OXFORDSHIRE TREESCAPE PROJECT

Update July 2025: The Oxfordshire Treescape Project transitioned to the Oxfordshire Nature Project in 2024. Websites and email addresses in this document have been updated to reflect that; all other information remains unchanged.

Mapping methodology and technical report

www.naturerecovery.ox.ac.uk/projects/Oxfordshire-Treescape-Project

September 2021

Thames Valley Environmental Records Centre

01865 815 451
tverc@oxfordshire.gov.uk
www.tverc.org
@TVERC1

~~info@growgreencarbon.org~~
~~www.growgreencarbon.org~~
The charity GrowGreenCarbon was dissolved in 2024. For technical information regarding the mapping please contact alison.smith@eci.ox.ac.uk For queries related to the charity GrowGreenCarbon please contact tormacnamara@gmail.com|July 2025

CONTENTS

List of tables

1. LIABILITY

This report has been prepared for use in the Oxfordshire Treescape Project and no other party may rely on the contents of the report. No liability is accepted by Thames Valley Environmental Records Centre or Grow Green Carbon for any use of this report, other than for the purposes for which it was originally prepared and provided. No warranty, express or implied, is made as to the advice in this report. The content of this report is partly based on information provided by third parties, which unless otherwise stated, has not been independently verified by TVERC.

2. FEEDBACK

If you have any feedback on this project, please email alison.smith@eci.ox.ac.uk for technical queries; for queries related to the charity GrowGreenCarbon please contact tormacnamara@gmail.com

3. OVERVIEW

The Oxfordshire Treescapes project and TVERC worked together closely to develop the opportunity maps and other outputs for the project. For access to all outputs and an overview of the project please visit naturerecovery.ox.ac.uk/projects/oxfordshire-treescape-project/.

Development of this methodology involved extensive research and consultation. The science of nature-based solutions is still in its early stages and there is not always full agreement on the best way forward. To help address this the project formed a consultee group drawn from a wide range of different stakeholders (Table 1). This group inputted into the content and usefulness of the maps.

Table 1 Consultee group

Role	Confirmed to date
Chair	Sam Clarke, Deputy Lord Lieutenant
Landowners	Richard Watson, Countryside Manager, National Trust Alice Ritchie, Land Use Policy Advisor, CLA Emma Watson, Gasson Associates
Farmers	James Price, Deputy Chair, NFU Oxfordshire Jonty Brunyee, Conygree Farm and manager of Farm-Ed Phil Chamberlain, Crowmarsh Battle Farms
Land agents	Mark Charter, Carter Jonas
Advisors	Alison Smith, Environmental Change Institute Paul Orsi, Sylva Mark Connelly, Cotswolds AONB Jenny Phelps, FWAG Gloucestershire Camilla Burrow, CEO Wild Oxfordshire Martin Hugi, Woodland Trust
Government	Dominic Lamb, South Oxon and Vale Councils Richard Pearce, Forestry Commission (TBC)
Community	Patrick Fleming, Greener Henley Fiona Danks, Watlington Community Action Group

The project team also reported to a management group who kept oversight of the project (Table 2).

Table 2 Management group

The management group
Tim Stevenson, Lord Lieutenant of Oxfordshire
Sam Clarke, Deputy Lord Lieutenant and landowner
Dom Hare, CEO, Blenheim Palace
Karen Woolley, Chair, Trust for Oxfordshire's Environment
Niel Nicholson, director, Nicholson's Forestry
Ian Curtis, The Environmental Change Institute, Oxford University
Nick Mottram, Sustainability Manager, Oxfordshire County Council

Beyond this, a wide range of experts and practitioners too numerous to mention here were consulted on the project.

4. OVERARCHING MAPPING CONSIDERATIONS

The aim of the project is to suggest to farmers and landowners what opportunities are open to them, and what benefits these might bring. It is not in any sense to dictate what might be done. It is central to the project that the final land use decisions rest with farmers and landowners. We are only providing guidance on what opportunities are open to them and how they might best be prioritised.

