NATCAP
RESEARCH

Chalford Parish

13/05/2022 14:43

Your natural capital baseline

An effective environmental and biodiversity programme must be built on the strongest possible evidence. We are delighted to provide you with that.

With this assessment, you have a rock-solid baseline of your environmental assets, based on the best science. As well as gaining a vital tool to manage grants and comply with regulation, you have the starting point for future enhancements to your natural capital.

Now you have this baseline, you can regularly measure and report on progress on your enhancement activity, confident in the accuracy of your data. It can also be used to explore and plan for a range of alternative enhancement options, re-running baselines to see what difference they could make to specific land areas or the wider land context.

Our team at Natural Capital Research can lead you through this process, helping you plan towards biodiversity net gain and net zero carbon targeting. We would be delighted to support you further to profit from these new opportunities in land management, and help you explore your own options.

Thank you for commissioning this baseline assessment from us, and taking this important first step towards better environmental business planning. We look forward to helping you further on this journey, and would be happy to discuss further. You can contact us at info@natcapresearch.com at any time.

About natural capital research

At NCR we help our clients to measure their natural capital, enhance its value and monitor changes in the baseline over time.

Natural Capital Research builds on the extensive expertise of our global research team. We are a science-led organisation and are setting the standard in natural capital for accuracy, insight, and usability. We help our clients to measure natural capital across the globe, enhance its value and report progress. The team's in-depth knowledge covers all aspects of the natural capital agenda, from spatial and analytical modelling, to establishing a natural capital baseline, to advising on enhancements and valuation of natural capital assets. This knowledge and experience has been leveraged to deliver top quality, scientifically rigorous, and unstintingly evidence-based outputs – outputs that have already been tested in the field by official bodies, shareholders, stakeholders, investors and environmental groups throughout the world.

NatCap Research Ltd. (https://www.natcapresearch.com/) was established in 2018 and since this time we have developed a strong client base across sectors including utilities, asset management, land management, agriculture, infrastructure development, and charities including national parks.

Disclaimer and copyright

The Information has been provided to the Client at their request for discussion purposes only. Any assumptions, opinions, and estimates expressed in the information constitute Natural Capital Research's judgement as of the date thereof and are subject to change without notice. The proposed approach and methodology are protected by copyright and no part of this document may be copied or disclosed to any third party, either before or after the contract is awarded, without the written consent of Natural Capital Research Ltd.

The Client acknowledges that the advice provided under this agreement by Natural Capital Research is at all times independent, and Natural Capital Research shall not be required to advance the interests of the Client, or engage in lobbying or any similar activities.

The Client agrees that the advice provided by Natural Capital Research is for their internal use only and that it will not be placed in the public domain without Natural Capital Research's written permission. Natural Capital Research accepts no liability for advice given hereunder.

Natural Capital Research has compiled the Data from sources believed to be reliable and will make reasonable efforts to ensure the accuracy and reliability of the information. However, Natural Capital Research makes no warranty, express or implied, that the Data is accurate, complete, correct, free of errors or suitable for the Client's business. The Data is presented "as is" and should not be used in substitution for the Client's own independent investigations and sound judgement. The Data does not constitute nor should be considered as advice or a recommendation to dispose of or acquire any investment or to engage in any transaction.

All warranties, representations, conditions and all other terms of any kind whatsoever implied by statute or common law are, to the fullest extent permitted by applicable law, excluded from these Natural Capital Research Terms and any Contract. In particular, Natural Capital Research does not warrant or guarantee any potential outcome in forecasting or modelling future events provided as part of the Services or any opinion, advice or recommendations or the contents of any Report or Data. The Client acknowledges that its use of any recommendations, Data, Report, forecast or other document prepared, provided, made or written by Natural Capital Research, any advice or opinion given by Natural Capital Research or the results of the work undertaken by Natural Capital Research will be at its own discretion and that the Client must exercise its own judgement in using or acting on any such advice and complying with applicable legislation and regulations

Table of contents

Executive summary

Natural Capital Research carried out this baseline assessment as of 13/05/2022 14:43, using our unique NatCap Map tool. It provides you with a critical evidence base for determining where to protect your natural capital and where there may be potential for enhancement.

Using the highest data standards, the following summary assessment comprehensively maps the type and extent of the different natural capital assets on your land, and provides you with estimates of the ecosystem services they provide. With this up-to-date baseline register, you have a starting point for planning future land management, natural capital enhancement and improvements and revenue generation.

Estimated natural capital assets

Asset	Quantity	
Landcover		
Neutral grassland	26.9	ha
Arable and horticulture	39.3	ha
Hedgerows and trees outside of woodlands	68.2	ha
Broadleaved mixed and yew woodland	140.7	ha
Built-up areas and gardens	127.8	ha
Dense scrub	32.0	ha
Modified grassland	16.2	ha
Calcareous grassland	15.0	ha
Water		
Large rivers and lakes	1.9	ha
Topography		
Average elevation	160.4	m
Average slope	13.6	%
Soils		
Loam	467.8	ha

Estimated natural capital ecosystem service flows

Ecosystem service flow	Total		Average	
Carbon storage in vegetation and soils	238,082.0	tCO2e	509.0	tCO$_2$e/ha
Carbon storage in woodlands and forests	54,033.0	tCO$_2$e	115.0	tCO$_2$e/ha
Carbon storage in trees and vegetation outside of woodlands	12,934.0	tCO$_2$e	28.0	tCO$_2$e/ha
Carbon storage in topsoil	171,116.0	tCO$_2$e	366.0	tCO$_2$e/ha
Carbon sequestration in vegetation and soils	700.0	tCO2e/yr	1.0	tCO2e/ha/yr
Carbon sequestration in woodlands and forests	512.0	tCO2e/yr	1.0	tCO2e/ha/yr
Carbon sequestration in trees and vegetation outside of woodlands	187.0	tCO2e/yr	<1	tCO2e/ha/yr
Soil erosion prevention	8,186.0	tonnes soil loss avoided/yr	17.0	tonnes soil loss avoided/yr/ha
Flood risk reduction	180,554.6	m^3 runoff avoided/yr	385.9	m^3 runoff avoided/yr/ha
Recreation	24,500.0	number of visits/yr	n/a	
Important areas for supporting insect pollinators of crops	324.0	ha	n/a	
Important biodiversity habitats	468.0	ha	n/a	

Heatmap of combined ecosytem service flows

The map below is a heatmap showing where you have the largest concentrations of ecosystem service flows, it provides key data for assessing where to concentrate enhancement efforts and how to optimise your natural capital development strategy.
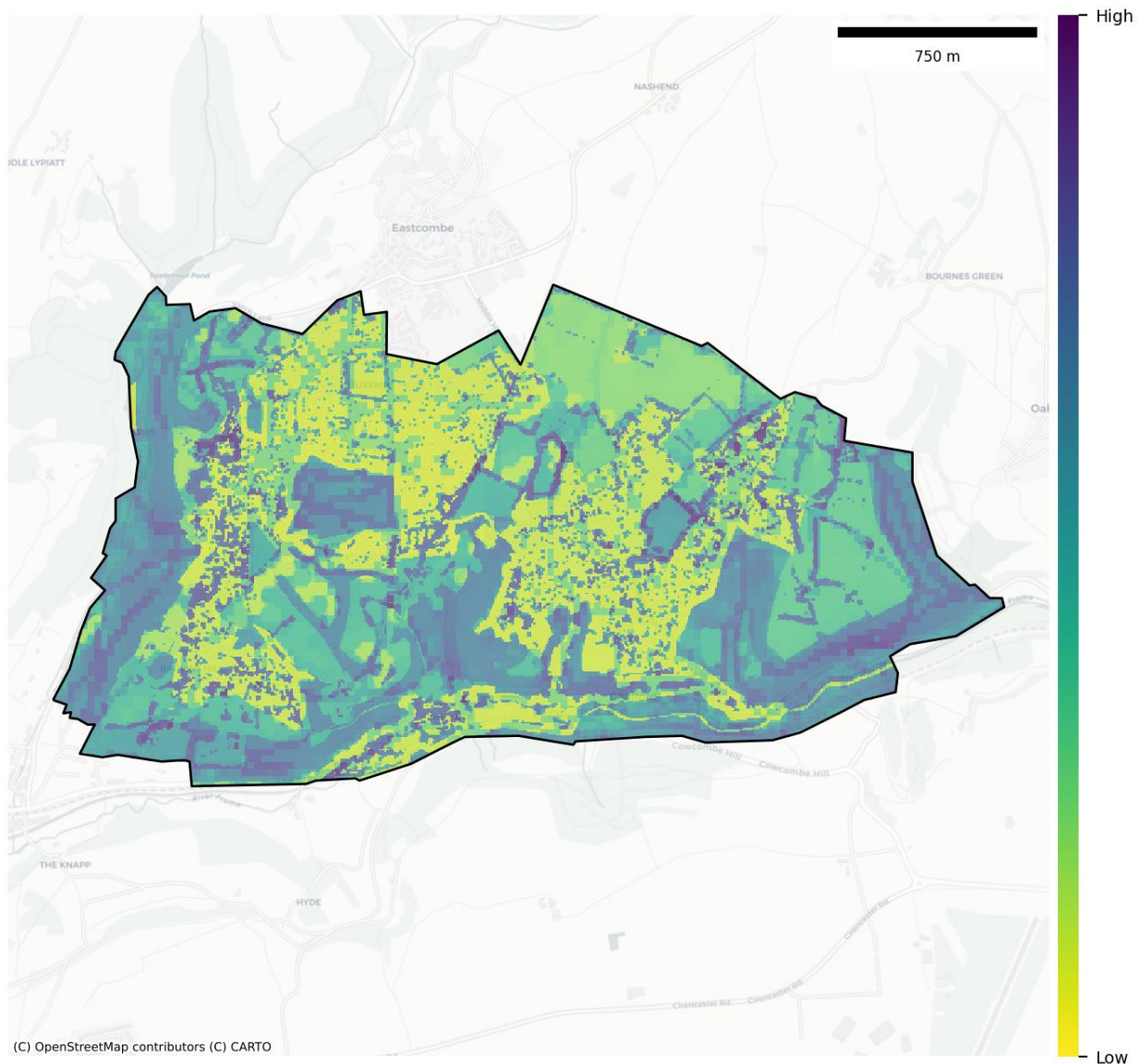
The following pages provide you with a breakdown of the individual underlying factors that make up your baseline assessment. Each of the following sections present the full data behind those two summary reports above. Each section of the report and each map gives you a full set of proof points and measurements, allowing you to present your environmental record, confidently and credibly, to government, stakeholders, markets, investors, special-interest groups and others.

They also provide you with the platform for your next steps on enhancing and improving your natural capital assets. If you would like further guidance on this, or more information on this report, we would be very pleased to help. You can contact us at info@natcapresearch.com.

Introduction

Natural Capital

Natural capital can be simply described as the aspects of nature (e.g. species, habitats, communities, soils etc.) that provide key ecosystem services underpinning important public goods or benefits (Figure 1).

We divide natural capital into three categories: assets, flows and societal benefits. An asset is the extent and condition of a natural resource – what is on the ground, how much of it there is and of what quality. A flow (ecosystem service) is derived from the asset and provides societal benefits, such as important public goods and services.
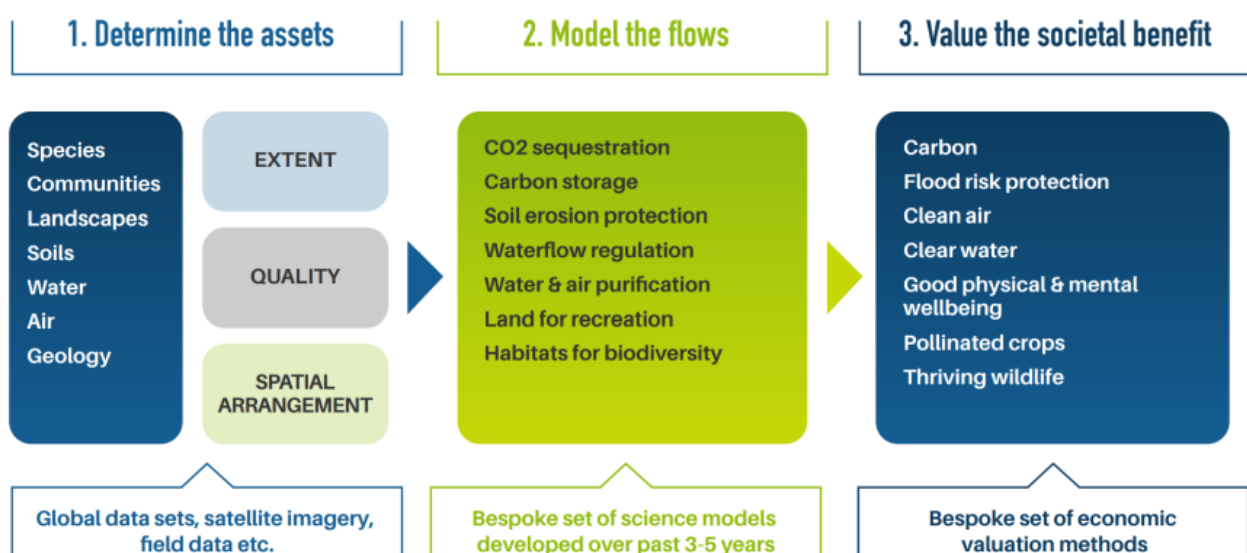

Figure 1. Schematic to show examples of the relationship between natural capital assets (stocks), ecosystem services (flows) and societal benefits (public goods and services)

This report will show you what natural assets have been found in your chosen area, where they have been found, and in what quantity, to provide information that can be placed in an asset register. The report provides you with an estimate of the natural capital assets of:

- Landcover
- Height of forest, woodland, trees and hedges
- Topographical variation of the land (elevation and slope)
- Water and wetlands
- Soil type

The report also provides you with estimates of the following ecosystem service flows that these assets provide:

- Carbon storage
- Carbon sequestration
- Soil erosion prevention
- Flood risk reduction
- Recreation
- Pollination

- Important biodiversity habitats
- Nature networks

This report

This report details the data used by Natural Capital Research Ltd to calculate these ecosystem service flows and establishes an asset register. The following sections present our findings on the assets and flows relating to your chosen report area. We provide a series of maps and tables to illustrate how the various assets and flows are distributed, and a summary heatmap to help you understand where in your chosen report area multiple overlapping ecosystem services occur.

The information below provides a critical evidence base for determining where to protect natural capital and where the maximum benefits from the ecosystem services are being provided. It also serves as an important baseline document showing areas with potential for income when a system of payment of 'public money for public goods' is implemented.

