



# Realising nature's value in infrastructure: Yorkshire Water and National Grid

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**AECOM**

# This presentation

## – Introduction

- Overview of AECOM
- Introduction to Natural Capital
- Overview of the Natural Capital Protocol

## – Case Study: Yorkshire Water

- High level application of the whole Protocol

## – Case Study: National Grid

- More focused application of some of the key steps



## Who we are

- AECOM is a global provider of professional technical and management support services with around 90,000 employees working in the environment, energy, water, and transportation sectors
- AECOM's **Policy and Appraisal team** is a specialist research, assessment, and evaluation team working in:
  - Natural capital and ecosystem services
  - Spatial and land use planning
  - Climate change and climate finance
  - Social impact and social capital



# Natural capital and ecosystem services



*“The world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this **natural capital** that humans derive a wide range of services, often called **ecosystem services**, which make human life possible”*

World Forum on Natural Capital

**AECOM**

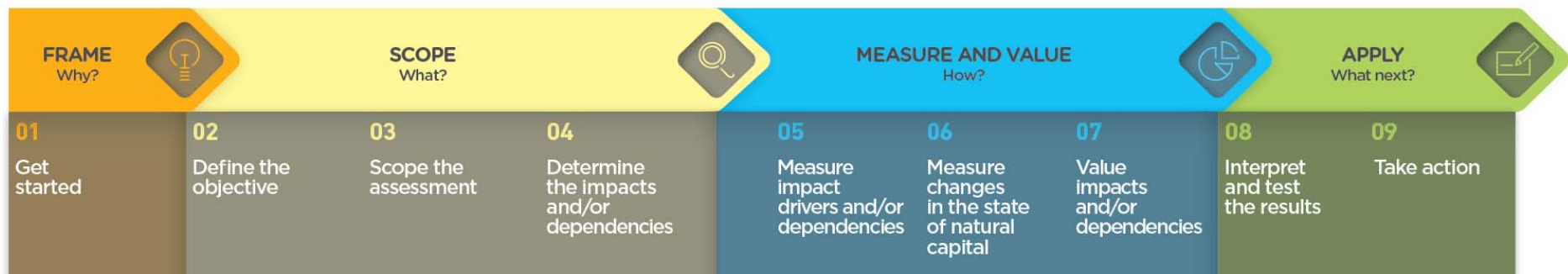
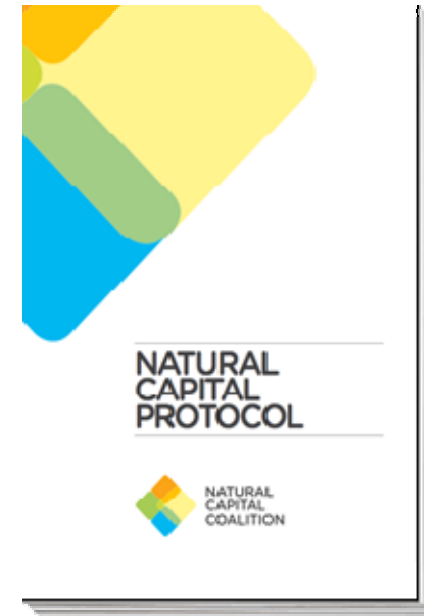
## Natural capital experience

- We work on a range of natural capital projects for government, business, NGOs, and international agencies
- We are part of the EU Business@Biodiversity Platform, CIWEM's Natural Capital Network, the Sustainable Leaders Forum, and the Scottish Forum on Natural Capital
- We also manage the Natural Capital Coalition's Operations Group: a forum for businesses to learn and share good practice in terms of approaches for incorporating natural capital into decision-making



# This presentation

- Focus of this presentation is on application of the Natural Capital Protocol (NCP)
- A standardised framework to identify, measure, and value impacts and dependencies on natural capital
- Case studies from two companies who have used the NCP to realise the benefits that natural capital can provide to business



The background is a solid green color with several thin white lines crisscrossing across it, creating a geometric pattern of triangles and quadrilaterals.

# Realising nature's value in infrastructure

## Case study: Yorkshire Water

## Overview of Yorkshire Water

- Water and waste water service company in northern England with over 5 million customers
- Natural capital approach consistent with 6 strategic objectives
- Leaders in sustainability:
  - Developed a corporate Environmental Profit and Loss Account
  - Undertaking a ‘Total Impact and Value Assessment’
  - Commissioned AECOM to pilot the draft Natural Capital Protocol