The project recognises that data mapping is likely to be imperfect. This is primarily because:

- All datasets will inevitably have some inaccuracies.
- Mapping is based on a set of assumptions about where opportunity features can and cannot be placed. No set of assumptions can fully cover every eventuality and there will always be exceptions.

On the other hand, the quality of datasets is continuously improving, and the science of nature-based solutions is becoming more established. We expect to update and improve our maps over time, with input from end users and experts within our extensive stakeholder network.

However, to deal with these issues at the current time we have applied the following principles:

- If in doubt, leave it out! In mapping opportunities for treescapes, we have removed any areas where there is any doubt about suitability. The areas removed are however based on stated rules rather than on individual cases.
- We have aimed to make it clear that all the opportunities presented are broadly indicative only. Indeed, many of them are likely to be quickly eliminated. However, we cannot cover every eventuality in our mapping, and indeed the reason to strike out an opportunity will differ between stakeholders.

- We are insisting that no decision on introducing treescapes should be made based on the maps alone. A detailed on the ground assessment should always be made.

We predominantly see our mapping tools as a useful contribution to an overall land use management plan into which a wide range of other factors and resources have also been taken into consideration. This plan can then be shared with relevant experts and authorities and all necessary approvals sought before going ahead with any interventions. We are then intentionally only delivering our reports to farmers and landowners through specialist delivery partners in order that they can provide this wider context and further degree of support.

5. METHOD

Please see the Treescapes Guide for a more detailed description of each treescape and each benefit mapped. This guide also gives a brief summary of the main mapping considerations.

TVERC collated a wide range of data and used a variety of analytical approaches to identify suitable and unsuitable areas for tree planting, and their impact on ecosystem service provision. The data and methods are described below.

2.1. DATA ACQUISITION

The base layer used for the analysis was the Natural Capital geopackage developed by Alison Smith at the Environmental Change Institute[1]. Alison Smith also provided the project with a layer of agricultural fields with improved geometries, removing objects such as tracks through fields and giving a truer impression of agricultural field size, which was combined with the more detailed Natural Capital layer through a largest overlap spatial join, a symmetrical difference and a merge, all done through QGIS as ArcGIS lost attributes when performing similar processes.

A series of other layers were then joined into this with one of two methods, either an intersect where the first matched feature is joined, or a largest overlap where the feature that has the largest portion of overlap is joined. The former is used on layers such as Air Quality and ALC Grade, where there is the potential than a polygon may intersect with multiple features and therefore the feature with the largest overlap should be used. The joins were conducted in QGIS 3.16[2] and R 4.04[3] .

Table 3 outlines the layers used, their source, and the method of spatial join. Some of these layers are not openly available, and so do not have a download link.

[1] https://www.eci.ox.ac.uk/people/asmith.html
[2] https://www.qgis.org/en/site/
[3] https://www.r-project.org/

Table 3 GIS Layer source and method of spatial join

Layer	Source	Join
Nature Recovery Network	TVERC	Intersect
Agricultural Land Classification	Natural England[4]	Largest Overlap
Built Up Areas	DEFRA[5]	Intersect
Public Rights of Way	Oxfordshire County Council	Intersect
Natural Flood Management	Environment Agency	Intersect
Air Quality – PM10 & AQMA (Air Quality Management Area)	DEFRA[6]	Largest Overlap
LSOA (Lower Super Output Area)	Oxfordshire County Council	Largest Overlap
National Forest Inventory	Forestry Commission[7]	Largest Overlap

2.2. REMOVAL OF UNSUITABLE AREAS

The suitability score was determined through a series of spatial joins and through a conditional case_when statement in R, resulting in a 0 where the land is unsuitable for most tree planting, and a 1 where it is suitable.

Areas outlined as unsuitable for treescapes (Table 4) are marked as unsuitable, through a binary suitable column. An additional "Unsuitable Reason" column was created, specifying each of the reasons why an unsuitable polygon is unsuitable.

