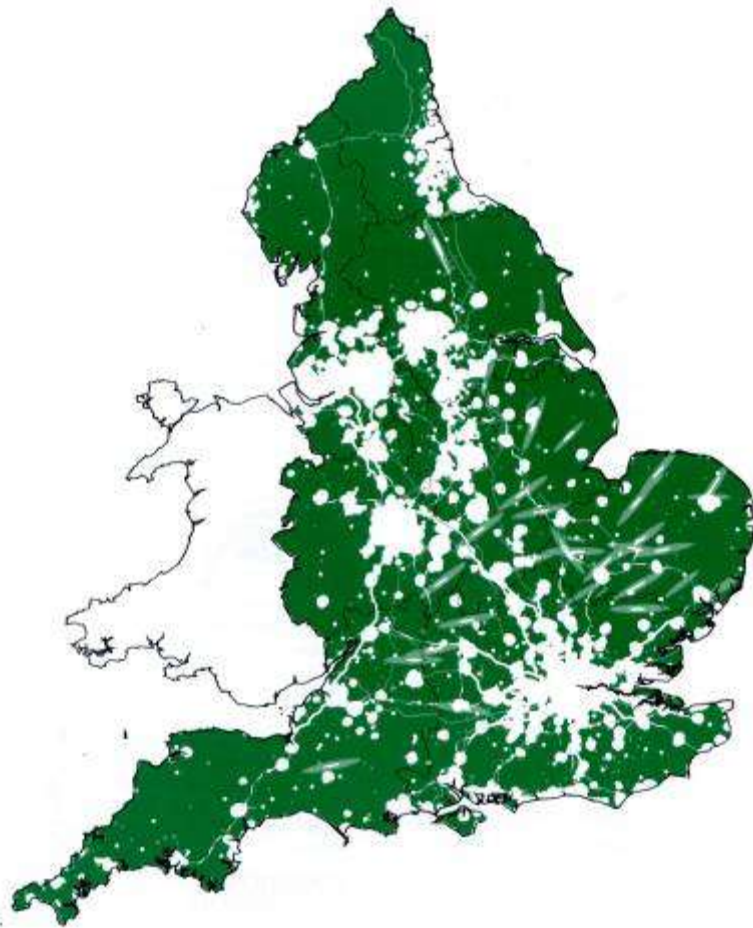
HAD JOHN CONSTABLE LIVED TO DAY

*By kind permission of the "Daily Express"*

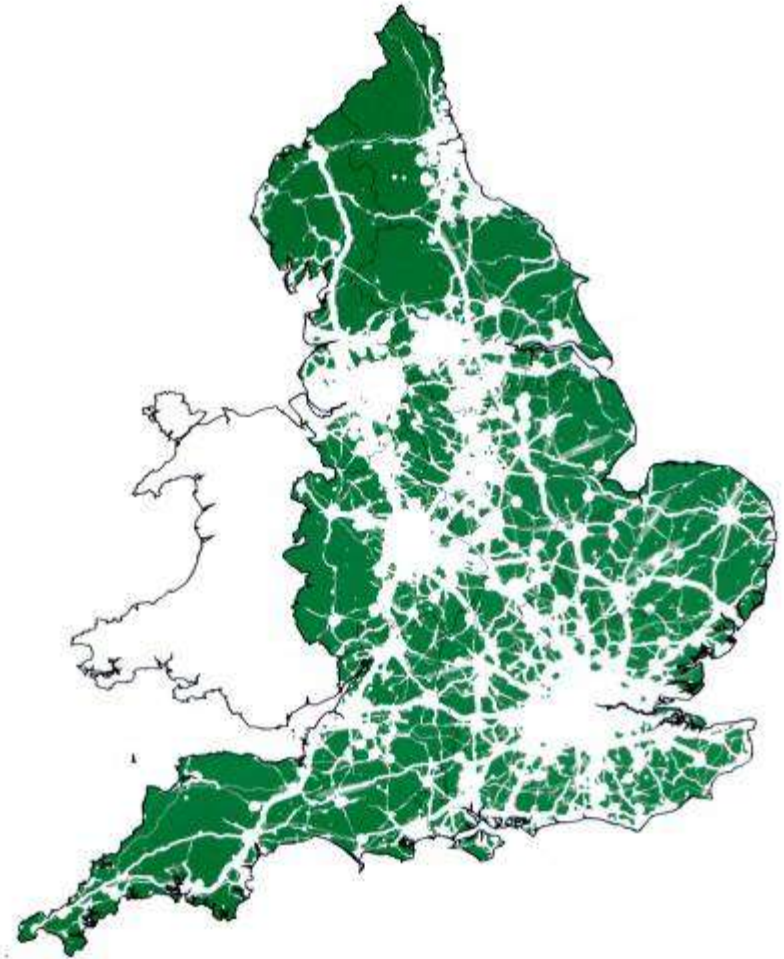


Campaign to Protect  
Rural England

Wind energy and the landscape



England -1960s



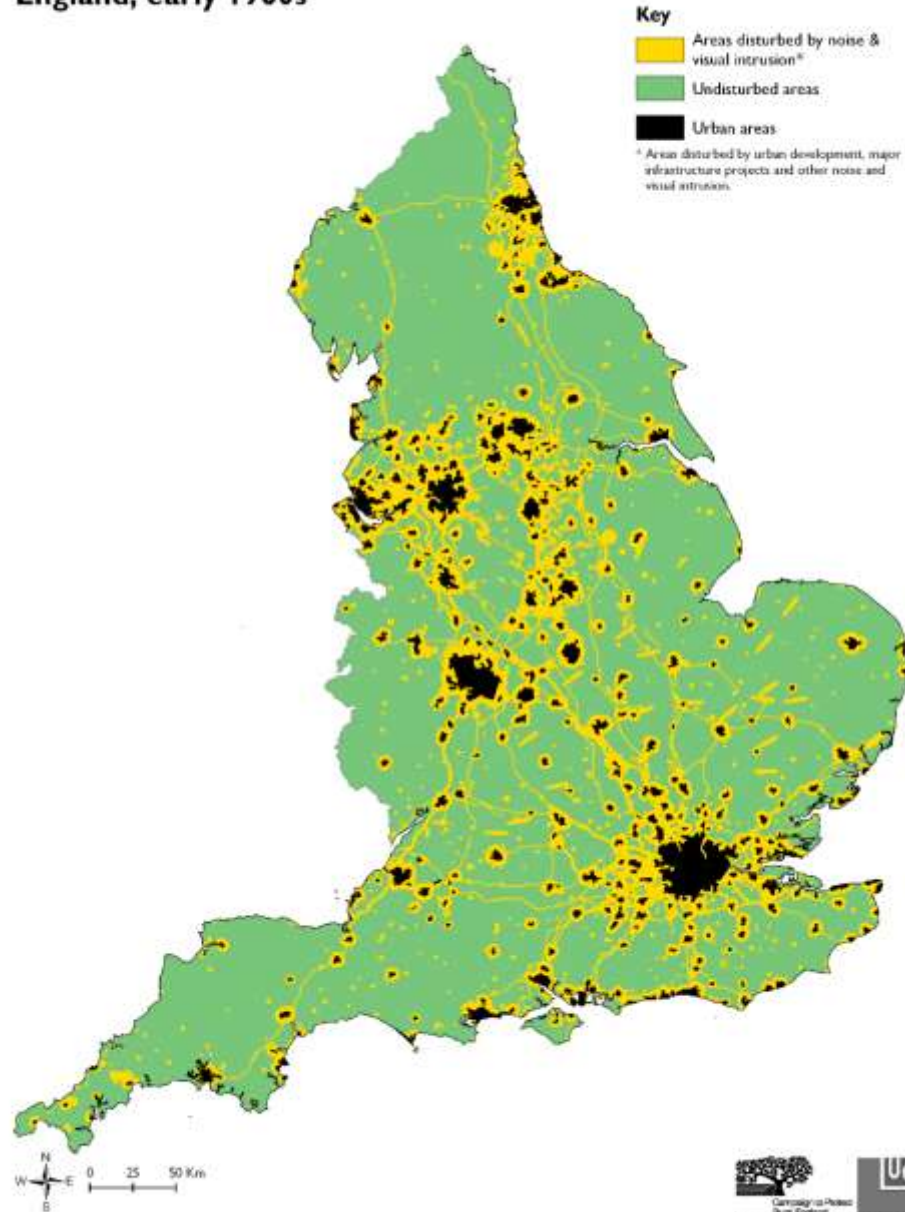
England -1990s

## CPRE's earlier 'Intrusion' maps



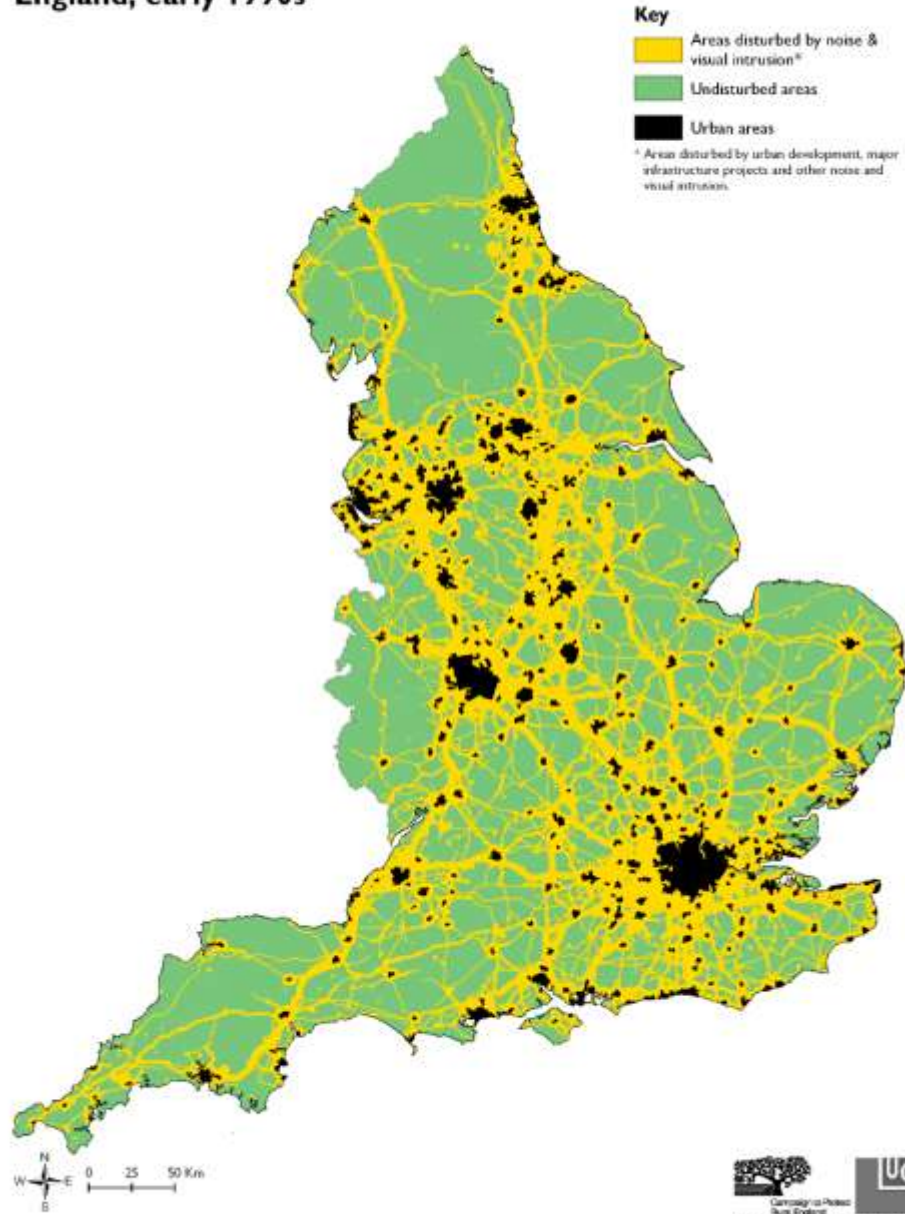
# Urban Intrusion - 1960s

**Intrusion Map:  
England, early 1960s**



# Urban Intrusion - 1990s

Intrusion Map:  
England, early 1990s



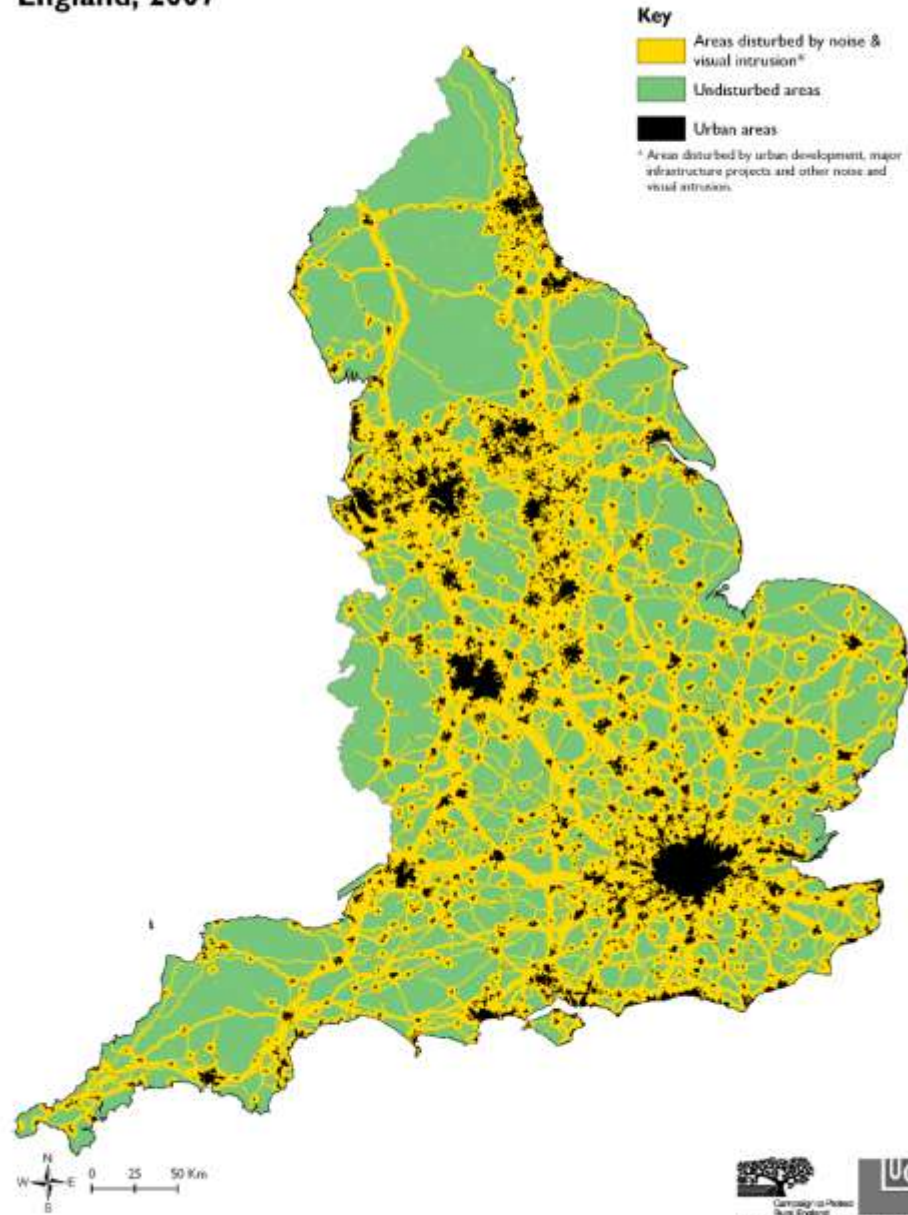
Campaign to Protect  
Rural England

For full information see the report available at [www.cpre.org.uk](http://www.cpre.org.uk)  
Digital copyright CPRE and Geospatial Commission, 1995.  
Reproduced from Ordnance Survey information with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright. Land Use Consultants, Licence Number 100819265.  