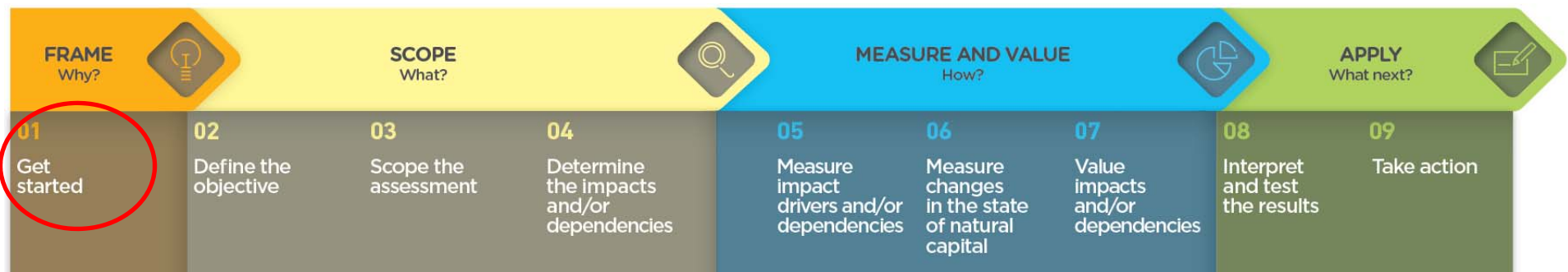




## Step 01. Get started

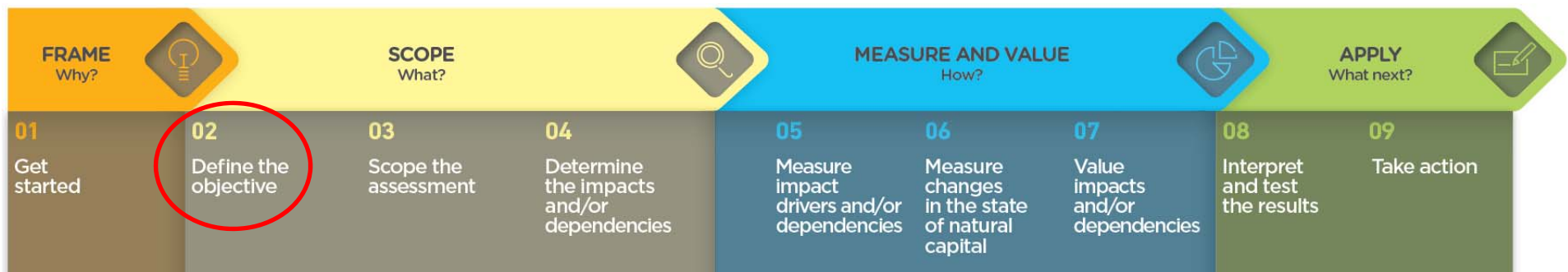
### Why would a UK water company incorporate natural capital approaches in decision-making?

- One of five capitals that underpin business performance
- Inform decision-making and risk management:
  - UK environmental and financial regulators expect to see natural capital and ecosystem services considered in decision-making
- Powerful communication tool for internal and external stakeholders
- Demonstrate leadership and broader value created



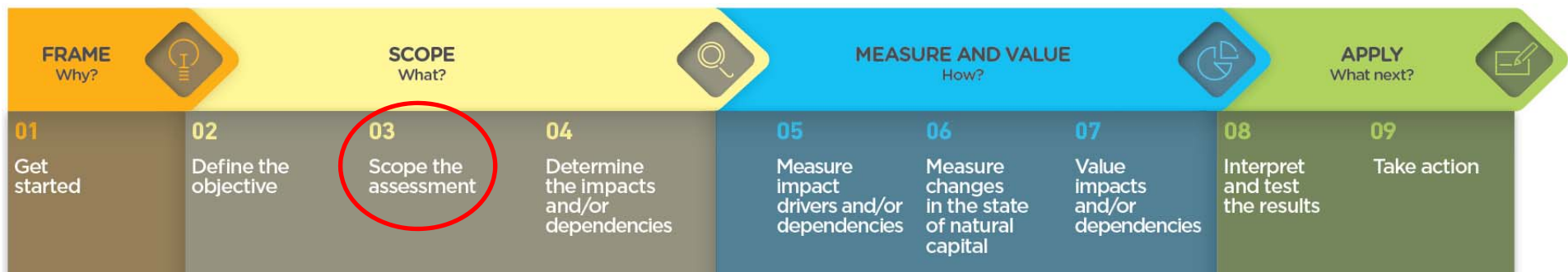
## Step 02. Define the objective

- Yorkshire Water wanted to:
  - Understand how the natural capital approach works
  - Determine how it might differ from existing approaches
  - Develop a case study for communication
- Pilot the Protocol on one of the company’s wastewater treatment sites (Rivelin)
- Full case study is available on Yorkshire Water and NCC websites



## Step 03. Scope the assessment

- Rivelin is one of the primary water treatment plants supplying Sheffield
- Currently undergoing a £24m capital upgrade
- A number of high level options were considered before two main solutions were assessed in more detail
- Pilot retrospectively evaluated the natural capital impact of the two upgrade solutions ('notional' and 'chosen')





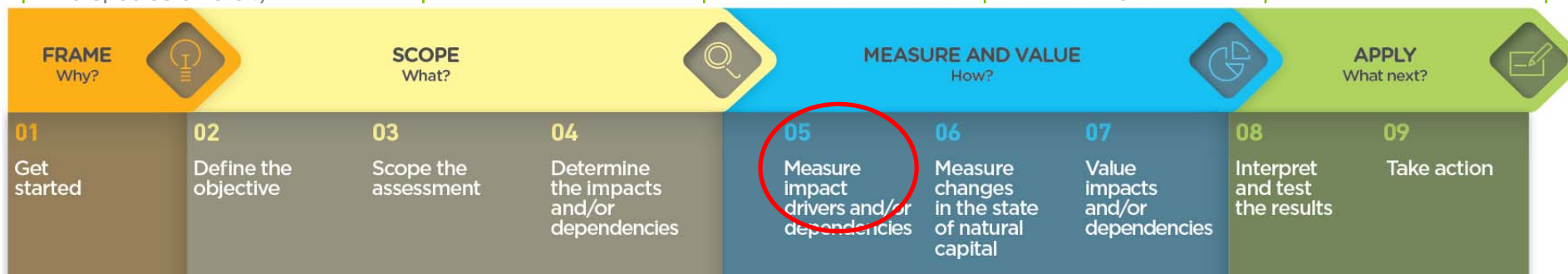
# Step 04. Determine the impacts and/or dependencies