Table 4 Areas unsuitable for treescapes

Unsuitable area	How it was identified	UnsuitableReason value
All existing woodland	TVERC Habitats Dataset[8] National Forest Inventory[9]	Woodland
All unimproved and semi-improved grassland	TVERC Habitats Dataset	WildlifeValue
Historic parkland and wood pasture	DEFRA[10]	Park
Sites designated for nature conservation (SAC / SPA / SSSI / NNR / LNR / LWS / LGS).	TVERC Sites Dataset[11]	WildlifeValue
Peat bogs and heathland	TVERC Habitats Dataset	WildlifeValue
Ghost and actual fen sites	TVERC Fen Inventory[12]	WildlifeValue

[4] https://naturalengland-defra.opendata.arcgis.com/datasets/provisional-agricultural-land-classification-alc-england
[5] https://data.gov.uk/dataset/15e3be7f-66ed-416c-b0f2-241e87668642/built-up-areas-december-2011-boundaries-v2
[6] https://uk-air.defra.gov.uk/data/
[7] https://data.gov.uk/dataset/ae33371a-e4da-4178-a1df-350ccfcc6cee/national-forest-inventory-woodland-england-2015
[8] Updated May 2020
[9] https://data-forestry.opendata.arcgis.com/datasets/bcd6742a2add4b68962aec073ab44138_0
[10] https://data.gov.uk/dataset/88cfe0de-85cd-431f-9836-2bee841d8165/registered-parks-and-gardens-gis-data
[11] Updated April 2021
[12] Updated November 2018

Certain scheduled Ancient Monuments and features or sites recorded on the Historic Environment Record.	DEFRA[13]	Archaeology
All active buildings, industrial sites, road, rail, bridges and hard standings.	TVERC Habitats Dataset & OS Mastermap[14]	Built
Rivers and standing water, canals, reservoirs, drains, weirs, swimming pools and fountains.	TVERC Habitats Dataset	WildlifeValue
Core Zone in the Nature Recovery Network	TVERC Nature Recovery Network[15]	CoreNRN
Urban greenspace areas classed as play spaces, churchyards, cemeteries and bowling greens.	Ordinance Survey[16]	Greenspace
All existing priority habitats (except for hedgerows on floodplain grazing marsh, good quality semi-improved grassland and lowland meadows)	TVERC Habitats Dataset	WildlifeValue

2.3. TREESCAPE PLACEMENT SELECTION

The seven treescapes mapped can be grouped into three layers, based on their geometry and selection method.

The first layer consists of areas suitable for woodland, silvoarable, silvopasture, community orchards, garden trees and trees in open spaces (henceforth known as TIOS). The second is external and internal hedgerows, and the third is lines of trees and woodland buffers.
The selection criteria for each are outlined below:

WOODLAND

FarmingUse equals Pasture or Arable &
ALC equals "Grade 3" or "Grade 4" &
Area > 0.25ha

WOODLAND BUFFER

Buffer existing woodland by 20m and remove unsuitable areas.
Note that woodland buffer areas will also be mapped as woodland areas. Woodland buffers will have a higher biodiversity score than woodland in the same location.

GRASSLAND

FarmingUse equals Pasture or Arable &
ALC equals "Grade 3" or "Grade 4" &

[13] https://data.gov.uk/dataset/640d5dab-4295-4b85-bc26-a8369abb73f6/scheduled-monuments-gis-data
[14] Updated July 2020
[15] Updated July 2020
[16] https://www.ordnancesurvey.co.uk/business-government/products/mastermap-greenspace

Area > 0.25ha

SILVOARABLE

FarmingUse == "Arable" &
ALC equals "Grade 1", "Grade 2" or "Grade 3" &
Area > 4ha, length > 54m & width > 38m
BUT NOT:
Area > 4ha & Area < 21ha & available for Internal Hedges

SILVOPASTURE

FarmingUse equals Pasture or Arable &
ALC equals "Grade 3", "Grade 4" &
Area > 0.5ha

COMMUNITY ORCHARDS

Either:
FarmingUse equals Arable or Pasture and is within a Built Up Area
OR
Selected for Trees in Open Spaces &
Greenspace equals Allotments Or Community Growing Spaces, School Grounds or Public Park or Garden

TREES IN OPEN SPACES

Greenspace equals "Cemetery", "Playing Field", "Golf Course", "Public Park Or Garden", Allotments Or Community Growing Spaces", "Religious Grounds", "School Grounds" or "Institutional Grounds &
Area > 0.25ha

EXTERNAL HEDGES

Field boundaries as determined by the 'Agricultural, Orchards and Rough Grass' line dataset from Alison Smith, clipped by a 0.5m buffer of existing woodland and the CEH Woody Linear Features (snapped to the base layer with a 20m tolerance).