August, 2007

  
Campaign to Protect  
Rural England  
  
Produced on behalf of CPRE  
by Land Use Consultants

# Urban Intrusion - 2007

## Intrusion Map: England, 2007



Campaign to Protect  
Rural England

This map is based on data from 2001 to mid-2007.  
For full information see the report available at [www.cpre.org.uk](http://www.cpre.org.uk)  
Original copyright CPRE and Countryside Commission, 1995.  
Reproduced from Ordnance Survey information with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright. Land Use Consultants, Licence Number 100819265.  
August, 2007.

Produced on behalf of CPRE  
by Land Use Consultants

# Developing tranquillity mapping

- Roger Levett's critique (2000):
  - Single threshold only
  - No account taken of varying conditions
  - No account taken of cumulative effects
  - **Expert selection** of disturbance sources
  
- Jackson et al.'s critique (2006):
  - No factors adding to tranquillity
  - Local effects not visible
  - No assessment of what **matters to people**



join the **Barratt** lifestyle

MORTGAGE  
**PAID**  
FOR A YEAR!



tranquillity

**comes as standard**

**Live the waterside life and get your mortgage paid for a year!\***

Enjoy the stunning views from your stylish new home at Waterside while Barratt pay your first 12 month's mortgage repayments.

**To find out more, phone, check out our website or pay us a visit NOW!**

**Albany Gardens**

*Distillery Lane, Colchester*

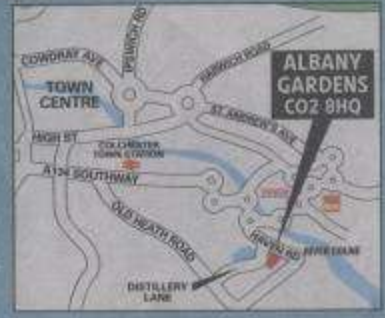
If you are looking for a luxury apartment in an idyllic setting, look no further.

Waterside at Albany Gardens is a collection of high specification apartments built next to a glorious expanse of open water.