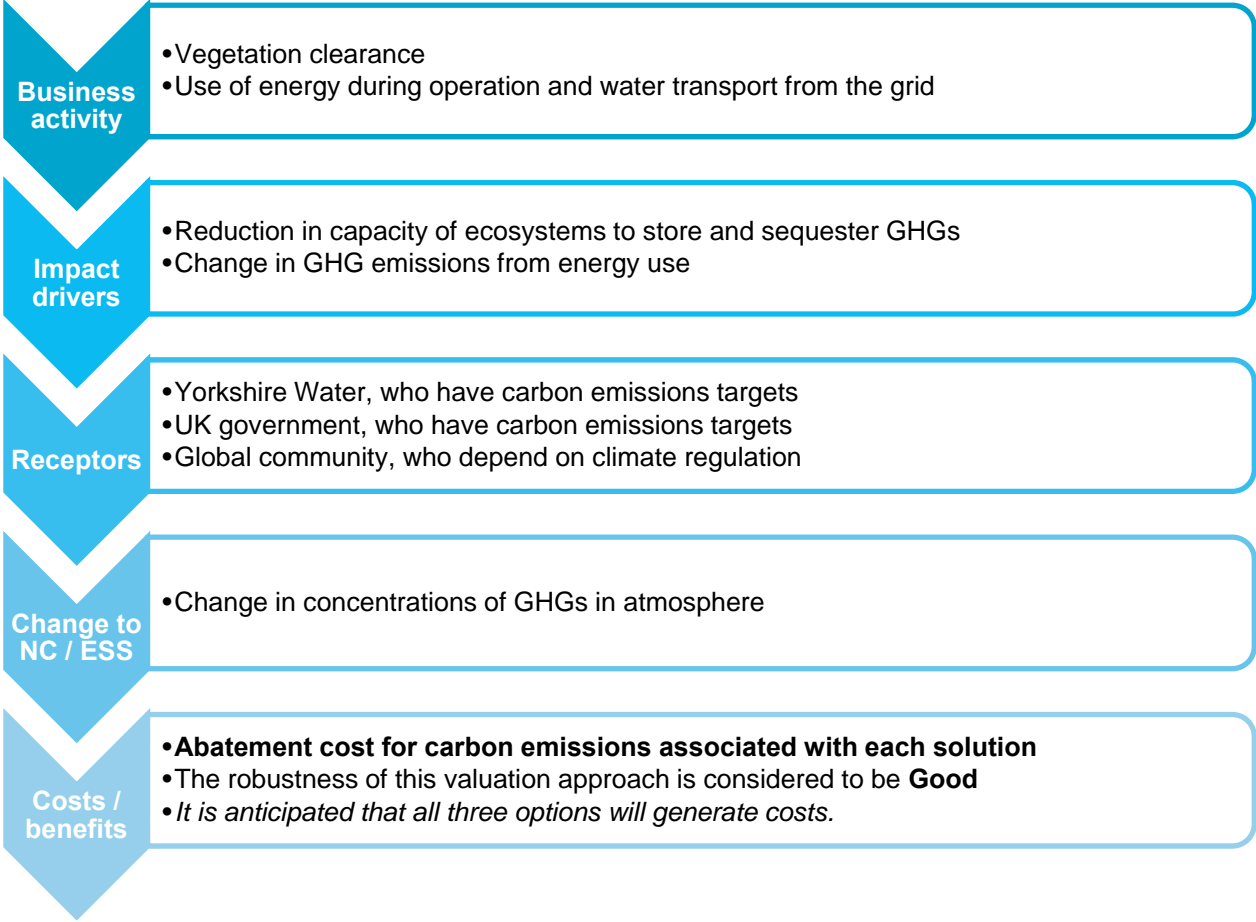


# Step 05. Measure impact drivers and/or dependencies

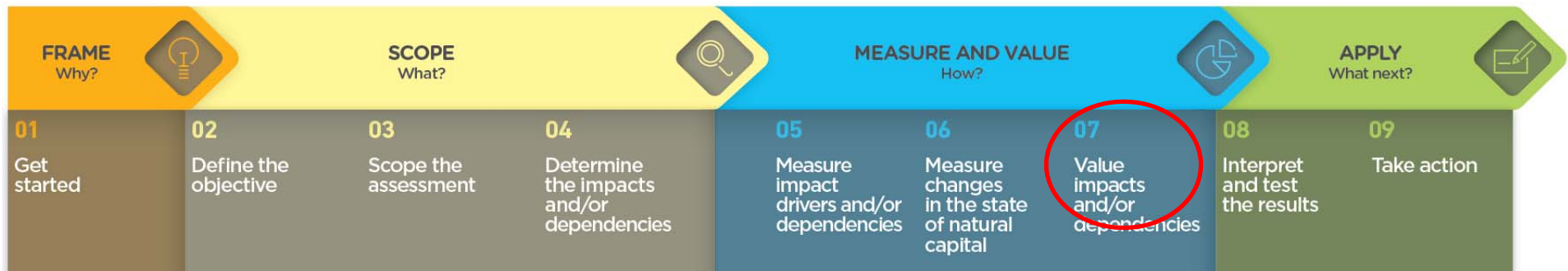
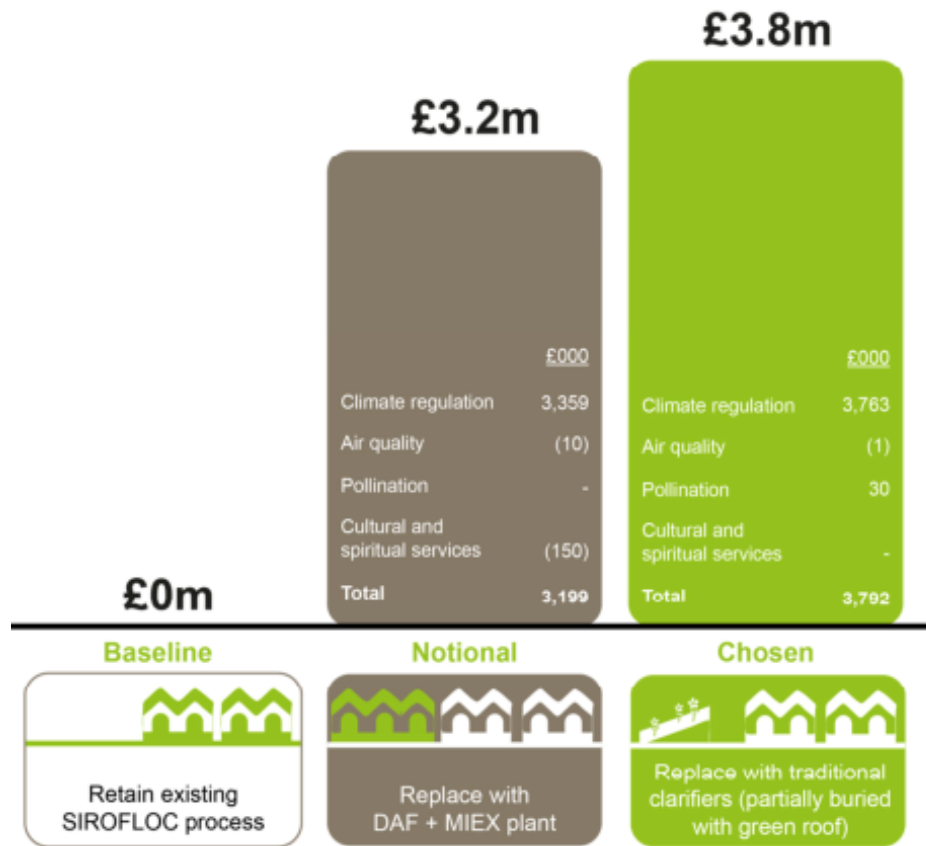
Ecosystem Service	Estimated Impact Relative to Baseline		Materiality	Priority for inclusion in NCA
	Notional Solution	Chosen Solution		
Crops	-	-	Low	✗
Livestock and fodder	-	-	Low	✗
Capture fisheries	-	-	Low	✗
Aquaculture	-	-	Low	✗
Wild foods	-	-	Low	✗
Timber	-	-	Low	✗
Energy	-	-	Low	✗
Biochemicals and medicine	-	-	Low	✗
Water supply	-	-	Low	✗
Fibre	-	-	Low	✗
Genetic resources	-	-	Low	✗
Local climate regulation	-	-	Low	✗
<b>Global climate regulation</b>	↑	↑↑	<b>High</b>	✓
