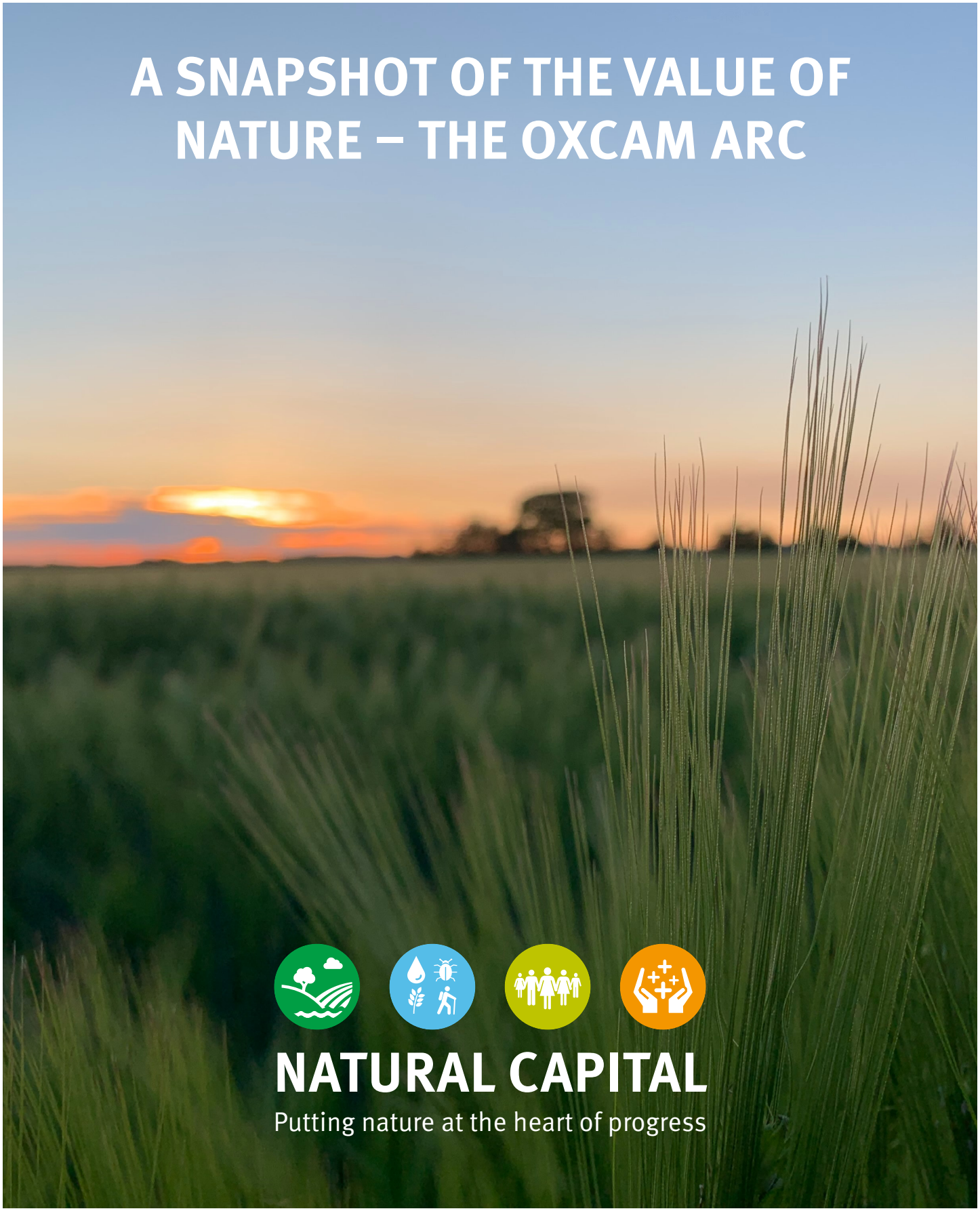
OXFORD – CAMBRIDGE ARC

OxCam
Local Natural Capital Plan

A SNAPSHOT OF THE VALUE OF NATURE – THE OXCAM ARC



NATURAL CAPITAL

Putting nature at the heart of progress

OxCam LNCP
Nature at the heart of progress

Valuing the Natural Capital in the OxCam Arc

The Oxford to Cambridge (OxCam) Arc is the name given to a cross-government initiative that supports planning for the future of the five ceremonial counties of Oxfordshire, Bedfordshire, Buckinghamshire, Cambridgeshire and Northamptonshire up until 2050.

Because of the commitments to **green growth, its governance and scale**, the Arc represents a unique opportunity to put the Government's 25 Year Environment Plan into action. The Local Natural Capital Plan Project is co-creating a natural capital plan and approach for the Arc with partners to help ensure that the concept of natural capital is woven into the fabric of decision making, putting nature at the heart of progress.

Natural capital comprises the elements of nature that directly or indirectly provide benefits to people in a variety of ways, including wellbeing and sustainable growth.

Nature is complex and interlinking, and the more traditional linear approaches to tackling issues do not work for more diffuse change like climate change and large scale growth. Taking a natural capital approach in a place helps to bring together a broader set of issues to inform decision making, whilst factoring in spatial aspects and long-term thinking.

This account summary highlights the value of the benefits natural capital provides to society – and all the interlinking and overlapping dependencies, but also shows gaps in evidence and understanding which are just as important. A natural capital approach is about everyone understanding the multiple benefits that come from nature, and their value to society up front.

