Natural Capital Accounts for Natural England's National Nature Reserves

Valuing Nature Annual Conference 2018

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Types of Goods

	Excludable	Non–excludable
Rival	**Private**	**Common**
Non – Rival	**Club**	**Public**

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Accounting Boundary

Applying ‘asset-thinking’ to the Natural Environment

Tractors and National Nature Reserves

- what benefits does it provide?
- for how long?
- how well?
- what state is the asset in?
- what maintenance and investment is required?

Photo Credits:

- Ingleborough NNR / Natural England
- Tractor and grassland aerator / Natural England

Accounts can be for organisations or for areas

ORGANISATIONS

- Corporate Natural Capital Accounting (CNCA)
- Our approach

AREAS

- Office for National Statistics country-wide estimates
- AECOM work for national parks

What are Natural Capital Accounts for?

- Management Accounts?
- External accounts?
- Communications?

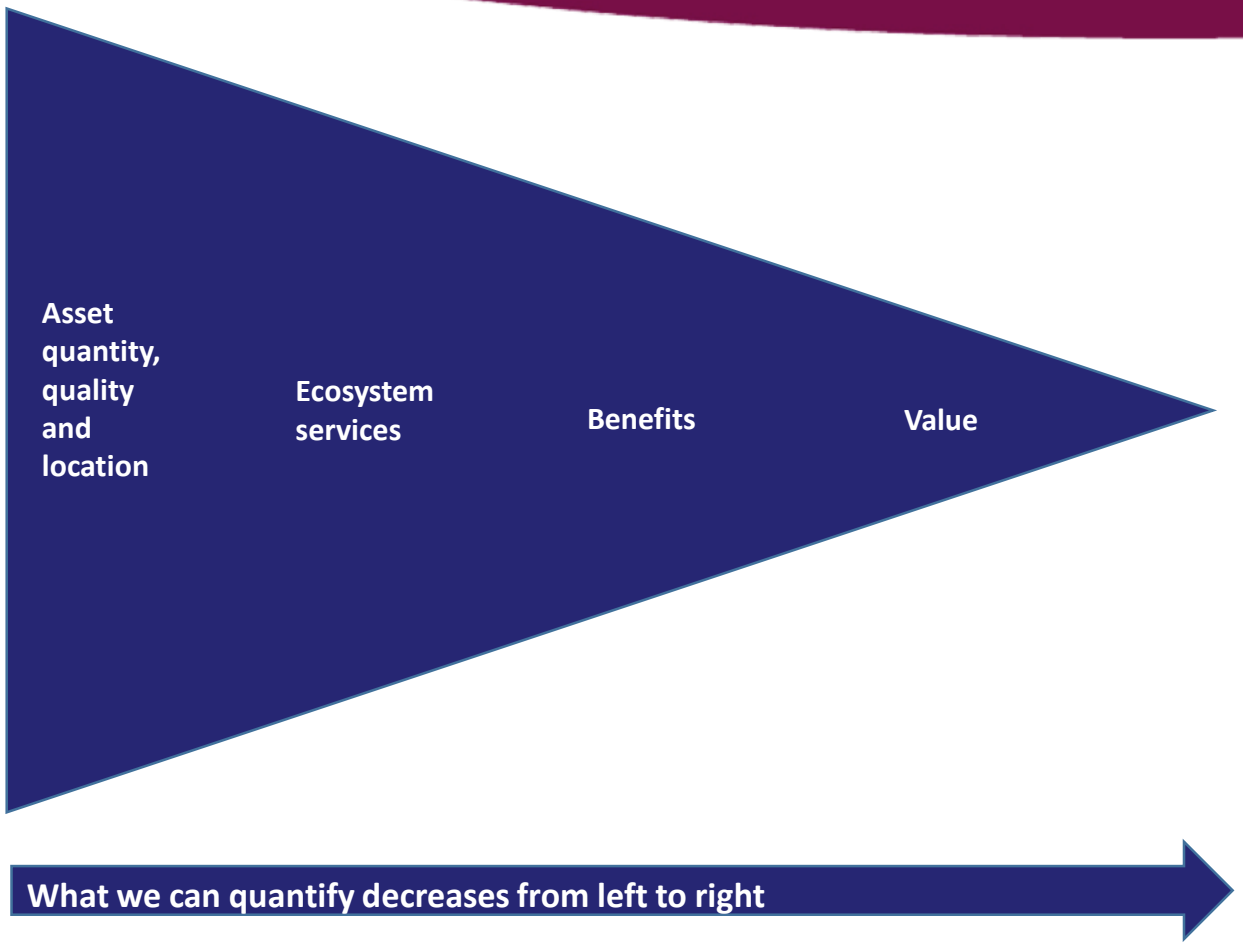
Natural Capital Committee

National Trust Balance Sheet – Wimpole Estate 2013

		Year 2013			
		Renewables		Total	Of which reported in fin accts
		Private	External	Value	
		£'m	£'m	£'m	£'m
Assets					
1	Baseline value (2008)	14.1	12.3	26.4	
2	Cumulative gains/(losses)	1.7	4.4	6.1	
3	Additions/(disposals or consumption)	1.7	1.6	3.4	
4	Revaluations and adjustments			-	
	Gross asset value	17.5	18.4	35.8	
Liabilities		Private	External		
5	Legal provisions				
6	Other maintenance provisions	(3.6)	(1.5)	(5.1)	
	Total maintenance provisions			(5.1)	
Total Net Natural Capital				30.7	