Report study area

Your chosen area covers 468.0 hectares (1,156.0 acres). The data in this report works to a resolution of 5m.
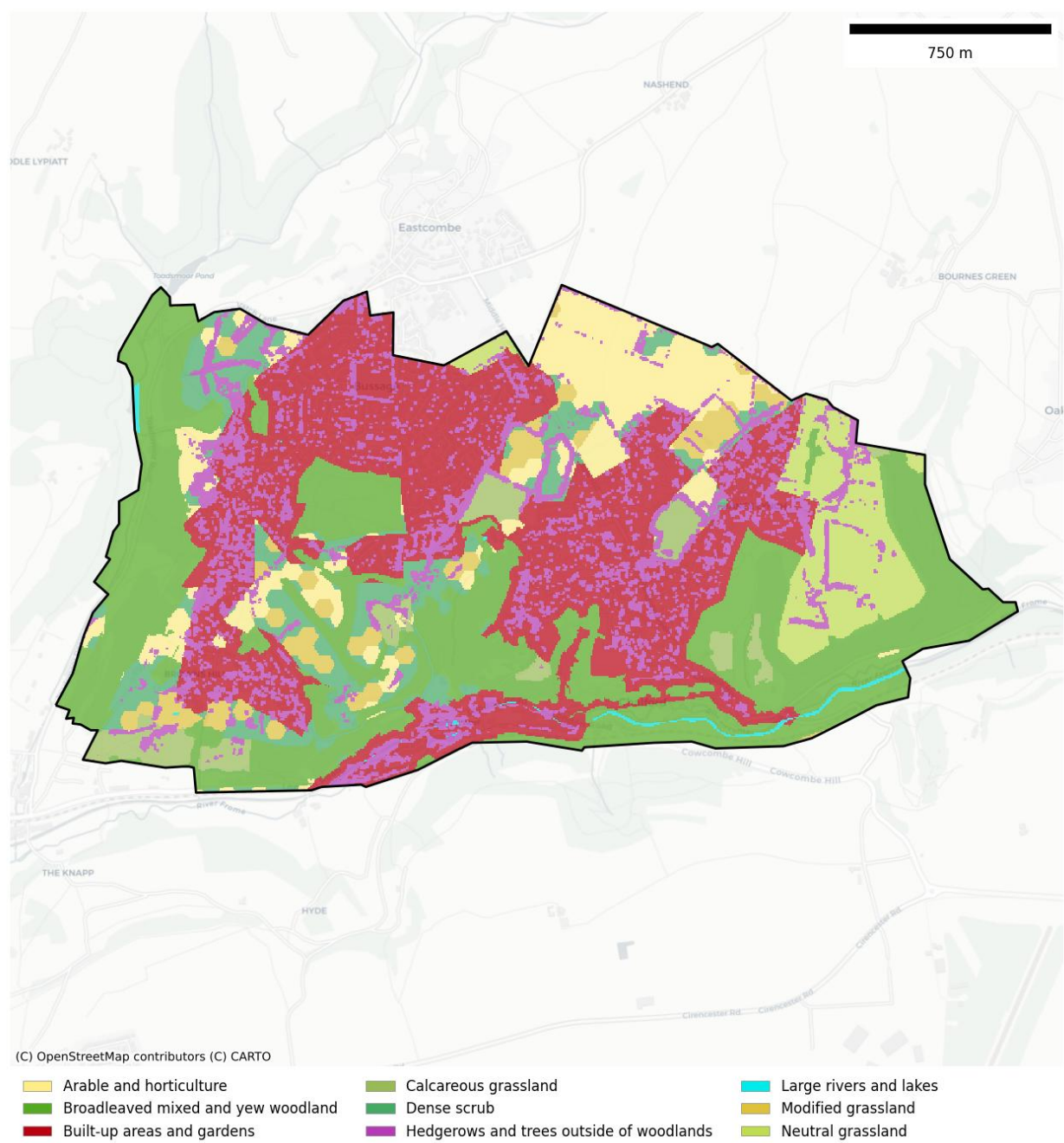

Map 1. Report study area

1. Natural capital assets

Natural capital assets can be simply described as the aspects of nature (e.g. species, habitats, communities etc.) that provide key ecosystem services underpinning important public goods or benefits (see map 1).

Within the study area, the extent, quality and location of natural capital assets were determined and are described below.

1.1. Landcover of chosen study area

Map key:
- Arable and horticulture
- Broadleaved mixed and yew woodland
- Built-up areas and gardens
- Calcareous grassland
- Dense scrub
- Hedgerows and trees outside of woodlands
- Large rivers and lakes
- Modified grassland
- Neutral grassland

(C) OpenStreetMap contributors (C) CARTO

Map 2. Detailed landcover information grouped by broad landcover classes in your chosen report area. See section 7 for data sources

## 1.2. Height of forests, woodlands, trees and hedges

Map 3 shows the height of forest, woodlands, trees and hedges as obtained from aerial photography in your chosen report area. Data supplied by Bluesky Ltd.
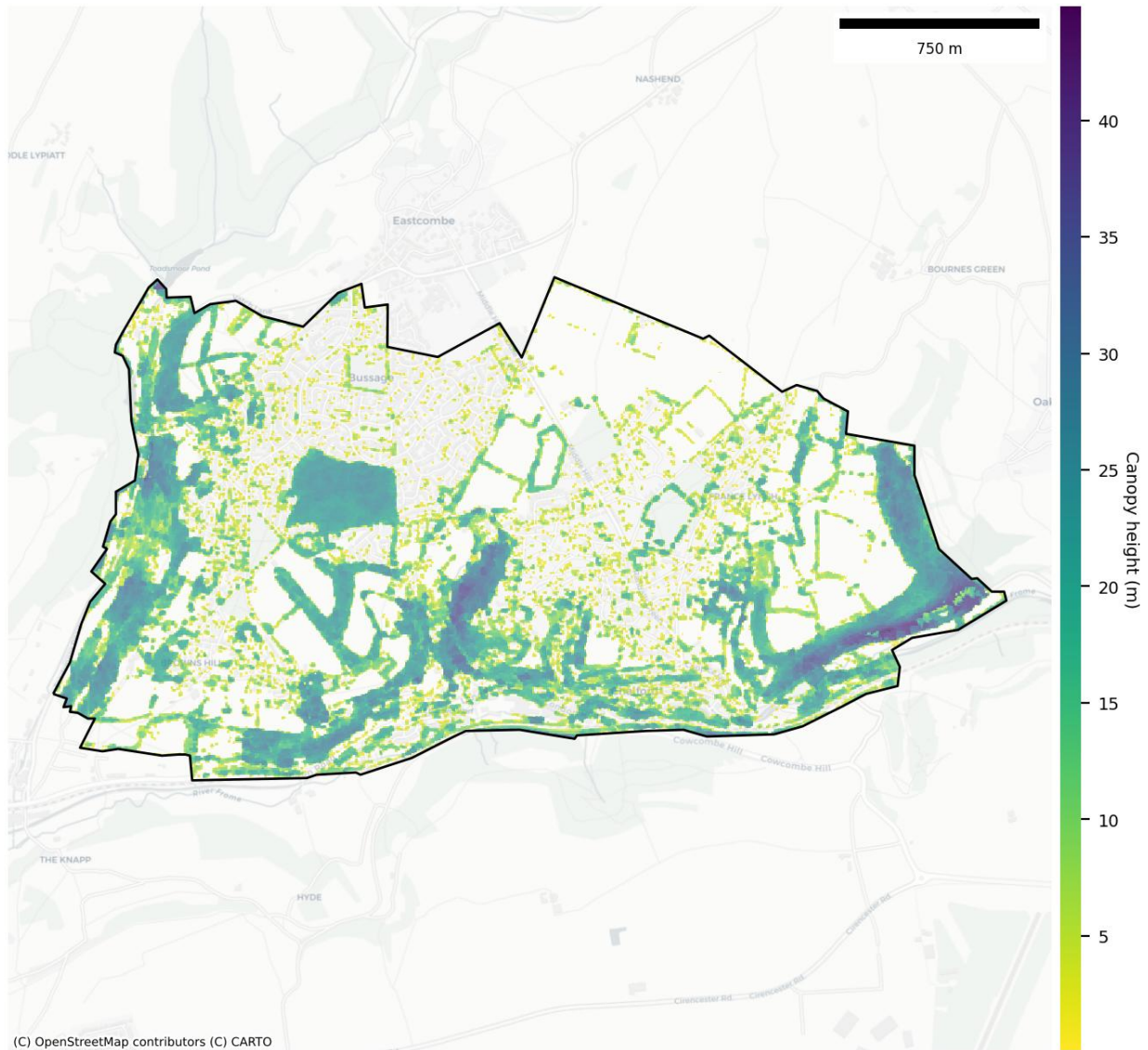
Map 3. Height of forest, woodland, trees and hedges (metres)
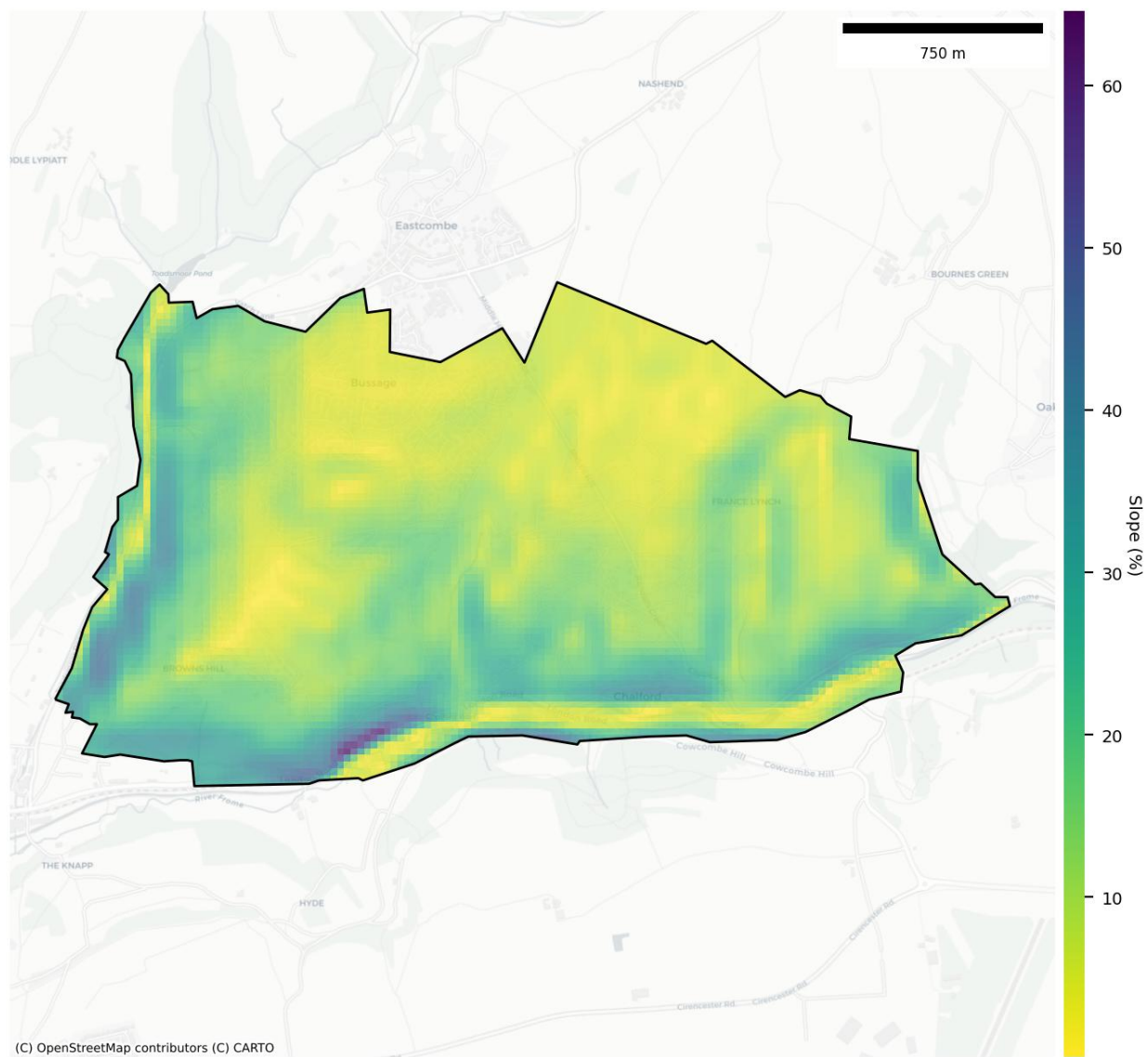
1.3. Elevation

The following two maps show the topographical variation across your chosen report area. The first shows elevation above sea level and the second shows our calculation of slope, both at 25m resolution.
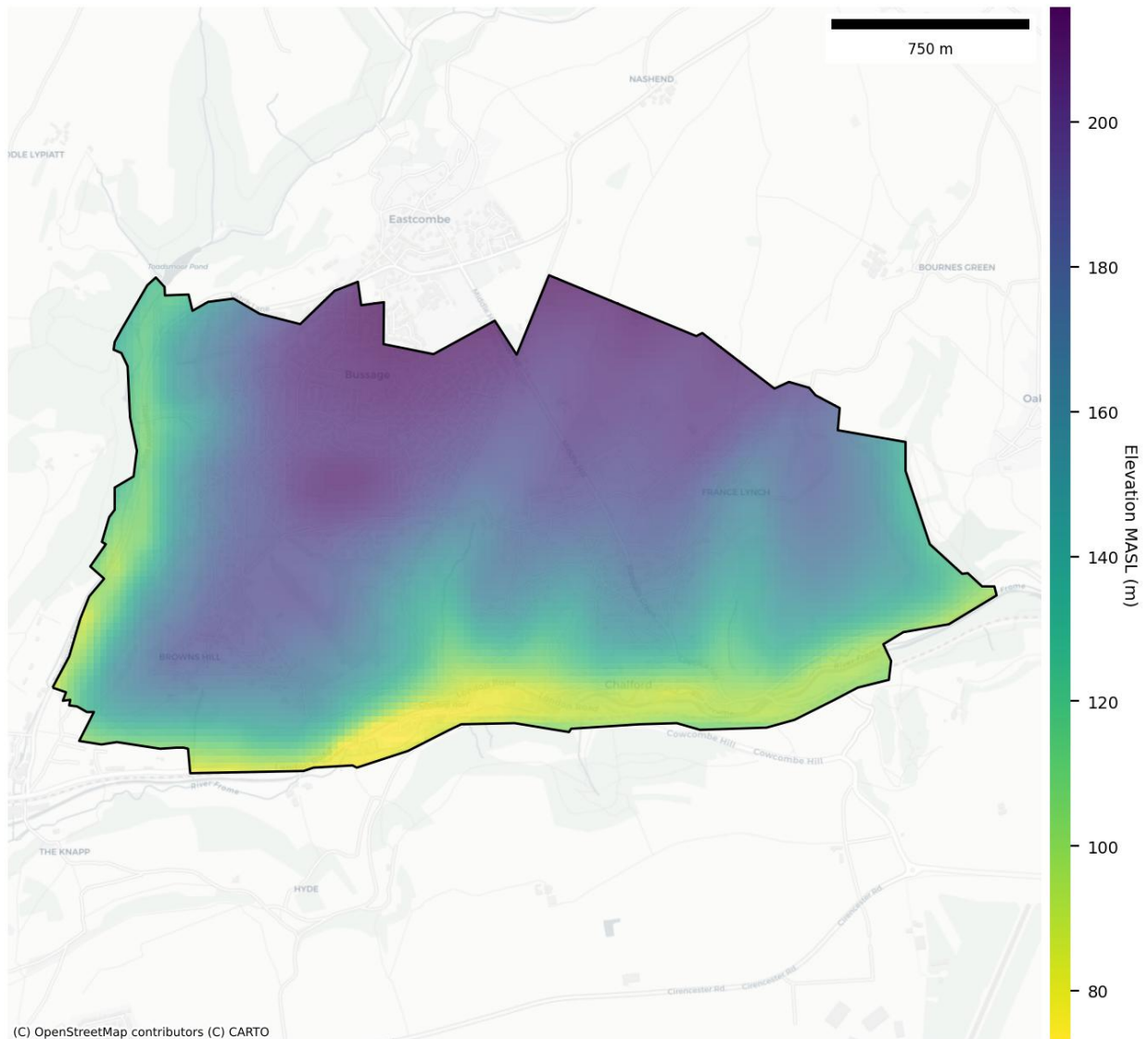
Map 4. Elevation (metres above sea level)