INTERNAL HEDGES

When FarmingUse equals Arable or Pasture & Area > 20ha

2.4. ECOSYSTEM SERVICE SCORING

We have mapped each of our treescapes as either delivering or not delivering each benefit (Table 5). Each of our treescapes may deliver any or all of these benefits to some degree, but for simplicity's sake we have classed them as either delivering a benefit when we judge the level to be significant or not delivering it at all.

The exception to this all or nothing rule are carbon capture and storage and biodiversity. Carbon capture and storage values vary by treescape, and biodiversity values vary by both treescape and location. For more details see below.

Also these benefits will only be delivered when the treescape is appropriately managed.

Table 5 Ecosystem service delivery by treescape type

Treescape ecosystem service potential	Woodland	Hedgerows	Silvoarable	Silvopasture	TIOS	Street trees	Community Orchards	Garden Trees
Timber production	1	0	0	0	0	0	0	0
Food production	0	0	1	1	0	0	1	0
Flood management, soil erosion control and water quality	1	1	1	1	1	1	0	0
Recreation and wellbeing	1	0	0	0	1	1	1	1
Air quality and noise reduction	1	1	0	0	1	1	1	1
Biodiversity	1	1	1	1	1	1	1	1
Carbon capture and storage	1	1	1	1	1	1	1	1
Total number of impacts (out of 7)	**6***	**4**	**4**	**4**	**5**	**5**	**5**	**4**

*In the case of woodland, a focus purely on management for timber production may limit or eliminate other benefits such as biodiversity and recreation.

Each benefit is mapped as delivered as follows:

FOOD

Silvoarable, Silvopasture and Grassland = 1, everything else 0.

TIMBER

Woodland = 1, everything else 0.

FLOOD MANAGEMENT

If the treescape allows flood management (in Table 3) and intersects with one of the two Natural Flood Management opportunity layers.

FloodManagement == 1 & (CatchmentPlanting == 1 | RiparianBuffer == 1)

The areas mapped include unsuitable areas and so the filter Suitable == 1 needs to be applied to identify the opportunity areas.

RECREATION

If the treescape allows recreation and it intersects with either a public right of way, is a public park or garden, or is a private garden.

Recreation == 1 & (PublicAccess == 1 | Interpreted_habitat == "Garden")

AIR QUALITY

The treescape can provide air quality and it falls within an area of AQMA or where the PM2.5 level is above 10 µg/m^3.

BIODIVERSITY

Biodiversity scores are based on DEFRA's Biodiversity Metric 2.0 with adaptions and additions to cover our fill list of treescapes, some of which are not covered by the Metric.

Metric 2.0 has now been replaced by Metric 3.0. This will be taken account of in a later iteration of the mapping.

Biodiversity is measured as the number of units uplift over the existing use. An area is not mapped as a treescape opportunity if the biodiversity uplift is zero or negative.

DEFRA biodiversity scores are based on a combination of distinctiveness, condition, connectivity, strategic significance of the location, difficulty in establishment and time to reach condition. The method of combination of all these factors varies according to whether the creation, enhancement or accelerated succession methodologies are used. Full details can be found in the Metric 2.0 methodology paper[17].

The current biodiversity units are calculated through the standard method in the current impact assessment calculator (as of April 2021, version 2) using Distinctiveness, an assumed condition of 2 (unless the habitat is incapable of achieving moderate condition, for example Amenity Grassland), Strategic Significance and Connectivity (as per version 2 of the calculator, depends on distinctiveness).