<b>Air quality regulation</b>	↓	↓	<b>Medium</b>	✓
Hazard regulation	-	-	Low	✗
Water quality regulation	-	-	Low	✗
<b>Pollination</b>	-	↑	<b>Medium</b>	✓
Disease and pest control	-	-	Low	✗
Noise regulation	-	-	Low	✗
Soil quality regulation	-	-	Low	✗
Tourism and recreation values	-	-	Low	✗
<b>Cultural and spiritual values</b>	↓↓	-	<b>Medium</b>	✓
Scientific and education values	-	-	Low	✗
Wild species diversity	-	-	Low	✗



# Step 06. Measure changes in the state of natural capital



# Step 07. Value impacts and/or dependencies



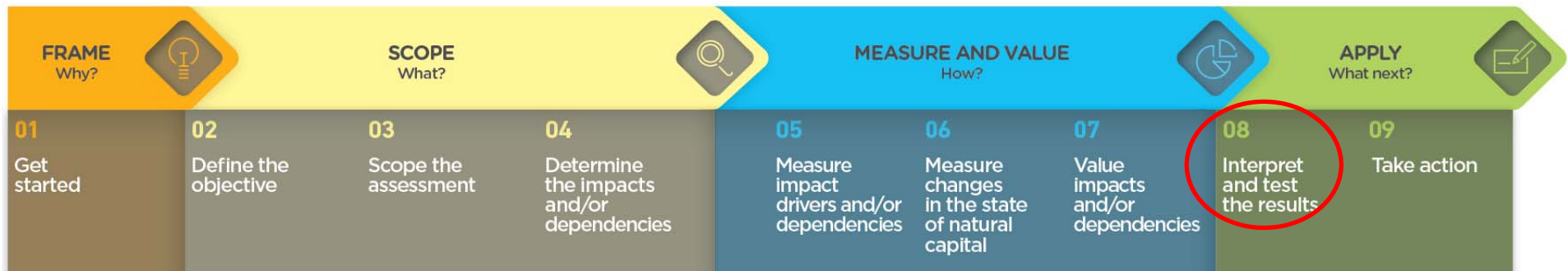
# Step 08. Interpret and test the results