1.4. Slope

Map 5. Slope (%)

1.5. Water and wetlands

Map 6 shows the location of surface waterbodies, wetlands, rivers and streams in your chosen report area.
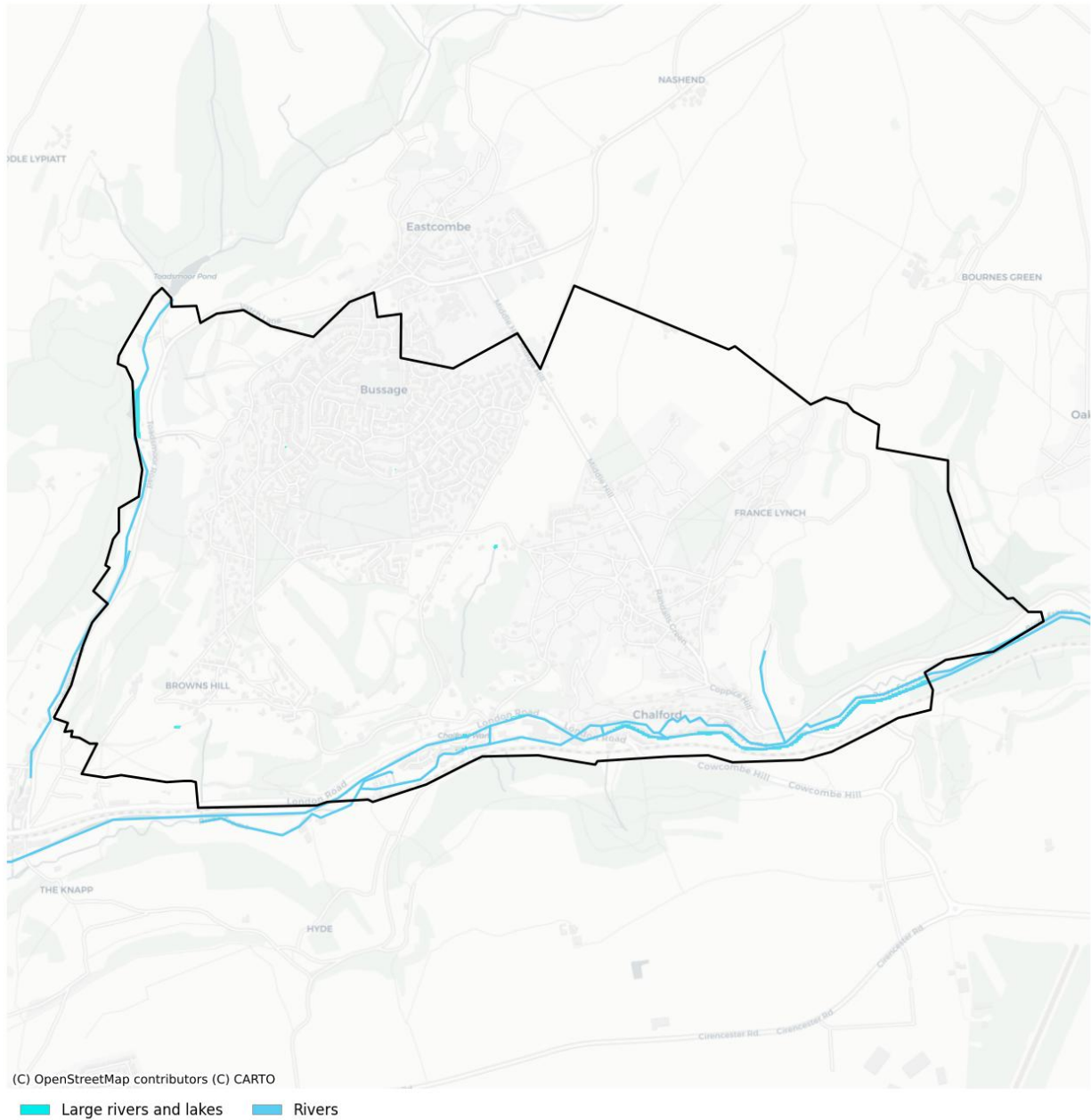
Map 6. Approximate location of water, wetlands, rivers and streams. See section 7 for data sources

1.6. Soil type

Map 7 illustrates the spatial distribution of the different soil types in your chosen report area. Soil data are typically of lower resolution than other data in this report.

Legend: Loam
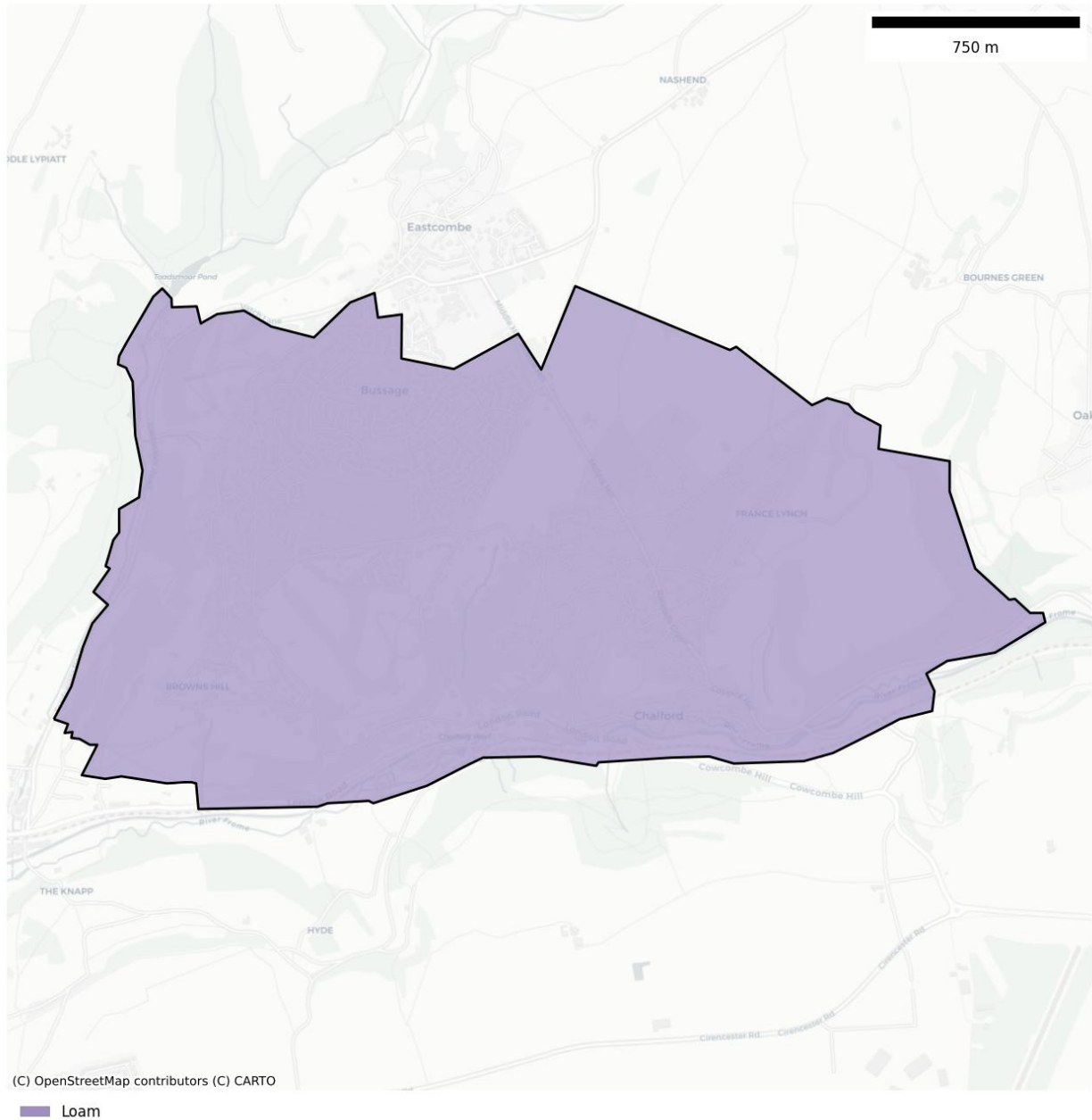
Map 7. Soil types in your chosen report area. See section 7 for data sources

2. Ecosystem service flows

Natural capital services, or ecosystem service flows, are the services provided by natural capital assets. For example, woodlands (asset) and carbon sequestration (ecosystem service flow) (see Figure 1).

Using the information obtained above relating to the distribution, quantity and quality of natural capital assets, we have modelled the spatial distribution of important ecosystem service flows in your chosen report area that are generated by these assets.

2.1. Carbon storage

2.1.1. Carbon stored in trees in forests and woodlands

Map 8 displays the carbon storage of trees in forests and woodlands in the chosen report area. Our estimates are based on a modelling approach that takes account of canopy height and biophysical data, including vegetation greenness from satellite data and estimations of woodland age and yield class. The carbon storage map is produced at 10m resolution and displays carbon density of vegetation in tonnes CO2e per hectare, accounting for both aboveground biomass and belowground living biomass (roots).
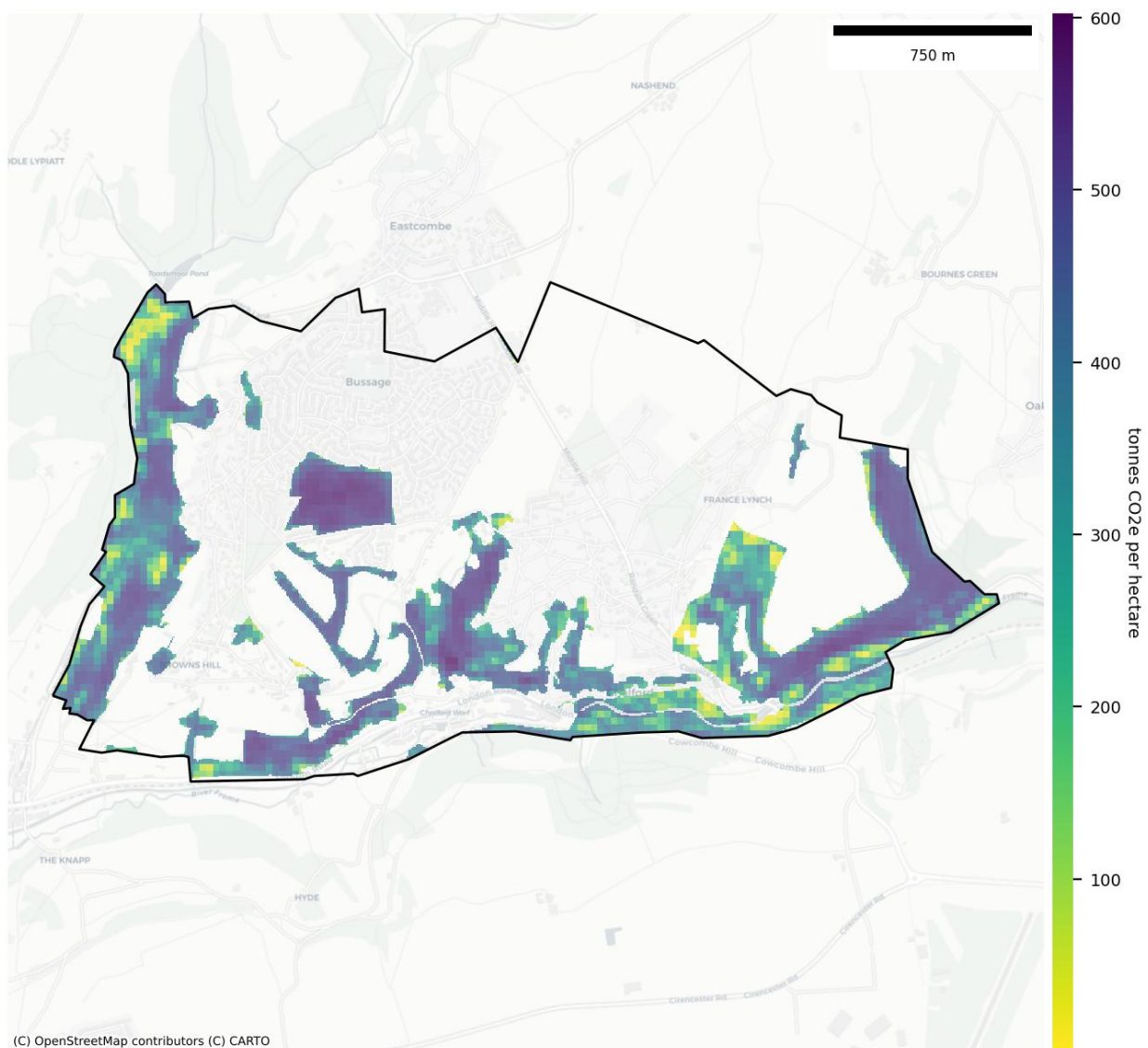
Map 8. Estimated storage of carbon in trees in forests and woodlands (tonnes CO2e per hectare)

2.1.2. Carbon stored in trees and vegetation that lie outside of forests and woodlands

Map 9 displays the estimated carbon stored by vegetation outside of forests and woodlands in your chosen report area, including in hedgerows, parkland and single trees. Our estimates for trees and hedges are based on a modelling approach that takes account of canopy height and biophysical data, including vegetation greenness from satellite data and estimations of woodland age and yield class. For other vegetation, we use published literature on the carbon density of habitats in the UK. The resulting carbon storage maps are produced at 10m resolution and display carbon density of vegetation in tonnes CO2e per hectare, accounting for both aboveground biomass and belowground living biomass (roots).