For existing land uses the units per hectare are calculated as (Distinctiveness x condition x connectivity x Strategic significance):

- Distinctiveness as set out by habitat in the metric.
- In the Metric, condition is preset to poor (1.0) for arable use. We have assumed it to be fairly poor (1.5) in the case of pasture land and medium (2.0) in all other cases.
- Connectivity is assumed to always be one in most cases as the Metric provides no method for its calculation. However for woodland and grassland it is assumed to be 1.1 and for woodland buffers 1.15.
- Strategic significance is measured as 1.0 in all areas except those within the Nature Recovery Network Recovery areas, where it is set at 1.1, and neighbouring the Nature Recovery Network Core areas, where it is set to 1.1.

This gives the following biodiversity unit values per hectare for existing habitats before any strategic significance score is applied (Table 6).

[17] http://publications.naturalengland.org.uk/publication/5850908674228224

Table 6 Defra Biodiversity Metric scores by habitat

Existing habitat	Units per hectare
Arable land	2.0
Pasture land	3.0
Woodland	Varies by type
Species rich grassland	Varies by type
Hedges	8.0
Community Orchards	8.0
Garden Trees	4.0
Street Trees	4.0
TIOS	4.0

The biodiversity values used to assess the value of introducing a treescape is the uplift over the existing use. The uplift is calculated as the biodiversity the treescape opportunity would bring less the existing biodiversity in that area.

In establishing new treescapes, choices have been made between the creation, enhancement and succession method (Table 7).

Table 7 Defra biodiversity metric creation / enhancement / succession method for treescape conversion

	From :	To :	Method
A	Anything	Hedges (Km)	Creation to good condition
B	Arable	Silvoarable	Accelerated succession to good condition
E	Improved grassland	Silvoarable	Not mapped as -ve uplift
C	Arable	Silvopasture	Accelerated succession to good condition
F	Improved grassland	Silvopasture	Accelerated succession to good condition
K	Arable	Species rich grassland	Enhancement to good condition
J	Improved grassland	Species rich grassland	Creation to good condition
D	Arable	Woodland	Accelerated succession to good condition
G	Improved grassland	Woodland	Accelerated succession to good condition
H	Arable	Woodland buffer	Accelerated succession to good condition
I	Improved grassland	Woodland buffer	Accelerated succession to good condition

Distinctiveness, difficulty and timing scores have been applied to each treescape (
Table 8).

Table 8 Defra Biodiversity Metric distinctiveness, difficulty and timing scores by treescape type

Treescape	Distinctiveness (Score)	End condition	Difficulty (Score)	Years to mature (Score)
Woodland	Medium (4.0)	Good (3.0)	Medium (0.67)	32+
Woodland buffer	Medium (4.0)	Good (3.0)	Medium (0.67)	32+
Hedges	Medium (4.0)	Good (3.0)	Medium (0.67)	10
Silvoarable	Medium (4.0)	Good (3.0)	Medium (0.67)	15
Silvopasture	Medium (4.0)	Good (3.0)	Medium (0.67)	32+
Community orchards	Medium (4.0)	Good (3.0)	Low	25
TIOS	Low (2.0)	Good (3.0)	Low	25
Street trees	Low (2.0)	Good (3.0)	Low	25
Trees in gardens	Low (2.0)	Good (3.0)	Low	25

Multiplying the area of the polygon by these factors as specified in the Metric for the various methods, and including the strategic significance multiplier depending on the NRN gives uplifts in biodiversity units over existing habitats (Table 9).

Table 9 Defra Biodiversity Metric uplift by treescape type from existing habitat

Treescape	Existing habitat	Uplift in Units per ha (TreescapeDistinctiveness field)
Community Orchards	Arable	6.69
Community Orchards	Pasture or improved grassland	7.58
Garden Trees	Any	2.46
Grassland	Arable	5.18
Grassland	Improved grassland	6.53
Hedges	Any	6.19
Silvoarable	Arable	3.98
Silvopasture	Arable	4.82
Silvopasture	Improved grassland	5.95
Street Trees	Any	2.46
TIOS	Any	2.46
Woodland	Arable	5.24
Woodland	Improved grassland	6.44
WoodlandBuffer	Arable	5.45
WoodlandBuffer	Improved grassland	6.69

CARBON

Carbon capture and storage is measured as the total uplift over the existing use.