Image from Natural Capital Committee / Wimpole Estate CNCA

Measured value is a small proportion of true value



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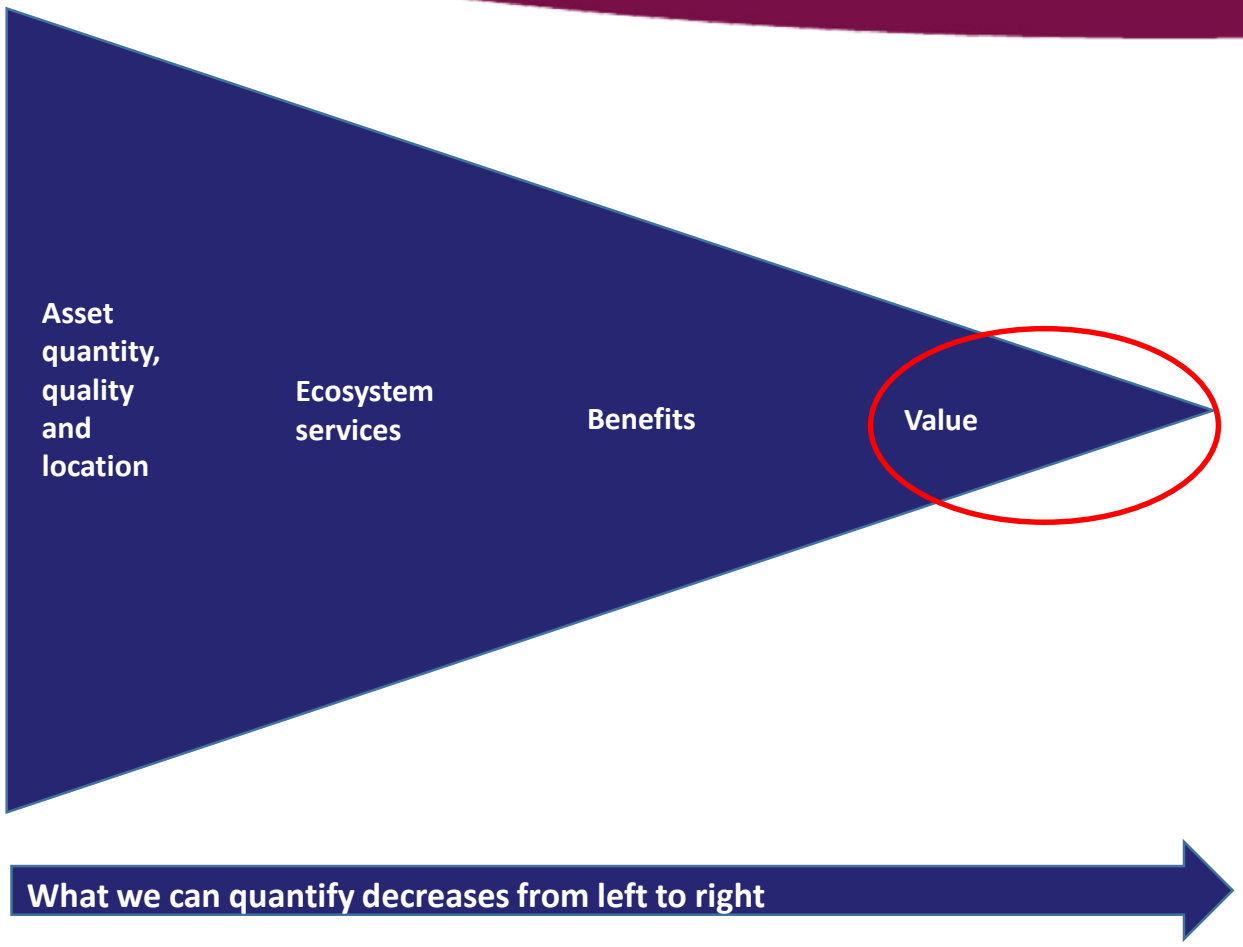
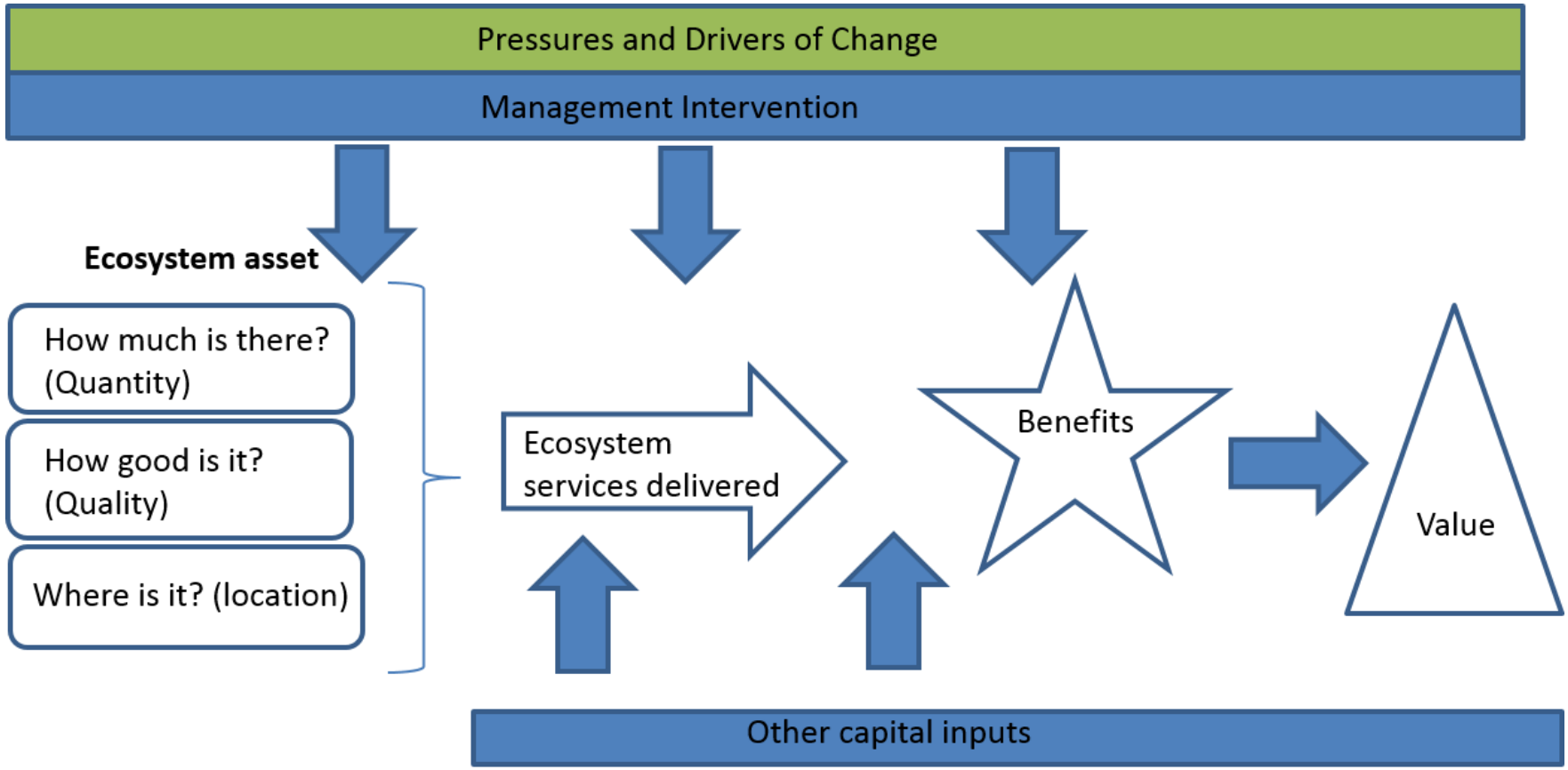


3 significant problems with NCA

1) They only offer a partial picture of environmental value
2) They can lose sight of the state of the underlying asset
3) They don’t (normally) state confidence levels in their findings

Natural England Natural Capital Logic Chain



Natural England Natural Capital Indicators Project

What are the ideal indicators for measuring change in natural capital?

What data can be used to do this?

What are the data gaps?