(C) OpenStreetMap contributors (C) CARTO
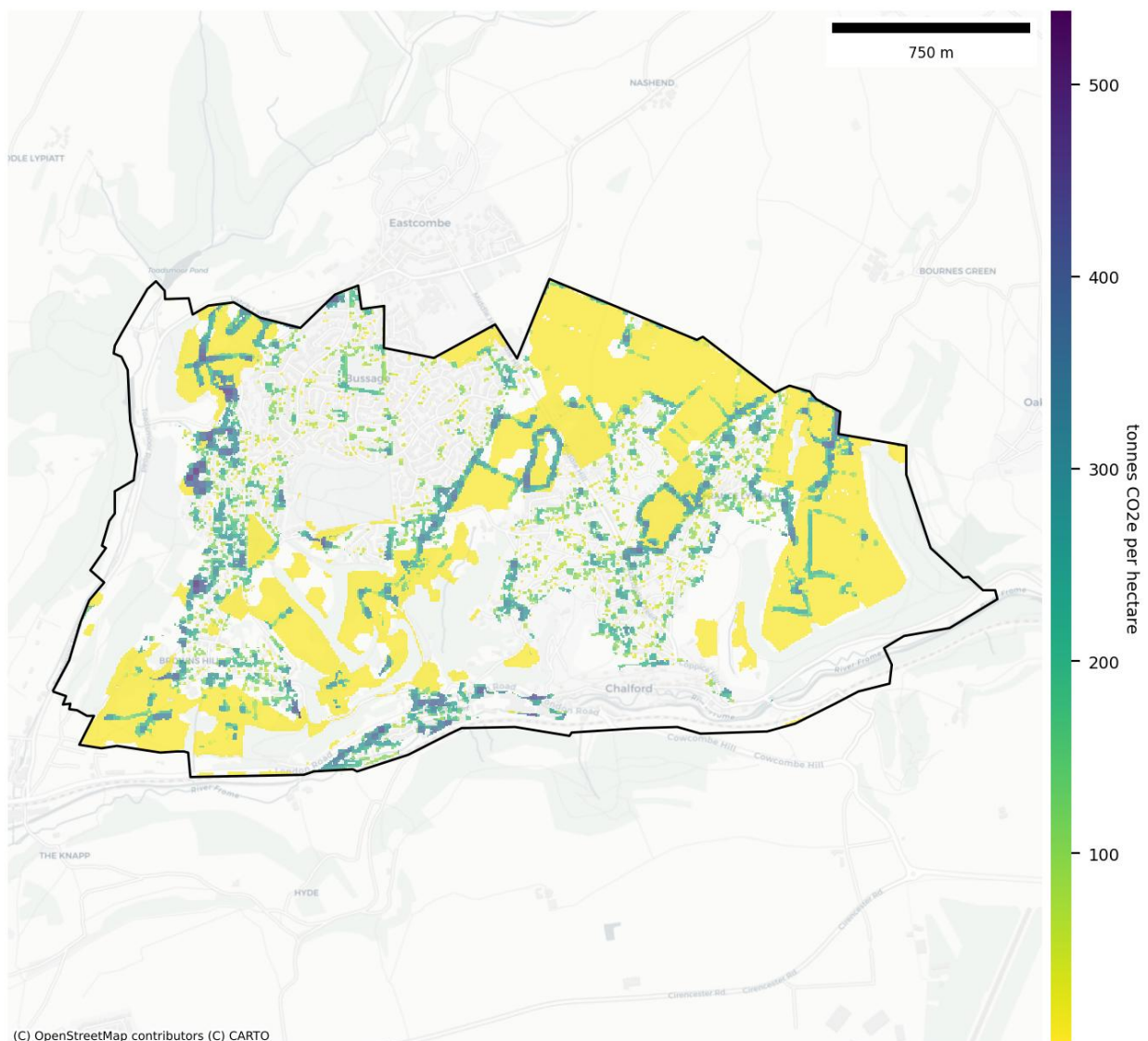
Map 9. Estimated storage of carbon in trees and vegetation outside of woodlands in your chosen report area (tonnes CO2e per hectare)

2.1.3. Carbon storage in topsoil

Map 10 displays the estimated belowground carbon storage in the topsoil (top 30 cm) of your chosen report area, in tonnes CO2e per hectare. See section 7 for datasets.
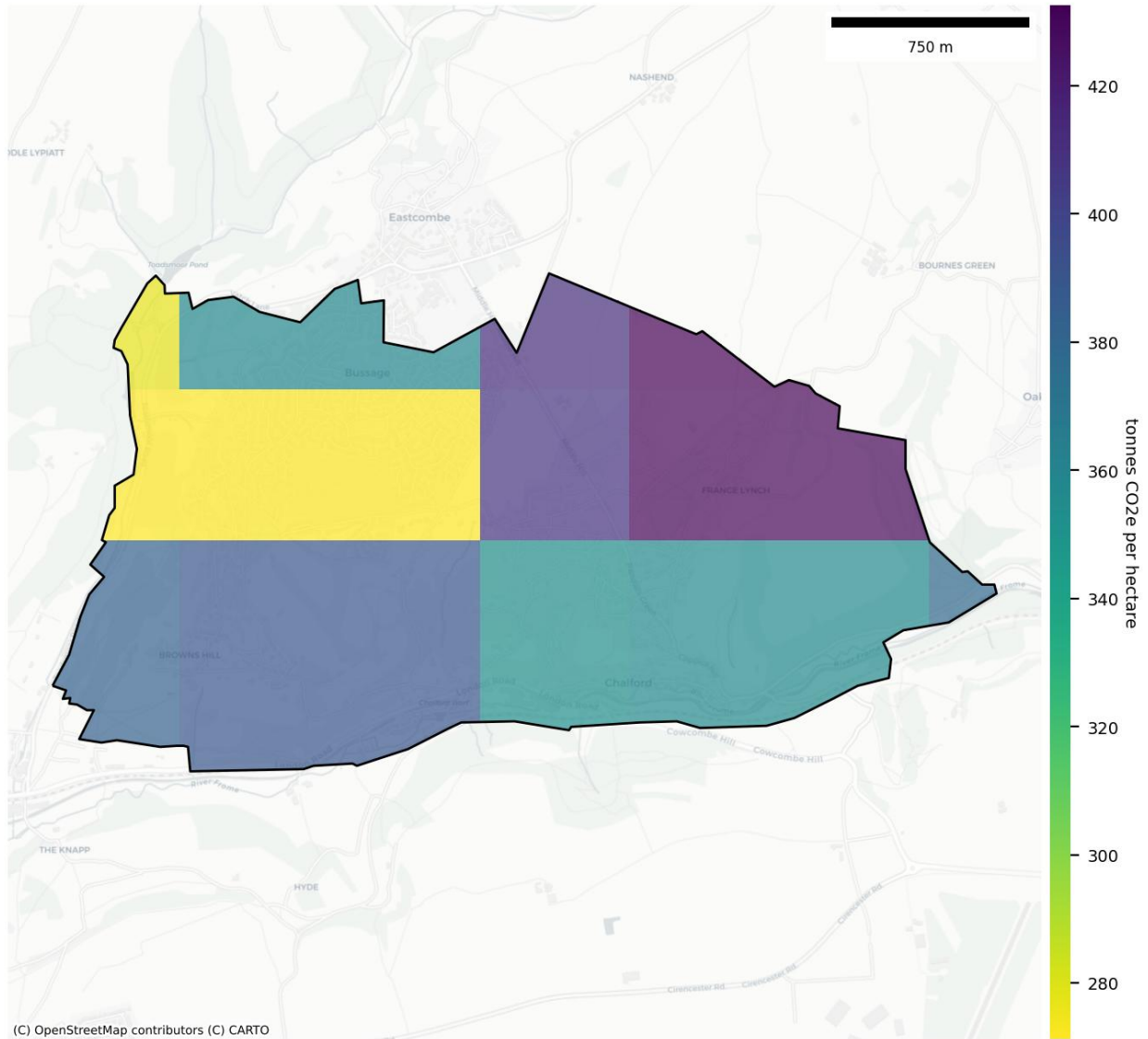
Map 10. Estimated storage of carbon in the top 30 cm of soil (tonnes CO2e per hectare)

2.2. Carbon sequestration

2.2.1. Carbon sequestration by trees in forests and woodlands

Map 11 displays the estimated rate of CO2 being sequestered (or emitted) from trees in forests and woodlands in your chosen report area. Our estimates are based on a modelling approach that takes account of canopy height and biophysical data, including vegetation greenness from satellite data and estimations of woodland age and yield class.
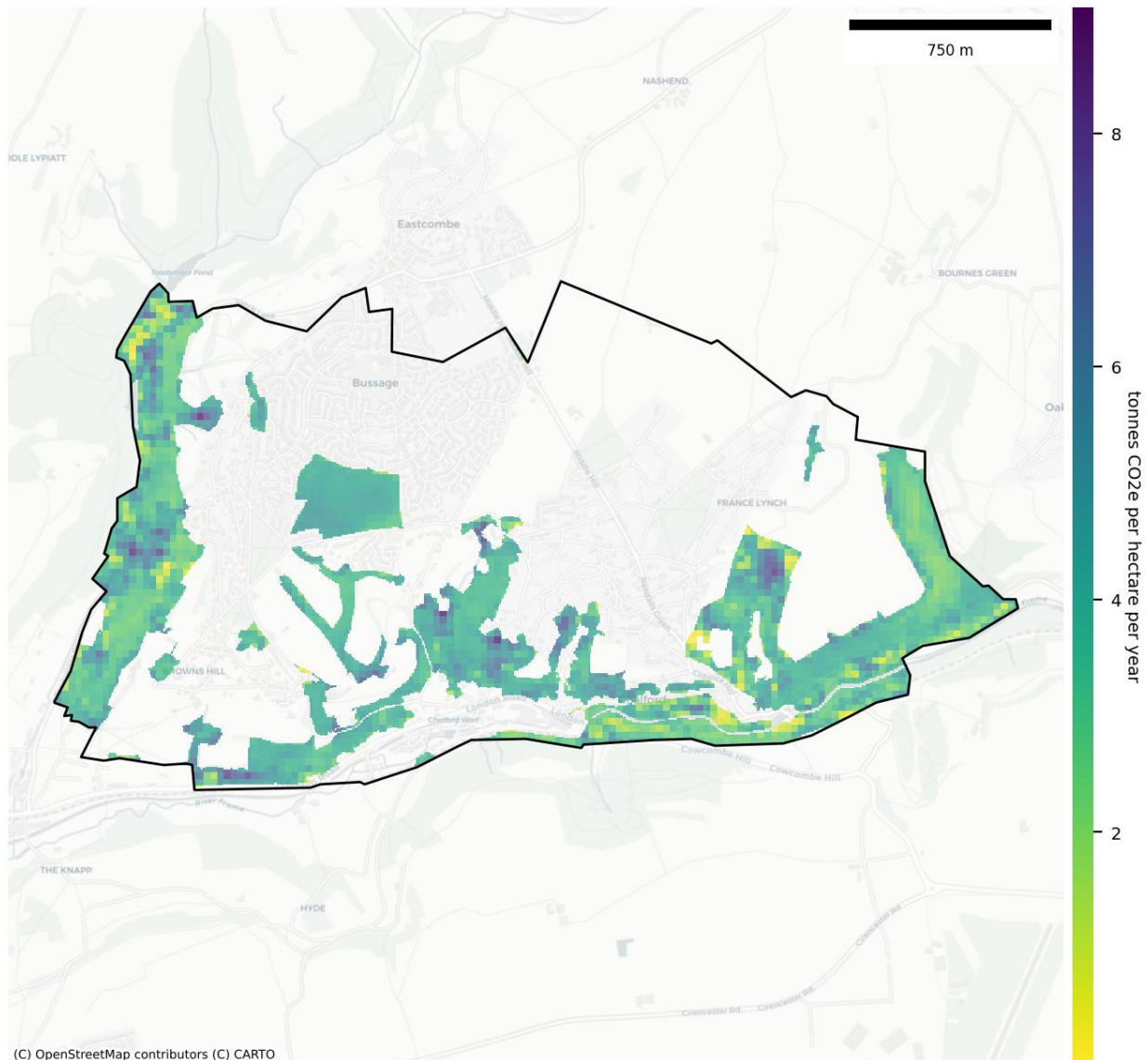
Map 11. Estimated rate of carbon sequestration by trees within forests and woodlands (tonnes CO2e per hectare per year)

2.2.2. Carbon sequestration by trees and vegetation that lie outside of forests and woodlands

Map 12 displays the estimated carbon sequestered in hedgerows and single trees that lie outside of the forests and woodlands in your chosen report area. Our estimates are based on a modelling approach that takes account of canopy height and biophysical data, including vegetation greenness from satellite data and estimations of woodland age and yield class. Carbon sequestration into non-woody landcovers such as grasslands and heathlands was assumed to be nil.
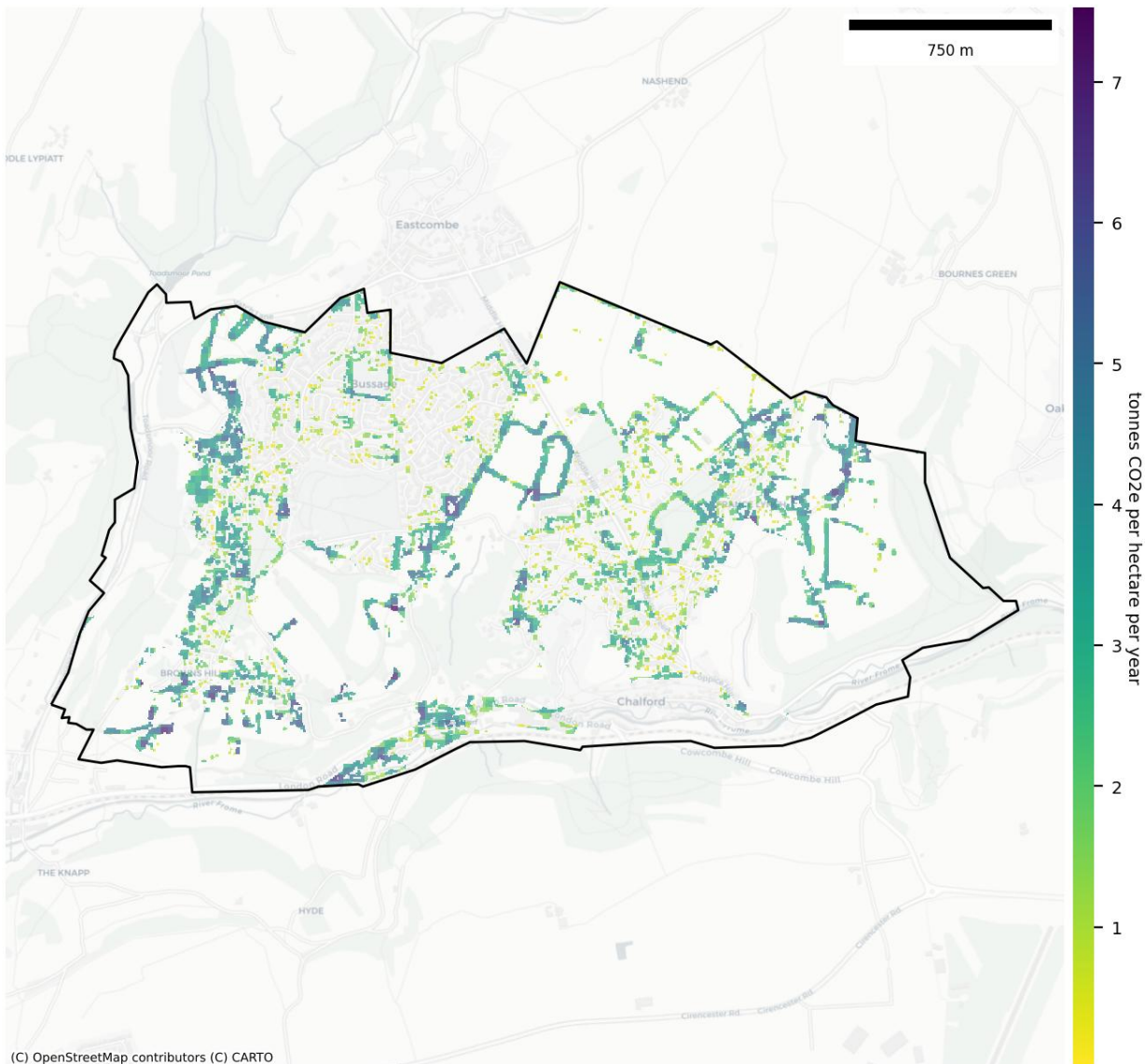
Map 12. Estimated rate of carbon sequestration by trees that lie outside of woodlands (tonnes CO2e per hectare per year)

