



Geographic Literacy in Natural England

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Setting expectations



- Not very technical

- Geography and the natural environment
- What is *Geographic Literacy*
- Why it matters to Natural England
- Case studies
- Current action plan
- Challenges
- New applications of geography
- Questions

- Geography helps us understand the natural environment and environmental issues and includes:
 - Spaces – where things are located
 - Places – areas with specific physical and meaningful characteristics
 - Relationships – what's next to, or close to something
 - Features - such as flora and fauna
 - Processes - erosion, for example
- For both physical and social & cultural environments

What is Geographic Literacy?

lit-er-a-cy /'litərəsē/ Noun

1. The ability to read and write.
2. Competence or knowledge in a specified area:

The United Nations Educational, Scientific and Cultural Organization ([UNESCO](#)) defines literacy as the "ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society."

computer literacy

n.

The ability to operate a computer and to understand the language used in working with a specific system or systems.

**Geographic Literacy
is our approach to
"Understanding,
mapping and
prioritising our work
to conserve, enhance
and manage the
natural environment
in different areas of
the country"**

What does Geographic Literacy mean to our work?



- All our work has an impact somewhere:
 - Land management
 - Land use planning
 - Statutory and open access
 - Marine conservation zones
 - Nature improvement areas
 - Localism
- Our ways of working are underpinned by geography too
 - Spatial Targeting
 - Integrated Delivery

So Geographic Literacy means we can

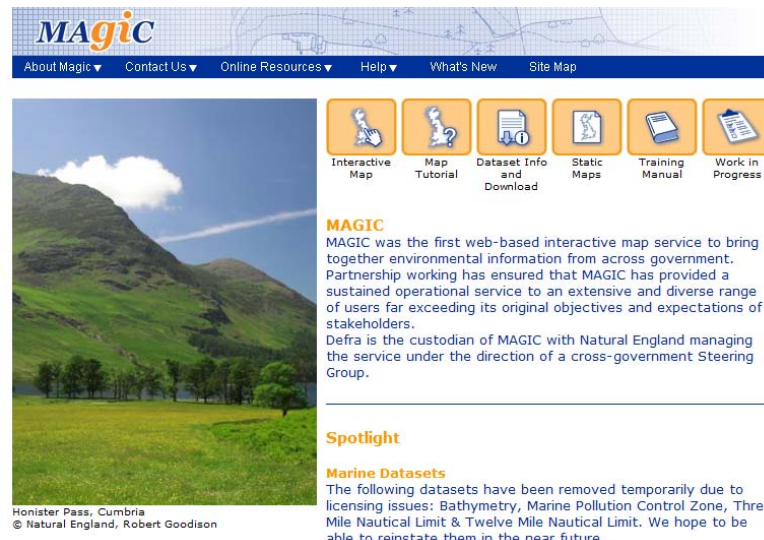


- Target actions to particular places and monitor the impact of actions on environmental features and landscapes
- Provide places for outdoor recreation that reflect where people come from, how far they will travel etc
- Understand the location of species and habitats and the location of threats
- Designate and notify protected sites based on biological, geological, physical features etc.

Case study 1 - MAGIC



- First cross-government interactive map service
- Usage grown significantly since launch in 2002
- Used by schools, researchers, environmental consultants, campaigners, archaeologists, people planning outdoor activities
- Usage is now decreasing as user expectations change



The screenshot shows the MAGIC website interface. At the top is the "MAGIC" logo in orange and blue. Below it is a navigation bar with links: "About Magic", "Contact Us", "Online Resources", "Help", "What's New", and "Site Map". A large landscape photograph of Honister Pass, Cumbria, is on the left. To the right of the photo is a row of six orange icons with labels: "Interactive Map", "Map Tutorial", "Dataset Info and Download", "Static Maps", "Training Manual", and "Work in Progress". Below the icons is a text block starting with "MAGIC" in orange, followed by a paragraph describing the service's history and partnership. Below that is a "Spotlight" section with the heading "Marine Datasets" in orange, followed by a paragraph explaining that certain datasets have been removed temporarily due to licensing issues.

MAGIC
MAGIC was the first web-based interactive map service to bring together environmental information from across government. Partnership working has ensured that MAGIC has provided a sustained operational service to an extensive and diverse range of users far exceeding its original objectives and expectations of stakeholders. Defra is the custodian of MAGIC with Natural England managing the service under the direction of a cross-government Steering Group.

