Climate Change Adaptation – It's In Our Nature

23 May 2023

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Environment Agency

Welcome and introduction

Julian Woolford, Event Chair
Chief Executive, Staffordshire Wildlife Trust

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Staffordshire Wildlife Trust

Housekeeping

- Fire (no drill planned) and emergency exits
- WiFi access
- First aid
- Location of toilets (all gender neutral)
- Location of cloakroom
- Refreshment breaks (11:25, lunch at 12:35)

Agenda

10:15	**Welcome and introduction:** Julian Woolford, Chief Executive, Staffordshire Wildlife Trust
10:25	**Harnessing nature to adapt to climate change:** Jim Davies, Environment Agency
10:45	**Project 1 -** i-Tree: Emma Forde, The Economic Intelligence Unit
11:05	**Project 2 -** Stafford Brooks: Dave Cadman, Staffordshire Wildlife Trust
11:25	**Comfort break**
11:40	**Project 3 -** Combining climate adaptation outcomes with LNRS and BNG: Sophie Spencer, West of England CA
12:00	**Project 4 -** Greening The City for Biodiversity and Climate Adaptation: Simon Needle, Birmingham City Council
12:20	**Q&A**
12:35	**Working lunch:** What are the ingredients needed to create a successful nature-based climate change project?
13:30	**SUNRISE Project:** Matt Lawrence, Environment Agency
13:50	**Optional site visit:** Impact of SUNRISE
15:00	**Close**

Harnessing nature to adapt to climate change

Jim Davies, Environment Agency

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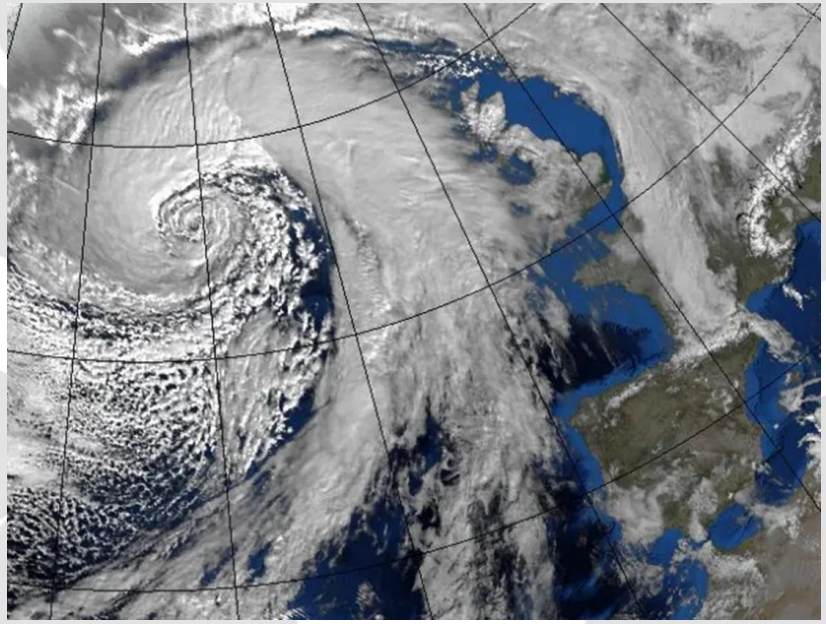
Climate Change Adaptation..
“its in our nature”



Jim Davies

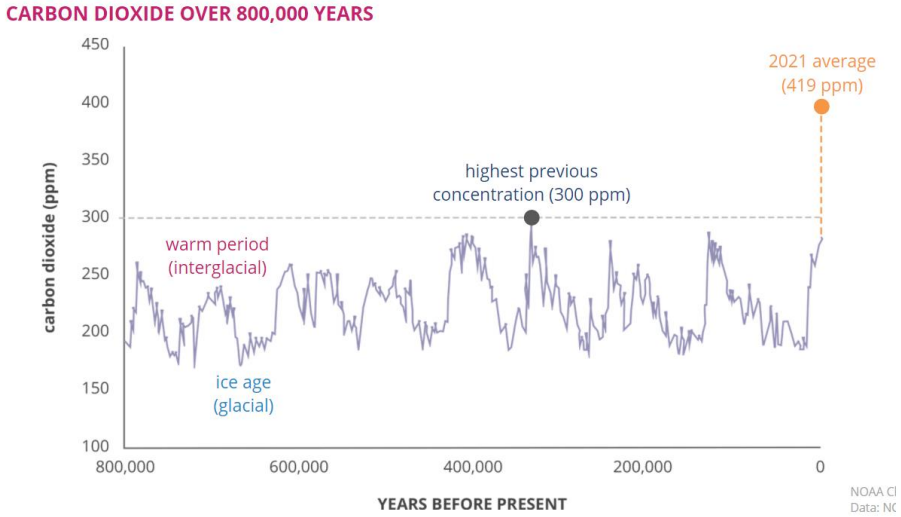
Senior Advisor, Local Nature Recovery Strategies

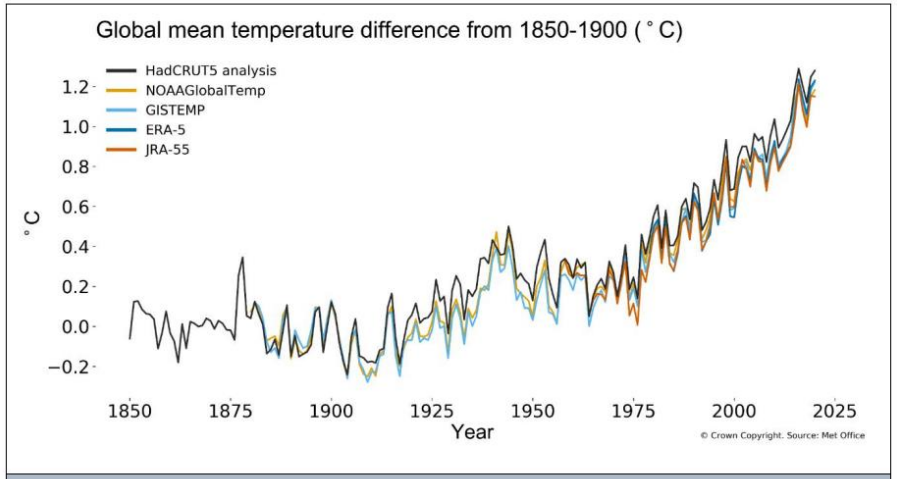
National Sustainable Places

Environment Agency

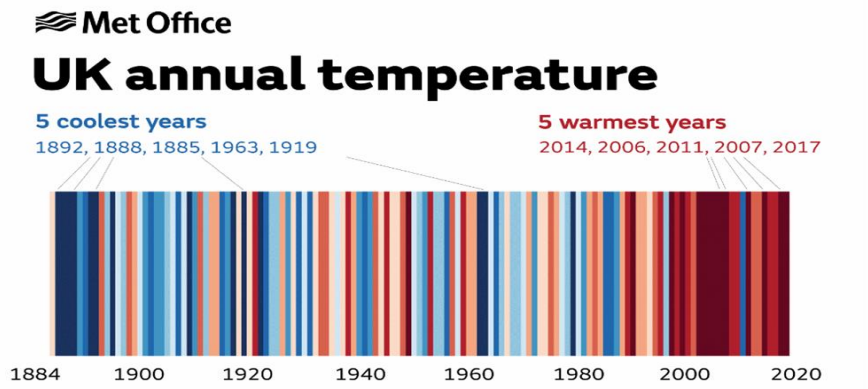
Living in the Anthropocene

Level of CO2 Over Time

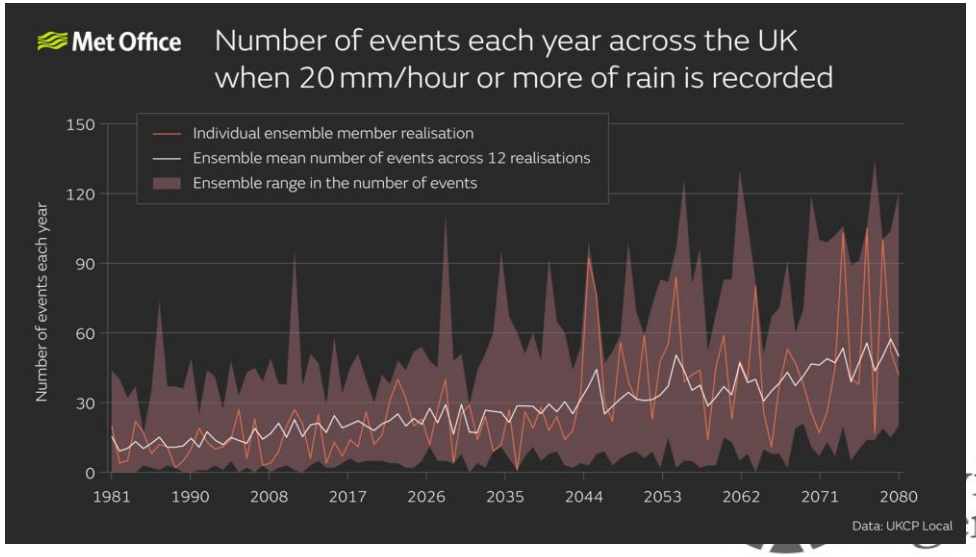




1.6 Five reconstructions of the global mean surface (land and ocean) temperature from 1850 to 2020, expressed as the annual mean difference from the average temperature for 1850-1900. Source: Met Office.



- Beginning with the hottest, the top ten warmest years in sequence are: 2014; 2006; 2011; 2007; 2017; 2003; 2018; 2004; 2002; and 2005.
- Beginning with the coldest, the top ten coolest years in sequence are: 1892 1888; 1885; 1963; 1919; 1886; 1917; 1909; 1887; and 1962



Sir James Bevan – (former) Environment Agency Chief Exec

(to the Whitehall and Industry Group on 16 March 2021)

"..even if the world was to stop tonight all its carbon emissions, the effects of the emissions that have already happened will continue to make themselves felt for decades.

….and we're already seeing evidence of more frequent and more ***extreme flooding, faster and more extreme coastal erosion; more frequent and more extreme droughts, water shortages and wildfires; and potentially permanent damage to habitats, plants, wildlife and cultural heritage.***

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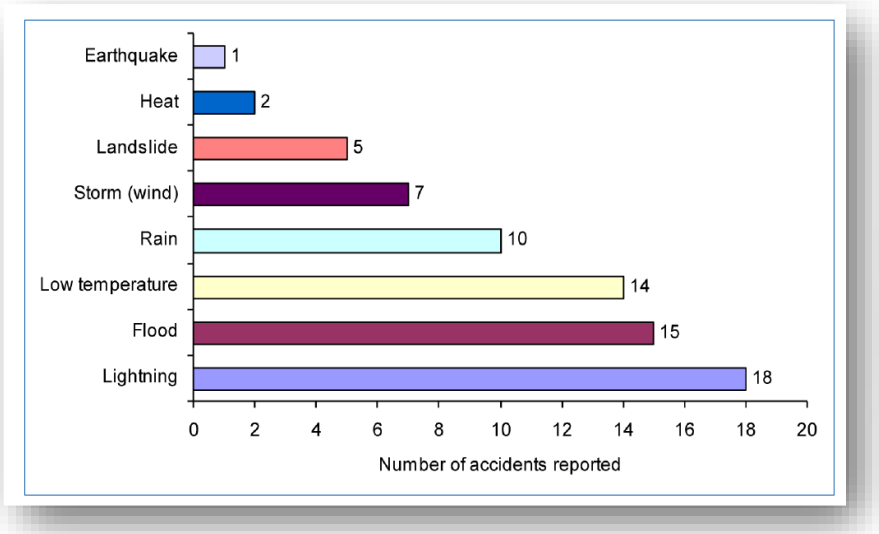
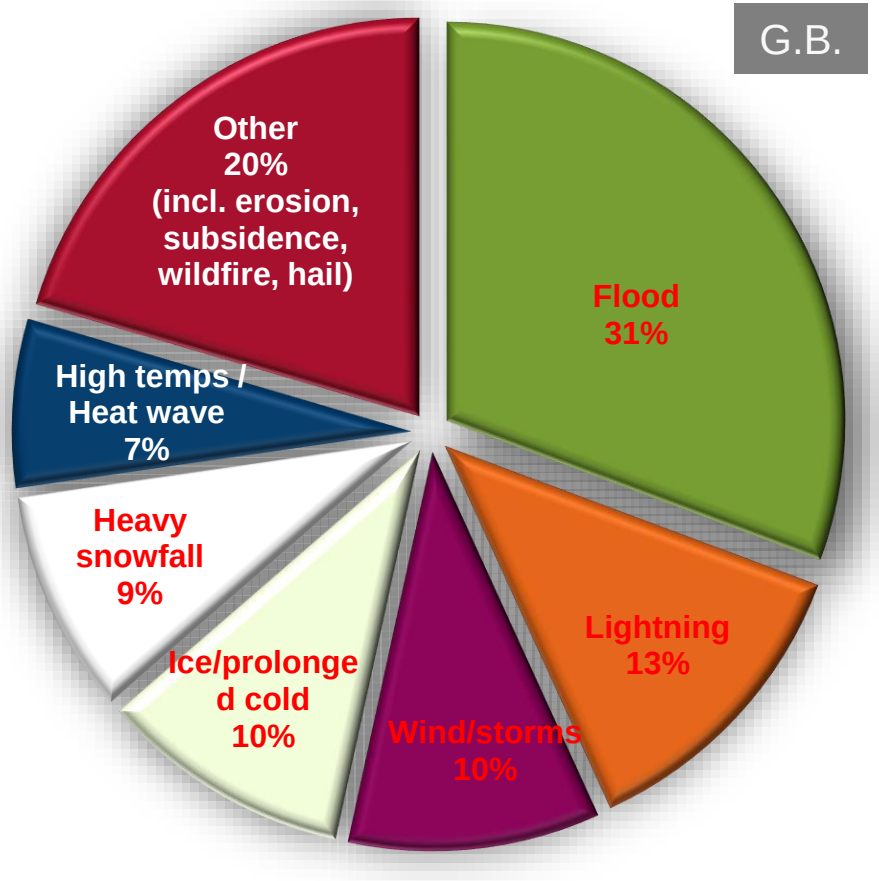
Most common extreme weather threats at present?