Superb  
2 & 3 bed  
apartments

From just  
**£169,995\*\***



**Tel: 01206 792781**

MARKETING SUITE OPEN 10AM TO 6PM EVERYDAY

**barratthomes.co.uk**

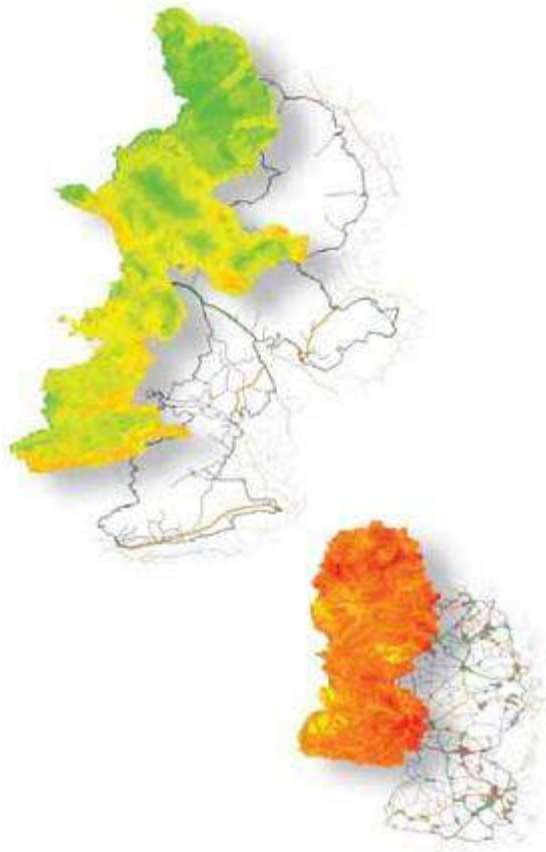
Mortgage paid up to a maximum of £1,000 per month for 12 months. All offers within this advertisement are on selected properties for a limited period only and cannot be combined with any other offer. Subject to status, contract and normal Barratt Eastern Counties conditions. Prices correct at time of going to press. \*\*Fees of all incentives.



Campaign to Protect  
Rural England

Wind energy and the landscape

# The pilot project: our new approach to mapping tranquillity



Relative tranquillity in two areas -  
Northumberland National Park and West  
Durham Coalfield

Crown copyright. All rights reserved. The Countryside Agency 2004.  
Licence No. 100018881.

## Relative tranquillity

Most tranquil areas



Least tranquil areas



# North East pilot project (2004)

## Extensive public consultation

- Participatory Appraisal (PA) approach
- Study areas
- Consultation sessions
- Identified:
  - Key factors adding to / detracting from tranquillity
  - Relative significance of each factor



# Extract from the methodology report

## 3.3.3.3.13 Seeing, coniferous woodland

Using the points generated for 'Seeing, Trees in the Landscape' visibility was calculated for all observation points covering sub-class 2.1 coniferous forest areas within 6km of the boundary of England.

Criteria	Parameter	Description
Subject Height	30m	Average height of mature coniferous woodland
Viewing Height	1.72m	Average height of a person
Radius (ZTV)	6km	Theoretical limit of visibility
Azimuth	360°	Complete field of view
Output Grid Size	500m	The output visibility surface is the same as the 500m grid used throughout this study.

Table 45: Parameters – 'seeing, coniferous woodland'



# North East pilot outcome

“..while tranquillity may seem to be a highly subjective experience, certain factors emerge strongly and repetitively. This allows us to build a picture of what characterises and detracts from areas that enable people to find tranquillity.”

*Mapping Tranquillity* report, 2005, p10



# Definition of Tranquillity

*Tranquillity is the quality of calm experienced in places with mainly natural features and activities, free from disturbance from manmade ones.*



# National Tranquillity mapping (2006)

## Key features:

- Replicates structure of pilot project
- Consultation - broad based quantitative survey
- GIS (Geographic Information System) to model and map tranquillity in 500m x 500m grid squares

## Output:

- National and regional tranquillity maps on scale of least to most tranquil – each based on relative tranquillity



# What tranquillity is

## Top 8 survey responses:

1. Seeing a natural landscape
2. Hearing birdsong
3. Hearing peace and quiet
4. Seeing natural looking woodland
5. Seeing the stars at night
6. Seeing streams
7. Seeing the sea
8. Hearing natural sounds



# Seeing a natural landscape (6.59%)

(Long Mynd, Shropshire)