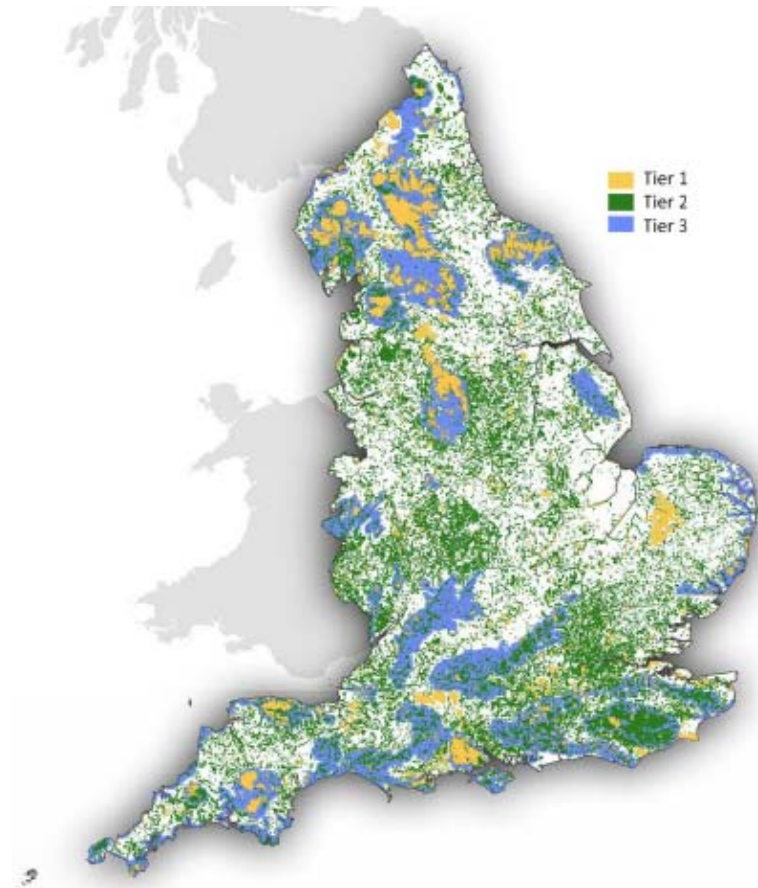
Spotlight
Marine Datasets
The following datasets have been removed temporarily due to licensing issues: Bathymetry, Marine Pollution Control Zone, Three Mile Nautical Limit & Twelve Mile Nautical Limit. We hope to be able to reinstate them in the near future.

Honister Pass, Cumbria
© Natural England, Robert Goodison

Case study 2 - Making Space for Nature



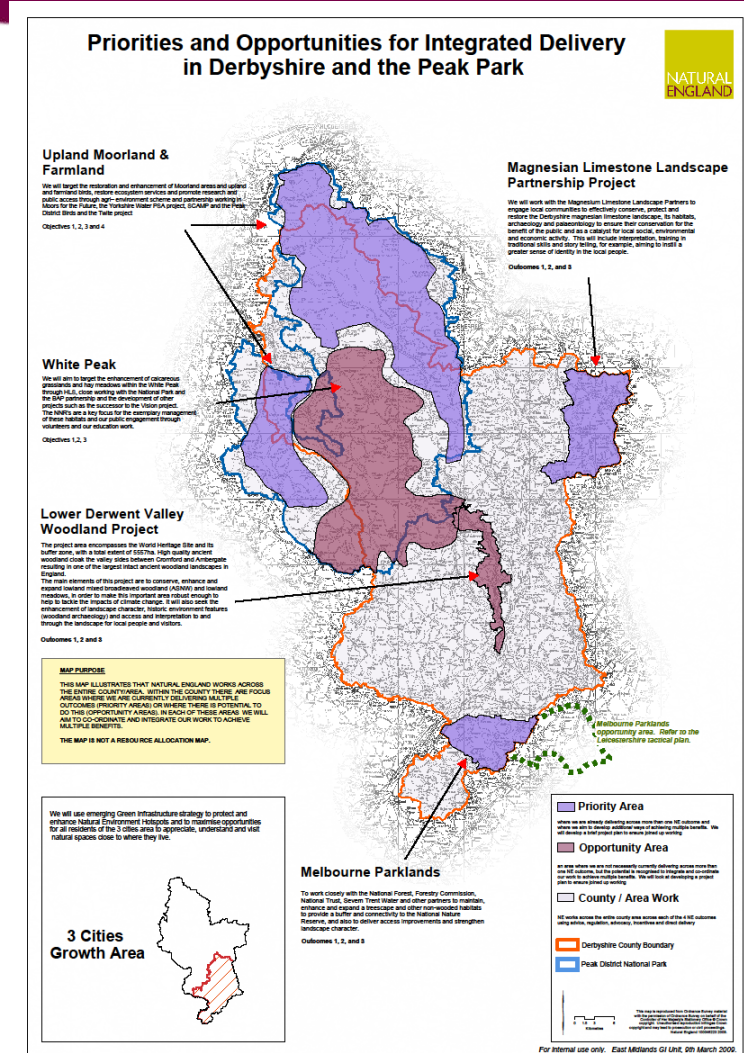
- Lawton Review on benefits for wildlife from ecological corridors and networks of wildlife sites
- Required series of new spatial analyses of different tiers of sites
- Demonstrated existing sites are too small to prevent further loss of habitats and species
- Resulted in a public competition to designate 12 new and large scale Nature Improvement Areas