Europe



EU NaTech accidents (1990-2009) MAHB, Lessons Learned Bulletin No.6 – NaTech accidents, 2014

G.B.

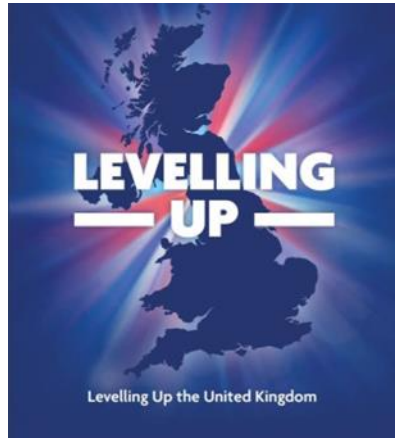


Extreme weather threats to G.B. establishments (Survey by CDOIF, 2021)

Climate Emergency Response

Over 30 LA's all tackling the same core issue in all different ways and focused on **Net Zero.**

Direct Support to the LA's (and other sectors), save resources, produce **consistency and foundation for Local Authority Climate Change Plans**



Over-arching Aim:

- Achieve a comprehensive understanding of the risks and opportunities associated with Climate Change for the West Midlands and produce an Adaptation Plan.
- The Adaptation Plan to include a high-level overview of actions that local and national decision makers and practitioners can consider for implementation.
- Promote a more strategic environmental **approach *Catchment Scale/Cross Boundary**
- Link to Government Policy - Covid Recovery, Build Back Better ***Levelling Up***
- ***"Creating a net zero nation resilient to climate change"***
- ***Environment. Economic. Social. Health -*** ***Integration.***

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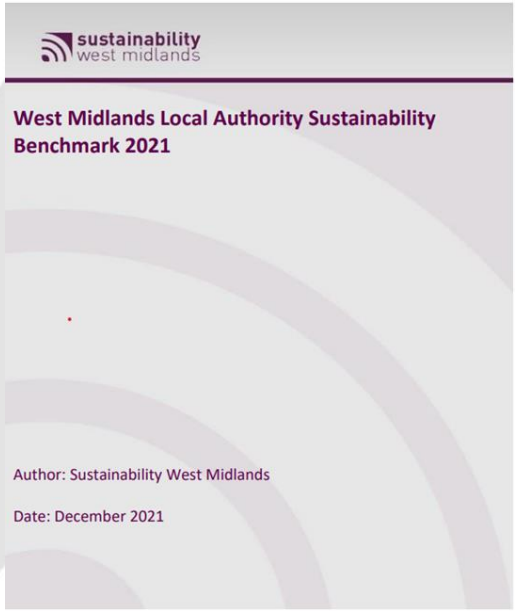
SWM Benchmarking Sustainability

- We believed Net Zero (Mitigation) was dominating Councils Planning, Economic and other Strategies
- Believed Adaptation and Resilience was ‘lower’ in Priorities - Proven
- However a lot of Adaptation work was already on-going such as in Planning but not badged as Adaptation, and still is.

- Alongside the Adaptation Plan, we have also published a report showing how our local authorities are progressing on sustainability, against each of the areas of our Roadmap
- It shows progress on climate adaptation is the **lowest…**

Roadmap symbol	Average % score	Rank
	56.0	1
	52.9	2
	50.0	3
	49.2	4
	48.4	5
	46.8	6
AVERAGE	46.5	SCORE
Various	46.5	7
	44.2	8
	40.3	9
	33.1	10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West Midlands Local Authority Sustainability Benchmark 2021

Author: Sustainability West Midlands

Date: December 2021

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EA West Midlands/SWM

"Adapt to Survive, Adapt to Thrive"

3 Years of Partnership Working with SWM.

- **West Midlands Climate Change Risk Assessment and Adaptation Plan**
- **West Midlands Climate Adaptation Working Group –** Chaired by Severn Trent
- WMCA and Stafford BC responded
- Weathering the Storm "Land Use and Agriculture"
- Climate Adaptation – *"its in our Nature"*
- Health and Climate Change Adaptation – NHS

Climate Change Adaptation and Partnership with SWM enabled effective influencing and engagement on a much wider platform that our remit-

- Economic Growth/Green Recovery
- Nature Based Solutions – Water Management
- Socio-Economic Benefits of Climate Resilience

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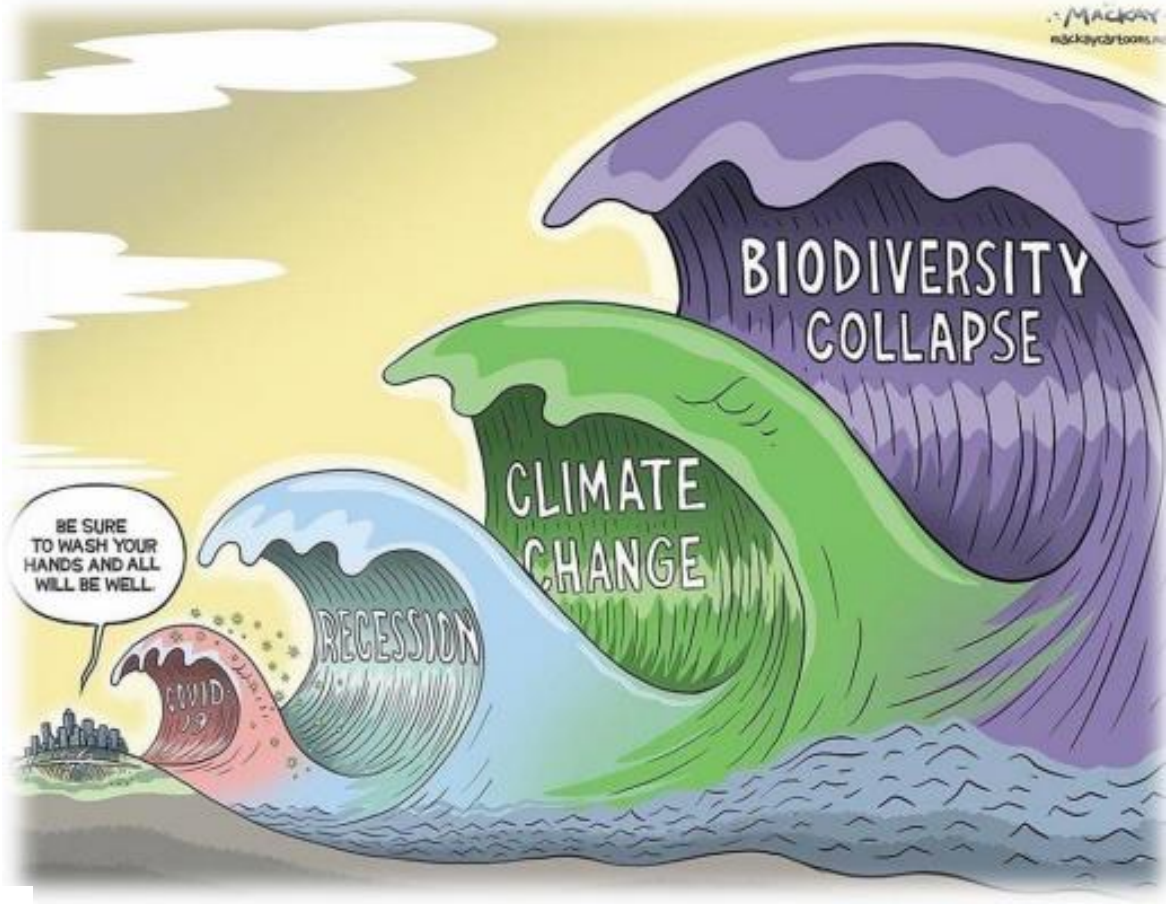
Biodiversity Collapse….?
Nature Recovery - Global Recovery



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The crucial role of nature-based solutions in addressing the climate crisis

Speech by Emma Howard Boyd at the ClimateExpo, 18 May 2021

- Floods and storms are responsible for almost three-quarters of climate disasters.
- In England, for every person who suffers flooding, around 16 others are affected by a loss of services such as transport and power.
- Yet, all around the world, resilience to climate shocks does not get the same airtime as net zero, and resilience measures are too reliant on the public purse.
- In England, the Environment Agency, working with local authorities, businesses and community groups, created 531 hectares of blanket bog, and restored a further 2,148 hectares in 2019/2020.
- Restoring peatland filters water, meaning water companies use less chemical treatment, while also slowing the flow, reducing downstream flood risk
- The Magic *of Sphagnum* bogmoss,

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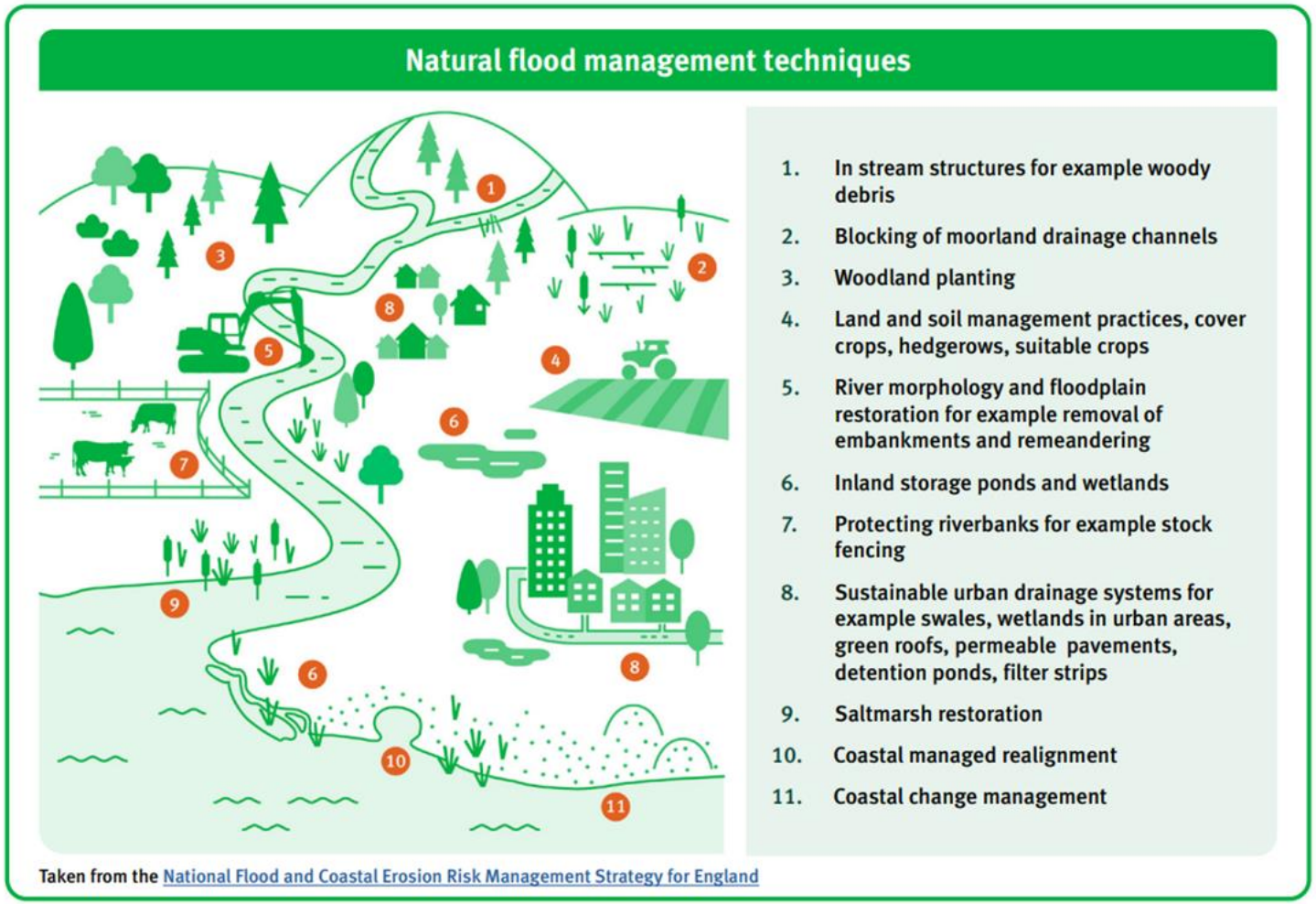
Adaption - Nature Based Solutions