Our natural capital valuation, or account, is based on the entire natural capital approach. It is a way of quantatively linking together the total benefits that flow from nature and tracing them back through the flows back to the assets.

That's important, as if we just focus on the benefits and values in isolation we miss the point that it's the assets we have to look after. The quality and quantity of these assets change over time due to pressures and drivers of change, such as human population growth.

The make up of the Arc and the key benefits that flow from the Arc's natural capital

Recreation
£507M

Welfare from recreation of **168 million visitors** to open green space across the Arc.

Water quality & supply
£747M

£747M – The value of the clean water supplies provided by the natural capital assets across the Arc.

Agricultural production
£763M

Agriculture production from over **847,000 hectares** of farmland – **34% livestock & 76% arable.**

Climate regulation
£70M

The value of **240,000 tonnes** of carbon sequestered by habitats such as woodland and peatland.

Using the account to encourage green growth

In order to support the aspirations of the Arc and green growth we need to encourage sound investment in the environment and sustainability.

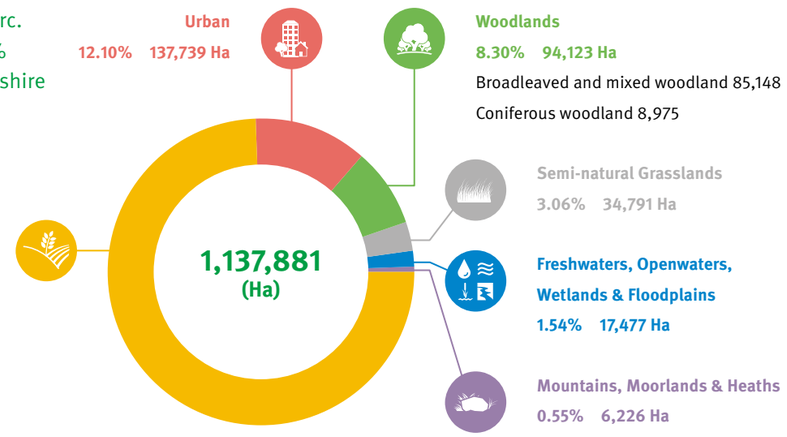
Natural Capital planning, and particularly accounting, can help to highlight the value of the environment to people and society. It also shows the multiple benefits that flow from our natural assets, encouraging the need to form partnerships – often between private and public sector funding – to deliver more outcomes and returns for a single investment. We want businesses and organisations within the Arc to consider how they can build the natural capital approach into projects and developments, and use our tools and evidence base, to maximise investment and the value that the environment brings.