The measure used is tCO2e captured per hectare per annum averaged over 30 years.

In addition, average emissions of 5 tCo2e per hectare per annum from farming operations has been assumed, based on the Climate Change Committee's sixth Carbon Budget. A further 5 tCO2e per hectare of carbon stored per annum is added where food production ceases through introduction of the treescape. This reduces to 2.5 tCO2e per hectare for species rich grassland as farming operations will still continue albeit at a less intensive level (Table 10).

Table 10 Carbon capture by land use type or treescape

Existing use or Treescape	SoilCarbonUplift included?	Average tCO2 captured per year	Benefit thru cessation of farming operations	Total
Conventional arable use	Yes	-0.3	-5	-5.3
Conventional pasture use	Yes	+1	-5	-4.0
Woodland	Yes	+10	+5	+15
WoodlandBuffer	Yes	+10	+5	+15
Grassland	Yes	+4	+2.5	+6.5
Hedges*	Yes	+1.2	0	+1.2
TIOS**	Yes	+7.5	0	+7.5
Community Orchards	Yes	+5	0	+5
Silvopasture	Yes	+5	0	+4
Silvoarable	Yes	+1.5	0	+1.5
Street Trees (per tree)	No	+0.033	0	+0.033
Garden Trees (per garden)	No	+0.017	0	+0.017

*for hedges the TotalOver30Years value is multiplied by the length in km
**a density of 75% of that of woodland was assumed for Trees In Open Spaces

The carbon uplift figures are stated for 30 years and are calculated through subtracting from the post treescape planting carbon value the current carbon value, which is calculated by multiplying the area of the polygon by the carbon value. t CO2e per hectare per year are calculated (Table 11).

Table 11 tCO2e uplift through conversion to treescapes

Existing habitat	Treescape	Uplift in tCO2e per ha
Arable	Woodland	+15.3
Improved grassland	Woodland	+14
Arable	WoodlandBuffer	+15.3
Improved grassland	WoodlandBuffer	+14
Arable	Species rich Grassland	+6.8
Improved grassland	Species rich Grassland	+5.5
Arable	Community Orchards	+10.3
Pasture or improved grassland	Community Orchards	+9
Any	Hedges	+1.2

Any	Garden Trees (per garden)	+0.017
Arable	Silvoarable	+1.8
Arable	Silvopasture	+7.8
Improved grassland	Silvopasture	+6.5
Any	Street Trees (per tree)	+0.033
Any	TIOS	+7.5

6. OUTPUT

The output for the project is presented within a geopackage, a spatial database file optimised for use in QGIS. The layers within the geopackage are presented in Table 12.

Table 12 Layers within the GIS output geopackage

Layer Name	Geometry Type	No. Features	No. Columns	Contents
nfm_reconnection	Multi Polygon	4663	2	Natural Flood Management layer for Floodplain Reconnection
nfm_planting	Multi Polygon	3572	2	Natural Flood Management layer for Catchment Planting
nfm_buffer	Multi Polygon	6969	2	Natural Flood Management layer for the Riparian Buffer
slope	Multi Polygon	57	4	Reference layer containing areas with slope over 7 degrees
existing_hedges	Line String	113807	10	CEH Hedgerow data, snapped to the geometry of the base layer with a 20m tolerance
street_trees	Multi Point	73510	1	Treescape layer (WIP)
baseline	Multi Polygon	516890	47	Baseline layer
woodland_buffer	Multi Polygon	17499	23	Treescape layer
silvopasture	Multi Polygon	24526	23	Treescape layer
silvoarable	Multi Polygon	7042	23	Treescape layer
woodland	Multi Polygon	30728	23	Treescape layer
grassland	Multi Polygon	30728	23	Treescape layer
garden_trees	Multi Polygon	103580	23	Treescape layer
external_hedges	Multi Line String	139854	22	Treescape layer
community_orchards	Multi Polygon	21910	24	Treescape layer
tios	Multi Polygon	1465	24	Treescape layer

BASELAYER

This layer contains all information required for treescape selection and ecosystem service calculation (Table 13).