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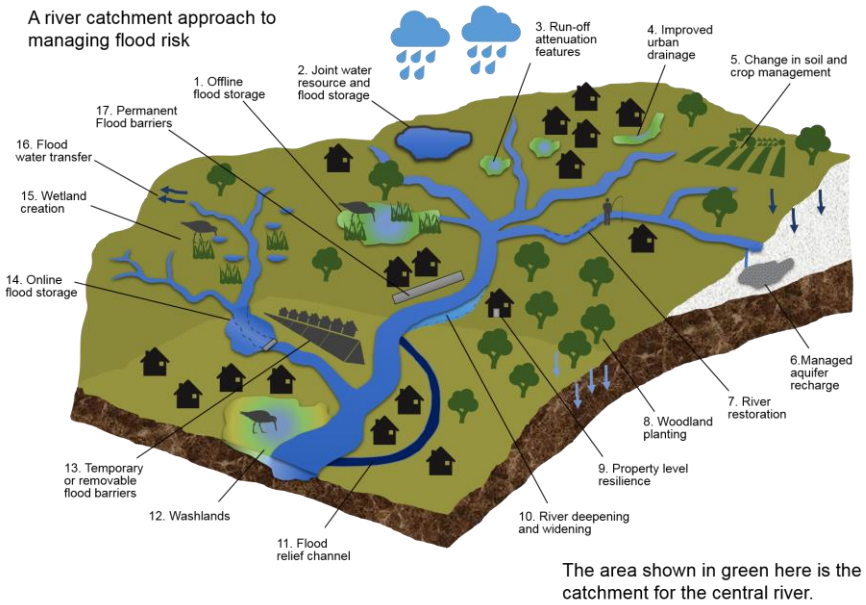
Phase 3 – Weathering the Storm
*A guide for agriculture and land use Management in a changing climate**

Resilience and Adaptation in the Farming Sector (Mirror Business Resilience Guide Guide)

- Existing examples of **Climate Change Adaptation** – building on case studies.
- **Working with Farmers and Agricultural Sector**
- **Environmental Land Management (ELM)**
- **Integrated Land Use for Climate Adaptation**
- **Strategic Approach – LNRS**.



The area shown in green here is the catchment for the central river.

Policy paper

Environmental Land Management (ELM) update: how government will pay for land-based environment and climate goods and services

Updated 3 February 2023

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Nature Based Regeneration and Resilient Communities

- Urban heating and air pollution;
- replenish groundwater resources;
- contribute to biodiversity net gain targets;
- capture and re-use rainwater;
- Contaminated Land
- Brownfield Land
- store carbon;
- reduce the need for carbon-intensive construction techniques and pumped systems;
- release capacity in combined sewerage systems and at wastewater treatment works;
- create and connect valuable areas of blue-green infrastructure
- reduce lifetime maintenance costs; and
- enhance the attractiveness and value of new development by integrating water management with habitat for wildlife and opportunities for amenity and recreation.

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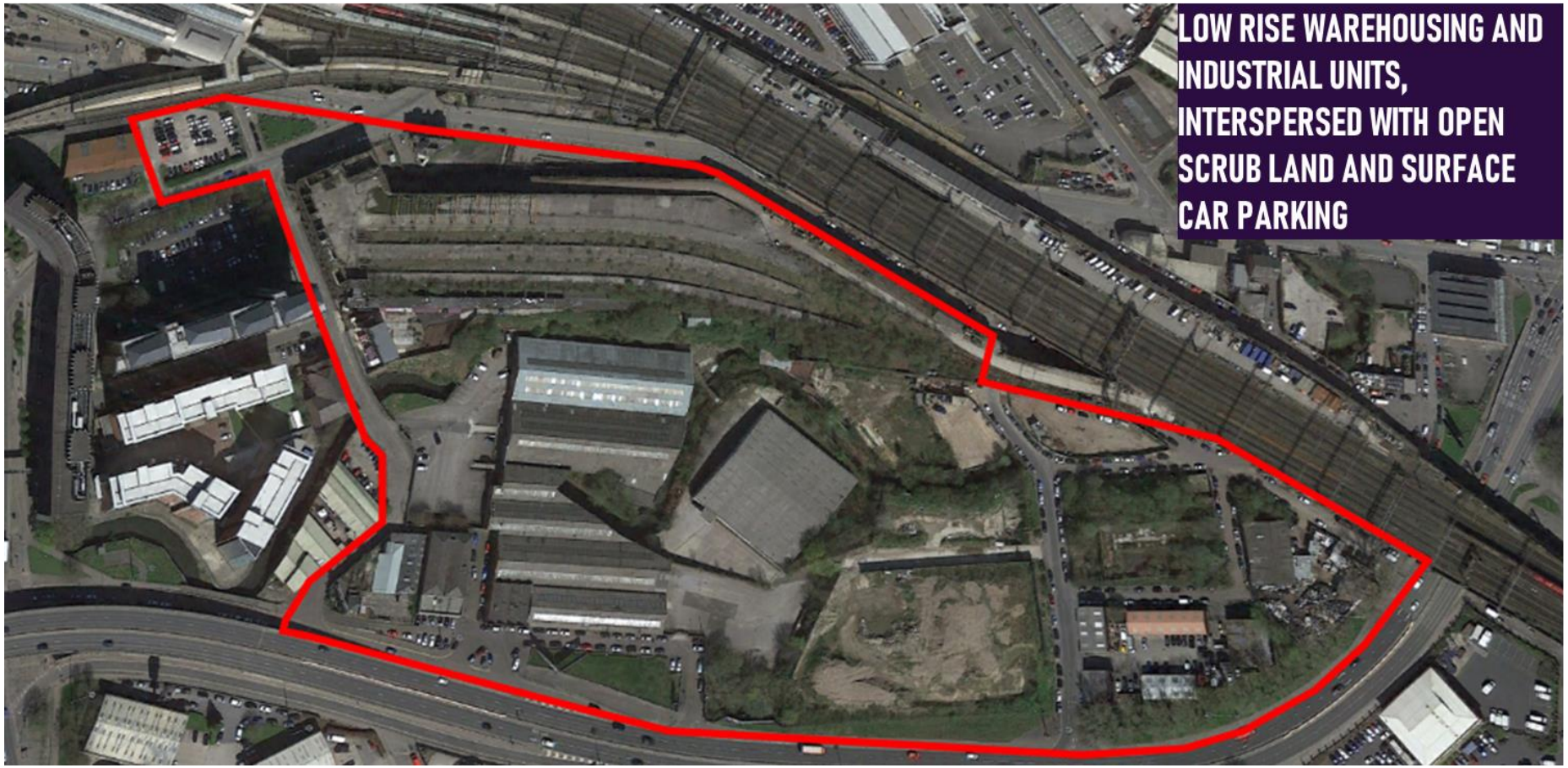
Mayfield Park – Manchester

Restoring the River Medlock – realising the benefits from getting green and blue into the grey



BURO HAPPOLD

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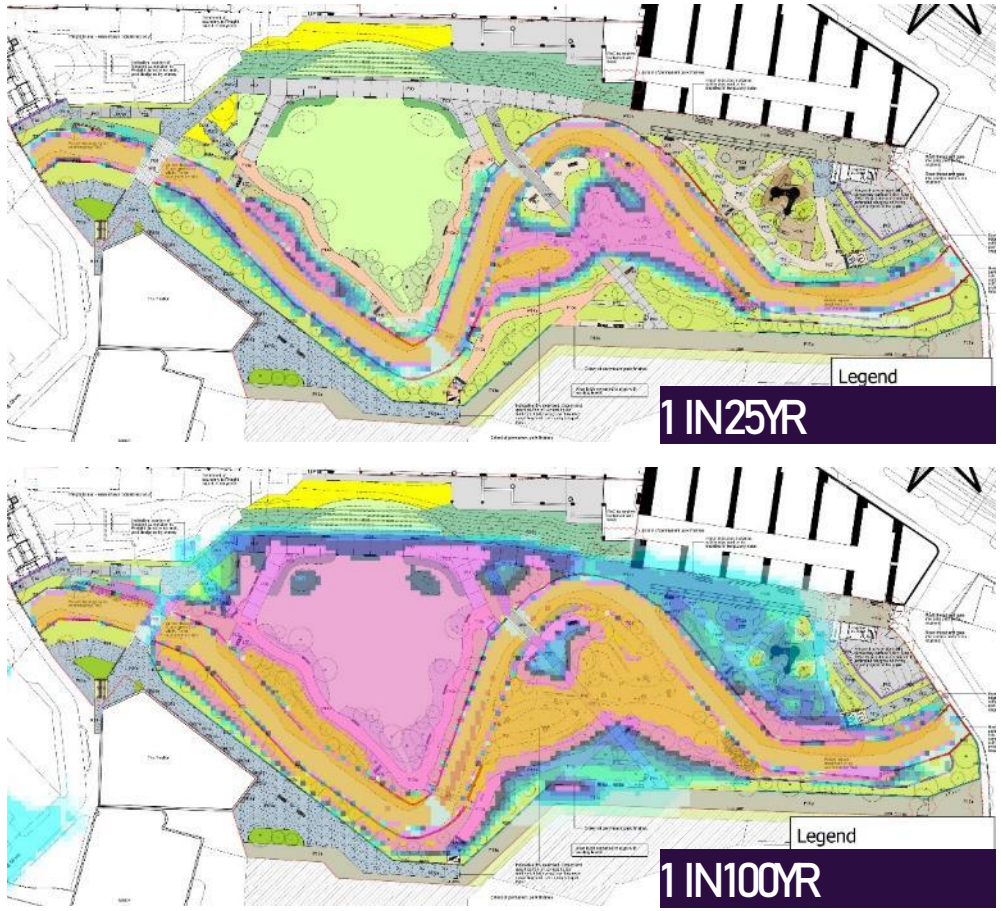
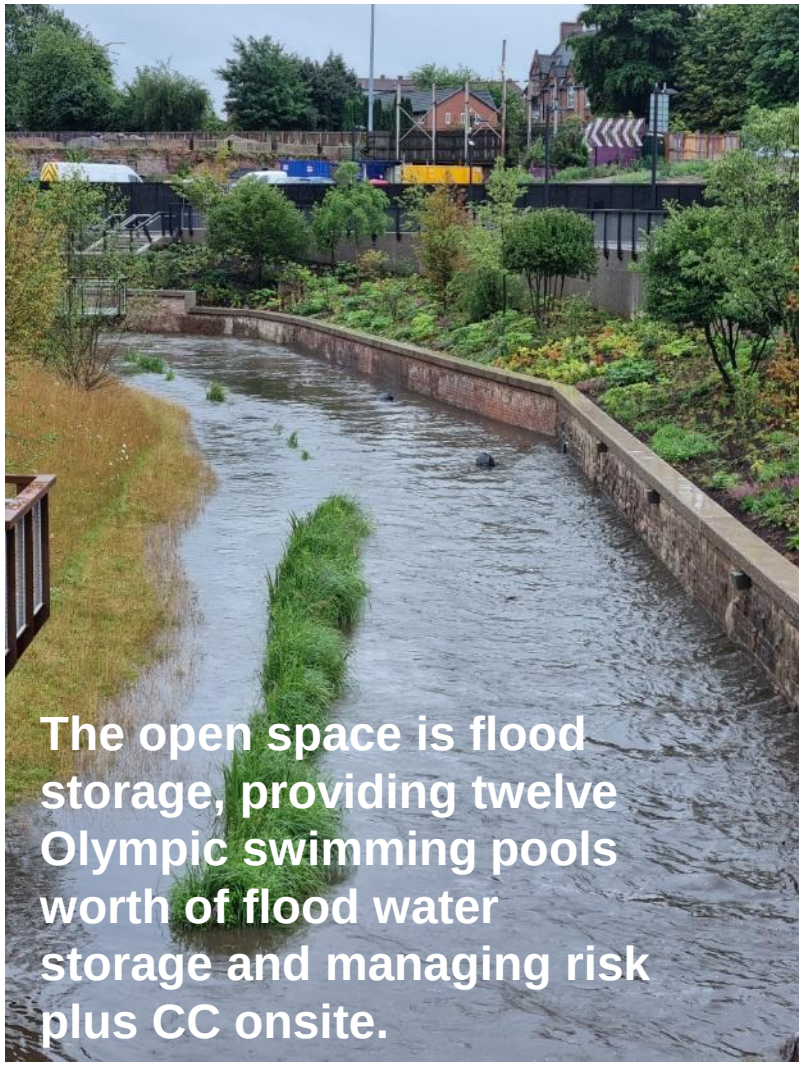
JBA consulting

Resilient places – using the green to manage high flows





The River Medlock and the Mayfield redevelopment

6.5 ACRE PUBLIC PARK, WITH DAYLIGHTING/ NATURALISATION OF MEDLOCK, MANAGEMENT OF FLOOD RISK AND HABITAT CREATION

BURO HAPPOLD

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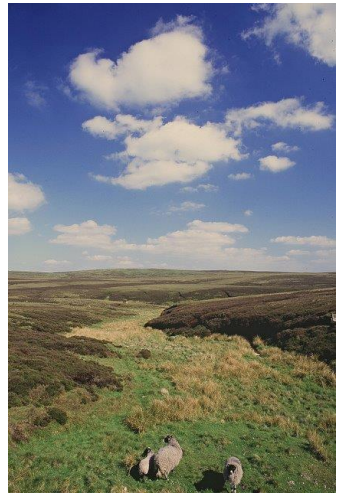
Local Nature Recovery Strategies



LNRSs are a new system of spatial strategies for nature, covering the whole of England and established under the Env Act 2021.