To learn more or view our full story of the Arc please visit **www.oxcamlncp.org**

The assets of the Arc

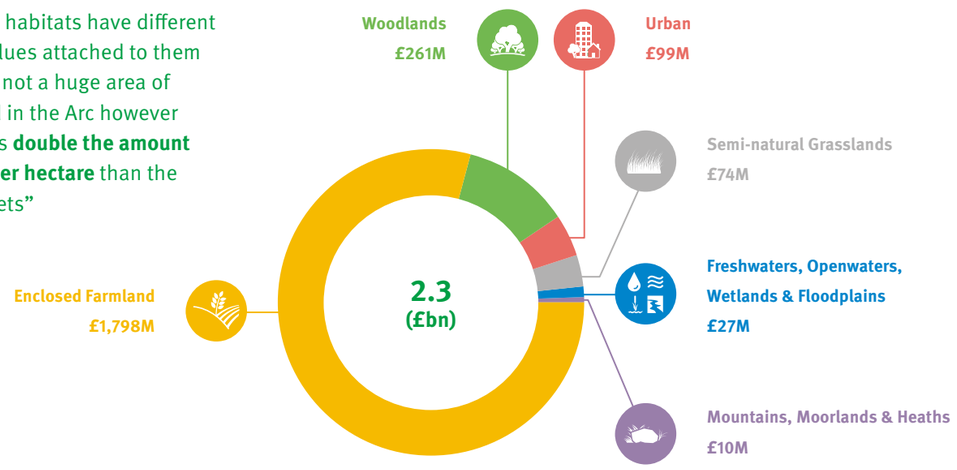
The land cover types of the Arc by area

"Farmland is by far the largest land cover type across the Arc. All counties have above 65% Farmland, whilst Cambridgeshire has 80%"



The value of the natural assets of the Arc

"Different habitats have different sets of values attached to them – there is not a huge area of woodland in the Arc however it provides **double the amount of value per hectare** than the other assets"



Per hectare value of each natural asset

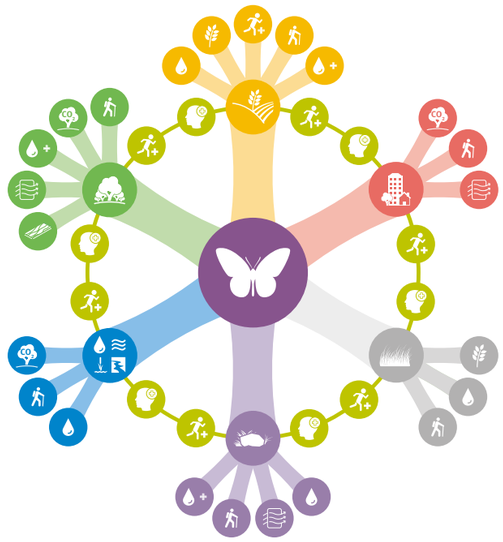
The ecosystem services of the Arc

Biodiversity plays a vital role in ecosystem functioning. Processes such as capturing essential resources, producing biomass and recycling nutrients, are all impaired as biodiversity declines. Furthermore, biodiversity not only underpins ecosystem functioning, it also enables these processes to be resilient in the face of global change.