2.3. Soil erosion prevention

Map 13 displays the areas in which the vegetation provides the greatest protection from soil erosion during rainfall events in your chosen report area. Our estimates are based on soil loss models that account for rainfall intensity, soil properties, slope and vegetation types. The exposure of soils to erosion from rainfall is determined from satellite data.
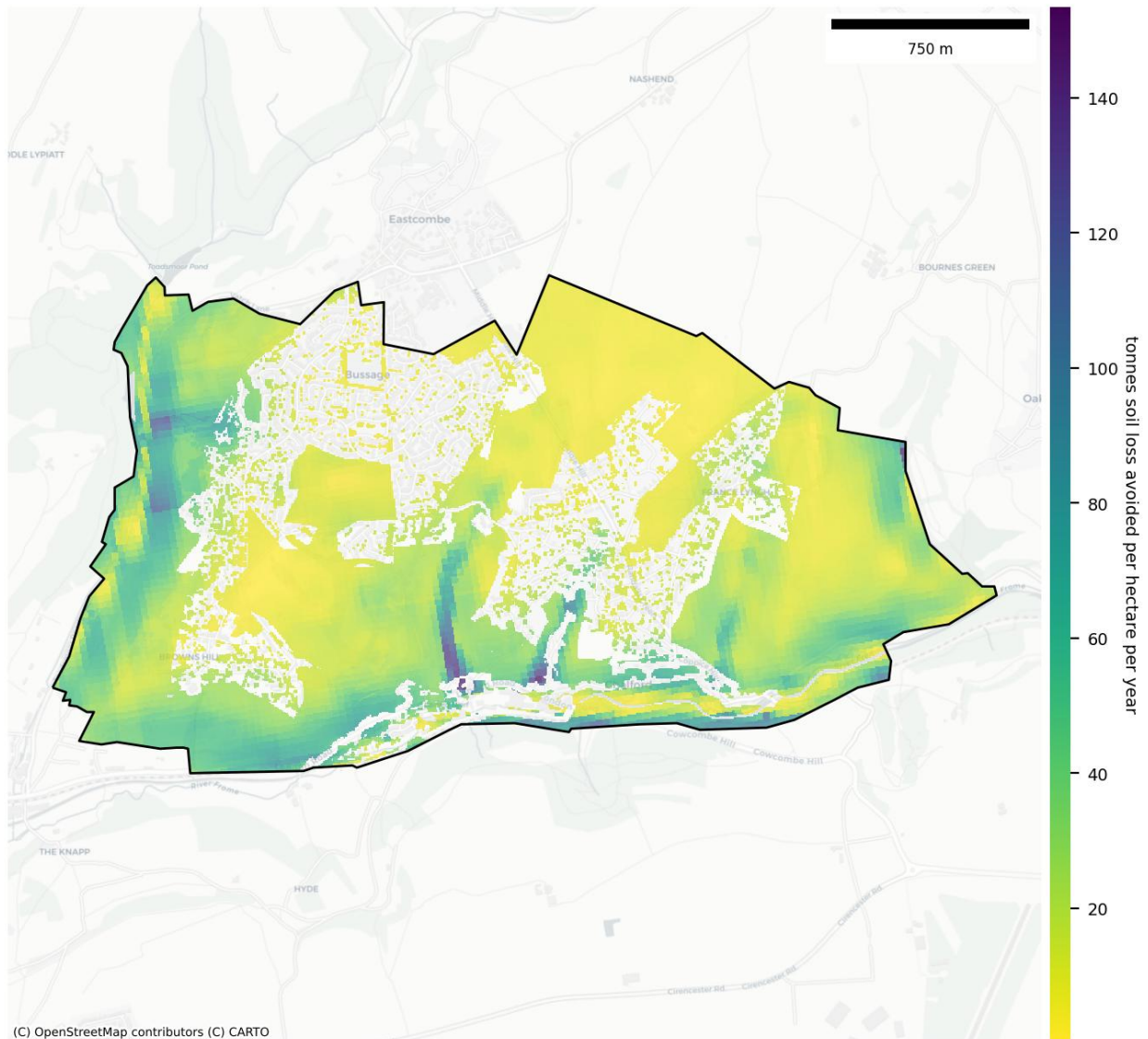
Map 13. Estimated soil erosion protection provided by different vegetation types in the chosen report area (tonnes soil loss avoided per hectare per year)

2.4. Flood risk reduction

Map 14 displays areas of land in the chosen report area where the vegetation is important in reducing surface rainfall-runoff and thus reducing the downstream flood risk during a storm event. Our estimations are calculated using a catchment approach, and we model water flows using the semi-distributed hydrological model SWAT. SWAT takes account of soil properties, information on landcover and land management, topography (including slope), and meteorological data (including rainfall). The resulting map displays m^3 of avoided surface runoff per hectare per year at a 25m resolution.
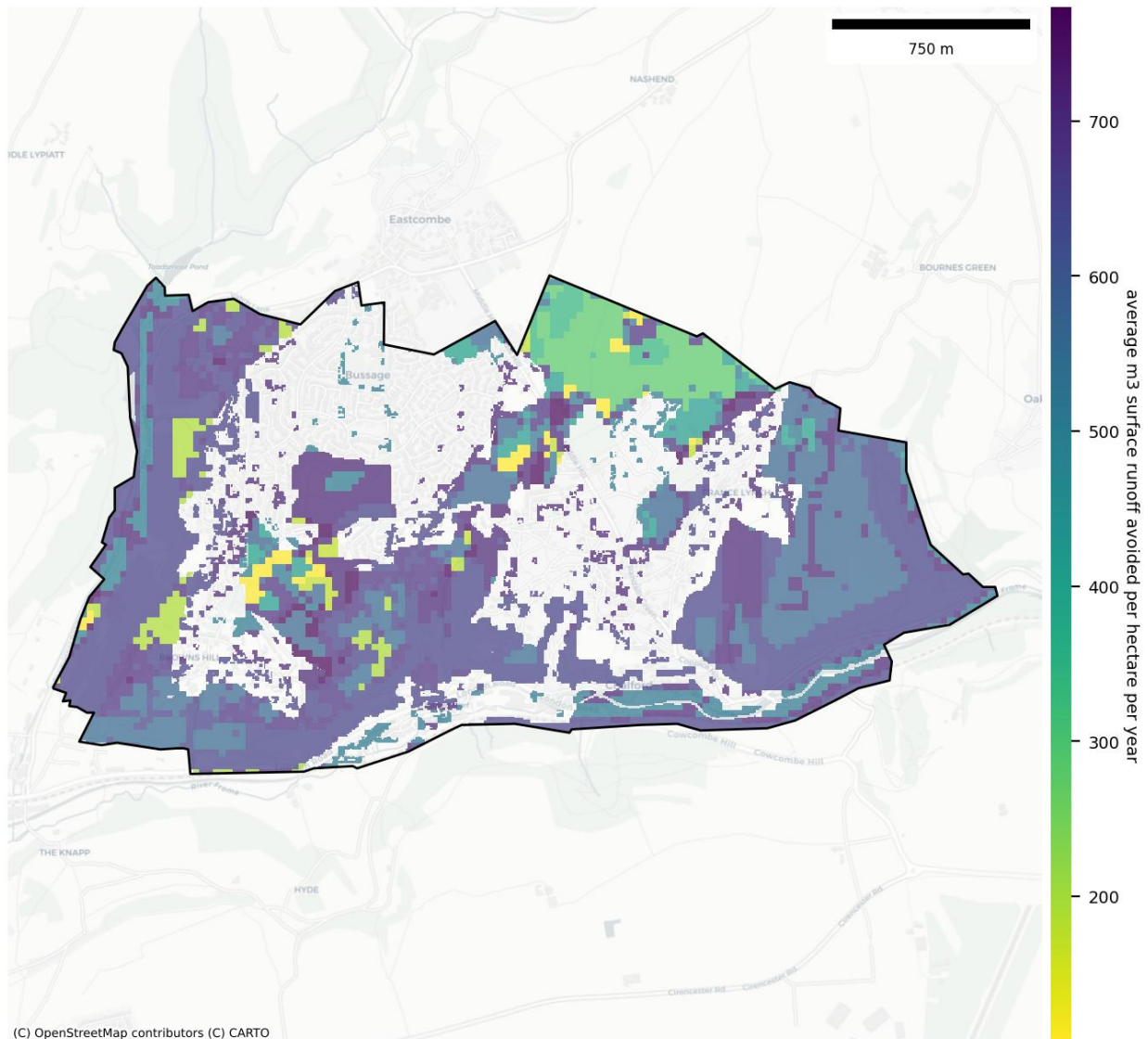
Map 14. Areas of the landscape where vegetation is estimated to be important for flood risk reduction in your chosen report area (average m^3 surface runoff avoided per hectare per year)

2.5. Recreation

Map 15 displays important areas for recreation in your chosen report area. Our estimations are based on a model that aggregates social media records (displaying parts of the landscape most frequently photographed or visited and uploaded onto social media platforms) with environmental variables (such as landcover, viewshed and presence of trails) and other data (such as access, amenities and travel times from towns and cities). The data and models used come from a variety of sources. See section 7 for details.
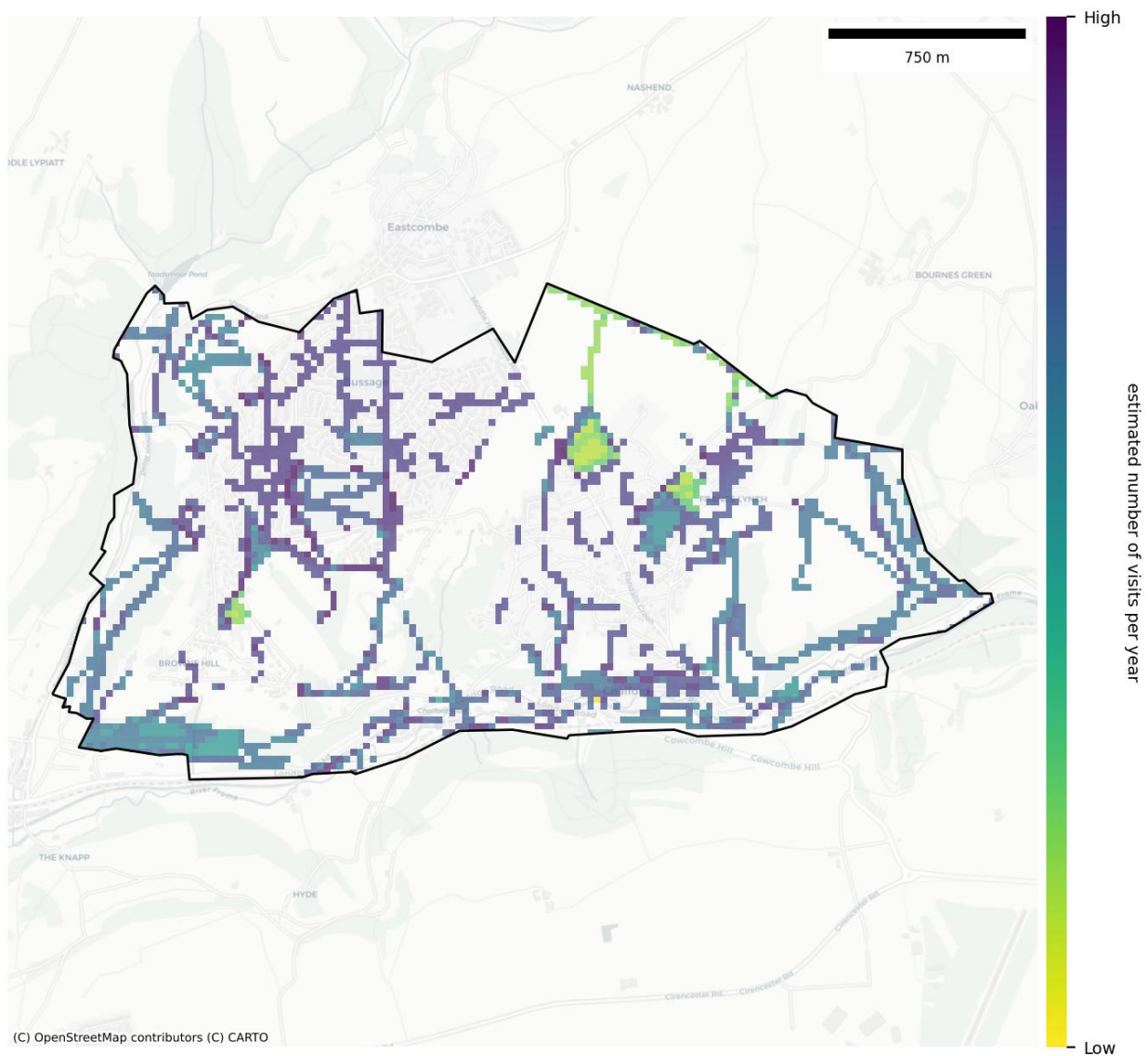
Map 15. Important areas for recreation (24,500) estimated number of visits per year