Each strategy will, for the area that it covers:

- Map the existing areas designated for biodiversity;
- Agree priorities for nature's recovery; and
- Map proposals for creating or improving habitat for nature and wider environment goals.

They will inform and underpin the **Nature Recovery Network (NRN)** by providing mapping and data, identifying opportunities for its expansion.

They will support delivery of mandatory **Biodiversity Net Gain (BNG)** and provide a focus for the strengthened duty on all public bodies to conserve and enhance biodiversity.

LNRS will provide a platform for wider **environmental, social and economic opportunities** as well as tackling the impacts and causes of **climate change.**

NATURAL ENGLAND

Forestry Commission

Environment Agency

Role of LNRS – Strategic Approach to Nature

To identify and map locations where creating or improving habitat will deliver the greatest benefit for nature and the wider environment.

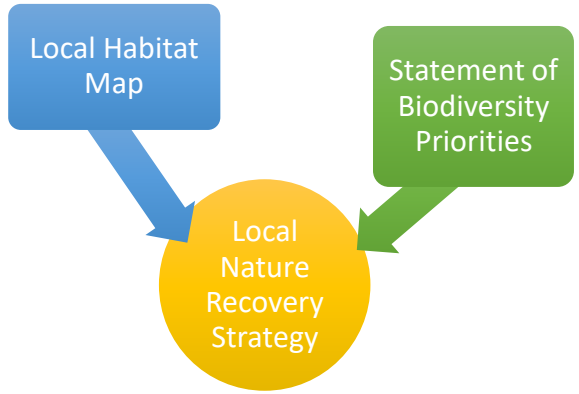
LNRS will help target future investment in nature-based solutions to support:

- **Climate change mitigation and adaptation**
- **Flood risk**
- **Water quality**
- **Water resources**
- Restoring natural processes
- Species/Habitats

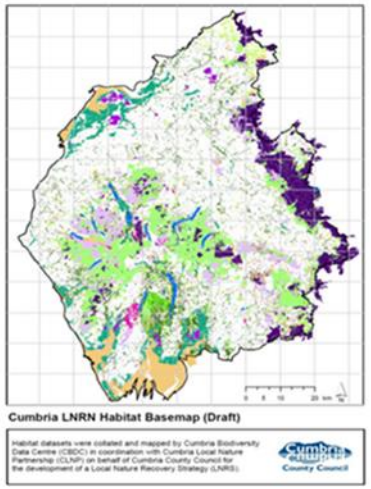
Deliver a key part of **Nature Recovery Network**

- *The Nature Recovery Network (NRN) is a major commitment in the government's 25 Year Environment Plan. By bringing together partners, legislation and funding, we can restore and enhance the natural environment.*

Some Responsible Authorities may have a lot of this data, mapping and Biodiversity and Habitat Action Plans – LNRS seeks to enhance and maximise this.



Local Habitat Map



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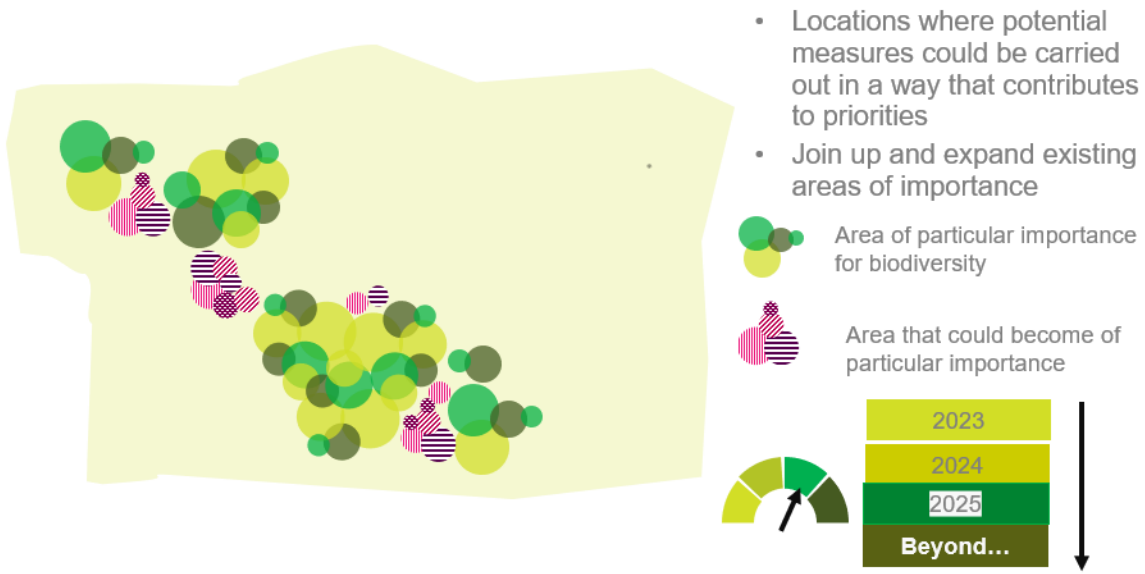
The Opportunities with LNRS

- **Working collaboratively** at local level to identify priorities for nature and nature-based solutions
- **Building a widely shared vision** for nature recovery at county scale
- **Working with farmers and Land Managers** to identify habitat restoration and creation opportunities
- **Creating resilient ecological networks** growing and connecting wild rich places
- **Enabling adaptation to, and mitigation of climate change** through habitat restoration and creation
- **Connecting people with nature** by creating wildlife corridors int urban areas
- **Strategic Planning** for Nature Recovery



Nature Recovery Network (NRN)

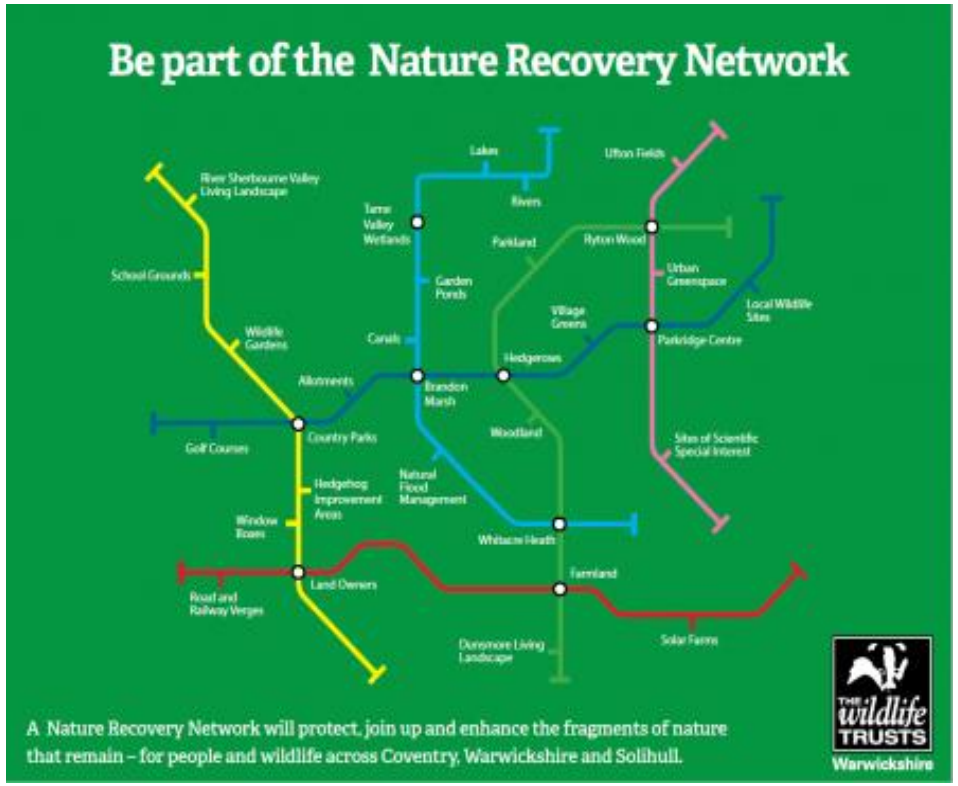
The NRN will be a national network of wildlife-rich places, expanding, improving and connecting these places across our cities, towns, countryside and coast.
The NRN is a major commitment in the government's **25 Year Environment Plan and enacted by the Environment Act 2021.**

The NRN will help us deal with 3 of the biggest challenges we face:

- **biodiversity loss,**
- **climate change**
- and **wellbeing**.

NRN objectives : To create the NRN, by 2042 it will require:

- restore 75% of protected sites on land (including freshwaters) to favourable condition so nature can thrive
- create or restore 500,000 hectares of additional wildlife-rich habitat outside of protected sites
- **support work to increase woodland cover**
- achieve a range of environmental, economic and social benefits, such as **carbon capture, flood management, clean water, pollination and recreation**



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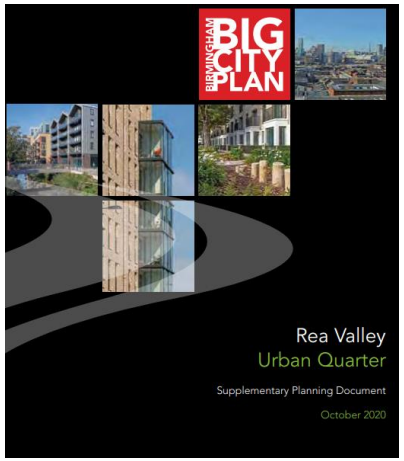
LNRS - Building on existing work and partnerships



West Midlands Natural Environment Plan: 2021 - 2026

Protecting, restoring and enhancing our region's natural environment

September 2021

The Powys Nature Recovery Action Plan 2022-2032

The Wildlife Trusts Staffordshire

Cannock Chase District Nature Recovery Network Mapping

SEVERN TRENT

glos nature
GLOUCESTERSHIRE LOCAL NATURE PARTNERSHIP

River Severn Partnership

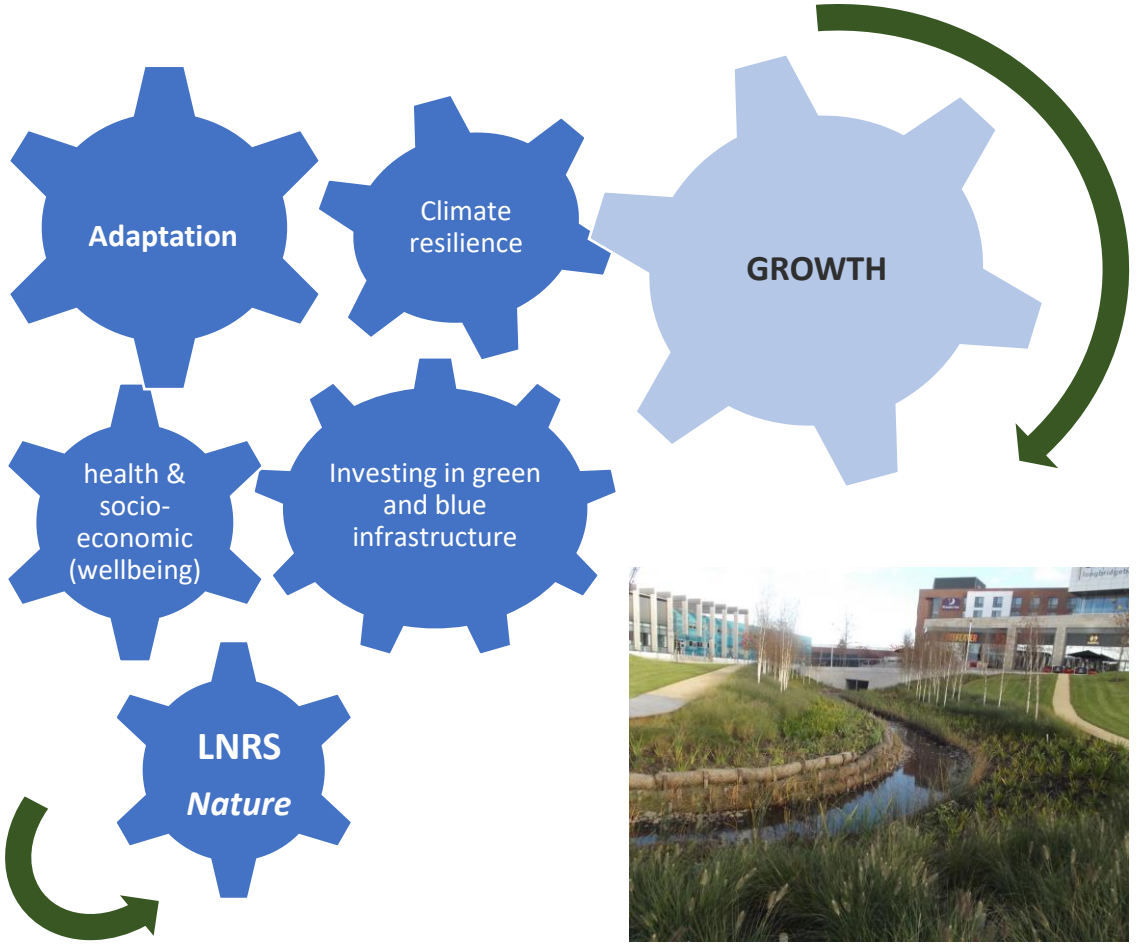
Great Fen

The Wildlife Trusts Bedfordshire Cambridgeshire Northamptonshire

Northumberland Wildlife Trust

LNRS – Drivers of much more….