## Opportunities

- Potential to enhance environmental and social benefits from capital investments
- Leads to informed operational decisions
- Can be an empowering engagement tool, internally and externally

## Challenges

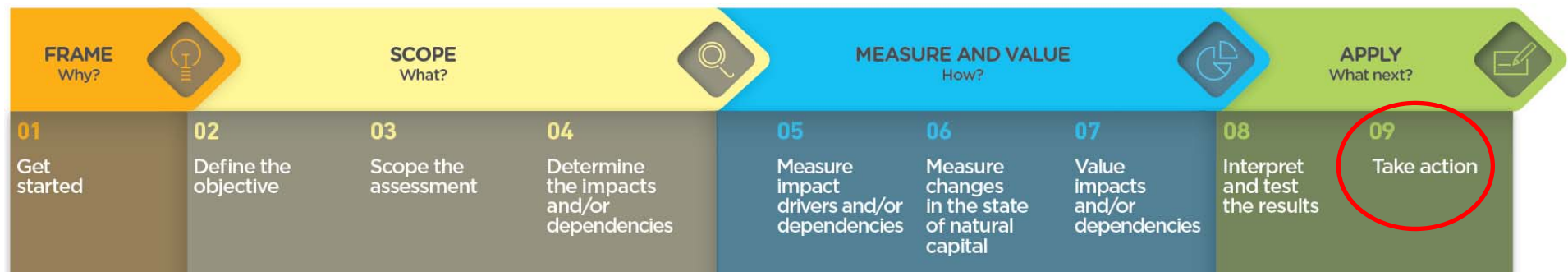
- Data and time requirements
- Developing a methodology that:
  - links with existing business systems
  - transparently addresses less tangible services
- Need to engage across a range of business functions, not just the Sustainability Team
- Most natural capital benefits (costs) accrue to society, not private companies





## Step 09. Take action

- Now helping Yorkshire Water to integrate **natural**, **human** and **social** capital into their company wider decision making procedures
- Aim is to integrate the capitals into cost-benefit analysis models in order to enable the social and environmental costs and benefits of standard engineering decisions to be more fully understood
- This will also help to allow the wider costs and benefits of alternative investment decisions such as peatland restoration, green roofs and natural filtration, to be compared against more traditional investments as standard business practice



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# Realising nature's value in infrastructure

## Case study: National Grid

# Overview of National Grid

## Electricity transmission:

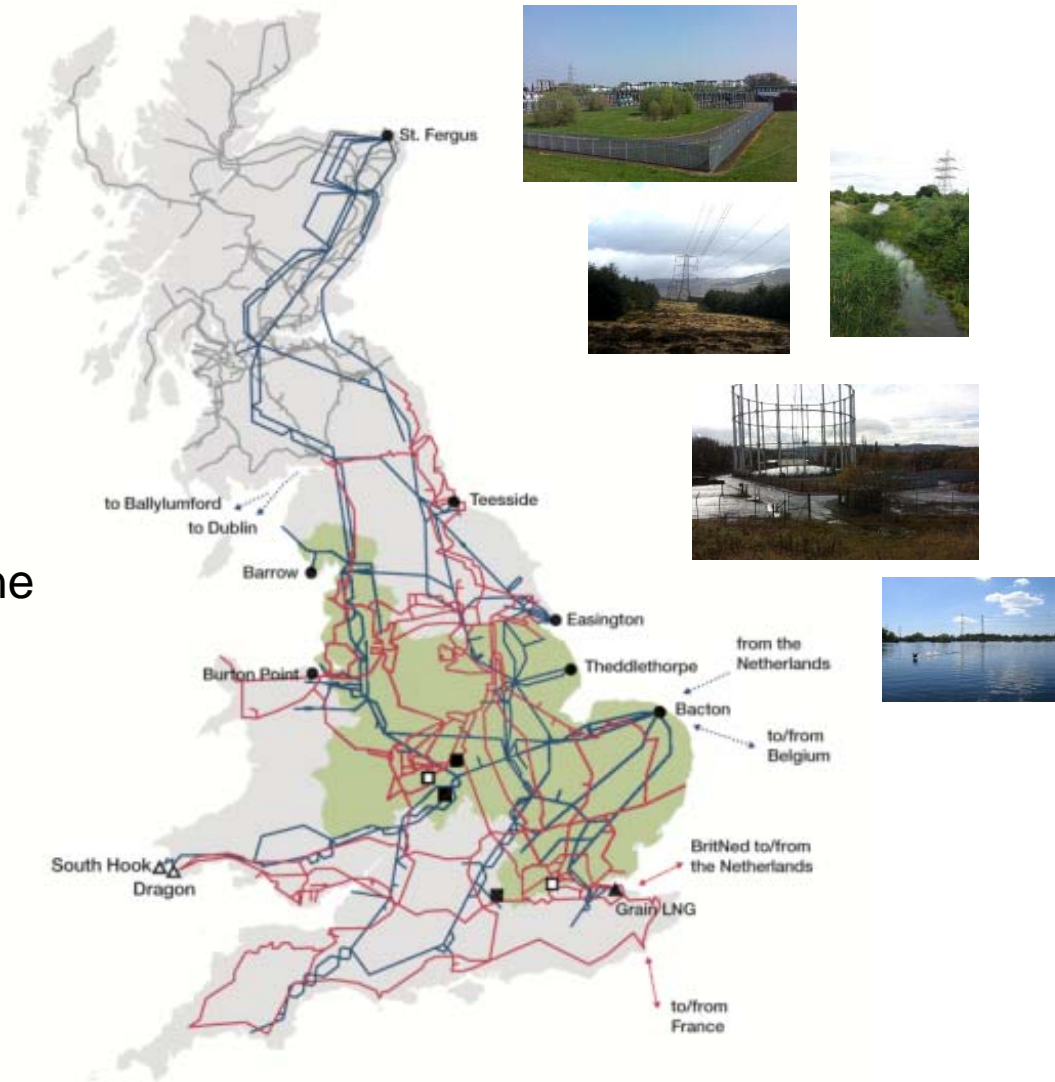
- 7,200 km overhead line
- 1,400 km underground cable
- 329 substations