Campaign to Protect  
Rural England

Wind energy and the landscape

**Seeing rivers ( 2.18%), Hearing running water (2.23%)**  
**(River Browney, Durham)**



Campaign to Protect  
Rural England

Wind energy and the landscape

# Seeing the sea (2.73%)

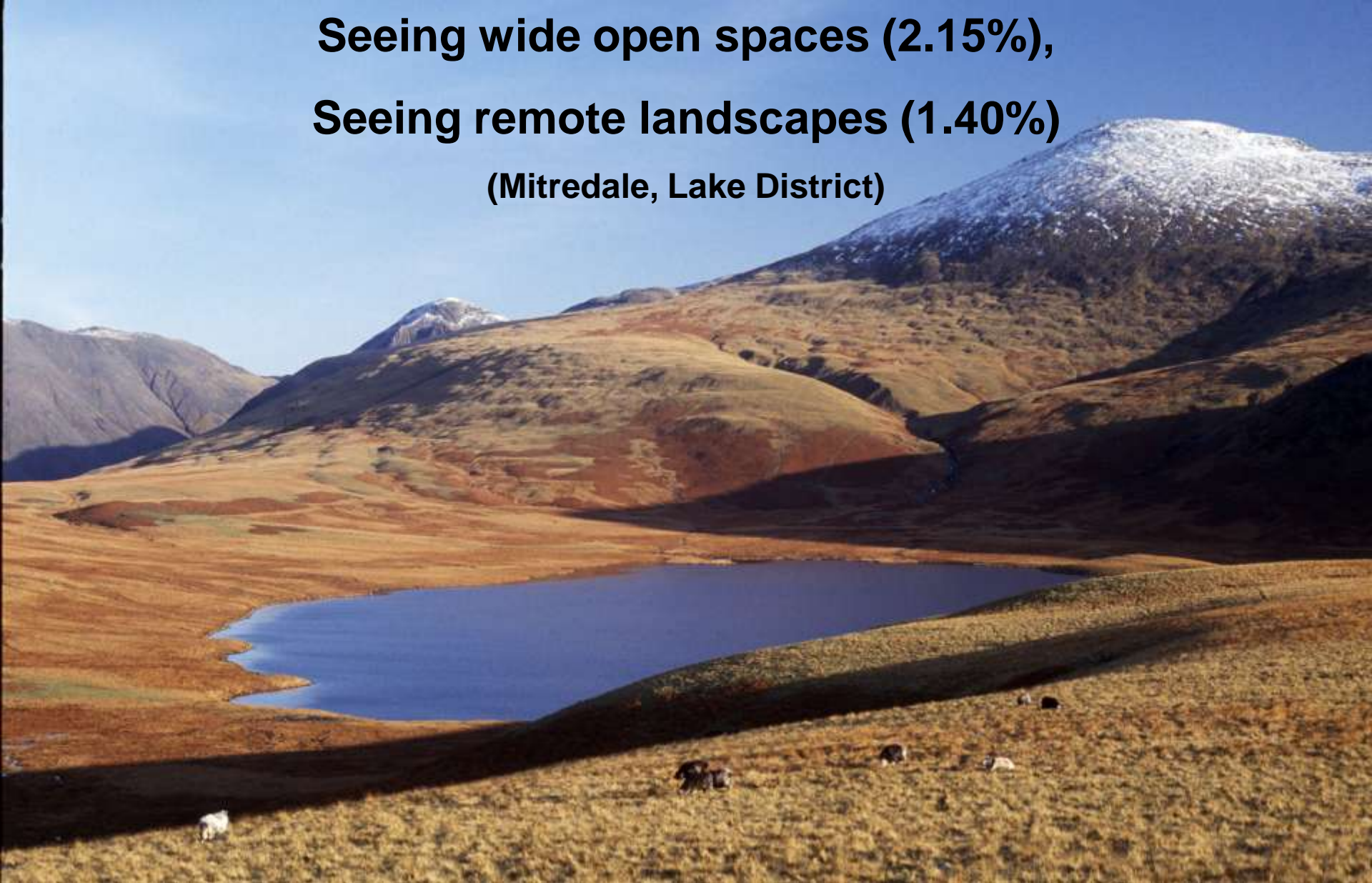
(Dorset Coast)



Campaign to Protect  
Rural England

Wind energy and the landscape

**Seeing wide open spaces (2.15%),  
Seeing remote landscapes (1.40%)  
(Mitredale, Lake District)**



# What tranquillity is **not**

## Top 8 survey responses:

1. Hearing constant noise from cars, lorries and/or motorbikes
2. Seeing lots of people
3. Seeing urban development
4. Seeing overhead light pollution
5. Hearing lots of people
6. Seeing low flying aircraft
7. Hearing low flying aircraft
8. Seeing power lines