‘*climate resilience and adaptation, sustainable healthy places, well-being..*



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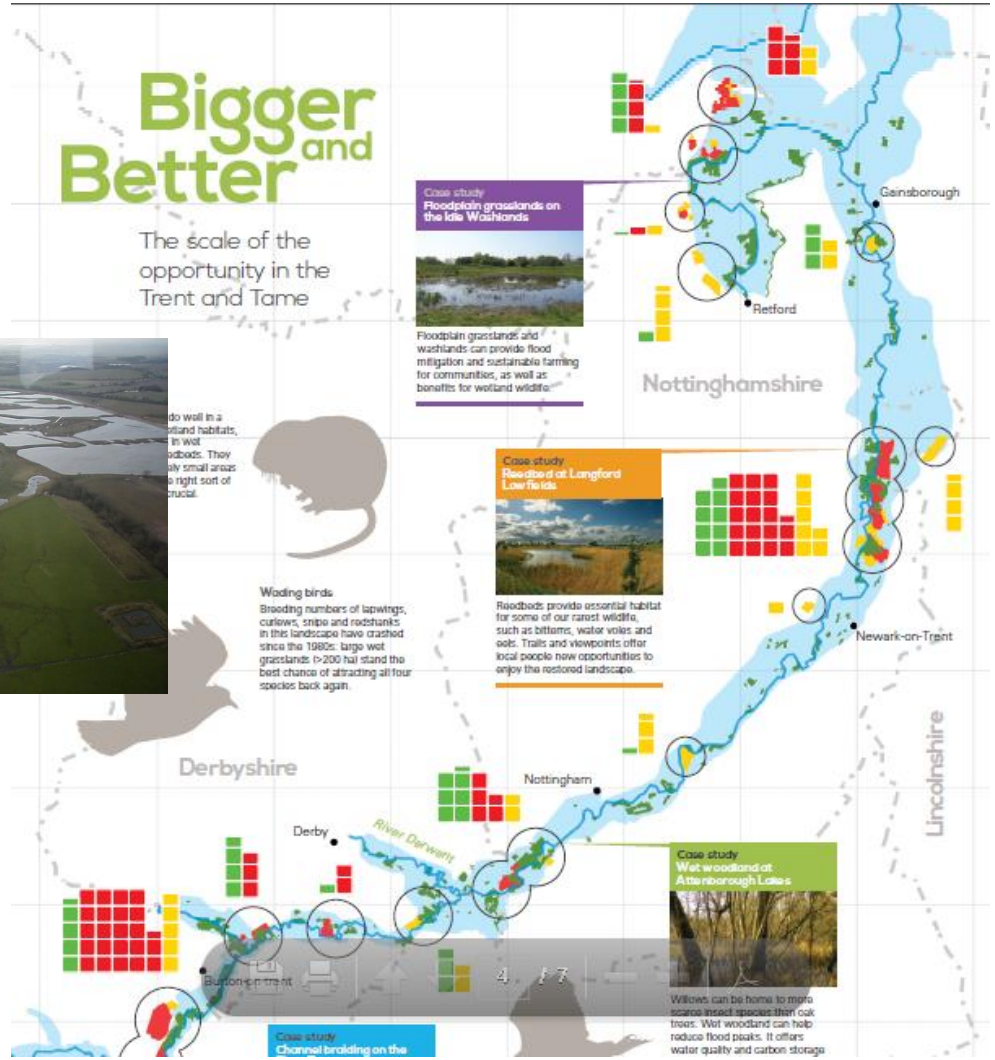
Catchment Scale Approach

Resilient
Adaptation
Strategic (Catchment) Planning
Integrated
Multiple Benefits

- **Economic**
- Environmental
- **Social**



Nature After Minerals

- Active Since 2005
- Promoting Mineral Site Restoration for Nature
- ‘Strategic’ Approach – WFD/Flood Management
- **Oxford-Cambridge Integrated Water Plan**

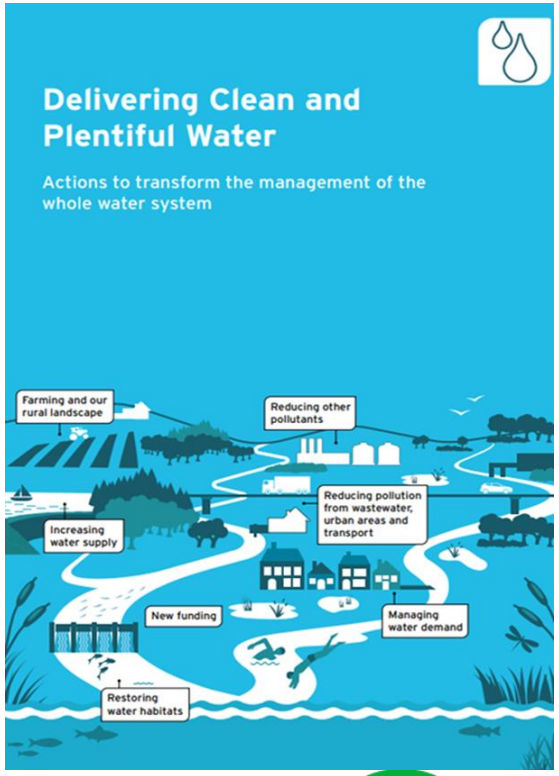
rspb giving nature a home NATURAL ENGLAND Forestry Commission Environment Agency

Sir James on Water..

Water is about the most important thing there is: it's essential for life and everything else. Water – its quantity and its quality - is the single biggest X factor for the state of nature. And as someone said to me a few years ago, the thing about water is that it gets everywhere…..

So you'd better make sure you have the right amount, of the right quality, in the right places.

Sir James Bevan, to the All Party Parliamentary Group on Water, 3 March 2022



Water Plan 2023

1. transform management of the whole water system (CATCHMENT APPROACH)

2. deliver a clean water environment for nature and people

3. secure a plentiful supply of water – meet our long-term water needs for people,

Environment Agency

Climate Change

"*Adaptation*" – it's in our Nature..and *so much more.*

Climate Change Adaptation – Natural Solutions

- Flood Risk Management
- Habitat and Woodland Creation
- Catchment/Integrated Water Management
- Water Resources/Water Quality
- Biodiversity
- Air Quality/Urban Heat
- Green Recovery
- Increased Urban and Landscape Scale Resilience
- Supporting Regeneration and causes of Deprivation.

Thank you

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Project 1: i-Tree

Emma Forde, The Economic Intelligence Unit

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The Black Country iTree Eco Project

Emma Forde

The Economic Intelligence Unit

What is iTree?

The Economic Intelligence Unit

- i-Tree is a peer-reviewed software suite designed to help quantify urban forest **structure**, **function** and **values.**

+ many collaborators
incl.:

DAVEY

In the UK:

Treeconomics

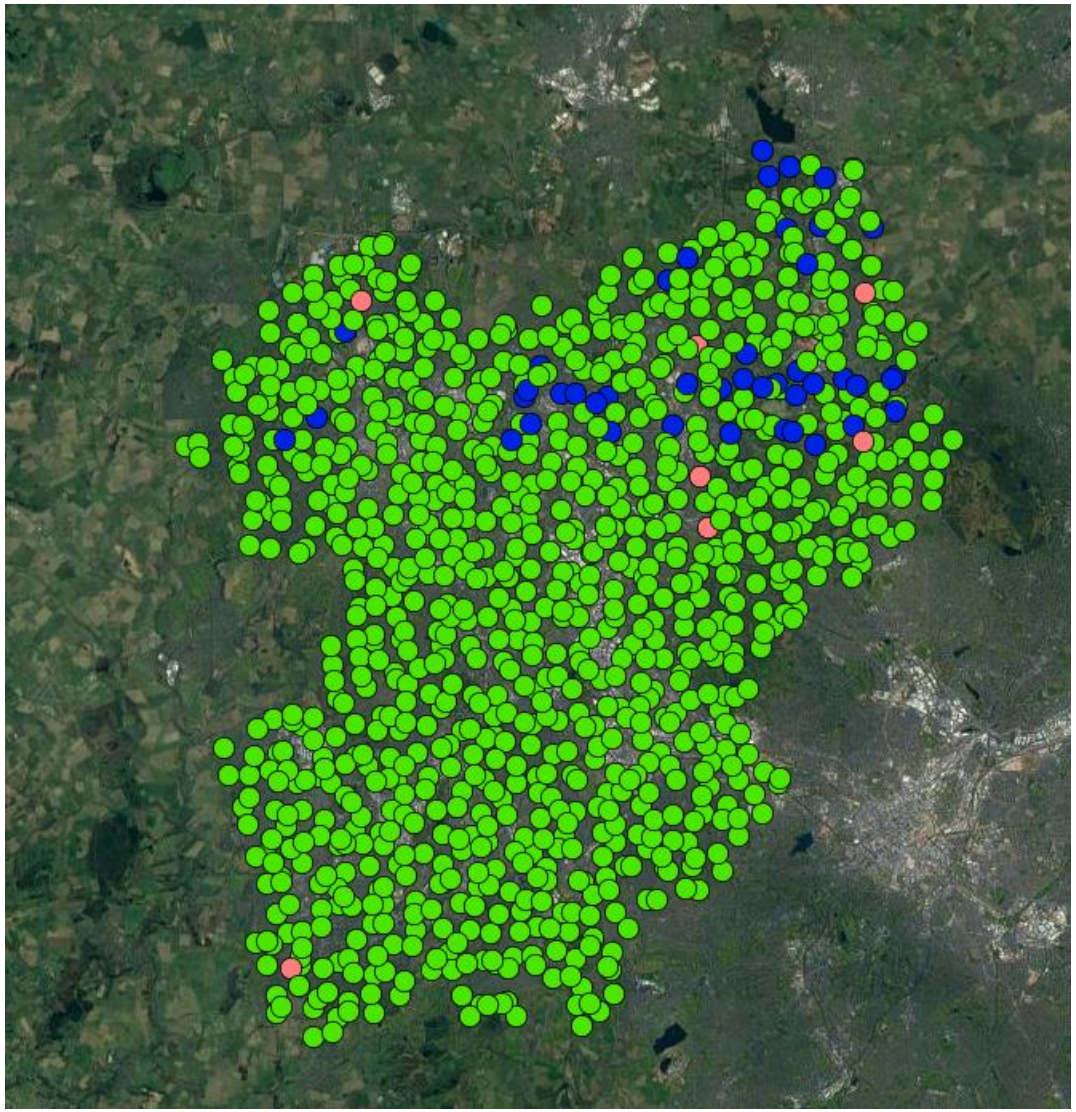
Forest Research

i-Tree Eco

i-Tree Canopy

Map of 1,000 sample plots

The Economic Intelligence Unit



Who was involved?