## Gas transmission:

- 7,660 km high pressure pipeline
- 23 compressor stations

## Legacy landholdings:

- 645 former industrial sites



# Why would a UK infrastructure company incorporate natural capital approaches in decision-making?

## Traditional view

- Risks
- Costs
- Liability
- Limited return on investment
- Contamination issue



## Natural capital view

- Benefits
- Dependencies
- Priorities
- Efficiencies
- Opportunities
- Value creation
- Positive return



# Approach

**Quantify**

- Natural capital on National Grid sites

**Assess**

- Ecosystem services provided

**Value**

- Each of the ecosystem services

Measure and Value

**Identify**

- Potential risks and opportunities

**Develop**

- More informed management decisions

**Realise**

- Benefits of natural capital

Apply



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

- Indicative site boundary
- Phase 1 Habitat Survey
- Target note
- Defunct hedge - native species-rich
- Bare ground
- Broadleaved parkland/scattered trees
- Broadleaved woodland - semi-natural
- Buildings
- Other tall herb and fern - ruderal
- Scrub - scattered
- Swamp

Client:  
Reproduced from Ordnance Survey digital map data  
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Licence number: National Grid Electricity - 10002424

Version of Issue: **DRAFT**

Site: **NATIONAL GRID**

Project Title: **NATURAL GRID**

Drawing Title: **PHASE 1 HABITAT MAP**

Drawn TG	Checked JH	Approved DS	Date 02/04/2014
ONS Internal Project No. 47086206		Scale @ A3 1:5,000	