50+ detailed logic chains for
17 ecosystem services in
8 broad habitats identifying short list indicators

88 people took part:
59 NE Specialists
29 EA Specialists

2 NE Deputy Chief Scientists
did the quality assurance

1 Excel spreadsheet

The Aim of our Accounts

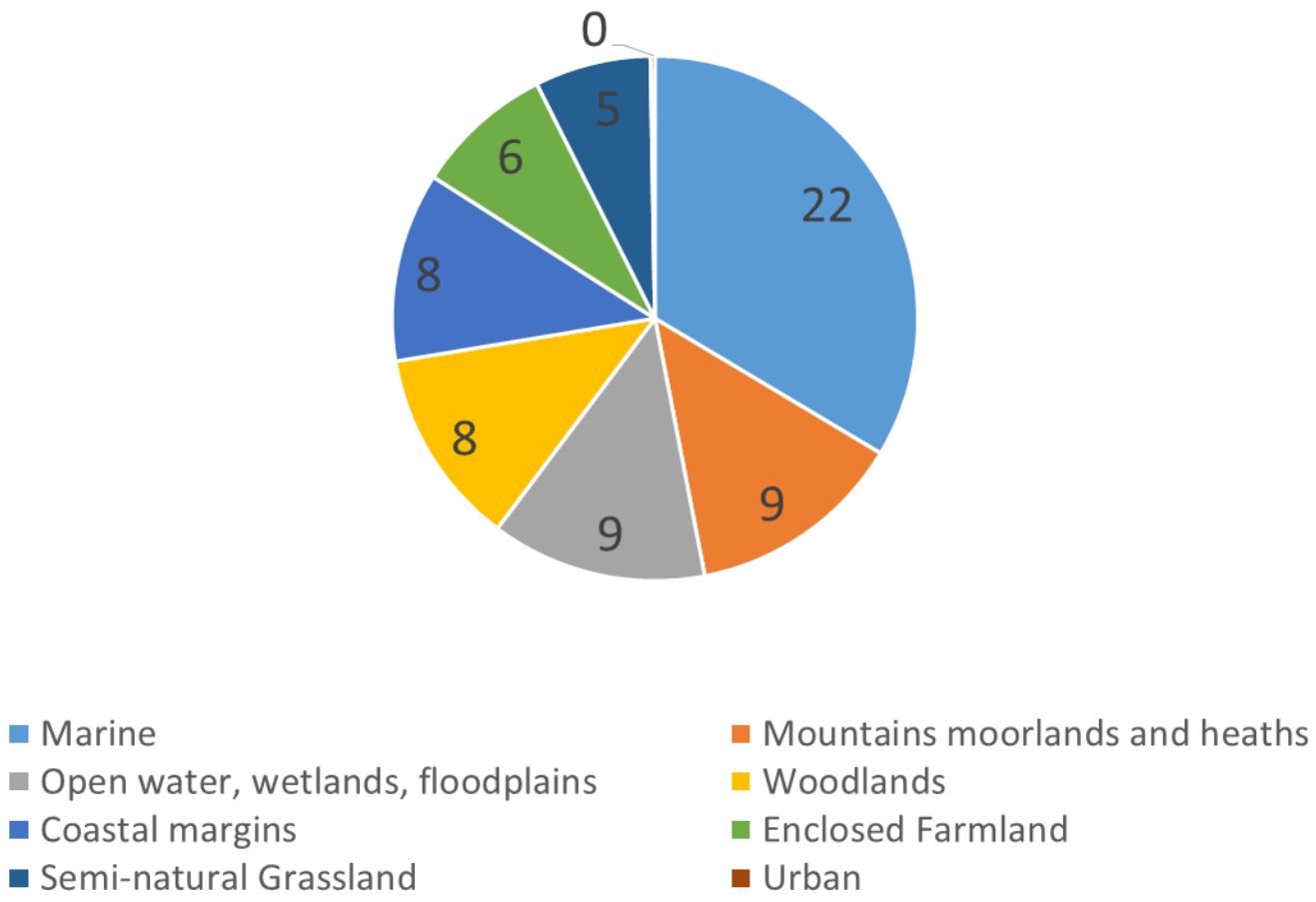
Physical Account of the Assets	Ecosystem Service Flow Account	Benefits Account	Value Account
Extent			
Quality			

Methods

We;

- considered NNR that Natural England manages
- collected information on the extent, quantity and quality of the assets
- quantified ecosystem services and benefits wherever possible
- scored all benefits and ecosystem services using expert judgement
- valued benefits wherever possible
- Expressed confidence limits expressed through RAG ratings