**Hearing constant noise from traffic (10.96%),**

**Seeing roads (1.72%)**

**(A4103 , Worcester)**



Campaign to Protect  
Rural England

Wind energy and the landscape

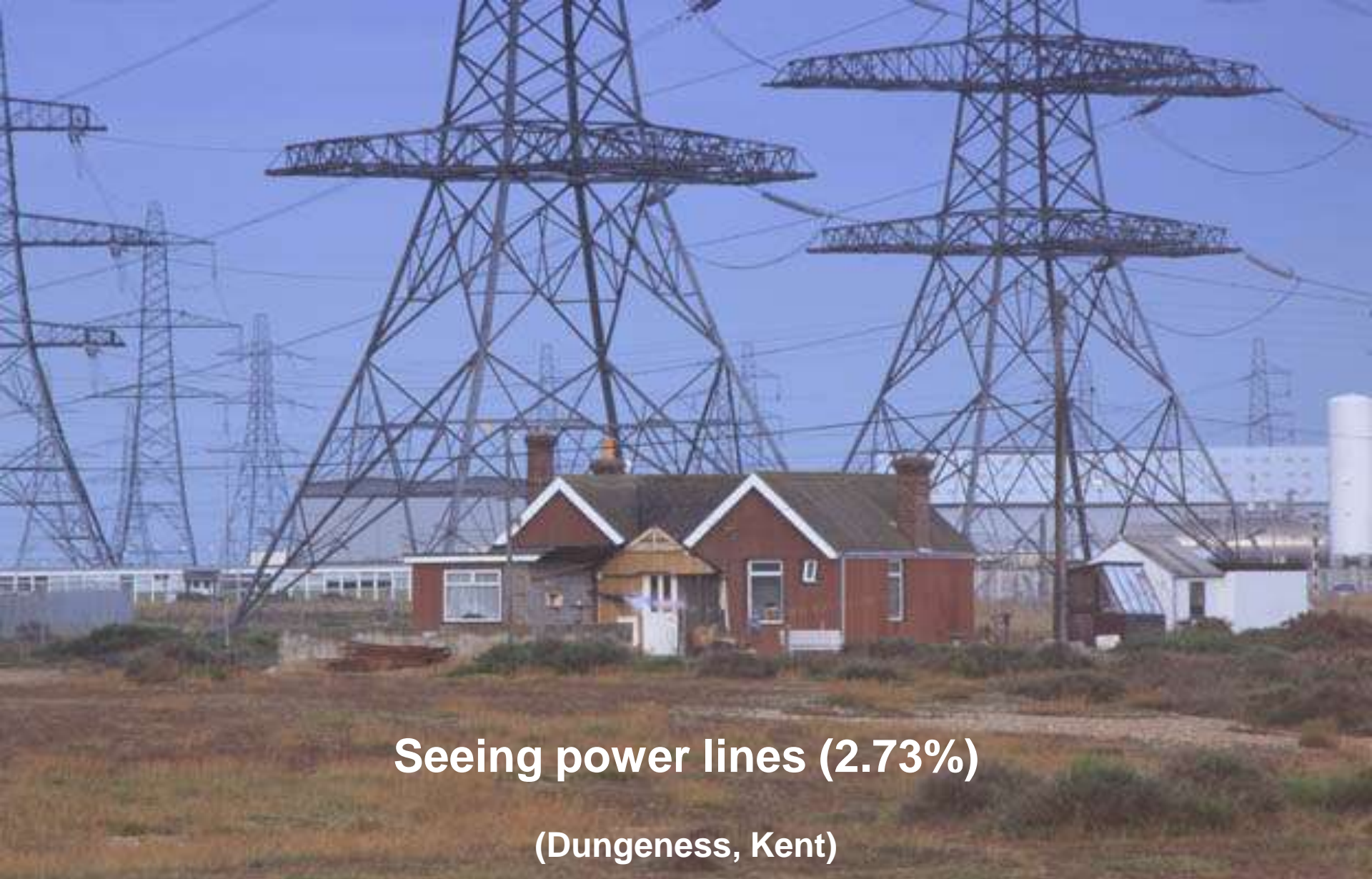


**Seeing urban development (4.62%)  
(Magna Park, Leicestershire)**



Campaign to Protect  
Rural England

Wind energy and the landscape



**Seeing power lines (2.73%)**

**(Dungeness, Kent)**



Campaign to Protect  
Rural England

Wind energy and the landscape

# Seeing towns and cities (2.50%)

(View to Brighton from Sussex Downs)



Campaign to Protect  
Rural England

Wind energy and the landscape

# Seeing wind turbines (1.09%)

(North Cornwall)



Campaign to Protect  
Rural England

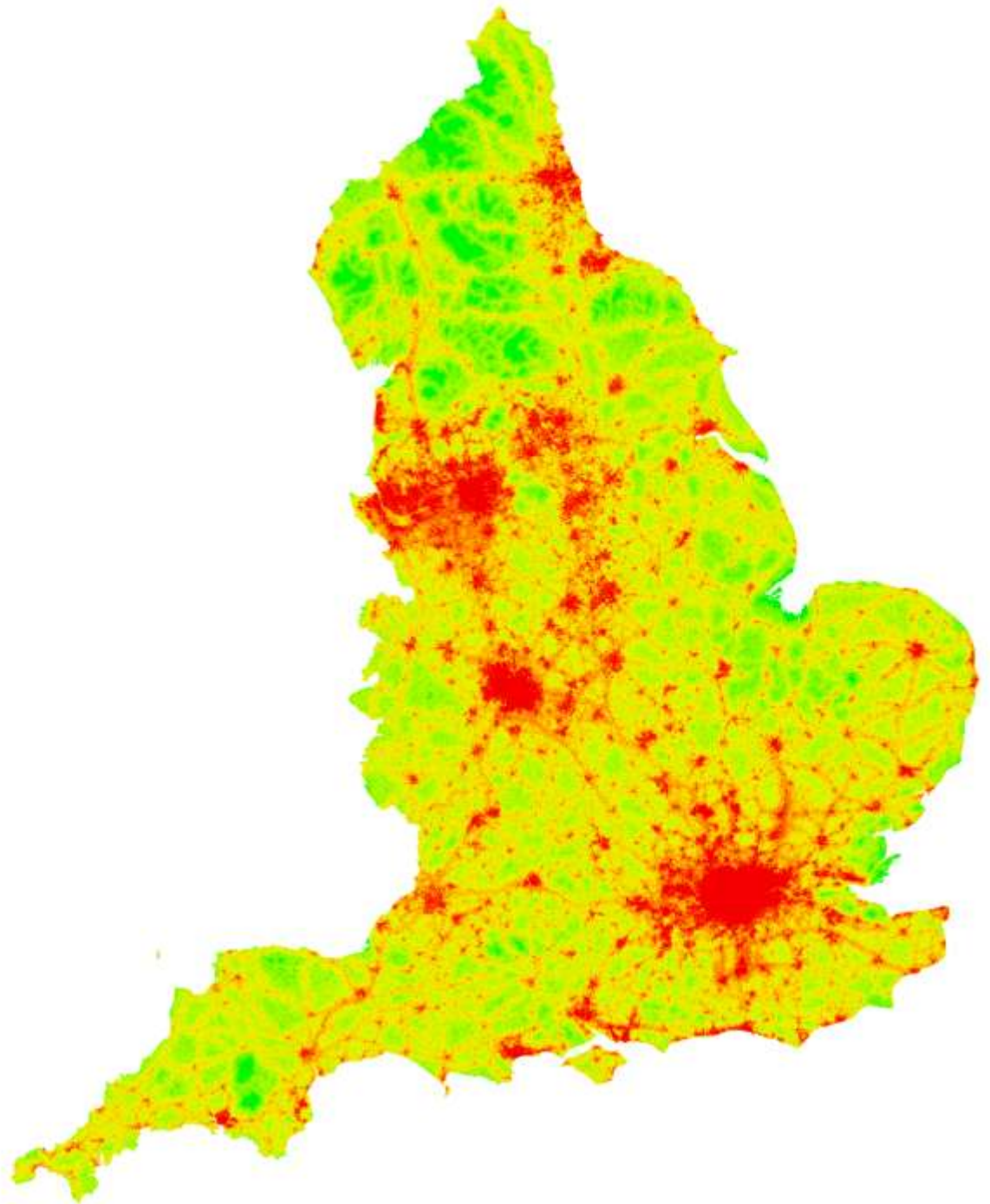
Wind energy and the landscape

# National Tranquillity mapping (2006)

Modelling and mapping:

- National datasets used, including:
- Satellite based land cover map from Centre for Ecology and Hydrology
- Ordnance Survey digital elevation model (50m resolution)
- Department of Works and Transport Traffic Flow data
- Much more detail is available in our methodology report