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# Quantify











Assess

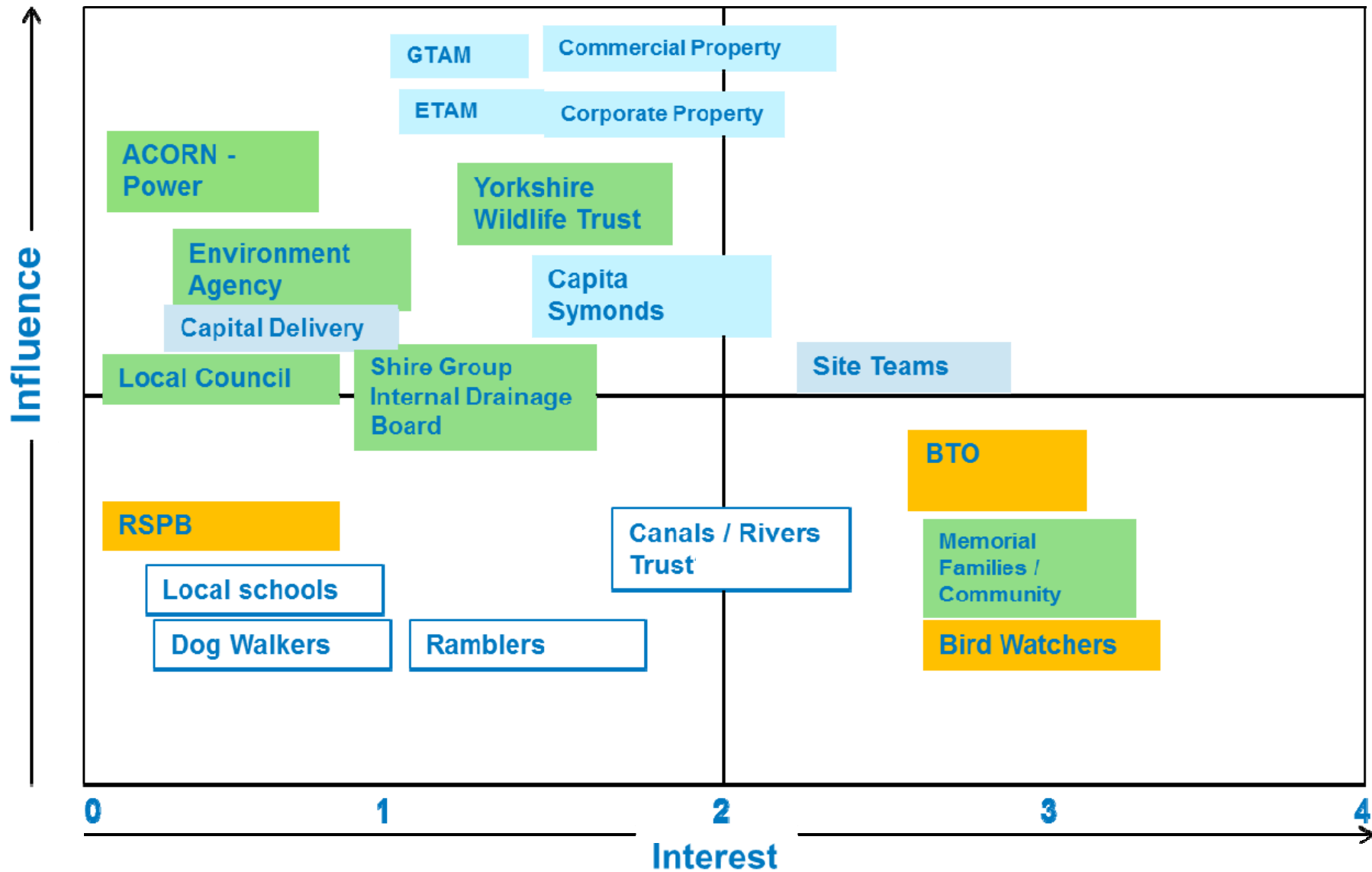


# Valuation Report: National Grid

	Baseline	Scenario 1	Scenario 2
<b>Provisioning Services</b>			
 <b>Food</b>	£0	£0	£256,794
 <b>Water</b>	£156,332	£156,332	£156,332
 <b>Timber</b>	£0	£0	£0
 <b>Energy</b>	£0	£0	£0
<b>Regulating Services</b>			
 <b>Carbon</b>	£61,940	£14,329	£116,845
 <b>Air Quality</b>	£0	£0	£0

Value

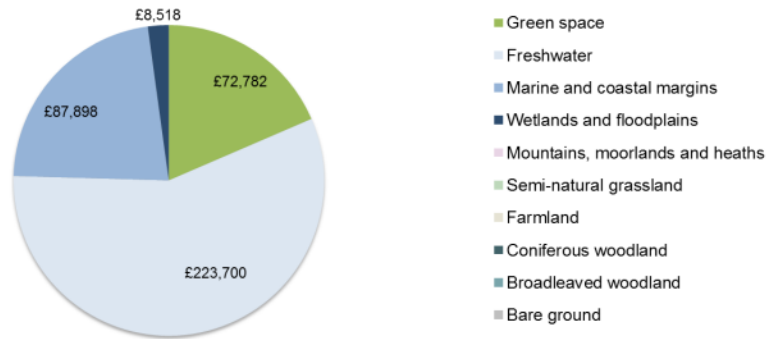




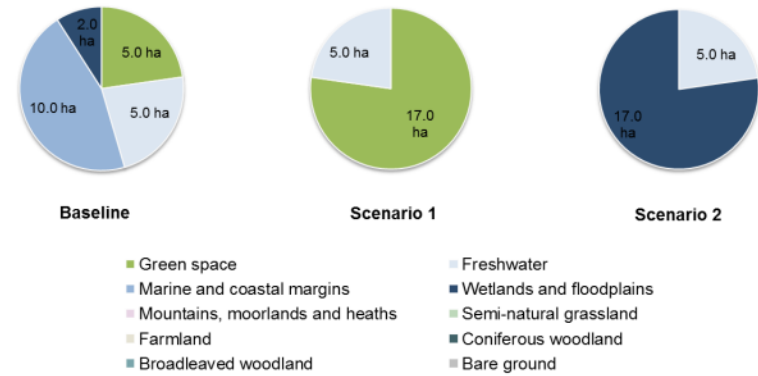
- Get buy in..
- Gauge interest
- Communicate approach
- Adhoc as required