Thousands of Hectares of NEA Habitat



Costs

Costs	£ millions	Confidence Rating
Staff costs for NNR and NNR related staff	4.5	Green
NNR running and capital costs ('direct')	4.2	Green
NNR running costs ('indirect')	3.1	Amber
NNR related expenditure by partner organisations	0.37	Green
Replacement cost of volunteers	1.8	Amber
Total	**13.97**	

Extended Balance Sheet

Ecosystem asset → Ecosystem services → Benefits and values

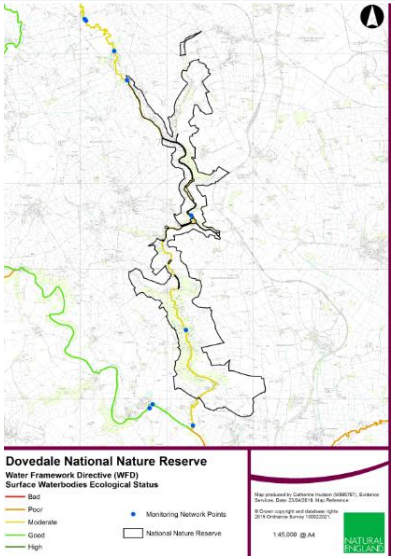
Natural capital asset baseline		
Asset Attribute	Indicator	
Extent	Total area (ha)	66839.7
Hydrology	Ground water status (% good) Water Framework Directive (WFD)	24.1
	Surface Water status (% good) WFD	18.6
Nutrient/chemical status	Mean sulphur dioxide concentration (µg m-3)	0.32
	Mean nitrogen acid deposition (kg N ha-1 year-1)	12.3
Soil	Mean Estimates of Soil Organic Carbon in 30cm Topsoil (% of total)	9.13
Vegetation	% of NNR (ha) under a Site of Special Scientific Interest (SSSI) which is in favourable condition	51.3
Species composition	Nectar plant diversity - Mean Estimates of Number of Nectar Plant Species for Bees (per 2×2m plot)	5.05
	Soil Invertebrates Abundance - Mean Estimates of Total Abundance of Invertebrates in Topsoil (0-8cm depth)	65.3
Cultural	Public Rights of Way (km)	468.6
	Scheduled monuments at risk (ha)	74.7

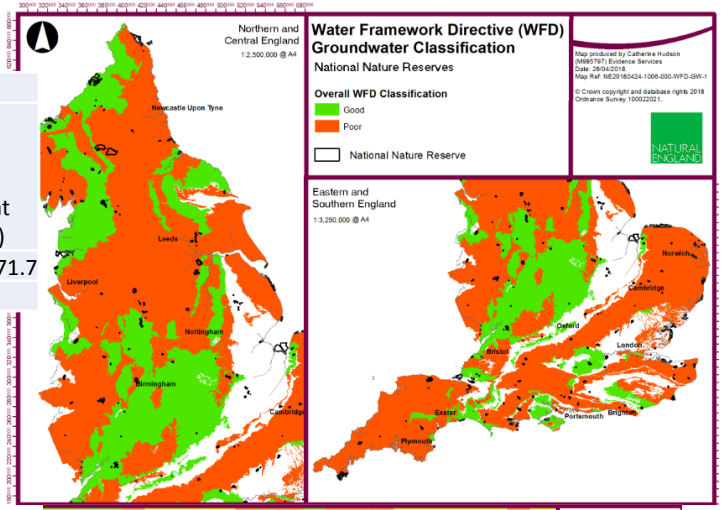
Ecosystem service't	Significance (1 small to 3 large)	Indicator	Quantity where available
Timber, hay and other materials	2	Sale of timber	~ 3000t
Water supply	1		
Livestock	1		
Water quality	1		
Air quality	1		
Erosion control	1		
Flood protection	1		
Pollination	1		
Thriving wildlife	3		
Pest and disease control	1		
Climate regulation	3	Carbon sequestered CO_2 equiv't	185,000 tonnes
Recreation, tourism and volunteering	3	No. of recreational visits No. of volunteering hours	5.5 million 150,000
Scientific and educational	3	No. of educational visits	37,000
Cultural wellbeing associated with places	3		