The basic feature unit is an agricultural field area. This means that some field data allocations have been made to whole fields when they may only apply to parts of those fields. For this reason some layers such as natural flood management and nature recovery network have been kept separate for some purposes.

Table 13 Fields within the GIS baselayer

Variable Name	Explanation	Value
TOID	Unique identifier from OS MasterMap	Numeric
ID	Unique identifier for this project	Numeric
Habitat	Simplified habitat classification	Text string
ALC_Grade	Agricultural Land Classification	Text string
AONB	Area of Outstanding Natural Beauty	Binary: 1 = in AONB
GreenSpace	OS Greenspace Classification	Text string
Urban	Built Up Areas urban classification	Urban = within urban BUA Rural = within rural BUA NA = outside BUA
NRN_Core	Core Zone from Oxfordshire Nature Recovery Network	Binary: 1 = in Core
NRN_Rec	Recovery Zone from Oxfordshire Nature Recovery Network	Binary: 1 = in Recovery
NRN_CoreNB	Neighbours Core Nature Recovery Network	Binary: 1 = neighbours Core
AveSlope	Average slope in degrees	Numeric
IMDDecile	Index of Multiple Deprivation Decile	Numeric, only top 4 deciles included
Area	Area in hectares	Numeric
ExistingWoodland	Existing Woodland Presence	Text string
Suitable	Suitable for treescape creation	Binary: 1 = suitable
UnsuitableReason	Reason for unsuitability	Text string
Track	Presence of a track	Binary: 1 = track
Woodland	Suitable for treescape	Binary: 1 = suitable
Grassland	Suitable for treescape	Binary: 1 = suitable
Silvoarable	Suitable for treescape	Binary: 1 = suitable
Silvopasture	Suitable for treescape	Binary: 1 = suitable
InternalHedge	Suitable for treescape	Binary: 1 = suitable
TIOS	Suitable for treescape	Binary: 1 = suitable
CommunityOrchard	Suitable for treescape	Binary: 1 = suitable
GardenTrees	Suitable for treescape	Binary: 1 = suitable
FloodRec	Natural Flood Management Possible in polygon	Binary: 1 = possible
FloodRecArea	Area suitable for Natural Flood Management	Numeric, area in ha
CatchPlant	Natural Flood Management Possible in polygon	Binary: 1 = possible
CatchPlantArea	Area suitable for Natural Flood Management	Numeric, area in ha
RipBuf	Natural Flood Management Possible in polygon	Binary: 1 = possible
RipBufArea	Area suitable for Natural Flood Management	Numeric, area in ha
FarmingUse	Likely farming use	Text string, Arable, Pasture or None

PublicAccess	Open Access or Public Right of Way Presence	Binary: 1 = access
PM25	PM2.5 value	Numeric, only over 10
AQMA	Air Quality Management Area	Binary
CurDist	Current habitat distinctiveness	Numeric
CurCondition	Current habitat condition	Numeric
CurConnect	Current habitat connectivity	Numeric
StratSig	Strategic significance	Numeric
CurrentTimber	Current provision of ecosystem service	Binary
CurrentFood	Current provision of ecosystem service	Binary
CurBiod	Current provision of ecosystem service	Numeric
CurBiodPerHa	Current provision of ecosystem service	Numeric
CurrentCarbon	Current provision of ecosystem service	Numeric
CurrentAirQuality	Current provision of ecosystem service	Binary
CurFM	Current provision of ecosystem service	Binary
CurRec	Current provision of ecosystem service	Binary
geom	geometry	WKT

TREESCAPES

The Street Trees treescape, as specified within the remit of this project, only contains points without any ecosystem service calculations.

Each of the other treescape layers (silvoarable, silvopasture, woodland, grassland, garden trees, trees in open spaces and community orchards) contains polygons showing land suitable for these trees (or linestrings for hedges) and columns containing ecosystem service calculations, as well as some information from the base layer such as greenspace or habitat.