2.6. Pollination

Map 16 displays parts of the landscape in your chosen report area that are good for insect pollinators of crops. These include, for example, areas with a high diversity of nectar plants or suitable nesting sites that are in close proximity to crops that require pollination services.
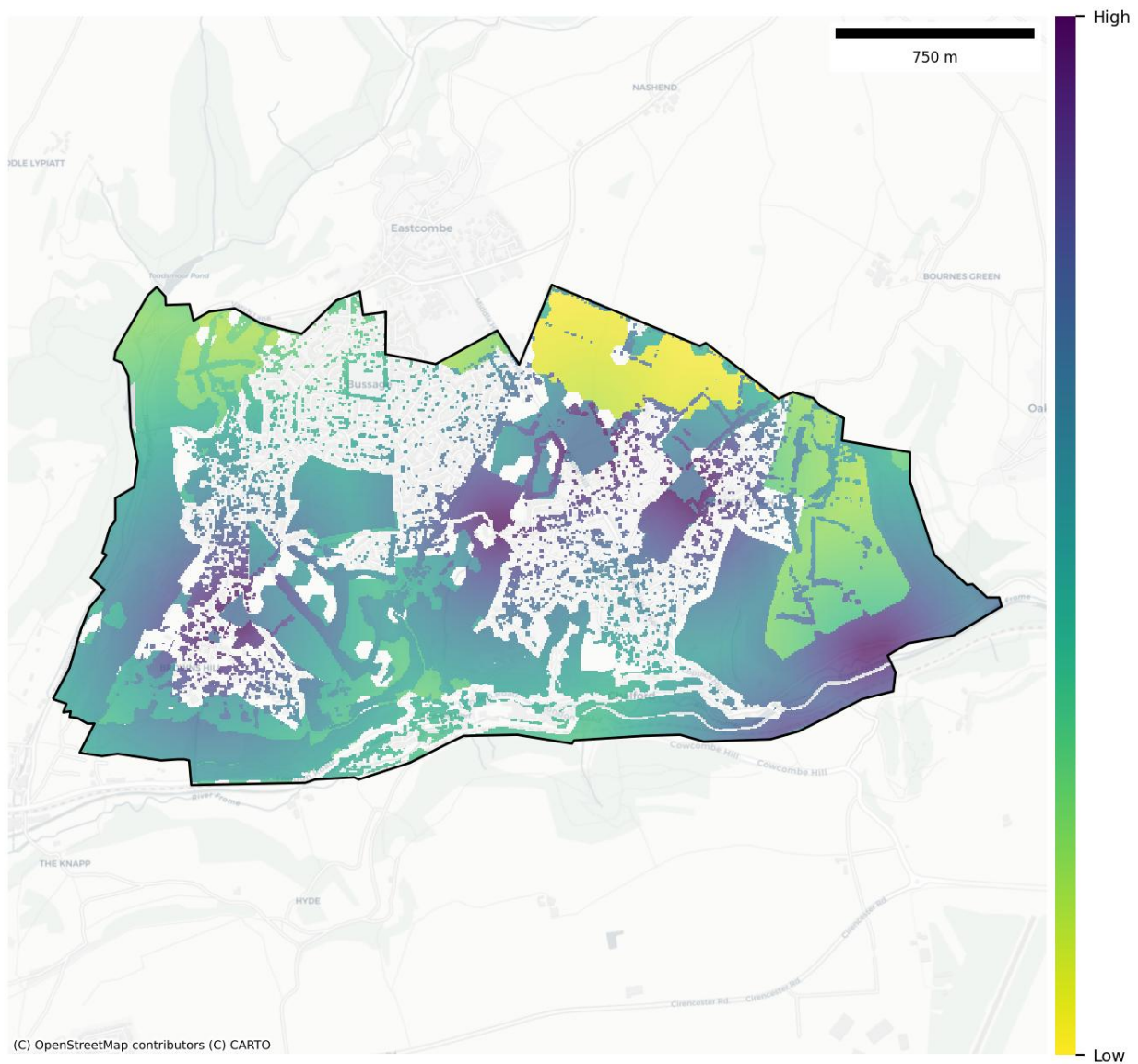
Map 16. Estimated distribution of landcover important for pollination services (metric indicating relative importance of landcover in that location, from low to high)

2.7. Important biodiversity habitats

Map 17 displays important areas for wildlife or conservation in your chosen report area. Our estimations are determined by combining information on designated protected areas and conservation sites with data for habitats that are recognised as important for biodiversity (priority habitats and ancient woodlands). We group these areas by their designation, either as 'internationally protected', 'nationally protected', 'locally protected' or 'priority habitat or ancient woodlands'.

National Importance - Non-Statutory Protected   National Importance - Statutory Protected
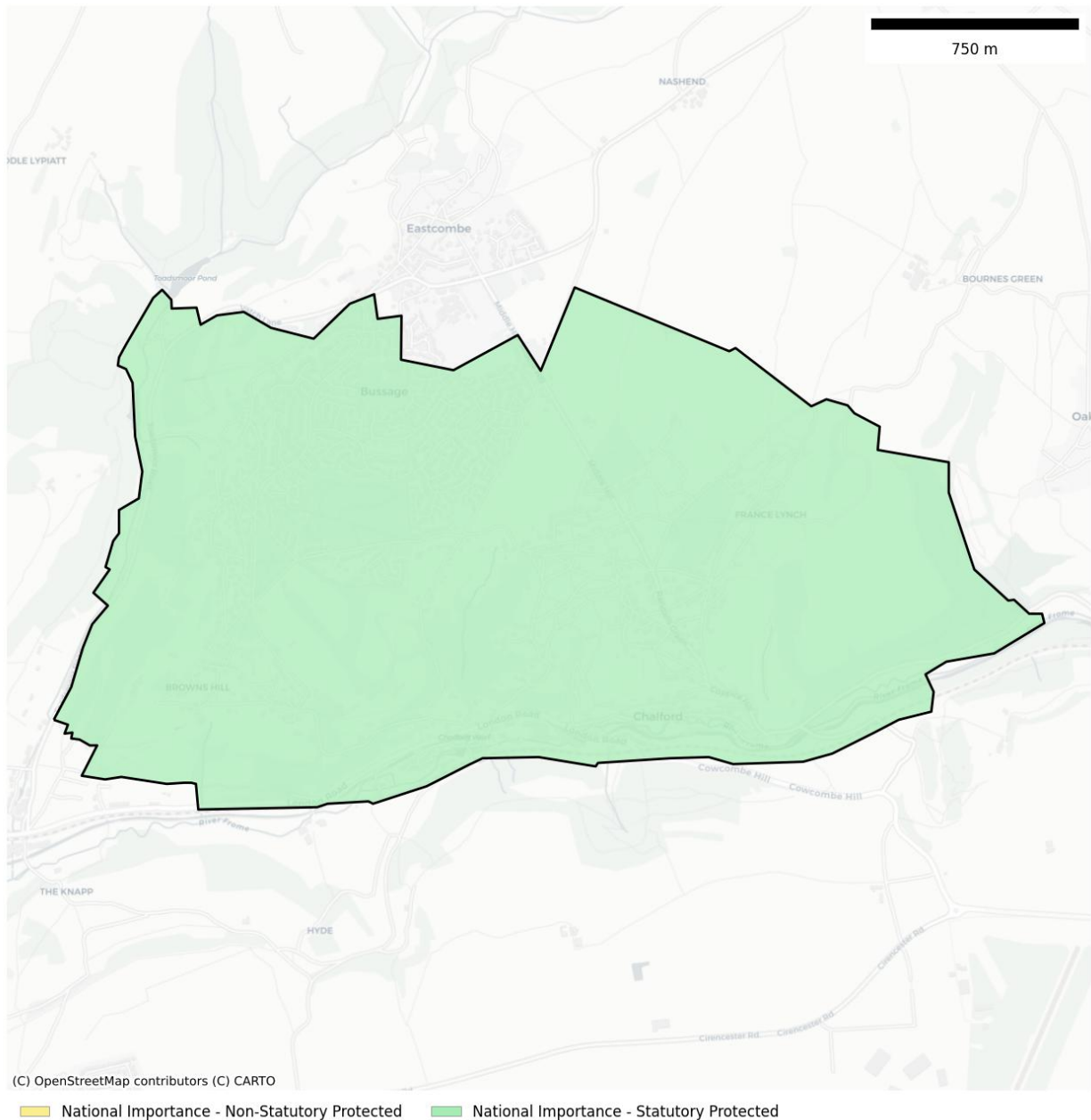
Map 17. Important habitats for biodiversity

2.8. Nature networks

Map 18 displays important patches of native woodland habitat for biodiversity connectivity and movement. Although results are only shown for your selected area, the model takes into account the importance of any native woodland patches within the wider landscape. Our model identifies patches of similar landcover types (e.g. native woodlands), calculates their area and uses graph theory models to measure the overall connectivity of the landscape, as well as identifying the most important patches that act as stepping stones for species between patches. The map also displays hedgerows; although not included in the modelling, they illustrate the connectivity of land between woodland patches.

(C) OpenStreetMap contributors (C) CARTO

🟨 Low Importance   🟪 Hedgerows and trees outside of woodlands
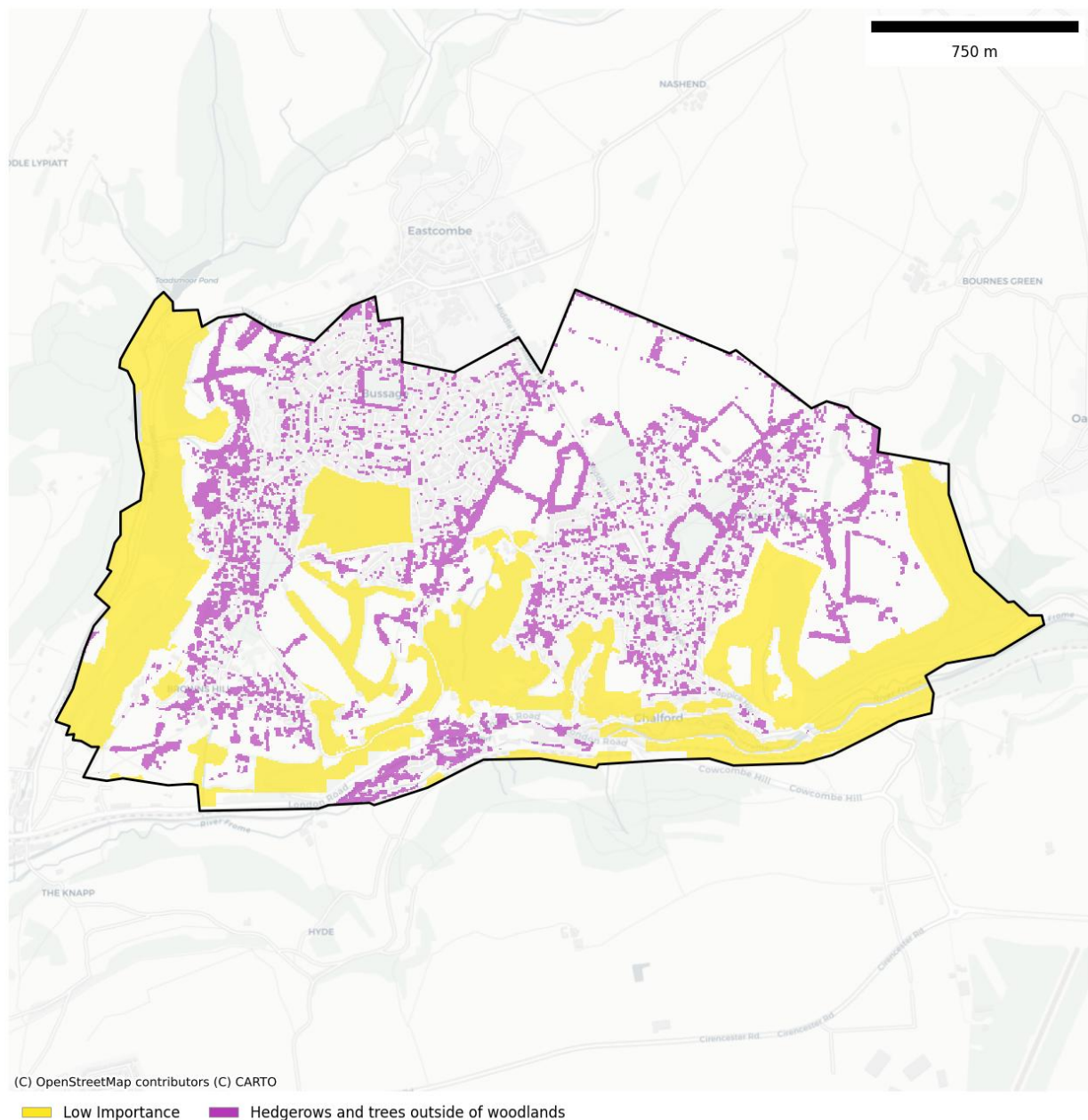
Map 18. Important native woodland patches for the movement of biodiversity across landscapes (metric indicating contribution of patch to overall landscape connectivity, from low to high). The map also displays hedgerows. The individual importance of hedgerows is not modelled but these are displayed to show the connectivity of the land between woodland patches

3. Summary

3.1. Heatmap of combined ecosystem service flows

Map 19 displays a heatmap demonstrating the parts of the landscape in your chosen report area which provide the largest quantity of ecosystem service flows. This was created by summing the standardised output maps from the ecosystem services described above to create a final map of the distribution of multiple service provision. The resulting map places equal weight on each of the service flows.
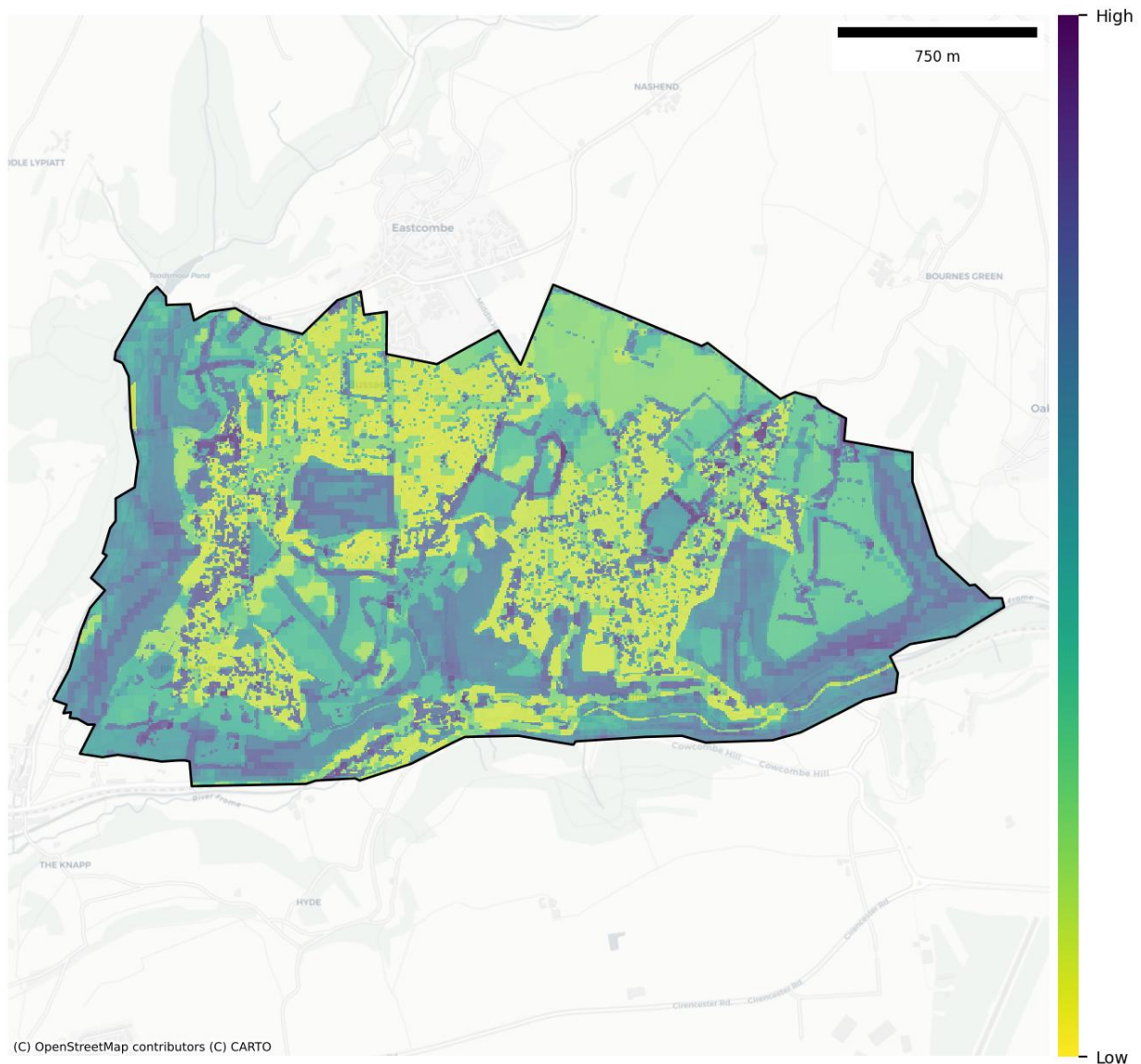
Map 19. Hotspots in the provision of multiple ecosystem services for your chosen report area (metric indicating the flows from all estimated ecosystem services, from low to high)