The Economic Intelligence Unit

Fieldwork & Data analysis

Treeconomics

Forest Research

BIRMINGHAM TREE PEOPLE

Barton Hyett Associates
Arboricultural Consultants

Working group members

Dudley Metropolitan Borough Council

Sandwell Metropolitan Borough Council

Walsall Council

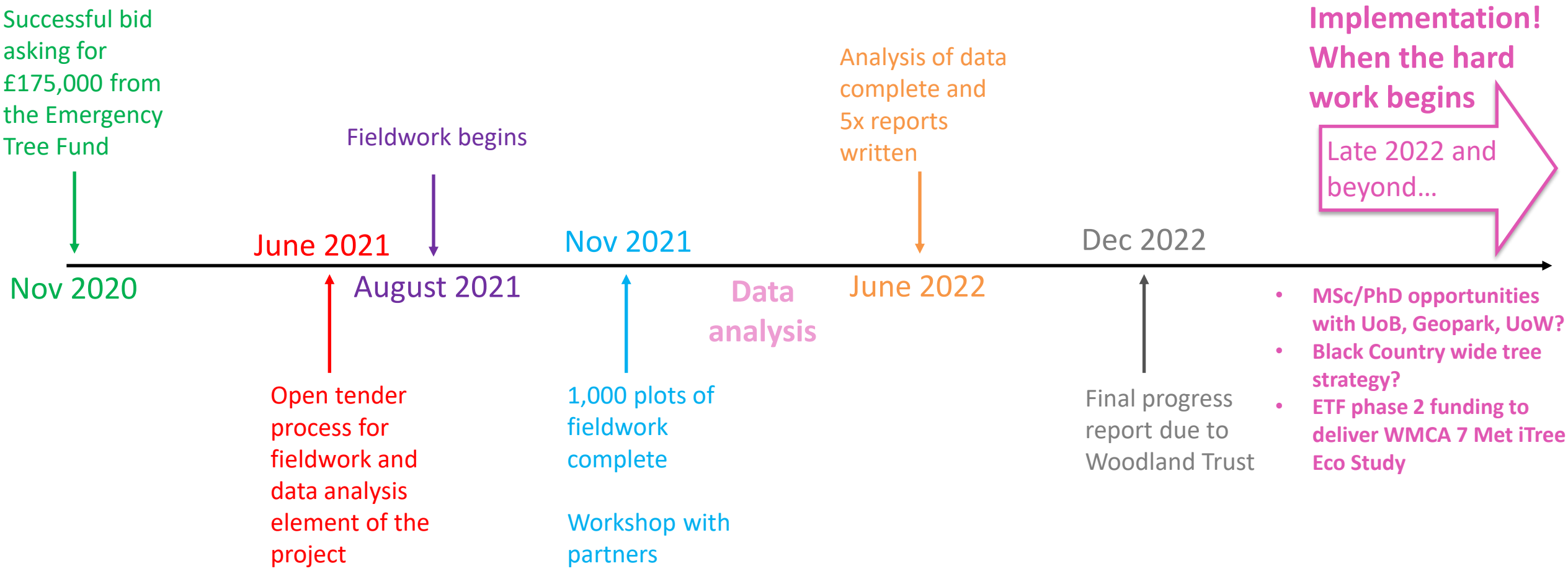
CITY OF WOLVERHAMPTON COUNCIL

Funders

WOODLAND TRUST

Project Timeline

The Economic Intelligence Unit



VALUING DUDLEY'S URBAN FOREST

Most Common Tree Species:
Hawthorn, English Oak and Ash

The replacement cost* of Dudley's Urban Forest is £334 Million
*Replacement cost refers to the CTLA Valuation, and does not account for the health or amenity value.

Urban forests provide people with a range of benefits (or ecosystem services) that help make our towns and cities better places to live.

Trees filter air pollution, improve our health, store carbon and reduce flooding, whilst also providing important habitat for wildlife and a multitude of other benefits.

Black Country Consortium Ltd worked in partnership with Birmingham Tree People, Barton Hyett Associates and Treeconomics to survey the trees in Dudley. Using a plot sample assessment in i-Tree Eco the structure of Dudley's urban forest was assessed and a range of the ecosystem services it provides to society were valued.

Number of Trees
590,000

17%
Tree Cover

88
Tree Species

60
Trees per hectare

Dudley's urban forest contains an estimated 590,000 trees benefiting over 313,000 people. That's almost 2 trees per person.

In addition, Dudley's trees:

- Cover an area equivalent to 1,665 ha with a leaf area of 9,290 ha.
- Intercept around 162,000 m³ of rain water every year, equivalent to an estimated £159,000 in avoided water treatment costs.
- Filter 17.6 tonnes of airborne pollutants each year, worth over £1 million.
- Remove an estimated 5,870 tonnes of carbon from the atmosphere each year, worth £5.3 million.
- Store an impressive 174,000 tonnes of carbon worth £158 million.
- Are at risk from pests and diseases - Ash dieback could affect 55,000 trees in Dudley.

Leaf area is equivalent to 774 times the area of Buckpool and Fens Pools Nature reserve (12 ha)!

Avoided runoff is equivalent to 65 olympic swimming pools of water!

Carbon sequestration is equivalent to the annual CO_2 emissions of 12,410 cars!

Carbon storage is equivalent to the weight of 14,000 new London double-decker busses (12.4 tonnes)!

VALUING SANDWELL'S URBAN FOREST

Most Common Tree Species:
Field Maple, English Oak, Bird Cherry

The tree measured with the highest replacement cost in the Black Country is a Beech in Sandwell valued at £28,367. It stands 28m high, has a DBH of 274cm, and provides ES worth £37.80 annually!

Urban forests provide people with a range of benefits (or ecosystem services) that help make our towns and cities better places to live.

Trees filter air pollution, improve our health, store carbon and reduce flooding, whilst also providing important habitat for wildlife and a multitude of other benefits.

Black Country Consortium Ltd worked in partnership with Birmingham Tree People, Barton Hyett Associates and Treeconomics to survey the trees in Sandwell. Using a plot sample assessment in i-Tree Eco the team quantified the structure of Sandwell's urban forest and valued a range of the ecosystem services it provides to society.

Number of Trees
265,000

18.1%
Tree Cover

108
Tree Species

31
Trees per hectare

Sandwell's urban forest contains an estimated 265,000 trees benefiting over 328,000 people. That's 0.8 trees per person.

In addition, Sandwell's trees:

- Cover an area equivalent to 1,550 ha with a leaf area of 7,450 ha.
- Intercept around 130,000 m³ of rain water every year, equivalent to an estimated £128,000 in avoided water treatment costs.
- Filter an estimated 15.3 tonnes of airborne pollutants each year, worth £828,000.
- Remove an estimated 5,550 tonnes of carbon from the atmosphere each year, worth £5 million.
- Store an impressive 361,000 tonnes of carbon worth £328 million.
- Are at risk from pests and diseases - Ash dieback could affect 22,300 trees in Sandwell.
- Would cost £684 million to replace like-for-like.

Leaf area is equivalent to 24 times the area of Sandwell Valley Country Park (308 ha)!

Avoided runoff is equivalent to 52 olympic swimming pools of water!

Carbon sequestration is equivalent to the annual CO_2 emissions of 11,730 cars!

Carbon storage is equivalent to the weight of 29,000 new London double-decker busses (12.4 tonnes)!

VALUING WALSALL'S URBAN FOREST

Most Common Tree Species:
English Oak, Silver Birch and Ash

Of the four districts of the Black Country, Walsall's trees provide the most ecosystem services per year, valuing £7.4 million

Urban forests provide people with a range of benefits (or ecosystem services) that help make our towns and cities better places to live.

Trees filter air pollution, improve our health, store carbon and reduce flooding, whilst also providing important habitat for wildlife and a multitude of other benefits.

Black Country Consortium Ltd worked in partnership with Birmingham Tree People, Barton Hyett Associates and Treeconomics to survey the trees in Walsall. Using a plot sample assessment in i-Tree Eco the team quantified the structure of Walsall's urban forest and valued a range of the ecosystem services it provides to society.

Number of Trees
624,000

10.9%
Tree Cover

77
Tree Species

60
Trees per hectare

Walsall's urban forest contains an estimated 624,000 trees benefiting over 286,000 people. That's almost 2.2 trees per person.

In addition, Walsall's trees:

- Cover an area equivalent to 1,130 ha with a leaf area of 9,850 ha.
- Intercept around 172,000 m³ of rain water every year, equivalent to an estimated £169,000 in avoided water treatment costs.
- Filter an estimated 14.5 tonnes of airborne pollutants each year, worth £923,000.
- Remove an estimated 6,900 tonnes of carbon from the atmosphere each year, worth £6.3 million.
- Store an impressive 141,000 tonnes of carbon worth £128 million.
- Are at risk from pests and diseases- Ash dieback could affect 52,800 trees in Walsall.
- Would cost £333 million to replace like-for-like.

Leaf area is equivalent to 266 times the area of Pelsall North Common (37 ha)!

Avoided runoff is equivalent to 69 olympic swimming pools of water!

Carbon sequestration is equivalent to the annual CO_2 emissions of 14,570 cars!

Carbon storage is equivalent to the weight of 11,000 new London double-decker busses (12.4 tonnes)!

VALUING THE CITY OF WOLVERHAMPTON'S URBAN FOREST

Most Common Tree Species:
Hawthorn, Silver Birch and Sycamore

The replacement cost* of Wolverhampton's Urban Forest is
£375 Million
*Replacement cost refers to the CTLA Valuation, and does not account for the health or amenity value.

Urban forests provide people with a range of benefits (or ecosystem services) that help make our towns and cities better places to live.

Trees filter air pollution, improve our health, store carbon and reduce flooding, whilst also providing important habitat for wildlife and a multitude of other benefits.

Black Country Consortium Ltd worked in partnership with Birmingham Tree People, Barton Hyett Associates and Treeconomics to survey the trees in Wolverhampton. Using a plot sample assessment in i-Tree Eco the structure of Wolverhampton's urban forest was assessed and a range of the ecosystem services it provides to society were valued.

Number of Trees
473,000

16.5%
Tree Cover

78
Tree Species

68
Trees per hectare

Wolverhampton's urban forest contains an estimated 473,000 trees benefiting over 262,000 people. That's 1.8 trees per person!

In addition, Wolverhampton's trees:

- Cover an area equivalent to 1,150 ha with a leaf area of 8,690 ha.
- Intercept around 151,000 m³ of rain water every year, equivalent to an estimated £149,000 in avoided water treatment costs.
- Filter 14.5 tonnes of airborne pollutants each year, worth £1.3 million.
- Remove an estimated 6,150 tonnes of carbon from the atmosphere each year, worth £5.6 million.
- Store an impressive 168,000 tonnes of carbon worth £153 million.
- Are at risk from pests and diseases - Ash dieback could affect 31,800 trees in Wolverhampton.

Leaf area is equivalent to 1,257 times the area of West Park (6.9 ha)!

Avoided runoff is equivalent to 60 olympic swimming pools of water!

Carbon sequestration is equivalent to the annual CO_2 emissions of 12,680 cars!

Carbon storage is equivalent to the weight of 13,600 new London double-decker busses (12.4 tonnes)!

Results

The Economic Intelligence Unit

Highlights

Structure and Composition Headline Figures	
Number of Trees (estimate)	1,950,000
Tree Density (trees/hectare)	42
Tree Canopy Cover	15.4%
Shrub Cover	10.6%
Most Common Tree Species	English oak (8%), Hawthorn (6%), Silver birch (6%)
Replacement Cost (CTLA)	£1.7 billion
Amenity Valuation (CAVAT)	£23.2 billion
Proportion of Trees in Good or Excellent Condition	79%

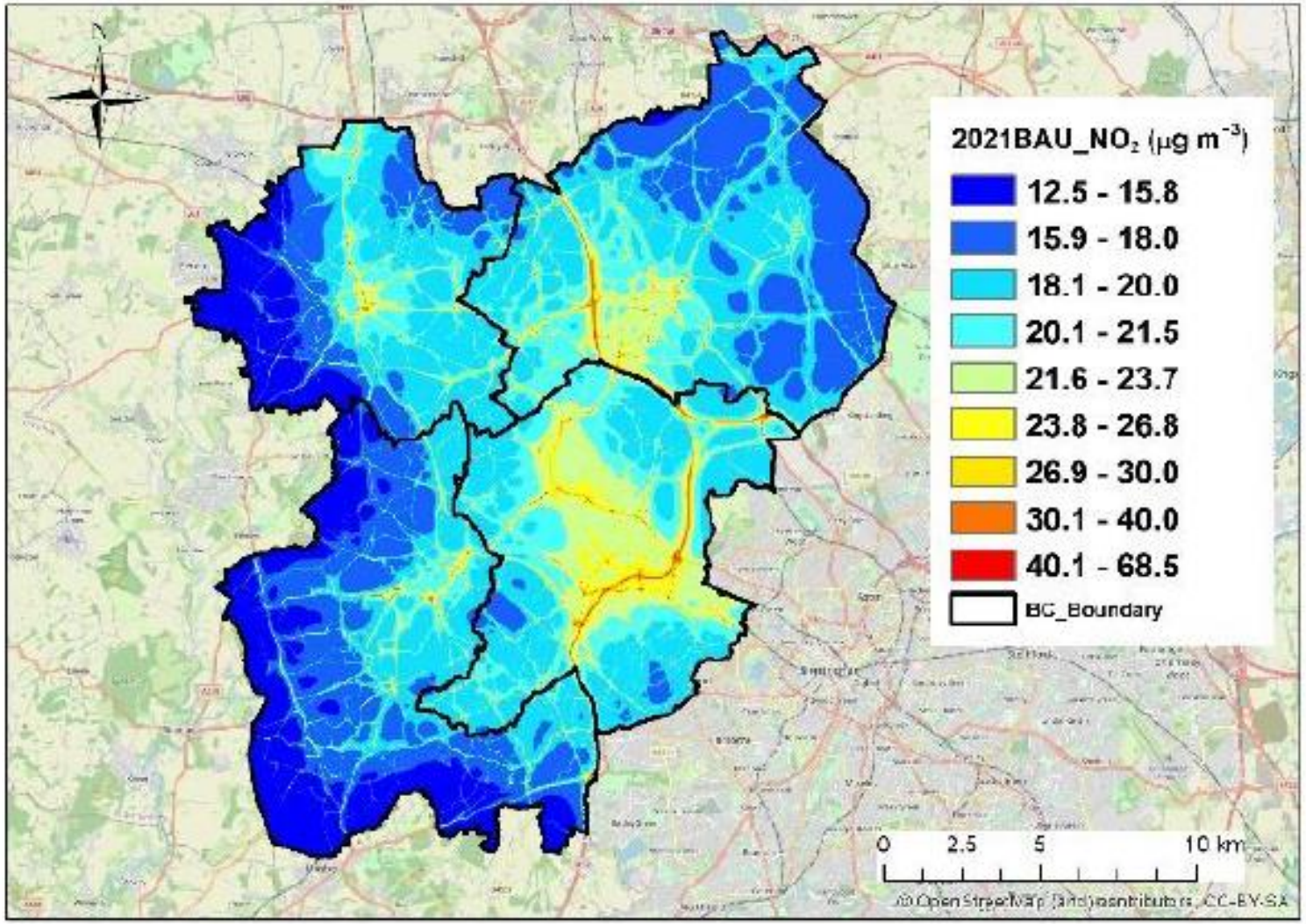
Ecosystem Services Headline Figures		
Total Carbon Storage	844,000 tonnes	£767,000,000
Annual Carbon Sequestration	24,500 tonnes	£24,200,000
Annual Pollution Removal	62.1 tonnes	£4,070,000
Annual Avoided Runoff	614,000 m³	£604,000
Total Annual Benefits	**£28,874,000**	