An outline of the treescape specific columns is presented (Table 14). Any other columns originate directly from the base layer.

Table 14 Variables within the Treescape GIS layer

Variable Name	Explanation	Contents
Treescape	Name of the treescape	Text string
CurBiodUnits	Total current provision of ecosystem units for the area	Numeric
TreeDist	Distinctiveness of the treescape, including connectivity, time to target, difficulty and assumed condition.	Numeric
BiodPerHa	Biodiversity units per hectare	Numeric
CarbonPerHa	Carbon sequestered per hectare	Numeric
Food	Ecosystem Service provision	Binary, 1 = provided
Timber	Ecosystem Service provision	Binary, 1 = provided
FloodManagement	Ecosystem Service provision	Binary, 1 = provided
Recreation	Ecosystem Service provision	Binary, 1 = provided
Biodiversity	Ecosystem Service provision biodiversity unit uplift	Numeric

Carbon	Ecosystem Service provision, carbon sequestration uplift 30 year total	Numeric
AirQuality	Ecosystem Service provision	Binary, 1 = provided
CalcFood	Ecosystem Service Provision Calculation value CalcFood = Food – CurrentFood Food production continues = 0 Food production stops = -1 Food production commences = +1	Numeric
CalcFlood	Ecosystem Service Provision Calculation value same as FloodManagement	Binary, 1 = provided
CalcRec	Ecosystem Service Provision Calculation value same as Recreation	Binary, 1 = provided
CalcCarbon	Ecosystem Service Provision Calculation value. Carbon Uplift > 5	Binary, 1 = provided
CalcBio	Ecosystem Service Provision Calculation value. Biodiversity Per Ha > 3.6	Binary, 1 = provided
CalcAQ	Ecosystem Service Provision Calculation value same as Ecosystem Service provision	Binary, 1 = provided
MultipleBenefits	Number of ecosystem services provided	Numeric

7. ABOUT TVERC

Thames Valley Environmental Records Centre (TVERC) is a 'not for profit' organisation covering Berkshire and Oxfordshire. We are run by a partnership and are one of a national network of local records centres. We are a member of the Association of Local Records Centres (ALERC) and the National Biodiversity Network (NBN). Our funding partners include all the local authorities in Oxfordshire & Berkshire plus the Environment Agency. We also work closely with the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust.

WHAT WE DO

We provide our funding partners with annually updated species and sites information as GIS tables, and undertake surveys of local wildlife sites. We also carry out data analysis for the monitoring of local authority Local Plans. We provide information to parish councils, local people, conservation bodies, land-owners, students and commercial organisations such as ecological consultants and utilities companies via data searches, data licensing and data exchanges. We provide other services such as ecological surveys, data analysis & presentation and training.

OUR RECORDS

We hold over 3 million records of flora and fauna in Berkshire and Oxfordshire plus information about Local Wildlife and Geological Sites, NERC Act S41 Habitats of Principal Importance (previously called UK Biodiversity Action Plan (BAP) habitats) and Ecological Networks (Conservation Target Areas and Biodiversity Opportunity Areas). We collect this data from the general public, skilled volunteer /amateur

recorders, professionals working for wildlife charities (BBOWT and RSPB), professionals working for government agencies (the Environment Agency & local authorities) and ecological consultants. This information is used:

- by planning authorities and developers to make informed decisions on the design and location of sustainable development
- to help farmers, land-owners and conservation organisations manage land in the best way to enhance biodiversity
- by nature partnerships to direct wildlife conservation work
- by teachers, students and scientists for education and scientific research.

For more information please visit our website: www.tverc.org

8. ABOUT THE OXFORDSHIRE TREESCAPES PROJECT

The Oxfordshire Treescapes Project is a joint initiative that brings together the expertise of Oxford University's Environmental Change Institute with the charity GrowGreenCarbon, who specialise in supporting farmers and landowners to maximise opportunities to harness the power of trees to address biodiversity loss, slow climate change and contribute to human wellbeing, alongside food production.

For more information please visit the website https://naturerecovery.ox.ac.uk/projects/oxfordshire-treescape-project/