

Mineral Extraction and Climate Change Adaptation and Resilience *“its in your nature”*

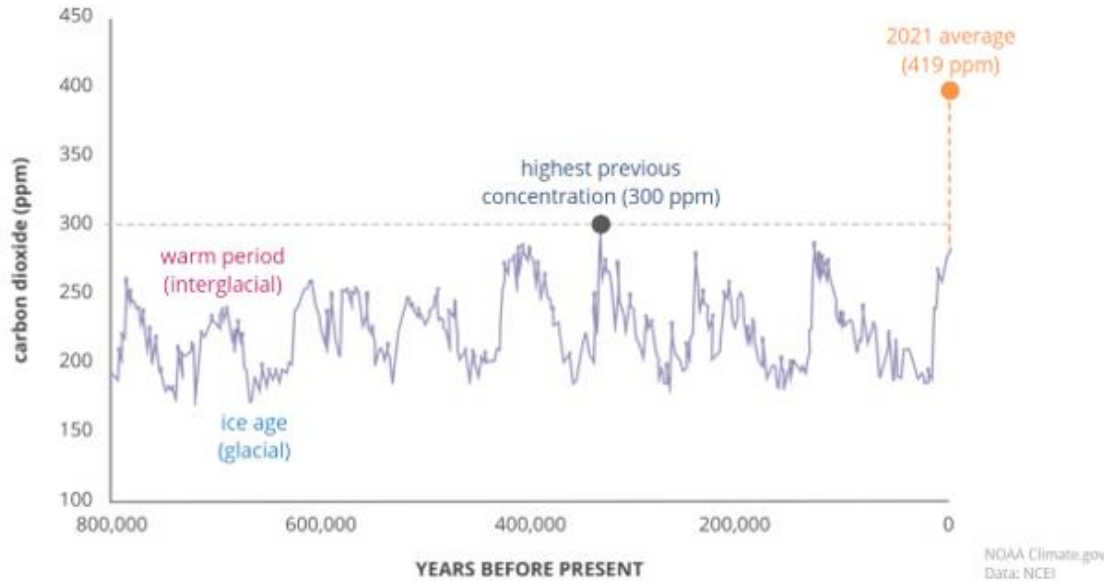


Jim Davies,
Senior Advisor, Local Nature Recovery Strategies
Environment Agency

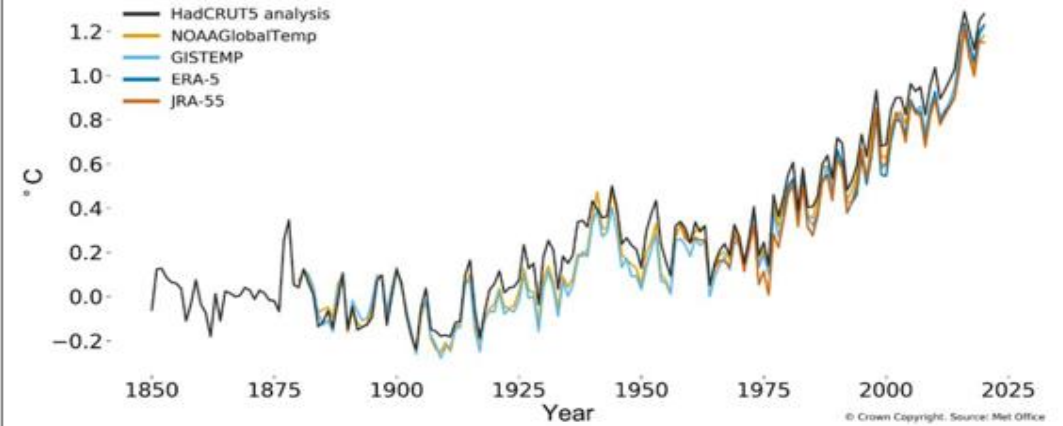
Living in the Anthropocene

Level of CO2 Over Time

CARBON DIOXIDE OVER 800,000 YEARS



Global mean temperature difference from 1850-1900 (°C)



1.6 Five reconstructions of the global mean surface (land and ocean) temperature from 1850 to 2020, expressed as the annual mean difference from the average temperature for 1850-1900. Source: Met Office.



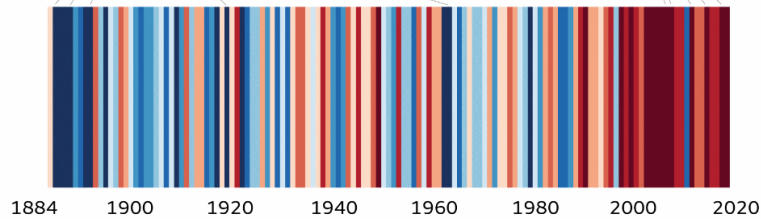
UK annual temperature

5 coolest years

1892, 1888, 1885, 1963, 1919

5 warmest years

2014, 2006, 2011, 2007, 2017

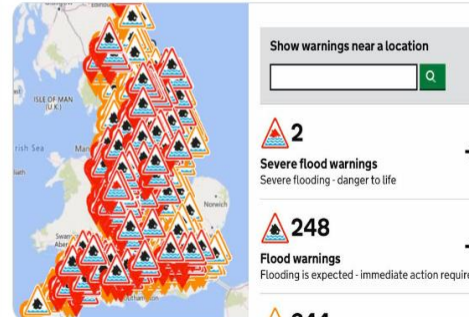


- Beginning with the hottest, the top ten warmest years in sequence are: 2014; 2006; 2011; 2007; 2017; 2003; 2018; 2004; 2002; and 2005.
- Beginning with the coldest, the top ten coolest years in sequence are: 1892; 1888; 1885; 1963; 1919; 1886; 1917; 1909; 1887; and 1962



John Curtin
@johncurtinEA

BREAKING: we now have the most flood warnings and alerts in force (594) in England than any other day on record. Stay safe and updated here [...od-warning-information.service.gov.uk/warnings](https://www.metoffice.gov.uk/warnings)

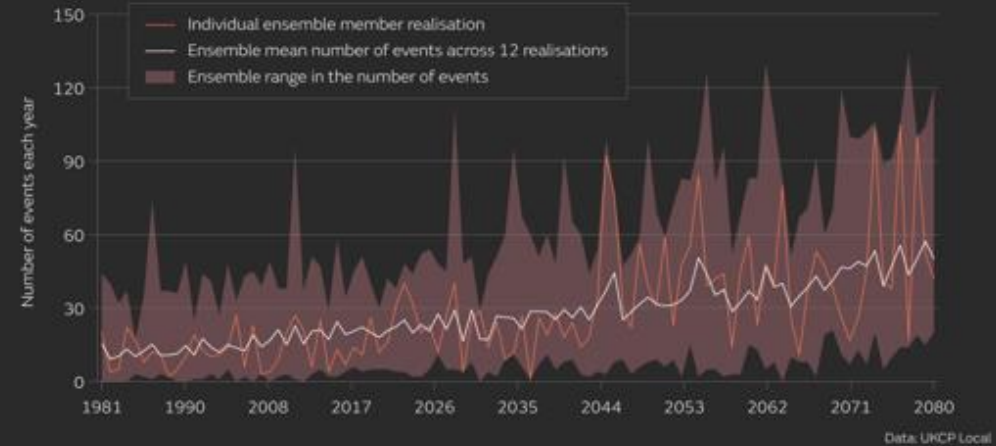


Environment Agency

11:49 am · 16 Feb 2020 · Twitter for iPhone



Number of events each year across the UK when 20 mm/hour or more of rain is recorded