# Identify

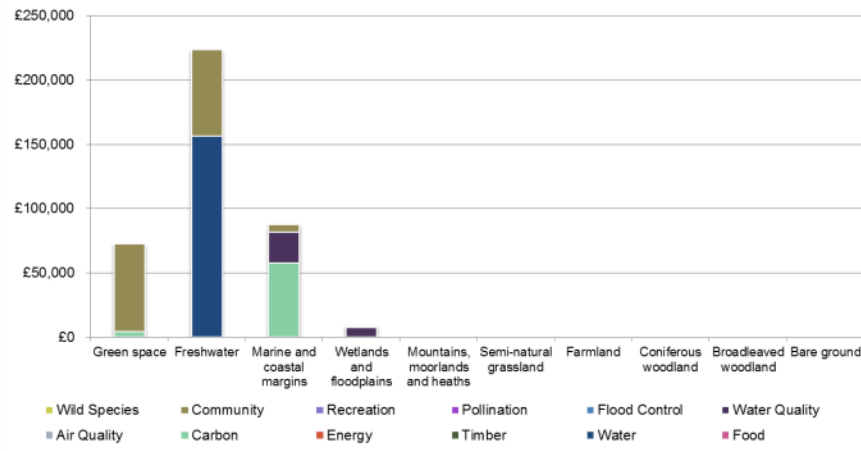
**Baseline Habitat Values**



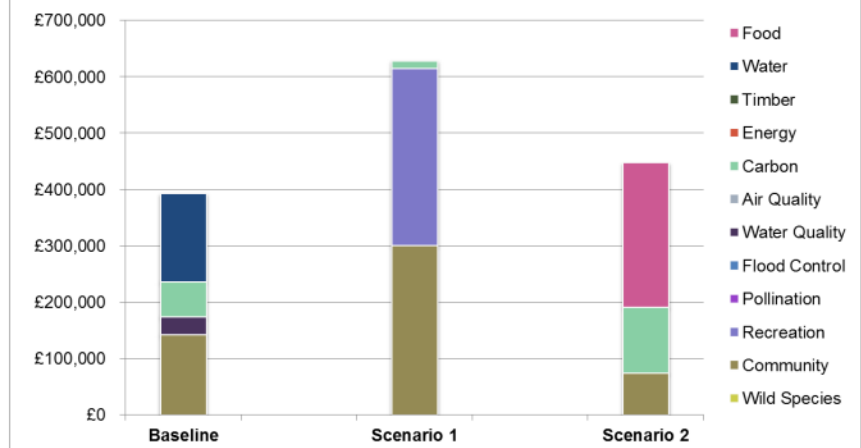
**Natural Capital Stocks**



**Baseline Habitat Values by Ecosystem Service**



**Ecosystem Service Flows**



Develop





Realise

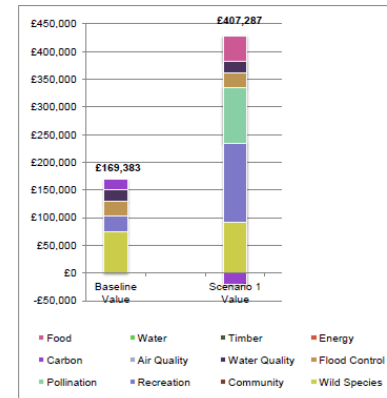


# Case study: Thorpe Marsh

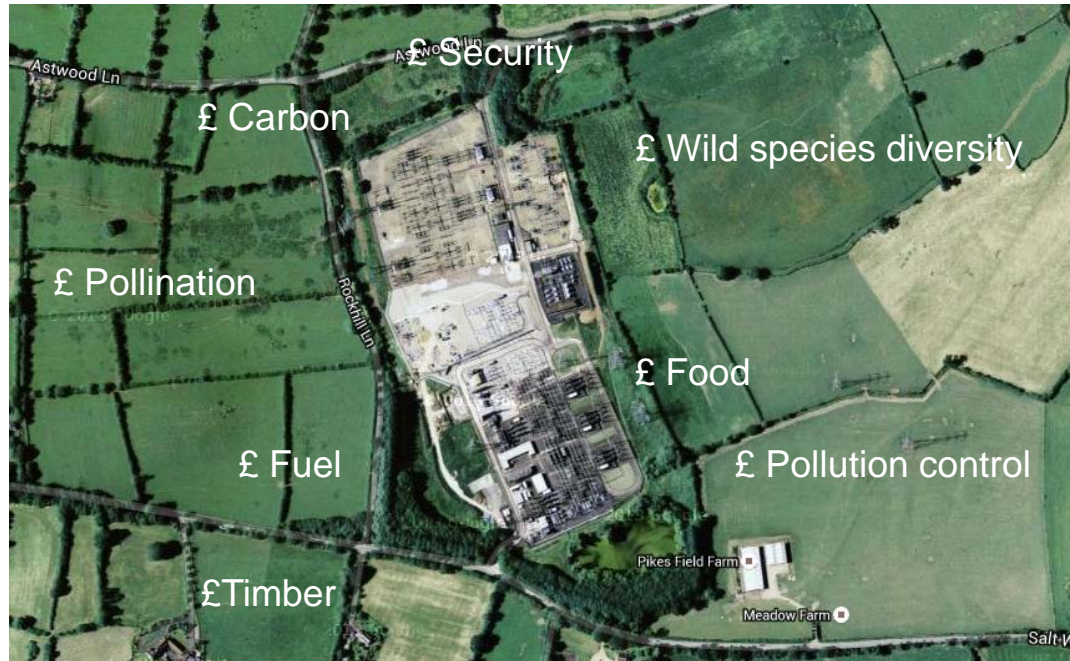


**Yorkshire**  
Wildlife Trust

- Initial assessment to establish baseline
- Development of scenarios with YWT
- Business case incorporating natural capital values
- Sanctioning
- Project delivery including:
  - Wetland / grassland restoration
  - Community engagement
- **Benefit:cost ratio 8:1**



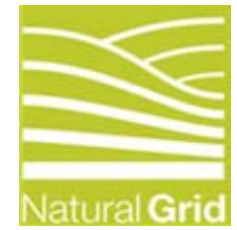
# A new view of National Grid's assets



**Carbon:**

- Total storage: ~330,000 tCO<sub>2</sub>(e)
- Annual sequestration: 10k tCO<sub>2</sub>(e)
- Current value: ~ £500k each year
- Potential growth: £50M to £125M

- Used on 100 sites with 38 active management plans
- Average value per hectare ~£20,000
- Broadleaf woodland accounts for a substantial value
- Huge opportunity to enhance the value





## Going forwards

- Approach is being deployed across National Grid:
  - Transforming the way assets are managed
  - Driving more informed decision making for capital delivery
  - Building a more complete picture of National Grid's land and natural capital value
- All new graduates are required to pilot the natural capital approach at a particular site
- Work with the tool to develop a business case for investment
- Pitch the case to a 'Dragons Den' panel with the best projects receiving funding
- Creating wider uptake of natural capital throughout the business, further investment, and improved relationships



Thank you

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