# England's Tranquillity Mapped

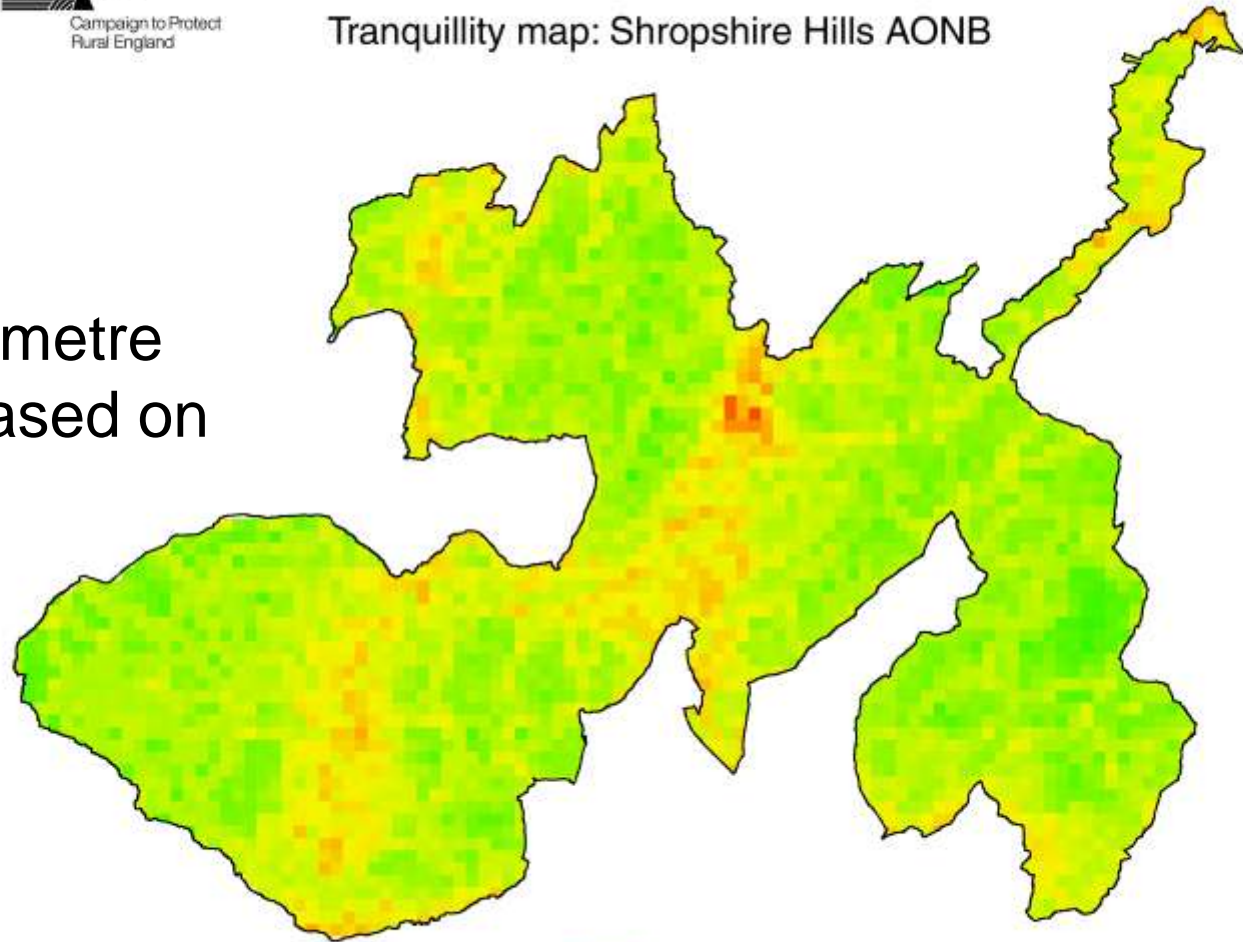


# Fine detail

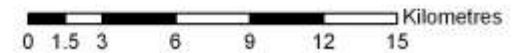


Tranquillity map: Shropshire Hills AONB

500 x 500 metre squares based on Ordnance Survey grid



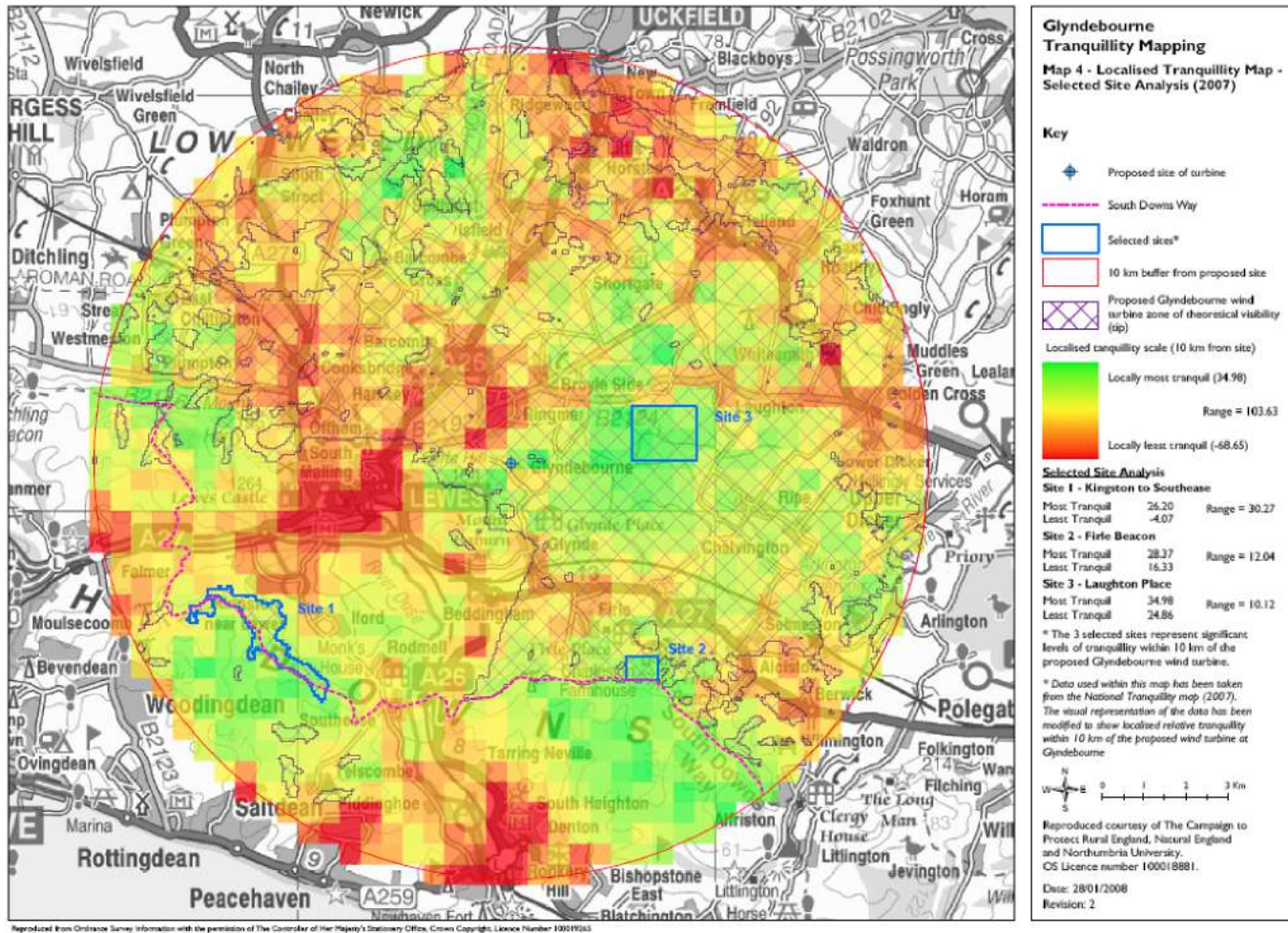
Reproduced courtesy of the Campaign to Protect Rural England. Revised edition 2007.