What it means in terms of actual Risk – Risks from Natural Hazards at Hazardous Installations (Natech)



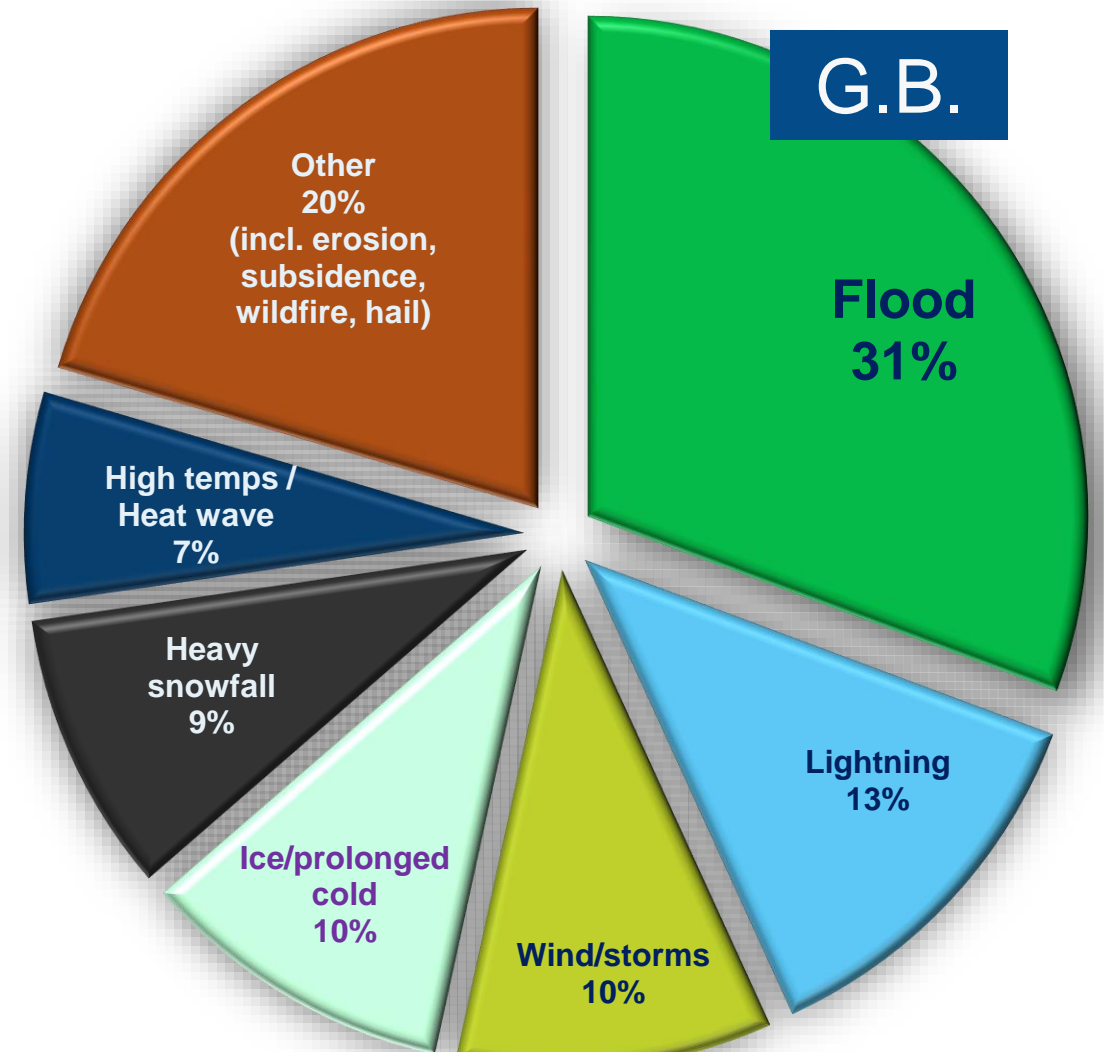
“..even if the world was to stop tonight all its carbon emissions, the effects of the emissions that have already happened will continue to make themselves felt for decades.

....and we're already seeing evidence of more frequent and more:

extreme flooding, faster and more extreme coastal erosion; more frequent and more extreme droughts, water shortages and wildfires; and potentially permanent damage to habitats, plants, wildlife and cultural heritage.

Sir James Bevan – (former) Environment Agency Chief Exec

(to the Whitehall and Industry Group on 16 March 2021)



**Extreme weather threats to G.B. establishments
(Survey by CDOIF, 2021)**

Climate change: risk assessment and adaptation planning in your management system

Climate Change will impact on your sectors current and future operations, your markets, supply lines, the regulatory system as well as socio-environmental-political and economic environment.

*Our Guidance explains how to **integrate climate change adaptation** into your management system. You will need to consider:*

- *the risks to your business from climate change*
- *the risks your business creates due to climate change*
- *how to embed controls*

Over the coming decades we will face **an increased risk of climate change impacts.**

Planning for this will help you to:

- *remain in **compliance** with your environmental permit, other obligations and regulations*
- ***minimise your impact** on the environment during an extreme weather event and the event's **impact on your operations**, either through accidental release or abnormal operation*
- ***improve your resilience** and business continuity by avoiding unplanned start-ups, shutdowns and other business interruptions*



Sector Guidance - Minerals

Guidance

Cement, lime and minerals: examples for your adapting to climate change risk assessment

Updated 17 May 2023

Daily extreme rainfall

- Daily rainfall intensity could increase by up to 20% on today's values.

Impact 3

Surface water run off systems need to be clear and account for increased flows.

The mitigation for this could include:

- *redoing capacity calculations to make sure trigger points are clear and action plans can be instigated*
- *increasing the surface water system capacity, including drainage pumps*
- *considering the use of retention systems; ponds, tanks, SUDs to reduce flows*

Of those submitted over the last 12 months contained responses indicating that some alternative thinking or design was adopted

For example, **increases in:**

- planned or built surface water drainage systems and attenuation facilities
- on-site surface water storage to reduce flooding and provide additional water for dust suppression in drier summers
- greater capacity at on-site effluent treatment plants and leachate lagoons to accommodate anticipated increased flows

Guidance

Landfill for hazardous or non-hazardous waste: examples for your adapting to climate change risk assessment

Updated 17 May 2023

Planning and Permitting (2012) – Refresh.