Case study 3 - integrated delivery



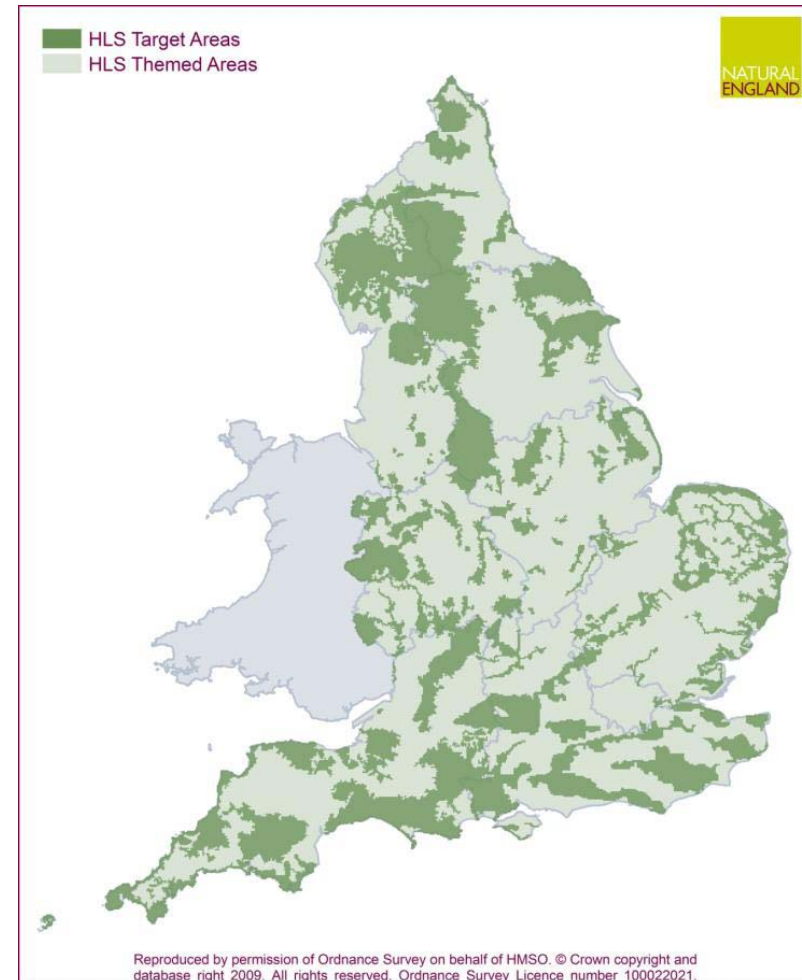
- Natural England needs to integrate needs of people, places and nature using wide range of environmental and socio-economic data
- We work in partnership with others and increasingly with local people and groups
- National Character Areas provide a spatial framework to communicate our priorities and develop joint priorities for local areas



Case study 4 – spatial targeting



- Multi-objective “Higher Level Scheme” but 80% of early agreements had a sole biodiversity focus
- Raw data mapped the relative priority for each of the five objectives
- Partners helped refine into areas that met targeting rules
- Final target areas covered 35% of England and identified where 80% of the budget should be allocated



How do we support Geographic Literacy?