3.2. Baseline register of natural capital assets

Table 3. Estimated natural capital stocks (assets) in your chosen report area

Asset	Quantity	
Landcover		
Neutral grassland	26.9	ha
Arable and horticulture	39.3	ha
Hedgerows and trees outside of woodlands	68.2	ha
Broadleaved mixed and yew woodland	140.7	ha
Built-up areas and gardens	127.8	ha
Dense scrub	32.0	ha
Modified grassland	16.2	ha
Calcareous grassland	15.0	ha
Water		
Large rivers and lakes	1.9	ha
Topography		
Average elevation	160.4	m
Average slope	13.6	%
Soils		
Loam	467.8	ha

3.3. Baseline register of ecosystem service flows

Table 4. Estimated ecosystem service flows in your chosen report area

Ecosystem service flow	Total		Average	
Carbon storage in vegetation and soils	238,082.0	tCO_2e	509.0	tCO_2e/ha
Carbon storage in woodlands and forests	54,033.0	tCO_2e	115.0	tCO_2e/ha
Carbon storage in trees and vegetation outside of woodlands	12,934.0	tCO_2e	28.0	tCO_2e/ha
Carbon storage in topsoil	171,116.0	tCO_2e	366.0	tCO_2e/ha
Carbon sequestration in vegetation and soils	700.0	$tCO2e/yr$	1.0	$tCO2e/ha/yr$
Carbon sequestration in woodlands and forests	512.0	$tCO2e/yr$	1.0	$tCO2e/ha/yr$
Carbon sequestration in trees and vegetation outside of woodlands	187.0	$tCO2e/yr$	<1	$tCO2e/ha/yr$
Soil erosion prevention	8,186.0	tonnes soil loss avoided/yr	17.0	tonnes soil loss avoided/yr/ha
Flood risk reduction	180,554.6	m^3 runoff avoided/yr	385.9	m^3 runoff avoided/yr/ha
Recreation	24,500.0	number of visits/yr	n/a	
Important areas for supporting insect pollinators of crops	324.0	ha	n/a	
Important biodiversity habitats	468.0	ha	n/a	

4. What could I do next?

This report details the assets and ecosystem service flows in your chosen report area. This is the baseline of the current situation. Building on this baseline, you can now go on to determine:

1. Where to enhance your natural capital assets (e.g. through land management changes) to increase the ecosystem service provision and related societal benefits from your land.
2. The value of your natural capital assets and the worth of enhancements.

Report: Re-run this report at regular intervals to demonstrate the scale and effectiveness of your natural capital enhancements.

If you require any information on developing the steps above please do get in touch – info@natcapresearch.com.

5. Detailed results – natural capital assets

Table 5. Estimated broad landcover classes in your chosen report area (hectares)

Landcover	Area	
Neutral grassland	26.9	ha
Arable and horticulture	39.3	ha
Hedgerows and trees outside of woodlands	68.2	ha
Broadleaved mixed and yew woodland	140.7	ha
Built-up areas and gardens	127.8	ha
Dense scrub	32.0	ha
Modified grassland	16.2	ha
Calcareous grassland	15.0	ha
Total area	465.98	ha

Table 6. Height of trees found in different landcover types

Landcover	Area		Average Height	
Broadleaved mixed and yew woodland	140.7	ha	19.4	m

Table 7. Estimated topographical variation: elevation (metres above sea level) and slope (%)

Topography	Average	
Average elevation	160.4	m
Average slope	13.6	%

Table 8. Estimated extent of water and wetlands

Water and Wetlands	Area	
Large rivers and lakes	1.9	ha

Table 9. Estimated extent of different soil types

Soils	Area	
Loam	467.8	ha

6. Detailed results – ecosystem service flows

Table 10. Carbon storage in trees in woodlands, trees outside woodlands and in vegetation and soils

Landcover	Area (ha)		Total (tCO₂e)	Average (tCO₂e/ha)
Trees in woodlands and forests				
Broadleaved mixed and yew woodland	140.7	ha	53,942.8	383.5
Trees and vegetation outside woodlands				
Arable and horticulture	39.3	ha	90.4	2.3
Built-up areas and gardens	127.8	ha	0.0	0.0
Calcareous grassland	15.0	ha	55.2	3.7
Dense scrub	32.0	ha	234.5	7.3
Hedgerows and trees outside of woodlands	68.2	ha	12,395.9	181.9
Large rivers and lakes	1.9	ha	0.0	0.0
Modified grassland	16.2	ha	59.3	3.7
Neutral grassland	26.9	ha	98.5	3.7
Topsoils				
Top 30cm of soil	467.8	ha	171,115.7	365.8

Table 11. Estimated rates of carbon sequestration by different landcover types in your chosen report area

Landcover	Area (ha)		Total (tCO2e/yr)	Average (tCO2e/ha/yr)
Trees in woodlands and forests				
Broadleaved mixed and yew woodland	140.7	ha	510.8	3.6
Trees and vegetation outside woodlands				
Arable and horticulture	39.3	ha	0.0	0.0
Built-up areas and gardens	127.8	ha	0.0	0.0
Calcareous grassland	15.0	ha	0.0	0.0
Dense scrub	32.0	ha	0.0	0.0
Hedgerows and trees outside of woodlands	68.2	ha	187.4	2.7
Large rivers and lakes	1.9	ha	0.0	0.0
Modified grassland	16.2	ha	0.0	0.0
Neutral grassland	26.9	ha	0.0	0.0
Total	467.8		187.4	<1

Table 12. Estimated soil erosion protection provided by different vegetation types in the chosen report area

Landcover	Area (ha)	Total (tonnes of soil/yr)	% of total	Average (tonnes of soil/ha/yr)
Arable and horticulture	39.3 ha	374.9	4.6	9.5
Broadleaved mixed and yew woodland	140.7 ha	4,998.9	61.1	35.5
Built-up areas and gardens	127.8 ha	0.0	0.0	0.0
Calcareous grassland	15.0 ha	435.1	5.3	28.9
Dense scrub	32.0 ha	637.8	7.8	19.9
Hedgerows and trees outside of woodlands	68.2 ha	1,187.6	14.5	17.4
Large rivers and lakes	1.9 ha	0.0	0.0	0.0
Modified grassland	16.2 ha	231.0	2.8	14.3
Neutral grassland	26.9 ha	321.2	3.9	12.0
Total	467.8	8,186.4	100.0	17.5

Table 13. Estimated contribution of vegetation in your chosen report area to flood risk reduction (avoided surface runoff from rainfall)

Landcover	Area (ha)	Total (m^3 surface runoff avoided/yr)	% of total	Average (m^3 surface runoff avoided/ ha/yr)
Arable and horticulture	39.3 ha	9,973.3	5.5	254.0
Broadleaved mixed and yew woodland	140.7 ha	88,189.9	48.8	626.9
Built-up areas and gardens	127.8 ha	0.0	0.0	0.0
Calcareous grassland	15.0 ha	8,436.3	4.7	560.8
Dense scrub	32.0 ha	21,076.9	11.7	659.0
Hedgerows and trees outside of woodlands	68.2 ha	29,660.1	16.4	435.2
Large rivers and lakes	1.9 ha	0.0	0.0	0.0
Modified grassland	16.2 ha	8,220.0	4.6	508.2
Neutral grassland	26.9 ha	14,998.1	8.3	558.1
Total	467.8	180,554.6	100.0	385.9

Table 14. Estimated area of landcover types in the chosen report area that are important for pollination services

Landcover	Area of habitat important for pollinating insects of crops (ha)	% of total area
Arable and horticulture	25.1 ha	5.4

Broadleaved mixed and yew woodland	140.7	ha	30.1
Calcareous grassland	15.0	ha	3.2
Dense scrub	32.0	ha	6.8
Hedgerows and trees outside of woodlands	68.2	ha	14.6
Modified grassland	16.2	ha	3.5
Neutral grassland	26.9	ha	5.7
Total	324.0		69.3

Table 15. Areas important for biodiversity in the chosen report area

Area important for biodiversity	Area (ha)		% of selected area
National Importance – Statutory Protected	467.8	ha	100.0
National Importance – Non-Statutory Protected	<1	ha	<1
Total	467.8		100.0

7. Data sources

Assets

Input data	Extent	Citation	Licensing
Landcover			
Surface water bodies and reservoirs	GB	OpenStreetMap contributors, 2020	OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF) and CC BY-SA 2.0. © OpenStreetMap contributors.
Trees crops (orchards, vineyards, allotments)	GB	OpenStreetMap contributors, 2020	OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF) and CC BY-SA 2.0. © OpenStreetMap contributors.
National Forest Inventory 2018	GB	Forestry Commission, 2018	Any public sector information contained in these data is licenced under the Open Government Licence v.2.0. Contains, or is based on, information supplied by the Forestry Commission. © Crown copyright and database right 2018 Ordnance Survey.
Ancient Woodlands (England)	England	Natural England, 2020	© Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2020].Contains public sector information licensed under the Open Government Licence v3.0
Ancient Woodlands (Scotland)	Scotland	Scottish Natural Heritage, 2020	Copyright Scottish Natural Heritage Contains Ordnance Survey data © Crown copyright and database right [2020]. Contains SNH information licensed under the Open Government Licence v3.0.
Ancient Woodlands (Wales)	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
Priority Habitat Inventory	England	Natural England, 2020	© Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2020].Contains public sector information licensed under the Open Government Licence v3.0.

Habitats Map Of Scotland (HabMoS)	Scotland	Scottish Natural Heritage, 2020	Copyright Scottish Natural Heritage Contains Ordnance Survey data © Crown copyright and database right [2020]. Contains SNH information licensed under the Open Government Licence v3.0.
Traditional Orchards	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
RPA Crop Map of England (CROME)	England	RPA, 2018	This data has been made freely available by Defra and its agencies for your use under the Open Government Licence.Attribution statement: © Rural Payments Agency.
Terrestrial Phase 1 Habitat Survey	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
Surface waterbodies	GB	Ordnance Survey Zoomstack, 2020	Contains OS data © Crown copyright and database right 2021. Contains public sector information licensed under the Open Government Licence v3.0.
Scotland Habitat and Landcover map	Scotland	Space Intelligence, 2020	Available under Open Government Licence
Corine Landcover Map	GB	Copernicus, 2018	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.
Copernicus Sentinel-2 mission. Level 2-A data	GB	European Space Agency (ESA), 2016	European Space Agency - ESA and content produced from ESA remote sensing data. © ESA 2000 - 2020.
Woodlands, trees and hedge composition			
National Tree Map (NTM)	England, Wales	BlueSky Ltd, 2020	©Bluesky International Limited.
BlueSky Digital Terrain Map and Digital Surface	Scotland	BlueSky Ltd, 2021	©Bluesky International Limited.
Topography			
European Digital Elevation Model v1.1 (Slope and DEM)	GB	Copernicus, 2016	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.

Water and wetlands			
Ordnance Survey Zoomstack (surface water bodies and rivers)	GB	Ordnance Survey Zoomstack, 2020	Contains OS data © Crown copyright and database right 2021. Contains public sector information licensed under the Open Government Licence v3.0.
Landcover map (see above)	GB	Mixed	Mixed
Soil type			
1:250 000 National soil map of Scotland	Scotland	Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250000. Macaulay Institute for Soil Research, Aberdeen	Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995-2021.
Topsoil Physical properties for Europe (based on LUCAS topsoil data)	GB	European Soil Data Centre (ESDAC), 2015; Ballabio, Panagos and Montanarell, 2016	Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995-2021.

Ecosystem service flows

Input data	Extent	Citation	Licensing
Carbon storage in vegetation and soils			
National Tree Map	England, Wales, Scotland	BlueSky Ltd, 2020	©Bluesky International Limited.
Digital Terrain Model and Digital Surface Model for Scotland	Scotland	BlueSky Ltd, 2021	©Bluesky International Limited.
National Forest Estate England, Scotland and Wales	England, Scotland, Wales	Forestry Commission, 2019	Any public sector information contained in these data is licenced under the Open Government Licence v.2.0. Contains, or is based on, information supplied by the Forestry Commission. © Crown copyright and database right 2018 Ordnance Survey.
Sentinel Satellite Observations (NDVI summer, NDVI winter)	GB	European Space Agency (ESA), 2020	European Space Agency - ESA and content produced from ESA remote sensing data. © ESA 2000 - 2020.

Digital Elevation Model (DEM, EU-DEM v1.1)	GB	Copernicus, 2016	Open and free access, as established by the Copernicus data and information policy. Regulation (EU) No. 1159/2013 of 12 July 2013.
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table
Woodland Carbon Code Lookup Tables	GB	Accessed from: https://woodlandcarboncode.org.uk/standard-and-guidance/3-carbon-sequestration/3-3-project-carbon-sequestration	Disclaimer: The Woodland Carbon Code Carbon Lookup Tables are distributed 'as is' and without warranties as to performance or merchantability or any other warranties whether expressed or implied. In particular, there is no warranty for the predictions derived from the Carbon Lookup Tables as they are regarded as indicative and not prescriptive.
Forest Research Climate Maps	Scotland	Forest Research 2020	© Crown Copyright 2021
Global Soil Organic Carbon Map (GSOC v1.0)	Global	FAO 2019	Content made available under the Creative Commons CC BY 4.0. Data contributed by Cranfield University and The James Hutton Institute
Topsoil Organic Carbon Content (TOC) Map for Scotland	Scotland	Lilly, A, Baggaley, N and Donnelly, D. 2012. Map of soil organic carbon in top soils of Scotland. Map prepared for EU project GS-SOIL - Assessmentand strategic development of INSPIRE compliant Geodata-Services for European Soil Data. ECP-2008-GEO-318004.	Available under the Open Data licence
1:250 000 National soil map of Scotland	Scotland	Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen	Available under the Open Data licence
Carbon sequestration in vegetation			
National Tree Map	England, Wales	BlueSky Ltd, 2020	©Bluesky International Limited.
Digital Terrain Model and Digital Surface Model for Scotland	Scotland	BlueSky Ltd, 2020	©Bluesky International Limited.