- Planning and Permitting Key issue raised with Industry, Planners and Elected Members.
- Climate Change Adaptation measures need to be identified early in the Planning and Permitting Process to avoid delay, reduce duplication etc.
- Will keep the advice to ‘twin-track’ or align both processes as much as possible.
- Environment Agency beginning a refresh of the Guidance for developments requiring planning permission and environmental permits.
- Currently reviewing our external guidance on the planning and permitting interface and are looking at opportunities to include a new minerals-related sector-specific guidance note as part of this for the first time.
- We hope to consult on this guidance in the summer and include Industry/POS etc. to help shape it



Guidance for developments requiring planning permission and environmental permits

October 2012

Key Issue - Water Resources

Water is about the most important thing there is: it's essential for life and everything else.....

.....So you'd better make sure you have the right amount, of the right quality, in the right places.

Sir James Bevan, to the All Party Parliamentary Group on Water, 3 March 2022

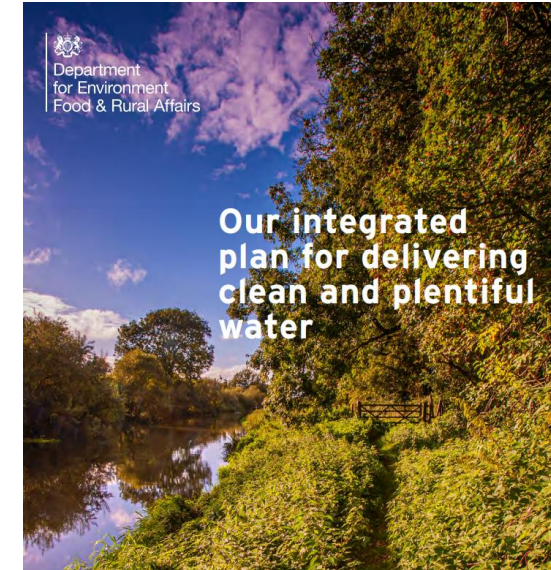
Water Resources are coming under increasing pressure and these are taken into account with our Licencing Strategies.

- **Population Growth,**
- **Agriculture,**
- **Industry,**
- **Nature**
- **Climate Change**

Water Abstraction is coming into the Environment Permitting Regime and we are currently waiting on Defra to obtain Ministerial sign off and publish the government response to the consultation that closed in December 2021.

Defra Water Plan for Water: our integrated plan for delivering clean and plentiful water (April 2023)

- The Plan for Water will deliver clean and plentiful water – a healthy water environment, and a sustainable supply of water for people, businesses and nature.
- The Plan is built around a catchment approach to managing the water system.

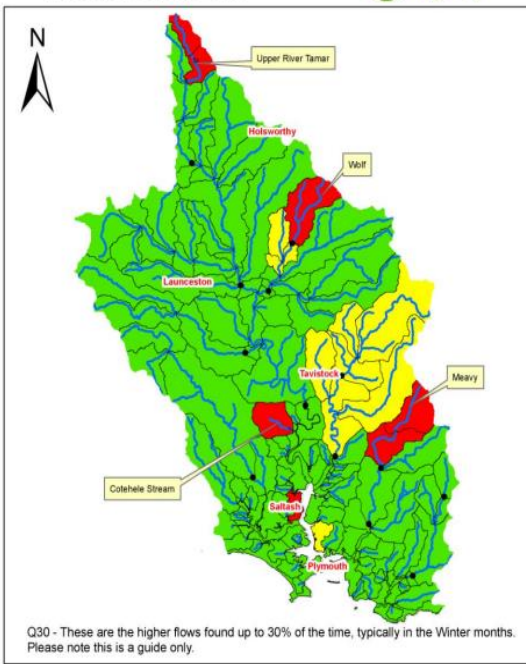


Catchment Abstraction Management Strategies

Tamar WFD Management Area Abstraction Licensing Strategy (Area of Minerals Extraction)

- River flows change naturally throughout the year, so we want to protect flow variability in our rivers from low to high flow conditions.
- Resource availability is calculated at four different flows, **Q95 (lowest)**, Q70, Q50 and **Q30 (highest)**

Tamar WFD Management Area
Resource Colours Q30



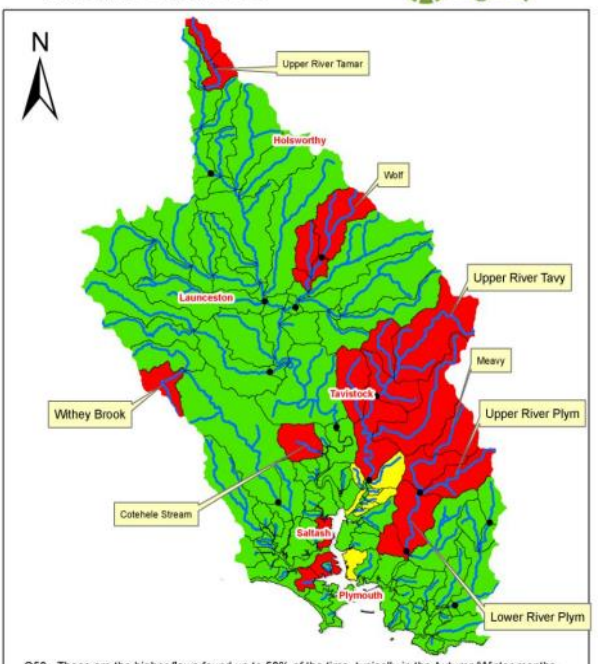
Legend

- Assessment Points
 - WFD Waterbodies
 - Rivers
- CAMS Colours**
- Green Water available for licensing
 - Yellow Restricted water available for licensing
 - Red Water not available for licensing

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Creation date 25 July 2012

Tamar WFD Management Area
Resource Colours Q50



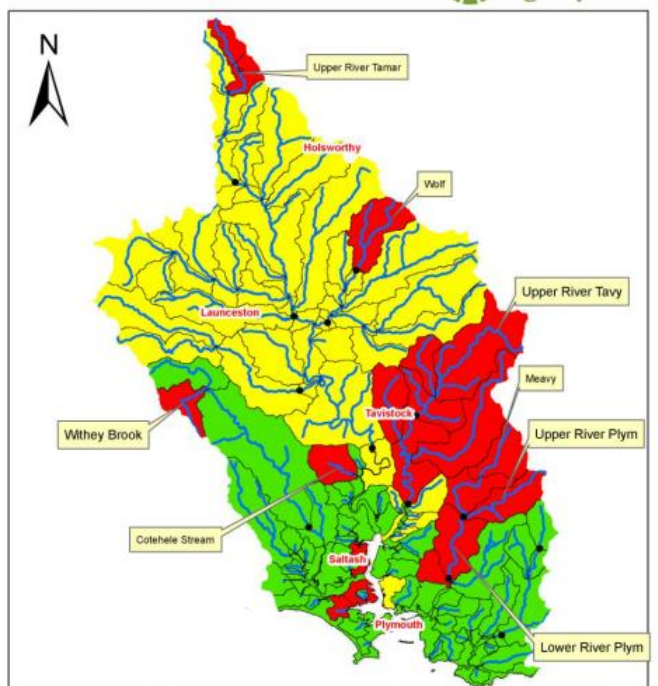
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Creation date 25 July 2012