Most of our natural capital assets, if appropriately connected and maintained, support our **mental and physical health.**

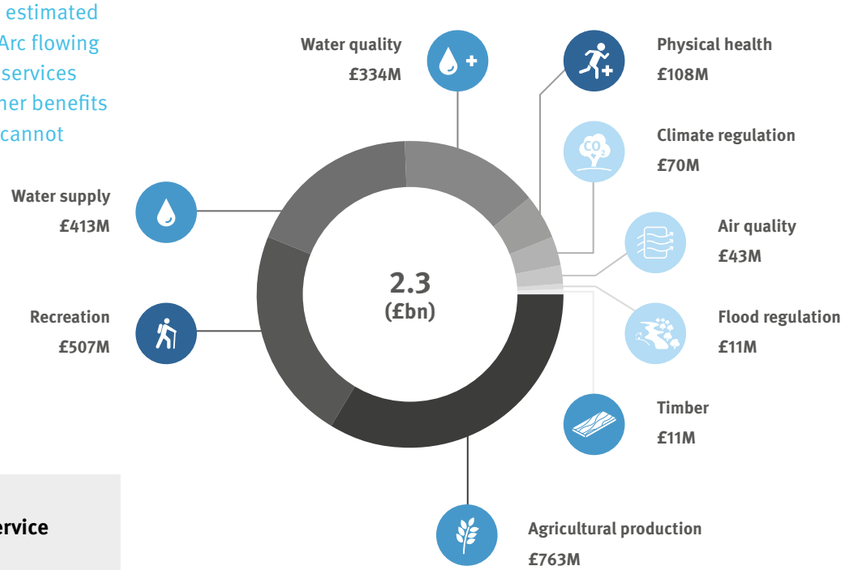
Mental and physical health are not captured as separate ecosystem services within the account, due to the difficulty in valuing them, but these benefits should not be underestimated.

Ecosystem Services – an illustration



The value and benefits from the ecosystem services of the Arc

"£2.68 Billion is the estimated annual value in the Arc flowing from the ecosystem services shown. There are other benefits from nature that we cannot yet value"



Ecosystem Service Categories

- Regulating
- Provisioning
- Cultural

The physical make up of the Arc at a glance

There are 3 Areas of Outstanding Natural Beauty (AONBs); The Cotswolds, the Chilterns and the North Wessex Downs, together covering **10%** of the total Arc area.

Within the Arc around **20,000 Hectares** of land are notified as Sites of Special Scientific Interest (SSSIs), this is **1.76%** of the total Arc area and **47%** of this area is defined as in favourable condition. There are around **50,000 hectares** of local wildlife sites.

Risk

Habitat connectivity – Lawton 2000 highlighted that lowland area is more at risk of fragmented habitats. The highly fragmented nature of the Arc's environment is demonstrated by the relatively small size of SSSIs in the Arc: only 1 out of the Arc's 175 SSSIs is within the top 100 (by area) of sites in England, despite the Arc making up 9% of England's total land area.

Opportunity

Habitat connectivity – By understanding the natural capital assets within the Arc, and the ecosystem services that flow from them, we can map opportunities at a spatial level in order to join up assets and interventions to improve habitat connectivity.

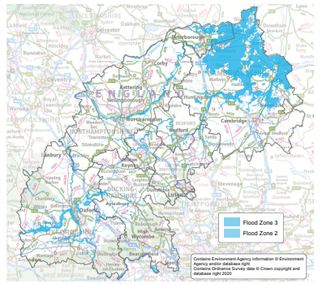
"Half of the UK's population of the **rare native black poplar trees** are found in Aylesbury Vale in the Arc"

650,000 tonnes of carbon sequestered by habitats such as woodland and peatland.

The Fens, located in the north east of the Arc around Cambridge, have some of the highest densities of flood plains in the country. **This provides the area with highly productive agricultural land.**

Risk

Flood and drought regulation – 14.7% of the Arc's land area is at a high risk of flooding. Across the Arc there are currently **74,000** properties within the Environment Agency's fluvial and coastal flood zone.



Opportunity

Natural flood risk management techniques are being used more frequently as part of flood alleviation schemes. These can deliver multiple ecosystem services aside from reducing flood risk.