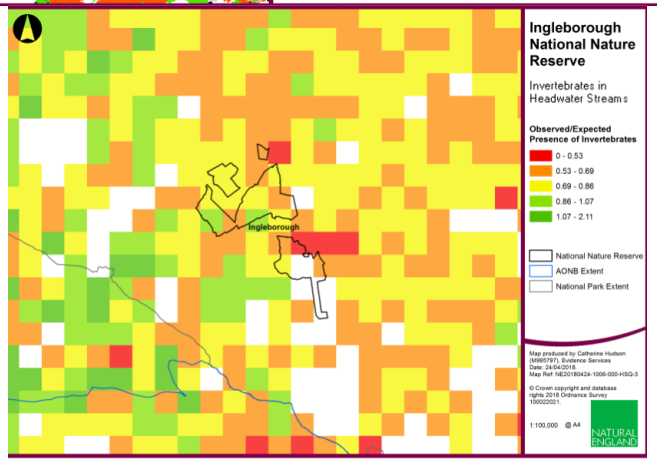
Benefit	Signif-icance	Indicator	Annual benefit	Asset value
Timber, wood and hay	2	Sale of timber	£56,000	£2 million
Food	1	Income from grazing Sporting rights	£309,000	£10 million
Clean and plentiful water	1			
Clear air	1			
Protection from floods and other hazards	1			
Pollination and pest control	1			
Biodiversity	3			
Equitable climate	3	Carbon sequestered	~£12 million	~£1 billion
Health	2			
Cultural wellbeing	3	No. of recreational visits No. of volunteer hours No. of educational visits	£22 million £1.8 million £123,000	£710 million ~£60 million ~£4 million
Total quantified monetary benefits			~£36 million	~£1.8 billion
Significance of unquantified benefits			Very large	

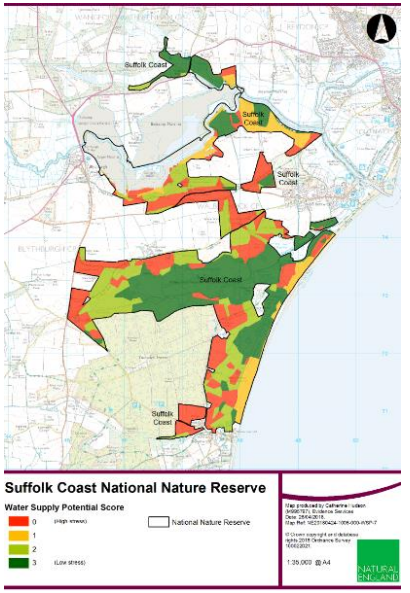
Hydrology – surface waters (WFD), groundwater (WFD), headwater steam quality and water supply potential (Nmaps)

Hydrology			
Quality of Surface Waters % good status	Groundwater % good	Headwater stream quality (mean quality score)	Water supply potential (summing of total area that has potential)
	29.4	0.7	46271.7
18.2			