Tamar WFD Management Area
Resource Colours Q70



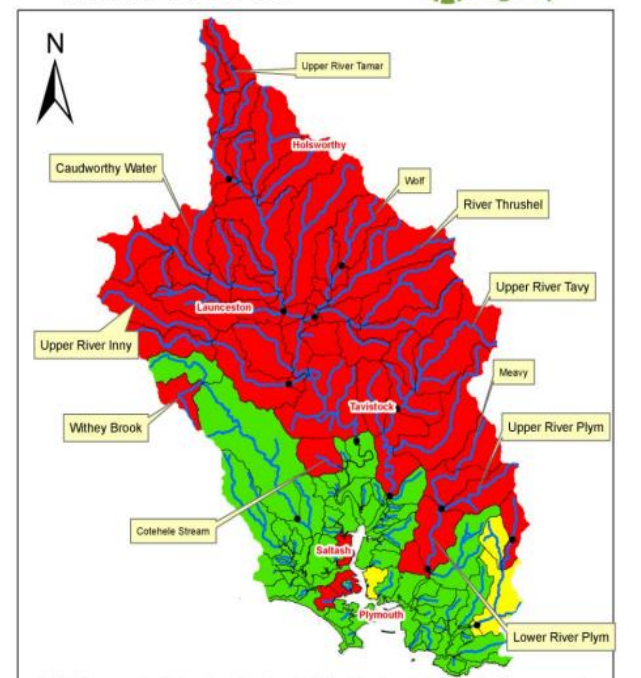
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Creation date 25 July 2012

Tamar WFD Management Area
Resource Colours Q95



Legend

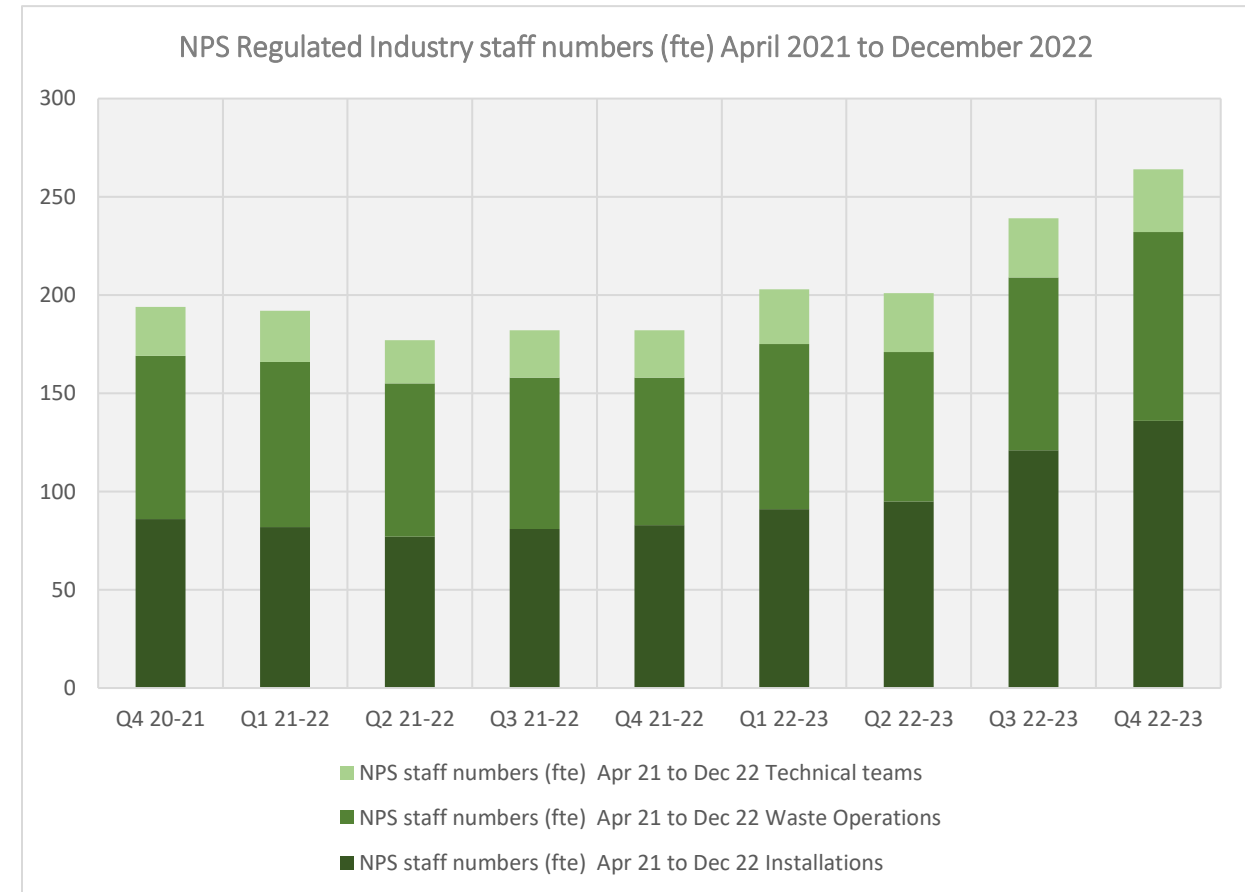
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Creation date 25 July 2012

National Permitting Service Update

- Significant recruitment during 2022
- A challenging jobs market.
- Dealing with high turnover & churn.
- Adapted and innovated our recruitment and offer.
- Future regular campaigns.
- Focus on training and utilisation
- Agreed framework for consultancy resource (up to 20 additional specialists)



National Permitting Service

The EA National Permitting Service (NPS) delivers circa 15,000 transactions per year. Environmental permitting is diverse and complex, at the heart of regulation, requiring a range of specialists to complete and delivering outcomes across Defra, BEIS and other departments.

There is an NPS team now focused on landfill and extraction to create a base of specialist.

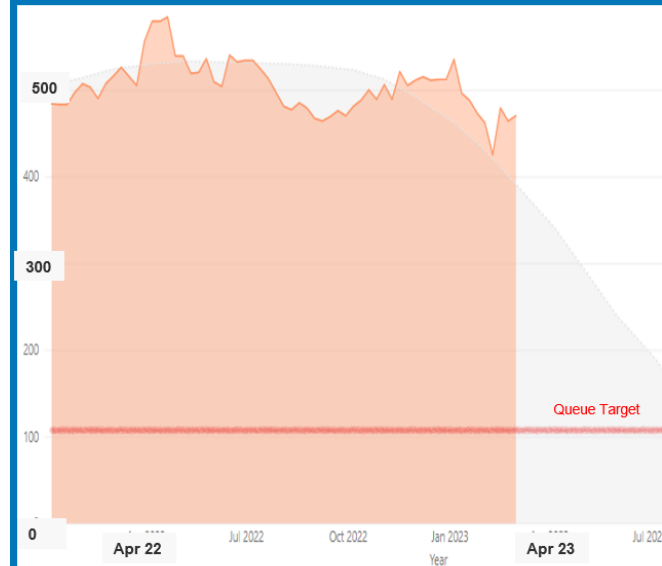
Working with industry to improve application quality – Development of an Industry Code of Practice.