- **Tools**
 - Desktop
 - Intranet and Internet
 - Field data capture solutions
- **Data**
 - Data catalogue of master data
 - Master data infrastructure
 - Much data also held locally or by individuals
- **Support services**
 - Training, advice and guidance
 - Direct support

- Data can still be very difficult to find and use
- Multiple tools and systems evolved over some years
- New requirements arising from INSPIRE Directive, political agenda, Natural Environment white paper
- Our GI teams have finite resource but the wider organisation may not have the skills needed
- Need to reduce costs
- Need to collaborate with local people, communities and partners

- So we have a strategy to develop our people, data, tools, knowledge and guidance so geography can be applied more effectively (and at a lower cost)
- Strategy objectives:
 - Use an integrated geographic view of the natural environment to target, monitor and communicate delivery
 - Develop our geographic skills and services
 - Use and share quality geographic data
 - Develop rationalised set of integrated GI systems

This year's action plan



- This year we have work underway to:
 - Develop Geography & Analysis skills
 - Reduce costs by reducing the number of different tools we use
 - Meet minimum legal requirements for data sharing
 - Reduce costs of licensing data
 - Make data easier to access internally and externally
 - Provide tools for capturing data in the field
 - Assess opportunities for using new technology

- Our people need to be geographically literate:
 - Who needs skills in applying geography and analysis?
 - What do they need to be competent in?
 - What skill level do they have and do they need?
 - What underpinning knowledge is required?
 - What learning & development opportunities are needed?

- Identifies six competence areas for using Geography
- Defines the outcomes from each competence
- Identifies three skill levels – starter, practitioner and expert
- Explains what we expect people to be able to do at each level for each competence area
- And what underpinning knowledge they need
- And (underway) how they might develop that knowledge

Example competence



AWARENESS		
Definition		
Understanding how Geography and Analysis can be applied to benefit the natural environment and how Natural England uses geography. This competence is relevant to all Natural England staff.		
Outcomes		
<p>Delivery of Natural England's strategic outcomes is supported by effective and appropriate use of geography & analysis</p> <p>The opportunities to apply geography to our work are considered at the earliest stages of planning</p> <p>Geography & analysis are applied consistently across the organisation</p> <p>Everyone in Natural England knows what geography & analysis services are available and how to access them</p>		
Levels		
Starter	Practitioner	Expert
<ul style="list-style-type: none"> Aware of benefits of applying geography & analysis and its relevance to their work Aware of the services that are available Understands how to access services and obtain support in using geography 	<ul style="list-style-type: none"> Good understanding of the application of geography & analysis to their work Practical experience of using the services Able to suggest improvements Understands and articulates the benefits 	<ul style="list-style-type: none"> Leads in the application of geography & analysis to the work of Natural England Extensive practical experience of using and developing services Articulates the benefits and convinces others
Underpinning Knowledge		
<ul style="list-style-type: none"> Geographical knowledge Awareness of the benefits of applying geography to our work Attended Introduction to Geography in Natural England Knowledge of geography & analysis services 	<ul style="list-style-type: none"> Knowledge of operational guidance Intranet GIS (WebMap) training Desktop (ArcGIS) training 	

Skills Framework



	Awareness	Knowledge & Application	Direction	Data Management	Service Management	Professional Analysis & Presentation
Executives	👍		👍👍			
Managers	👍	👍	👍			
Environmental Specialists	👍👍	👍👍	👍	👍		👍
Delivery Family roles	👍👍	👍👍	👍	👍		👍
Delivery Family roles in GI teams	👍👍👍	👍👍👍	👍👍👍	👍👍👍	👍👍👍	👍👍👍