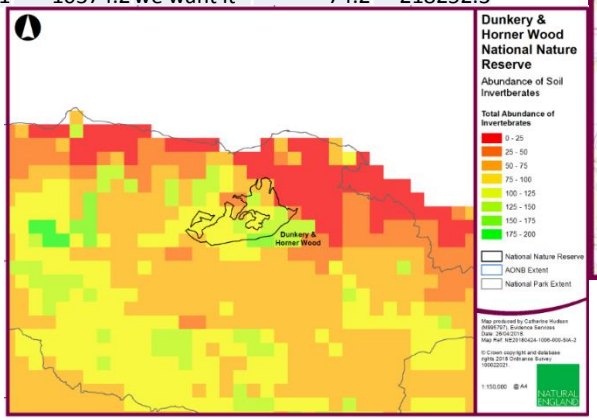


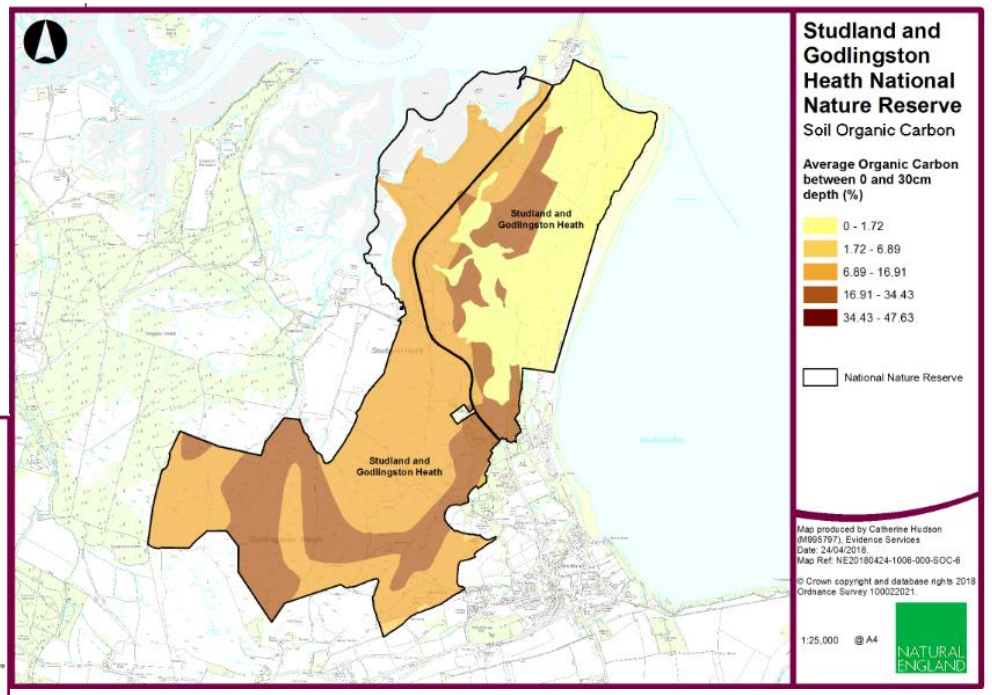




Soil/sediment process – soil organic carbon, soil invertebrate abundance, moorland deep peat status, peat depth, peat carbon storage

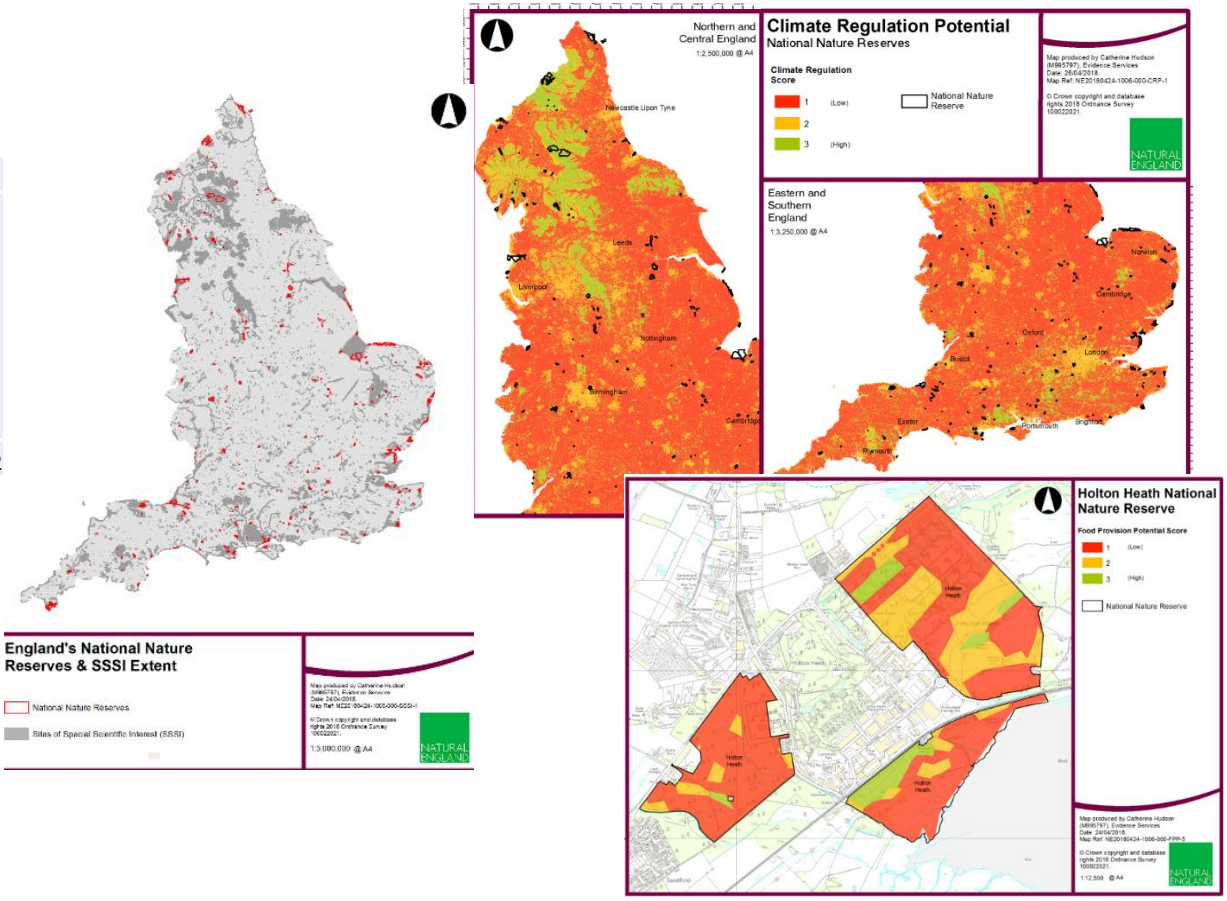
Soil/sediment processes				
Soil organic carbon (mean % value)	Soil inverbrate abundance (mean abundance scores)	Moorland deep peat status	Peat Depth (mean peat depth score cm)	Peat Carbon Storage (tonnes per hectare)
7.1	10374.2	? Not sure how to represent this and whether we want it	74.2	218252.3