Using permit decision panels at the start of permit determination.

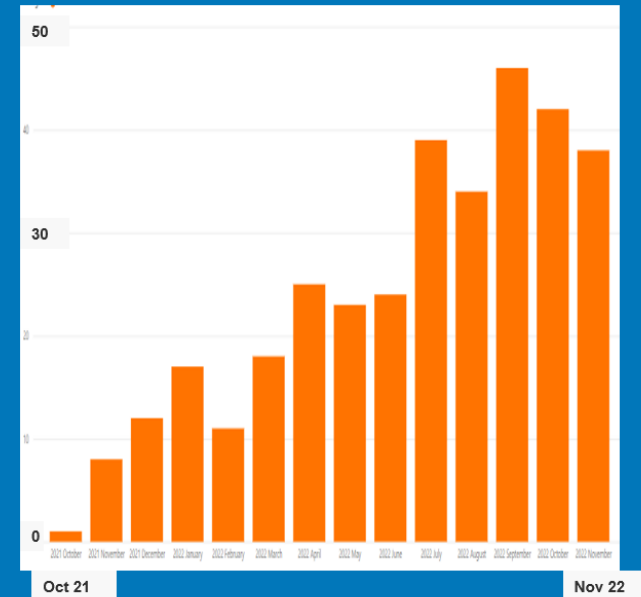
Waste Deposit /Geoscience Team Oil and Gas, landfill, Mining and Deposit recovery Agile working initiatives

Recovery graphs – waste & landfill

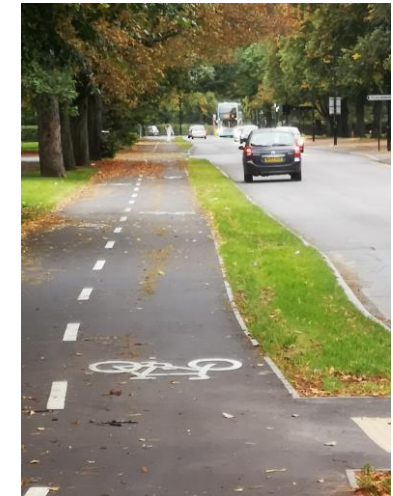
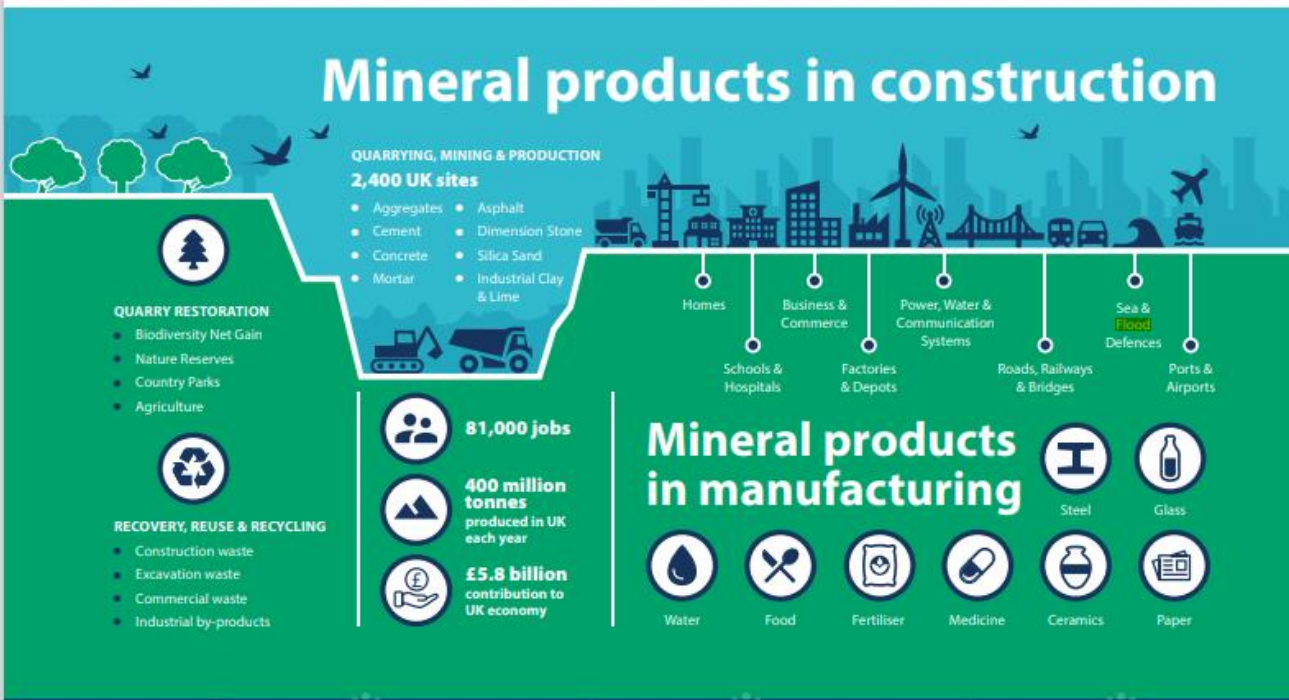
Apps on queue



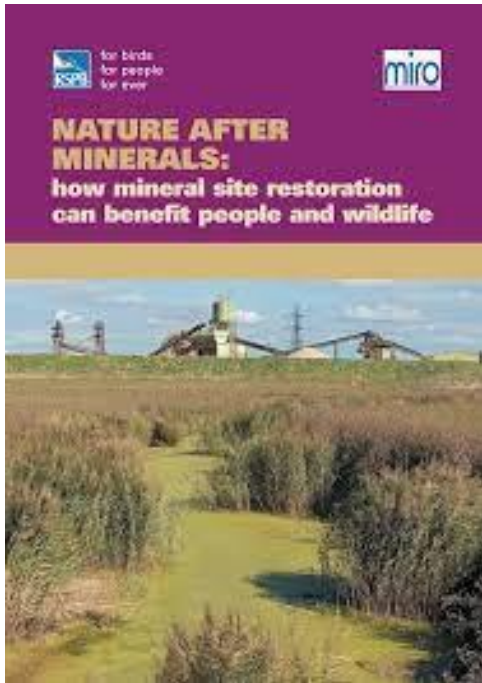
Queue age profile



Mitigation and Adaptation



Climate Adaptation – “*its in your Nature.....*”



Nature has extraordinary powers to lock up carbon dioxide; to provide clean air and water; to help protect us from flooding and extreme weather; and to provide the food which sustains us.