👍 STARTER

👍👍 PRACTITIONER

👍👍👍 EXPERT

Skills Framework

	Awareness	Knowledge & Application	Direction	Data Management	Service Management	Professional Analysis & Presentation
Executives					UNDERPINNING KNOWLEDGE ✓Data Acquisition and Licensing ✓Data Architecture, Analysis and Design ✓Data Capture and Digitising ✓Data Formats ✓Data Governance ✓Data Quality Management ✓Data Security Management ✓Data Translation Tools (FME, TranspOSE) ✓Data Warehousing ✓Database Management ✓INSPIRE Data Specifications ✓Metadata Management ✓Open Data Formats and Standards ✓Reference and Master Data Management ✓Scanning	
Managers						
Environmental Specialists						
Delivery Family roles						
Delivery Family roles in GI teams						

STARTER

PRACTITIONER

EXPERT

Rationalising our GIS tools



- Intranet
 - WebMap – replaced 3 legacy systems
- Desktop
 - MapInfo
 - ArcView 3.2
 - ArcGIS 9.3.1 – target version
- Internet
 - MAGIC
 - Nature on the Map

Meeting legal requirements arising from INSPIRE



- Natural England has 11 datasets in the scope of Annex I
- Our datasets are published through a shared service
- You can access the service through www.data.gov.uk

A screenshot of the data.gov.uk website. The page header includes the HM Government logo and a "Log in or sign up" link. The main navigation bar contains links for Data, Apps, Ideas, Forum, Blogs, Consultation, Linked Data, Resources, and About. The search bar contains the text "What are you looking for?" and a "Search" button. Below the navigation bar, the "Search" section displays the search results for the query "Site of Special Scientific Interest". The results list two datasets: "Sunderland Sites of Special Scientific Interest" and "Natural England INSPIRE compliant metadata". The first result is from Sunderland City Council and the second is from the Department for Environment, Food and Rural Affairs (DEFRA). The right-hand side of the page shows a "Current search" box, a "Search found 20 items" notification, and a "Sort by" dropdown menu with options for Relevancy, Title, Type, Last updated, and Rating.

Reducing the cost of data licensing



Commercial Datasets	Cost per year
Ordnance Survey and Aerial Photography	£1.3m
Geology	£60k
Soils	£80k
Socio-demographic data	£20k
Rivers and height data	£25k
Flood map	<£5k
Marine data	£15k
LIDAR data and support	£45k

- Data therefore represents a significant investment and is a key asset for Natural England

Making data more accessible internally



- We are currently rolling out a new data infrastructure to support our migration to ArcGIS
 - 400 master datasets
 - National coverage of all datasets in ArcGIS format
 - Will make it simpler to access data in ArcGIS
 - MapInfo users will only have access to regional data to “encourage” them to migrate more quickly

Sharing our data with the outside world



- We recognise the importance of sharing data to enable others to deliver our outcomes
- Need to make data meaningful to local communities
- Publishing data is therefore a corporate target
- Legal requirements for sharing data (INSPIRE regulations)
- But also political drivers (Transparency, open data)
- Mechanisms
 - NE data download site
 - Interactive map services – MAGIC, Nature on the Map
 - www.data.gov.uk
 - My Environment?

Opportunities for using new technology



- Need to deliver our outcomes through and with others
- Need to engage new audiences
- Newer applications of geography often:
 - Are simpler to use
 - Available on mobile devices
 - Collaborative
 - Enable sharing of data and experiences
 - Less restricted in terms of licences or user numbers
 - And meet user expectations

Drivers for new applications

Political drivers	Government policy	Natural England drivers
Transparency - making sure government data is readily accessible to the citizen	Help people take more responsibility for their environment	Involving local communities in delivering environmental outcomes
Big Society and Localism – putting more power into people’s hands	Big Sustainability Summit - to scale up and rank government on sustainable development”	Power of volunteering and “walking for health”
Public Data Corporation – easily accessible public information	Providing ready access to natural environment data through the My Environment portal	Providing information about the local environment to communities in new ways that meet their needs
Greenest government ever – publishing government carbon emissions	Achieving and demonstrating sustainability in operations and procurement	Green awards to local councils for their work to protect the environment
Government Efficiency – reducing the cost of government	Living within the 30% reductions	Finding lower cost ways of delivering our outcomes

Some examples



Climate Change

Take narrated tours about the impacts of climate change.



Heroes of Google Earth

See how people are using Earth to change their world.



Hubble Telescope

Browse these or fly to them



Favourite Places



Ancient Rome

Fly to Ancient Rome in 3D and see how it looked in AD 320.