National Forest Estate England, Scotland and Wales	England, Scotland, Wales	Forestry Commission, 2019	Any public sector information contained in these data is licenced under the Open Government Licence v.2.0. Contains, or is based on, information supplied by the Forestry Commission. © Crown copyright and database right 2018 Ordnance Survey.
Woodland Carbon Code Lookup Tables	GB	Accessed from: https://woodlandcarboncode.org.uk/standard-and-guidance/3-carbon-sequestration/3-3-project-carbon-sequestration	Disclaimer: The Woodland Carbon Code Carbon Lookup Tables are distributed 'as is' and without warranties as to performance or merchantability or any other warranties whether expressed or implied. In particular, there is no warranty for the predictions derived from the Carbon Lookup Tables as they are regarded as indicative and not prescriptive.
Sentinel Satellite Observations (NDVI summer, NDVI winter)	GB	European Space Agency (ESA)	European Space Agency - ESA and content produced from ESA remote sensing data. © ESA 2000 - 2020.
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table
Digital Elevation Model (DEM, EU-DEM v1.1)	GB	Copernicus, 2016	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No. 1159/2013 of 12 July 2013.
Forest Research Climate Maps	Scotland	Forest Research 2020	© Crown Copyright 2021
Soil erosion prevention			
R factor (used in the RUSLE model)	GB	European Soil Data Centre (ESDAC), 2017	Open and free access. Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995-2021.

K factor (used in the RUSLE model) dervied from LUCAS data	GB	European Soil Data Centre (ESDAC), 2015	Open and free access. Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995–2021.
LS Factor (used in the RUSLE model)	GB	European Soil Data Centre (ESDAC), 2015	Open and free access. Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995–2021.
C factor (used in the RUSLE model) derived from Landcover map	GB	Panagos, et al., 2015	
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table
Fractional vegetation cover dervied from Sentinel-2 satellite data	GB	European Space Agency (ESA), 2016	European Space Agency - ESA and content produced from ESA remote sensing data. © ESA 2000 - 2021.
Flood risk reduction			
1:250 000 National soil map of Scotland	Scotland	Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen	Available under Open Government Licence
Rivers and waterways	GB	Ordnance Survey Zoomstack, 2020	Contains OS data © Crown copyright and database right 2020. Contains public sector information licensed under the Open Government Licence v3.0.
European Soil Database v2 Raster Library	GB	European Soil Data Centre (ESDAC), 2015; Panagos, 2006	Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995–2021.
Digital Elevation Model (DEM, EU-DEM v1.1)	GB	Copernicus, 2016	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table

Weather data from Climate Forecast System Reanalysis (CFSR)	GB	National Center for Atmospheric Research, 2017	Content owned by the EU is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. © European Union, 1995–2021.

Important areas for supporting insect pollinators of crops

Rural Payments Agency (RPA) Crop Map of England (CROME)	England	RPA, 2018	This data has been made freely available by Defra and its agencies for your use under the Open Government Licence.Attribution statement: © Rural Payments Agency.
Corine Landcover 2018 (perennial crops of berries, orchards and vineyards)	GB	Copernicus, 2018	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.
Open Street Map (Orchards, vineyards)	GB	OpenStreetMap, 2018	OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF) and CC BY-SA 2.0. © OpenStreetMap contributors.
Traditional orchards (Wales)	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
Functional nectar diversity by landcover type	GB	Baude et al., 2016	
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table

Important biodiversity habitats

NNR, LNR, SSSI, SAC, SPA, Ramsar, Priority Habitat Inventory, Natural Improvement Areas, Environmentally Sensitive Areas, Biosphere reserves	England	Natural England, 2020	© Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2020].Contains public sector information licensed under the Open Government Licence v3.0.
NNR, LNR, SSSI, SAC, SPA, Ramsar, Biosphere reserves	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
NNR, LNR, SSSI, SAC, SPA, Ramsar, Environmentally Sensitive Areas, Biosphere reserves	Scotland	Scottish Natural Heritage, 2020	Copyright Scottish Natural Heritage Contains Ordnance Survey data © Crown copyright and database right (2020) Contains SNH information licensed under the Open Government Licence v3.0.
Ancient Woodlands (England)	England	Natural England, 2020	© Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2020].Contains public sector information licensed under the Open Government Licence v3.0.
Ancient Woodlands (Scotland)	Scotland	Scottish Natural Heritage, 2020	Copyright Scottish Natural Heritage Contains Ordnance Survey data © Crown copyright and database right (2020) Contains SNH information licensed under the Open Government Licence v3.0.

Ancient Woodlands (Wales)	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.Contains public sector information licensed under the Open Government Licence v3.0.
Nature networks			
Landcover map	GB	See data inputs in stocks table	See data inputs in stocks table
Recreation			
Flickr records 2020	GB	Flickr API, 2020	Open access.
eBird records 2020	GB	Levatich and Ligocki, 2020; GBIF.org (25 August 2020)	GBIF.org. Licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence or CC0 1.0 Universal (CC0 1.0) Public Domain Dedication
iNaturalist	GB	Ueda, 2020; GBIF.org (25 August 2020)	GBIF.org. Licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence or CC0 1.0 Universal (CC0 1.0) Public Domain Dedication
Digital Elevation Model (DEM, EU-DEM v1.1)	GB	Copernicus, 2016	Open and free access, as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.
Surface waterbodies and rivers, waterways Greenspaces, roads, Public Rights of Way (PRoW)	GB	Ordnance Survey Zoomstack, 2020	Contains OS data © Crown copyright and database right 2020. Contains public sector information licensed under the Open Government Licence v3.0.
Protected areas (NNR, LNR, SSSI, SAC, SPA, Ramsar, Priority Habitat Inventory, Natural Improvement Areas, Environmentally Sensitive Areas); Country Parks	England	Natural England, 2020	© Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2020].Contains public sector information licensed under the Open Government Licence v3.0.

Protected areas (NNR, LNR, SSSI, SAC, SPA, Ramsar); Country Parks; Wales Coastal Path	Wales	Natural Resources Wales, 2020	Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right. Contains public sector information licensed under the Open Government Licence v3.0.
Protected areas (NNR, LNR, SSSI, SAC, SPA, Ramsar); Country Parks	Scotland	Scottish Natural Heritage, 2020	Copyright Scottish Natural Heritage Contains Ordnance Survey data © Crown copyright and database right (2020) Contains SNH information licensed under the Open Government Licence v3.0.
Population density 2020	UK	Reid et al., 2017; UK Gridded Population, 2011	Contains data supplied by Natural Environment Research Council. ©NERC (Centre for Ecology and Hydrology). Contains National Statistics data © Crown copyright and database right 2011. Contains public sector information licensed under the Open Government Licence v3.0.
Recreation assets (World Heritage Sites + Registered Parks and Gardens + Registered Battlefields)	England	Historic England, 2018	Contains public sector information licensed under the Open Government Licence v3.0.
OpenStreetMap (OSM) paths (extracted from OSM roads), parks, public gardens, accessible areas	GB	OpenStreetMap, 2021	OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF) and CC BY-SA 2.0. © OpenStreetMap contributors.

National Forest Estates Recreation Areas GB, National Forest Estates Recreation Routes GB	GB	Forestry Commission, 2016	Any public sector information contained in these data is licenced under the Open Government Licence v.2.0. Contains, or is based on, information supplied by the Forestry Commission. © Crown copyright and database right 2018 Ordnance Survey.
National Cycle Network	GB	Sustrans UK, 2020	© Sustrans is a registered charity in England and Wales (number 326550) and Scotland (SC039263). Open Data Commons Open Database License (ODbL) v1.0
Countryside and Rights of Way (CRoW)	England	Natural England, 2020	Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right 2020.
Annual Survey of Visits to Visitor Attractions for England	England	VisitBritain, 2020	© VisitBritain/VisitEngland 2021.
All Forests Visitor Survey (Wales)	Wales	Forestry Commission Wales, 2005	© Crown Copyright, courtesy Forestry Commission (2005), licensed under the 2020 Open Government Licence. Contains public sector information licensed under the Open Government Licence v3.0.
All Forests Visitor Survey (Scotland)	Scotland	Forestry Commission Scotland, 2003	© Crown Copyright, courtesy Forestry Commission (2003), licensed under the 2020 Open Government Licence. Contains public sector information licensed under the Open Government Licence v3.0.

8. References

Aizen, M. A., Garibaldi, L. A., Cunningham, S. A. and Klein, A. M. (2009) 'How much does agriculture depend on pollinators? Lessons from long-term trends in crop production', Annals of botany, 103(9), pp. 1579–1588.

Alonso, I., Weston, K., Gregg, R. and Morecroft, M. (2012) 'Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources.', Natural England Research Reports, Number NERR04, 17(10), pp. 55–59.

Axe, M. S., Grange, I. D. and Conway, J. S. (2017) 'Carbon storage in hedge biomass—A case study of actively managed hedges in England', Agriculture, Ecosystems and Environment, 250, pp. 81–88.

Ballabio, C., Panagos, P. and Monatanarella, L. (2016) 'Mapping topsoil physical properties at European scale using the LUCAS database', Geoderma, 261, pp. 110–123.

Baude, M., Kunin, W. E., Boatman, N. D., Conyers, S., Davies, N., Gillespie, M. A. K., Morton, R. D., Smart, S. M. and Memmott, J. (2016) 'Historical nectar assessment reveals the fall and rise of floral resources in Britain', Nature, 530(7588), pp. 85–88.

Bieger, K., Arnold, J. G., Rathjens, H., White, M. J., Bosch, D. D., Allen, P. M., Volk, M. and Srinivasan, R. (2017) 'Introduction to SWAT+, A Completely Restructured Version of the Soil and Water Assessment Tool', JAWRA Journal of the American Water Resources Association, 53(1), pp. 115–130.

BlueSky Ltd (2020) National Tree Map.
Available at: https://www.bluesky-world.com/

Climate Forecast System Reanalysis (CFSR). Weather Data.
Available at: https://climatedataguide.ucar.edu/climate-data/climate-forecast-system-reanalysis-cfsr

Coomes, D. A., Dalponte, M., Jucker, T., Asner, G. P., Banin, L. F., Burslem, D. F. R. P., Lewis, S. L., Nilus, R., Phillips, O. L., Phua, M. H. and Qie, L. (2017) 'Area-based vs tree-centric approaches to mapping forest carbon in Southeast Asian forests from airborne laser scanning data', Remote Sensing of Environment, 194, pp. 77–88.

Copernicus (2018a) Corine Land Cover (CLC) Map. Version 20b2.
Available at: https://land.copernicus.eu/pan-european/corine-land-cover/clc2018

Copernicus (2018b) European Digital Elevation Model (EU-DEM), version 1.1.
Available at: https://land.copernicus.eu/imagery-in-situ/eu-dem/eu-dem-v1.1?tab=download

European Space Agency (ESA) (2016) Copernicus Sentinel-2 mission. Level 2-A data.
Available at: https://sentinel.esa.int/web/sentinel/missions/sentinel-2

European Space Agency (ESA) (2016) Fractional vegetation cover from Sentinel-2.
Available at: https://sentinel.esa.int/web/sentinel/news/content/-/asset_publisher/BZewkR1itkH2/content/fractional-vegetation-cover-from-sentinel-2

ESDBv2 Raster Library (2006) A set of rasters derived from the European Soil Database distribution v2.0 (published by the European Commission and the European Soil Bureau Network, CD-ROM, EUR 19945 EN).

FAO and ITPS. 2018. Global Soil Organic Carbon Map (GSOCmap).
Available at: http://www.fao.org/global-soil-partnership/pillars-action/4-information-and-data-new/global-soil-organic-carbon-gsoc-map/en/

Flickr API [Online] https://www.flickr.com/services/api/

Forestry Commission (2019) National Forest Estate Ownership (England and Scotland).
Available at: https://data.gov.uk/dataset/55e15503-623b-49ca-bc3c-454ae9343893/national-forest-estate-ownership-scotland-2019

Forestry Commission (2020) Woodland Carbon Code (WCC) Carbon Lookup Tables v2.3.
Available at: https://www.woodlandcarboncode.org.uk/

Godínez-Gómez, O. and Correa Ayram C.A. (2020) Makurhini R package: Analyzing landscape connectivity.

Hiederer, R. (2013) Mapping Soil Properties for Europe-Spatial Representation of Soil Database Attributes, Luxembourg: Publications Office of the European Union.

Klein, A. M., Vaissière, B. E., Cane, J. H., Steffan-Dewenter, I., Cunningham, S. A., Kremen, C. and Tscharntke, T. (2007) 'Importance of pollinators in changing landscapes for world crops', Proceedings of the Royal Society B: Biological Sciences, 274(1608), pp. 303–313.

Levatich T, Ligocki S (2020). EOD - eBird Observation Dataset. Cornell Lab of Ornithology. Occurrence dataset.
Available at: https://doi.org/10.15468/aomfnb

Lilly, A., Baggaley, N. and Donnelly, D. (2012) 'Map of soil organic carbon in top soils of Scotland. Map prepared for EU project GS-SOIL -Assessment and strategic development of INSPIRE compliant Geodata-Services for European Soil Data. ECP-2008- GEO-318004.'

Lonsdorf, E., Kremen, C., Ricketts, T., Winfree, R., Williams, N. and Greenleaf, S. (2009) 'Modelling pollination services across agricultural landscapes', Annals of Botany, 103(9), pp. 1589–1600.

Natural England (2020) Ancient Woodlands.
Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodland-england

Natural England (2020) Priority Habitat Inventory.
Available at: https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-england

Natural Resources Wales (2020) Ancient Woodlands.
Available at: https://naturalresources.wales/about-us/our-projects/nature-projects/life-n2k-wales/life-n2k-films/ancient-woodlands/?lang=en

National River Flow Archive (2020) Daily riverfall data.
Available at: https://nrfa.ceh.ac.uk/content/uk-water-resources-portal

Ordnance Survey Zoomstack (2020) Surface water bodies and rivers.
Available at: https://osdatahub.os.uk/downloads/open/OpenZoomstack?_ga=2.28235900.1798010300.1606921869-787398462.1605613285

Panagos, P., Meusburger, K., Ballabio, C., Borrelli, P. and Alewell, C. (2014) 'Soil erodibility in Europe: A high-resolution dataset based on LUCAS', Science of the Total Environment, 479–480(1), pp. 189–200.