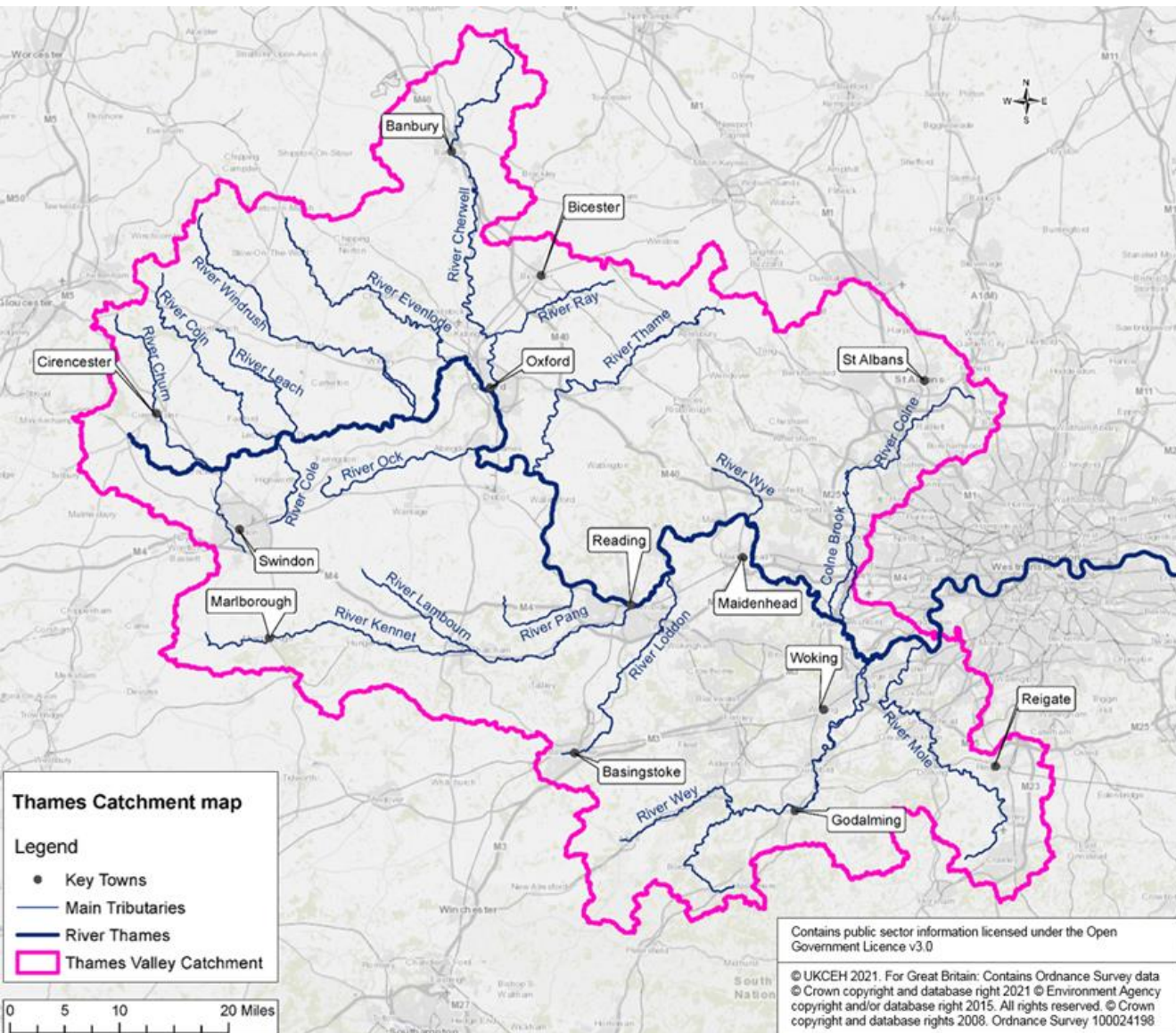
Sir David Attenborough

“Nature is our biggest ally in poverty reduction and achieving human welfare.”

Tony Juniper CBE, Chair of Natural England



Thames Valley Flood Catchment Integration



Coggeshall, Feering & Kelvedon Flood Alleviation



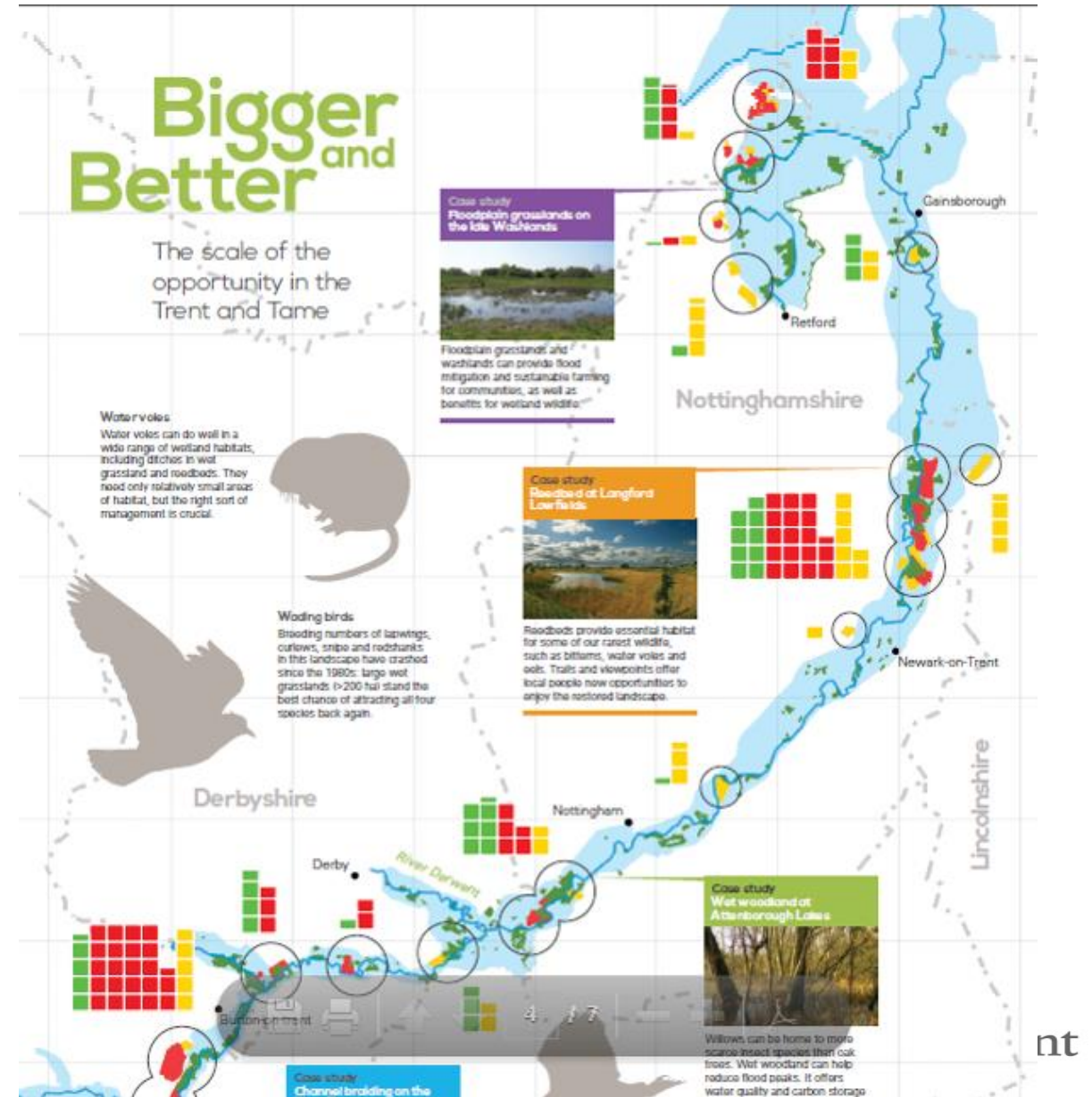
- **Flooding in Villages 2001, 2012, 2014**
- 3.02 million m³
- 13m tonnes S&G
- 20Yrs (West to East)
- Dam – Year 6
- £1 million Environment Agency, up to £8 million in direct funding contributions through the **Blackwater Aggregates partnership**.
- £25m scheme (conventional funding)
- Trees/Biodiversity Gain/Footpaths
- **Flood Protection**
 - **203 residential properties**
 - **15 business**