76% of the Arc is classed as enclosed farmland with **6.32%** classed as Grade 1 agricultural land and **24.17%** Grade 2, as compared with England-wide figures of **2.72%** and **14.18%** respectively. The Arc's agricultural picture mirrors that of England, arable to the East and livestock to the West.

"The Chilterns Area of Outstanding Natural Beauty (AONB) covers **324 square miles** of countryside, with much of it within the Arc, and over 1/5th of the area is wooded. Chalk streams are also a characteristic and attractive feature of the Chilterns landscape and are a globally rare habitat. **More than 85% of all the chalk streams in the world are found in England, with 11% of these in the Arc.**

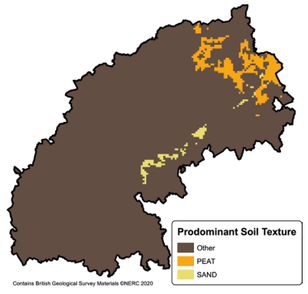
There is a lower density of rivers along the southern ridge, across the north of the Chilterns, but the chalk streams that do feature are of significance to this area.

There are 344 WFD river waterbodies across the Arc. Whilst **62.68%** are at moderate status, 251 of them have a reason for failure of achieving good status attributed to point source pollution and 234 attributed to diffuse source pollution.

Corrine landcover data shows that **8%** of the Arc's total land cover is woodland. Using Natural England's Ancient Woodland dataset we can determine that **8.5%** of England's ancient woodland landcover is within the Arc, **31,111.89 Ha**, the majority of it found within the Chilterns with patches distributed across the Arc.

The natural capital assets in the Arc, with woodlands contributing most, remove **57,000 tonnes** of air pollutants avoiding healthcare costs of **£43 million** per annum just from GP visits.

Soil underpins all of our landscapes. It is at risk from erosion, compaction, carbon loss, pollution, loss of condition and ultimately degradation and complete loss.



"The Arc is the UK home to the rare black hairstreak butterfly, which is only found in woodlands on the heavy clay soils between Oxford and Peterborough"

There are over **17,000 km** of public rights of way across the Arc. These rights of way ensure that people are able to move through and interact with the landscape and receive all the health benefits associated with it.

Risk

Soil degradation directly increases risks to various ecosystem services within the OxCam Arc including water quality, flood risk management and agricultural production. The most significant risk of soil erosion and loss arises where there is intensive arable land coinciding with sandy or peat soils, although the way land is managed can affect the risk profile greatly.

Opportunity

More robust evidence bases around the value of the natural environment and the benefits it provides can drive projects that pay farmers for the ecosystem services they provide, including future environmental land management and business-led agricultural land payment schemes.

This is an illustrative map only, to highlight some of the key themes and messages around the natural assets and characteristics of the Arc.

Natural Assets | Ecosystem Services | Benefits | Value

Annual values and benefits for the Arc

These are the natural capital assets that have been valued as part of our work. It should be noted that the financial values for these assets are derived from the total value of all of the ecosystem services benefits provided by any given asset.

Farmland
£1,798M
847,401 Ha

"Farmland is by far the largest natural capital asset type in the Arc by area but is not the most valuable per hectare"