	Dudley	Sandwell	Walsall	Wolverhampton
Total area (ha)	9,796	8,556	10,397	6,944
Canopy cover (ha)	1,670 (17%)	1,550 (18.1%)	1,140 (10.5%)	1,150 (16.5%)
Total Carbon Storage	174,000 tonnes	361,000 tonnes	141,000 tonnes	168,000 tonnes
Annual Carbon Sequestration	5,870 tonnes	5,550 tonnes	6,900 tonnes	6,150 tonnes
Annual Pollution Removal	17.7 tonnes	15.3 tonnes	14.5 tonnes	14.5 tonnes
Annual Avoided Runoff	162,000 m³	130,000 m³	172,000 m³	151,000 m³

6

Table 1: Headline figures and a comparison of outputs from the four i-Tree Eco studies in the Black Country

Urban Stress - Air Quality



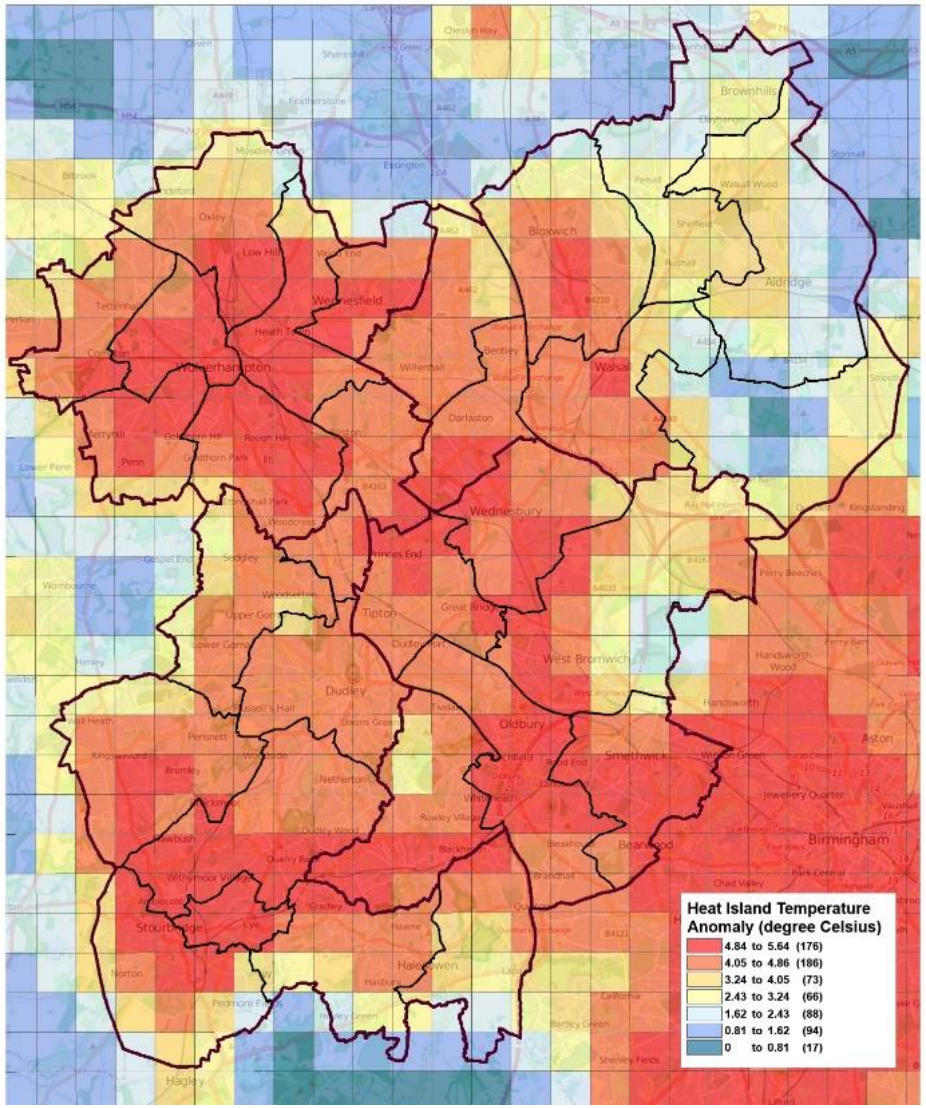
NAEI emission data & WM-Air modelling (Zhong et al., 2021).

32% of the Black Country' population live in wards exceeding the 2021 WHO Targets for NO_2

64% of the Black Country population live in wards exceeding the 2005 WHO guideline level for $PM_{2.5}$

Urban Stress - Urban Heat Island

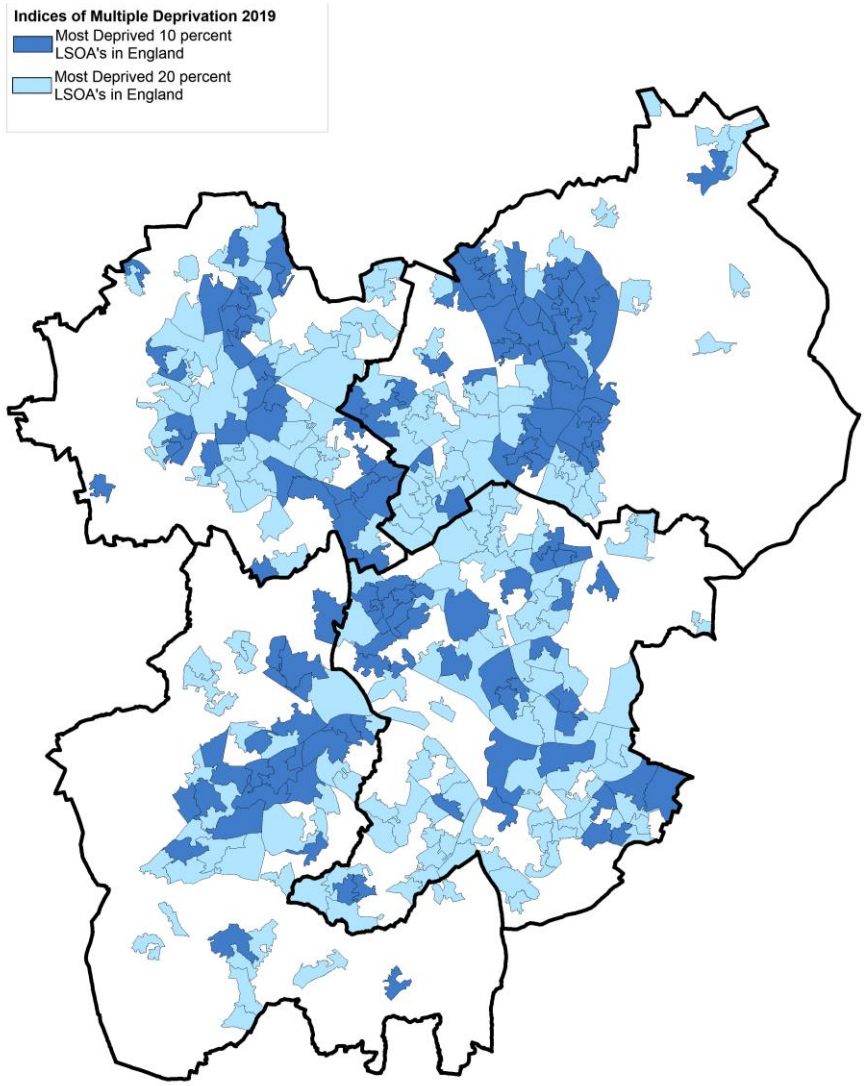
The Economic Intelligence Unit



The urbanised nature of the Black Country means the area is more prone to higher temperatures via the urban heat island effect