Grenmass (NL) : The Border Meuse Project

- Objective 1 – Flood protection: a safety level of 1 in 250 years by 2017
- Objective 2 – Nature conservation: reconnect the River.
- Objective 3 – Gravel extraction: delivering more than 35 million tonnes by 2023

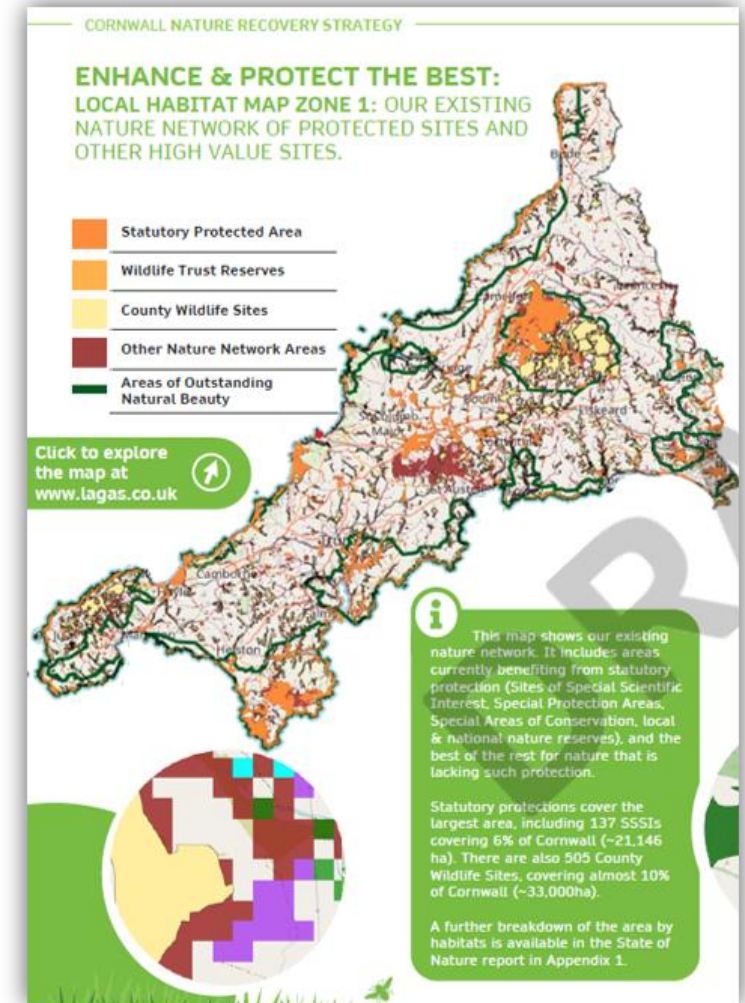
Strategic Approach to Restoration

- **Climate Resilient**
- Adaptation in Restoration
- Integrated Water Management
 - Flood
 - Water Resources
 - Water Quality
- Integrated Environment Approach
- Net Zero/Carbon
- Multiple Benefits (socio-economic)
- Opportunities – Land Owners, RSPB, WLTs,
 - Trent/Tame
 - Oxford Cambridge Pan Regional,
 - Bovey Basin
- **Nature Recovery Network**
- **Local Nature Recovery Strategies**