UNESCO

Take a virtual walk around natural and cultural landmarks.



Liquid Galaxy

Build your own environment.

OpenStreetMap
The Free Wiki World Map

Search [Where am I?](#)
Go

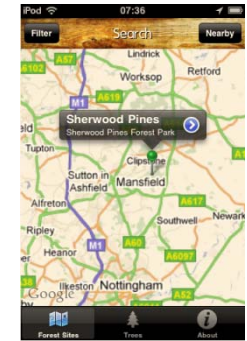
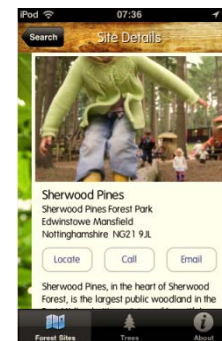
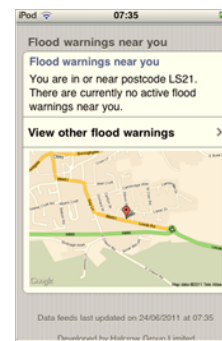
examples: "Albmar", "Regent Street, Cambridge", "CB2 5AG", or "post offices near Lunen" [more examples](#).

OpenStreetMap is a free editable map of the whole world. It is made by people like you. OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth. OpenStreetMap's hosting is kindly supported by the [UCL VR Centre](#), [Imperial College London](#) and [ByteMark Hosting](#). Other supporters of the project are listed in the [wiki](#).

Help Centre
Documentation
Copyright & License
Community Blogs
Foundation
Map Key

View Edit History Export GPS Traces User Diaries [log in](#) | [sign up](#)

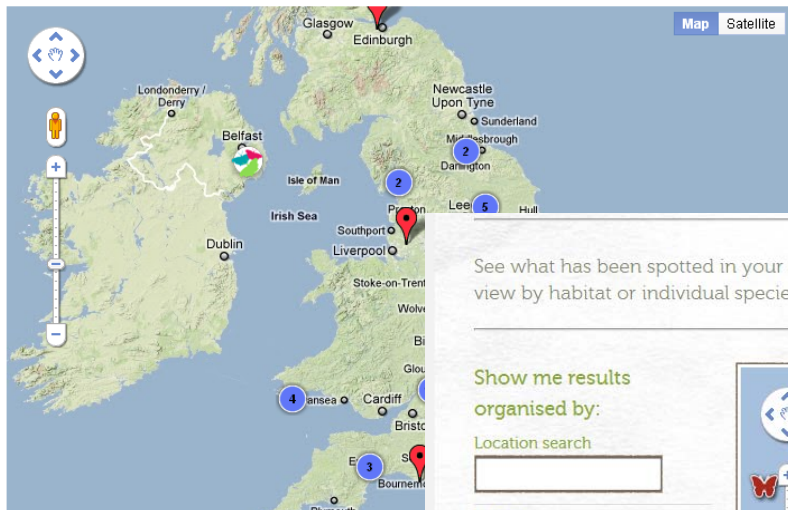
<http://www.google.com/earth/explore/showcase/>



Some more examples

Explore the map to find a butterfly hotspot near you

Use the checkboxes to switch on and off map pins Top 10 spots Your sightings



28688 counts have been completed.

See what has been spotted in your area or view by habitat or individual species.

Show me results organised by:

Location search

Habitat

Garden

Species

All

Date from

1 Jul

Date to

31 Aug

Show me the results



Location of the WCBS squares-
360 BTO BBS squares (blue) and
403 Butterfly Conservation squares (green)

- Applications like this have the potential to meet our needs to:
 - Support localism by publishing local information and providing mechanisms for individuals to contribute
 - Improve customer service through offering new channels, tailored services, alerts etc
 - Monitor our delivery by using others to collect information about outcomes in different areas
 - Get people outside by showing the opportunities in their local areas and what they can do when they get there
 - Meet the demands from Big Society?

- Very much depend on what people and communities need and want but could include:
 - Publishing our data in suitable formats for others to re-use under the Open Government Licence
 - Offering encouragement to others to develop applications using our data to deliver better environmental outcomes
 - Actively seeking partnerships to take some specific developments forward
- We are keen to talk to others with similar interests



Questions?