Urban
£99M
137,739 Ha

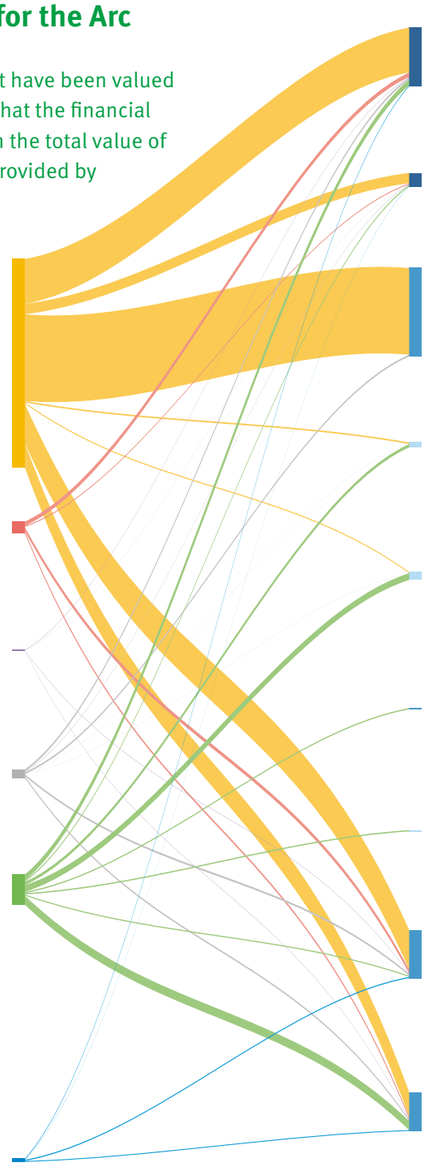
Mountains, Moorlands & Heaths
£10M
6,226 Ha

Semi natural grassland
£74M
34,791 Ha

Woodlands
£261M
94,123 Ha

"Different habitats have different sets of values attached to them – there is 8 times less woodland than farmland in the Arc however it provides a higher value per hectare"

Water & wetlands
£27M
17,477 Ha



Recreation
£507M
Welfare from recreation of **168 million visitors** to open green space across the Arc. This can bring added benefits of improved mental and physical health.

Physical health
£118M
Physical Health value calculated from active recreation visits.

Agricultural production
£763M
Agriculture production from over **847,000 hectares** of farmland **– 34% livestock & 76% arable.** Food provision is essential for maintaining the health of society.

Air quality
£43M
Avoided healthcare cost due to the removal of **57,000 tonnes** of air pollutants.

Climate regulation
£70M
The value of **650,000 tonnes** of carbon sequestered from habitats such as woodland and peatland. Climate change **affects the social and environmental determinants of health.**

Timber
£11M
The net value of sustainably managed timber from over **94,000 Hectares** of woodland across the Arc.

Flood regulation
£11M
The estimated value of **592 million m³** of flood storage provided by woodlands across the Arc.

Water supply
£413M
863 million m³ of water abstracted for clean water supply and energy generation. Access to clean water underpins our health.

Water quality
£334M
Value of water quality is based on how much people are willing to pay to know the water quality in their local/national rivers is in a good condition. This approach estimates the value of water quality to citizens for amenity, recreation and "non-use" (wellbeing) reasons.

"Many of the ecosystem services and the benefits that flow from them impact significantly on our physical and mental health."

Physical health benefits

Mental health benefits

"We have a unique opportunity, through the planned growth in the Arc, to protect and enhance its natural capital and the value it brings. By understanding more about the positive contributions our natural assets provide, alongside the benefits of other planned changes to improve productivity and place-making, we can look to develop a more connected society within the Arc – connected physically, socially, digitally and to our natural environment."

Productivity

2
Million jobs
Up to 1.2 million new jobs

Place-making

3.7
Million residents
Up to 1 million more homes

Connectivity

110
Billion annual GVA
Provide new enabling infrastructure to support a further £20 billion GVA pa

Environment

2.3
Billion annual asset value of natural capital
Increased quantity, quality protection and connection of natural capital assets

£72 Billion The estimated total natural capital asset value in the Arc over 100 years.

£2.3 Billion The estimated annual value of services flowing from the natural capital assets in the Arc.

Ecosystem Service Categories

- Regulating
- Provisioning
- Cultural

Confidence Key

High confidence in results. Input data and assumptions are based on statistical reports, peer reviewed values or industry standard methodologies.

Moderate confidence in results. Input data and/or assumptions from single source/not peer reviewed, or based on sources that are not specifically tailored to this context.

Low confidence in results. Input data and/or parameters from single source and low level of transferability from original to site.