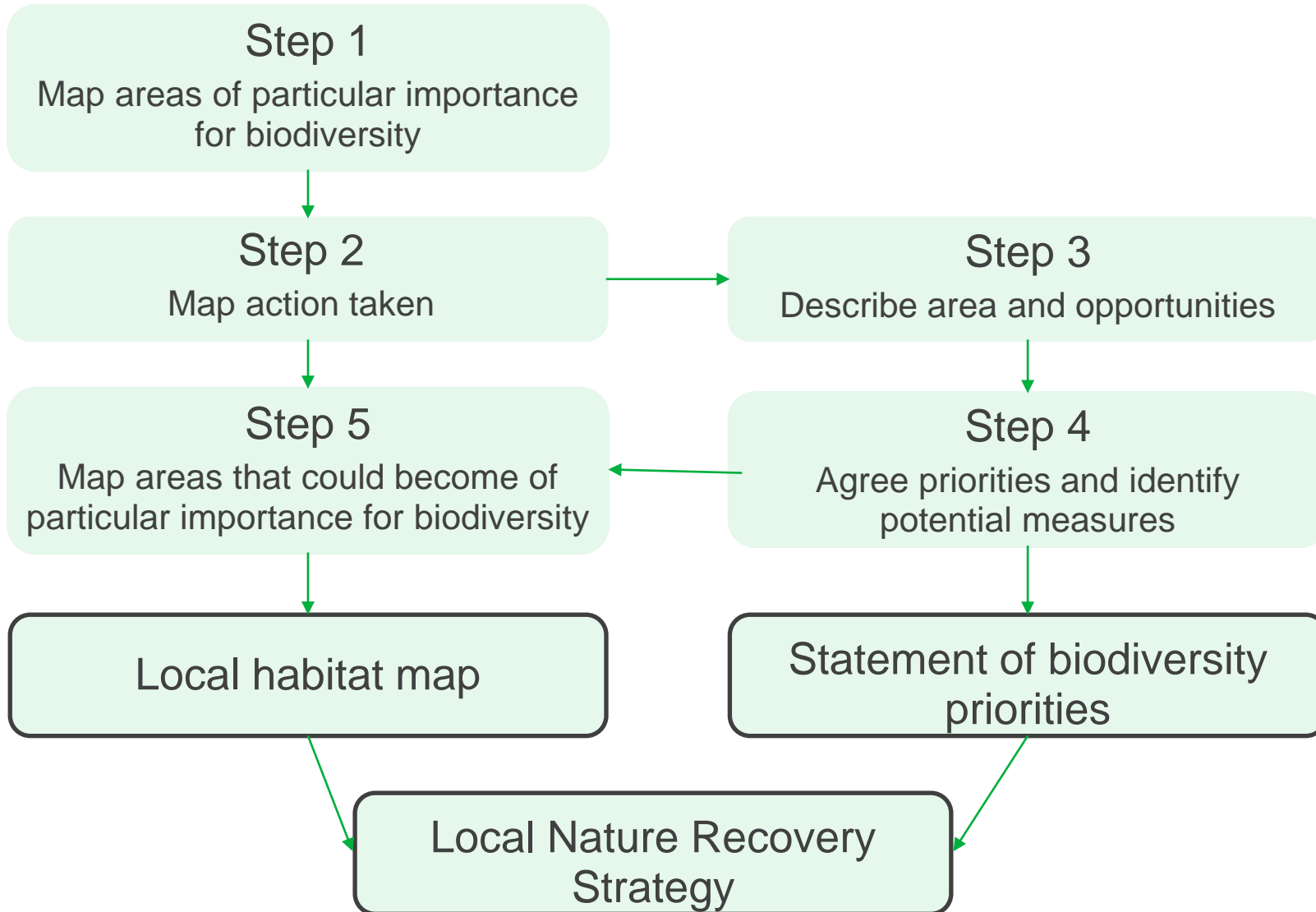


Local Nature Recovery Strategies

- New England-wide system of spatial strategies for nature **Required by the Environment Act 2021**
- Support the creation of the **Nature Recovery Network**
“could be designed to bring a wide range of additional benefits: greater public enjoyment; pollination; carbon capture; water quality improvements and flood management.”
- LNRS Regulations and Statutory Guidance published March 2023.
- The overall responsibility for producing LNRS rests with **the 'Responsible Authority'** (County Councils, Unitaries (MPAs) and some Combined Authorities)
- **Natural England** leading support to all Responsible Authorities (FC/EA supporting)
- **48 LNRSs** covering the whole of England.
- Strategic Plans for Nature – Strategic Plans for Adaptation.



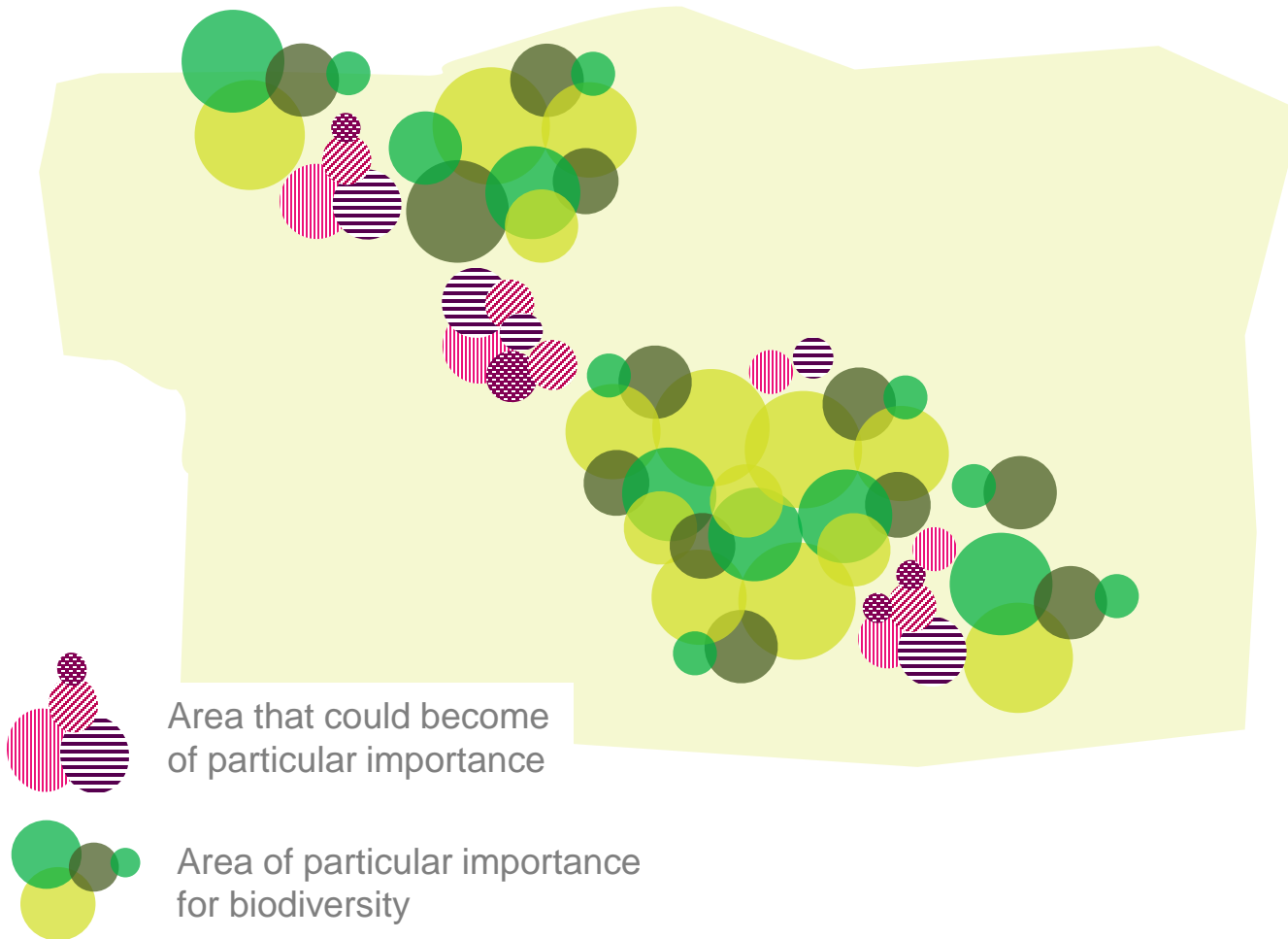
How will it work in practice?



- Starting from April 2023
- Expected to take 18 months
- *LNRS in all areas by April 2025*
- *Reviewed after 3 to 10yrs*
- *Deliverable*
- *Inform Local Plans, Minerals Plans.*

- Detailed planning guidance on LNRSs to follow soon.

Step 5: Map areas that could become of particular importance



- LNRS should be used to help inform how and where biodiversity net gain should be delivered, (identified sites)
- LNRS can be used to **target offsite BNG**
- The 'strategic significance' score is a landscape scale factor, which gives **additional unit value to habitats that are located in preferred locations for biodiversity and other environmental objectives**
- Strategic Approach to Restoration on a Catchment, Cross County Council Area.
- Promoting Integrated Water Management
- Climate Adaptation/resilience.
- **LNRS is the Strategic component of BNG**



Thank you



Links.

Permitting Guidance

<https://www.gov.uk/guidance/climate-change-risk-assessment-and-adaptation-planning-in-your-management-system>

<https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/cement-lime-and-minerals-examples-for-your-adapting-to-climate-change-risk-assessment>

<https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/landfill-for-hazardous-or-non-hazardous-waste-examples-for-your-adapting-to-climate-change-risk-assessment>

Water Plan for England –

<https://www.gov.uk/government/publications/plan-for-water-our-integrated-plan-for-delivering-clean-and-plentiful-water/plan-for-water-our-integrated-plan-for-delivering-clean-and-plentiful-water>

Local Nature Recovery Strategies

<https://www.gov.uk/government/publications/local-nature-recovery-strategy-what-to-include>

Nature After Minerals

<https://afterminerals.com/>