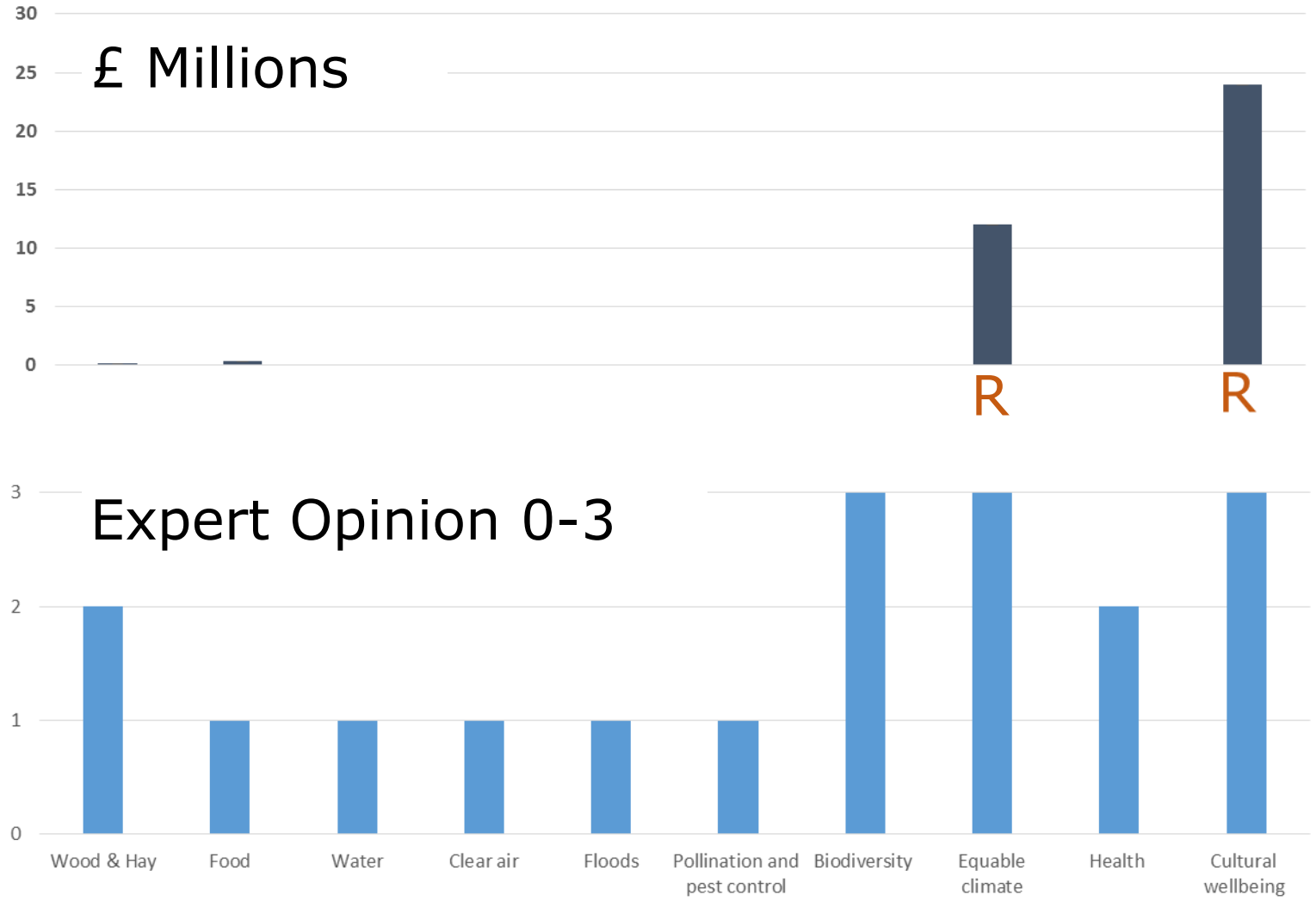


Vegetation – SSSI condition, climate regulation potential (Nmaps), food provision potential (Nmaps)

Vegetation		
SSSI condition (% favourable condition)	Climate regulation potential (summed area of score 1 - 3)	Food provisioning potential (summed scores 1-3)
30.5	62491.5	52336.2



Two different ways to look at benefits



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