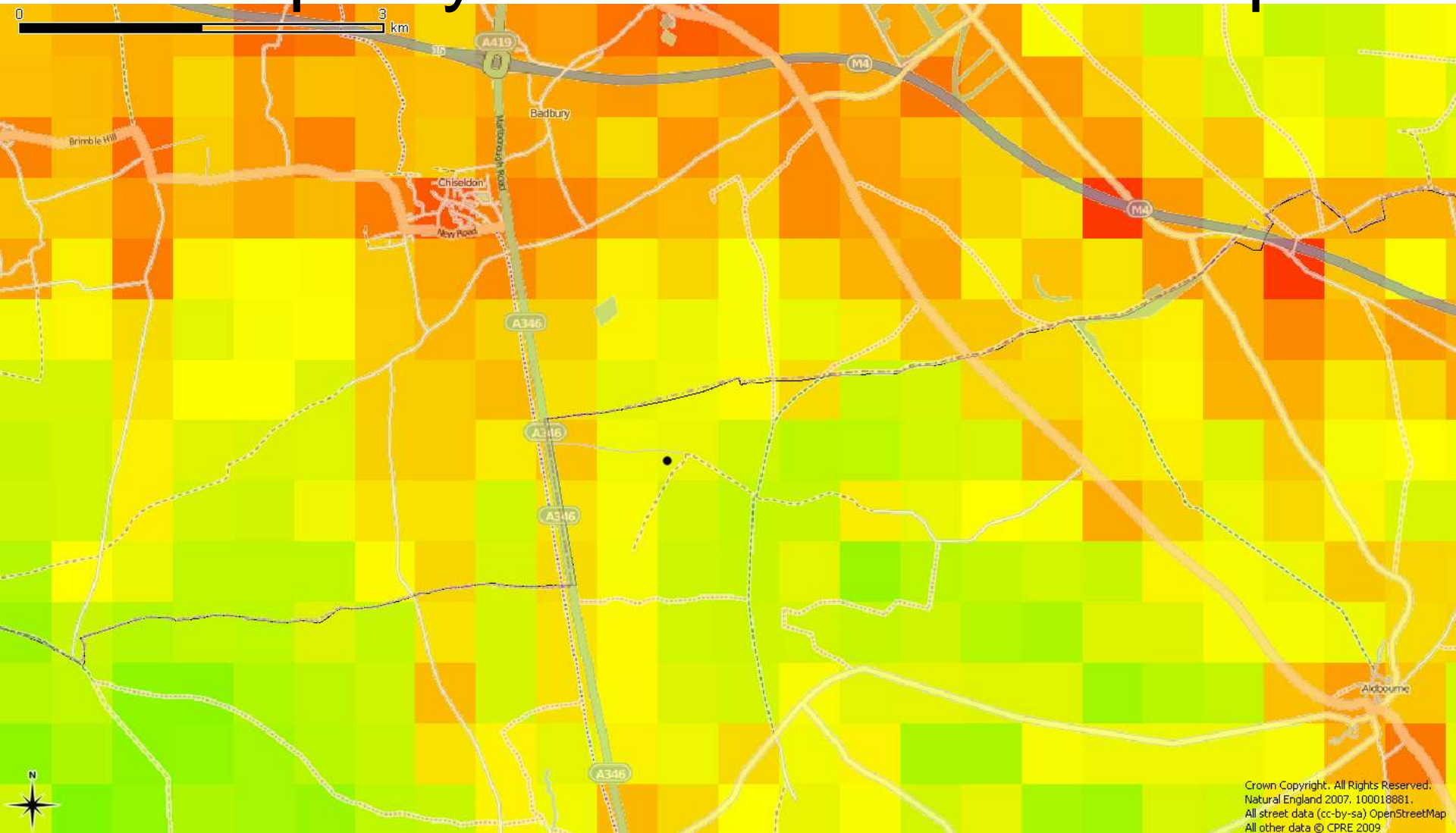
Crown copyright. All rights reserved.  
The Countryside Agency 2006. 100018881.



# Tranquillity in action: localised map



# Tranquillity in action: national map



# Action possible at all levels

**Government:** include tranquillity as a measure of the quality of the countryside;

**Regional planning bodies:** use tranquillity when developing regional strategies, including energy strategies;

**Local authorities:** incorporate tranquillity into local planning policies and work to improve tranquillity locally;

**Developers:** factor tranquillity into siting decisions; and

**Everyone:** go out and enjoy your tranquil countryside!



# People and planning

- plan led system
- cumulative impact
- attendant infrastructure (eg. grid connections)
- landscape character assessment
  
- iterative debate over energy options
  
- technical advice body



[www.cpre.org.uk/tranquillity](http://www.cpre.org.uk/tranquillity)