Urban Stress - Indices of Multiple Deprivation

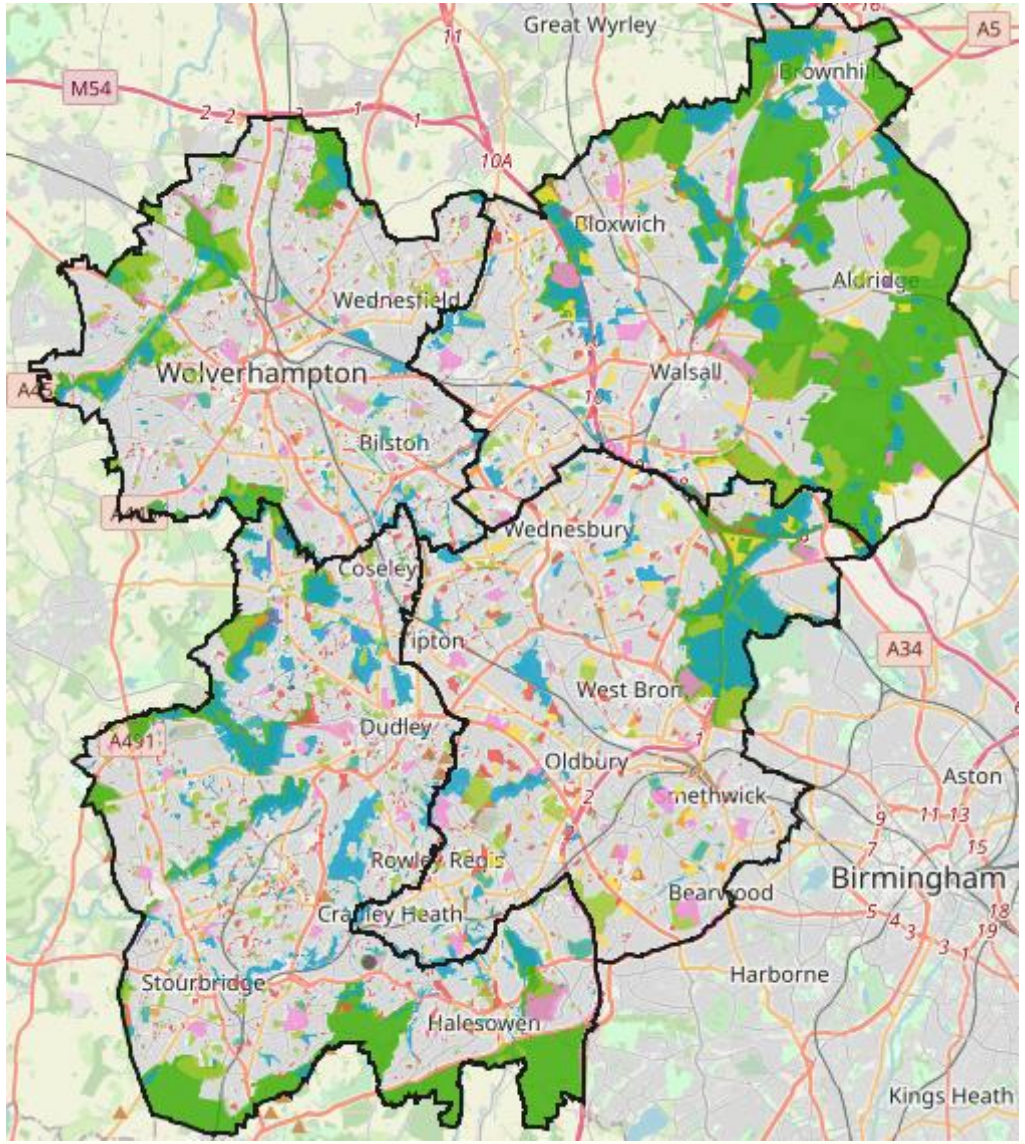
The Economic Intelligence Unit



19.1% of LSOAs in the Black Country are in the most 10% deprived nationally

Urban Stress – Access to Greenspace

The Economic Intelligence Unit



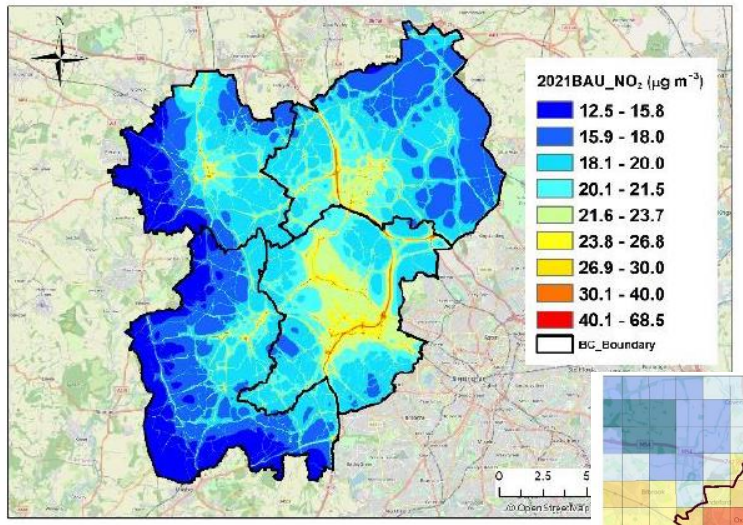
Greenspace_region

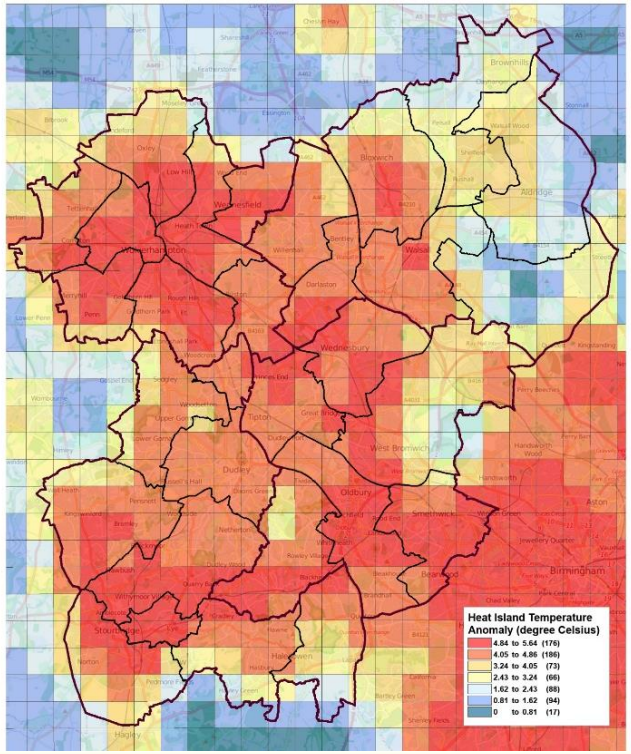
- Amenity Greenspace
- Natural and Semi Natural Urban Greenspace
- Outdoor Sports Facilities
- Provision for Children & Young People
- Allotment
- Institutional Land
- Parks and Gardens
- Green Corridor
- Cemetries/Churchyards
- Grazing

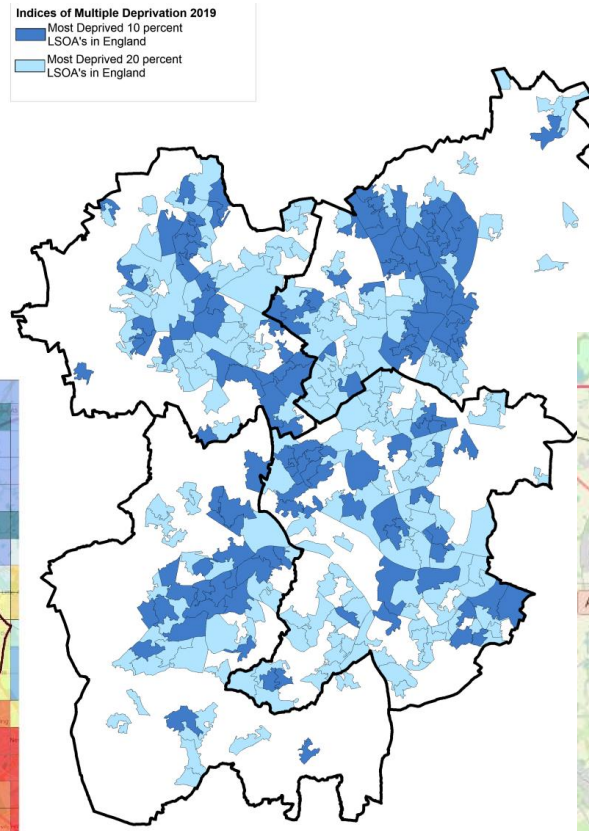
Greenbelt

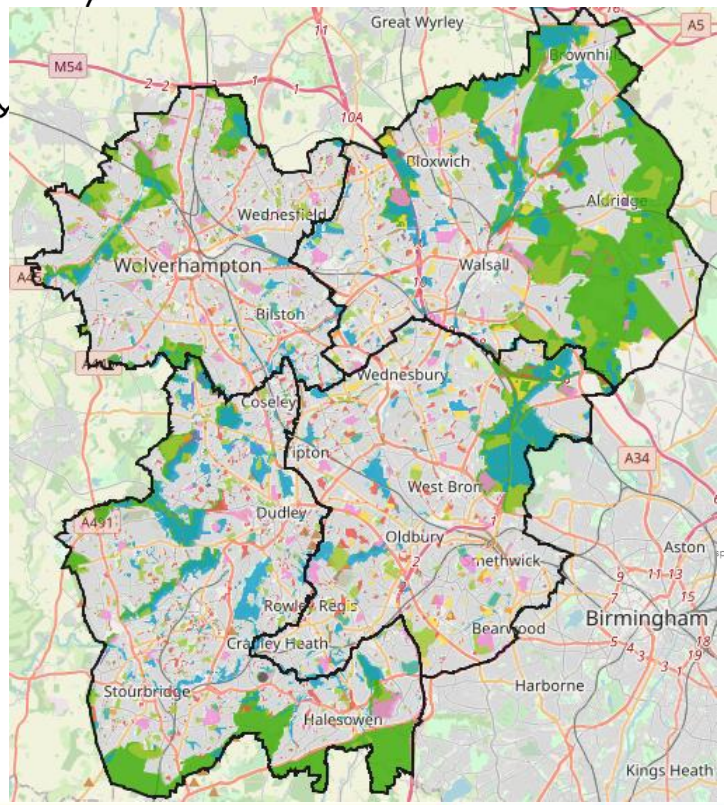
Tree Planting Opportunity Map

The Economic Intelligence Unit









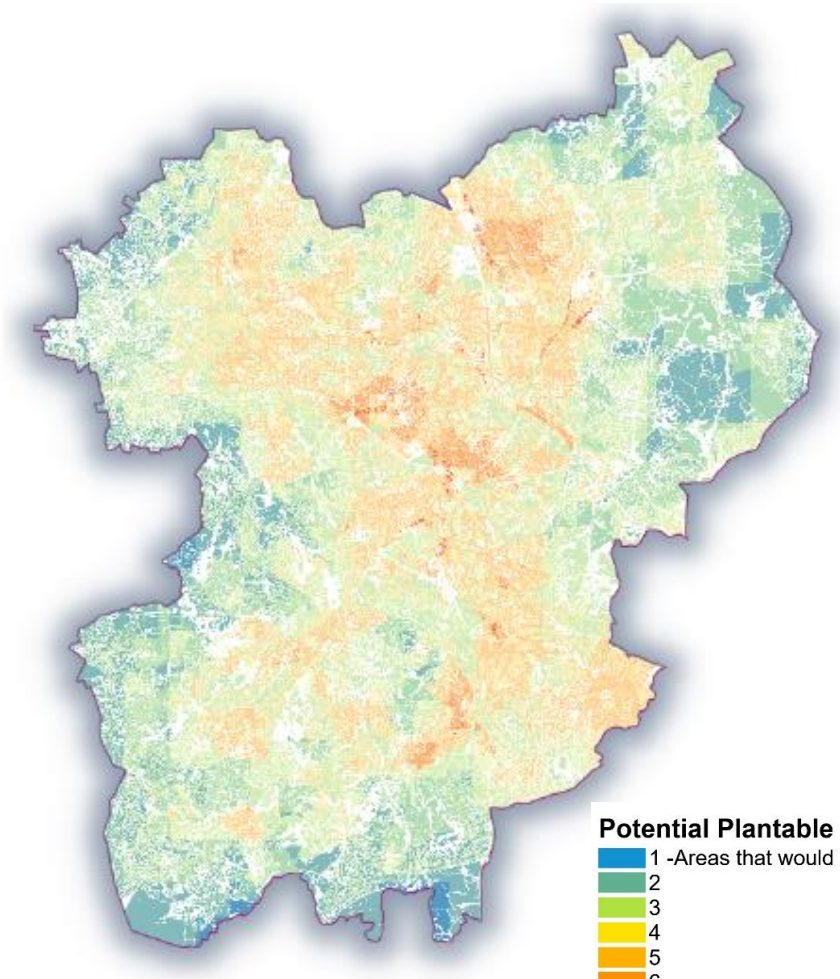
Tree Planting Opportunity Map methodology

The Economic Intelligence Unit

	This is Important	I'm Neutral - This is relatively important	This is not important
1) Flooding	✓		
2) Index of Multiple deprivation	✓		
3) Natural areas not under canopy already	This layer will be cookie cut out **after** the model has been run, as the assumption is that there will be no planting under existing tree canopy.		
4) Public Health England Indicators*	✓		
5) Air Pollution combining N02 and PM2.5 pollution levels (data is only at the 1km level)	✓		
6) Land within 10m of a road		✓	
7) Urban Heat Island	✓		

Tree Planting Opportunity Map methodology

The Economic Intelligence Unit



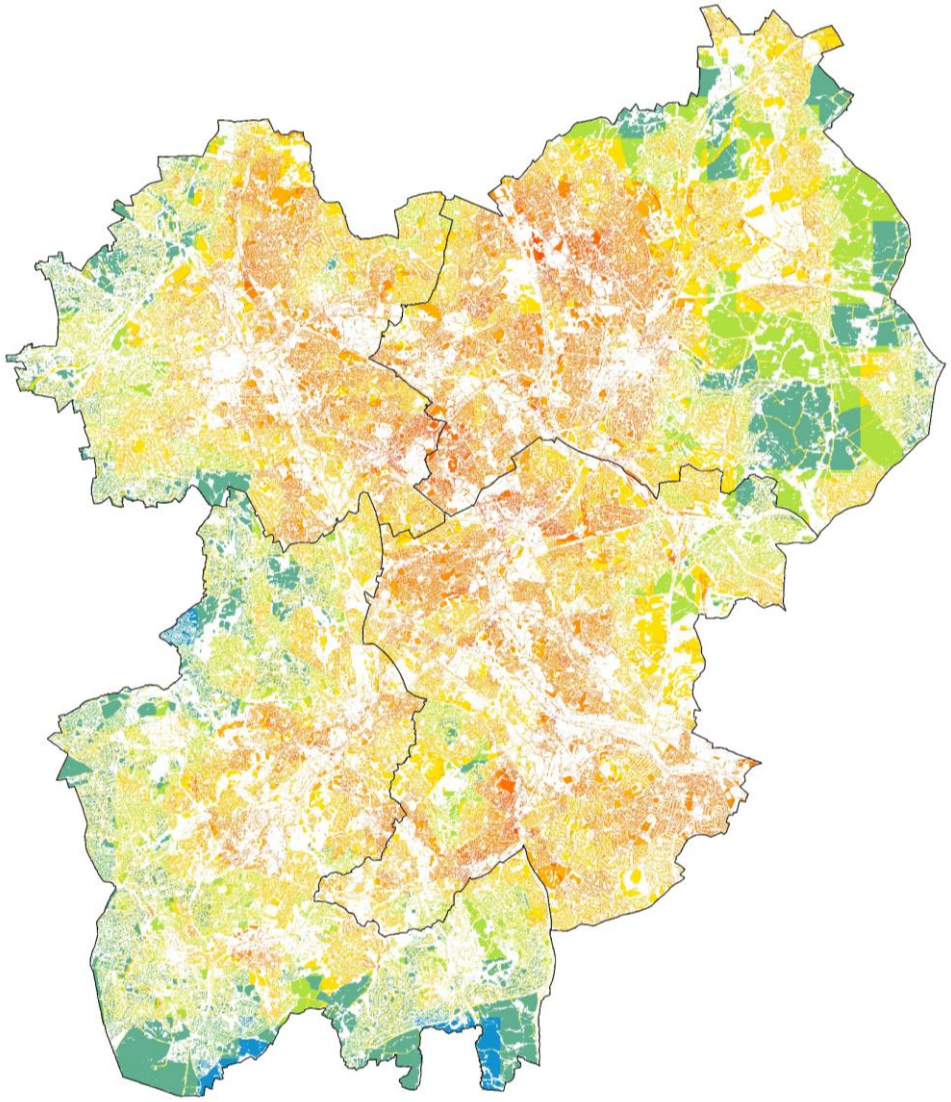
hotter / red colours are those areas with the highest scores and therefore the areas which would derive the most benefit from tree planting:

Tree Planting Potential Map

The Economic Intelligence Unit

Potential Plantable Space

- 1 -Areas that would benefit least from tree planting
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Areas that would benefit most from tree planting

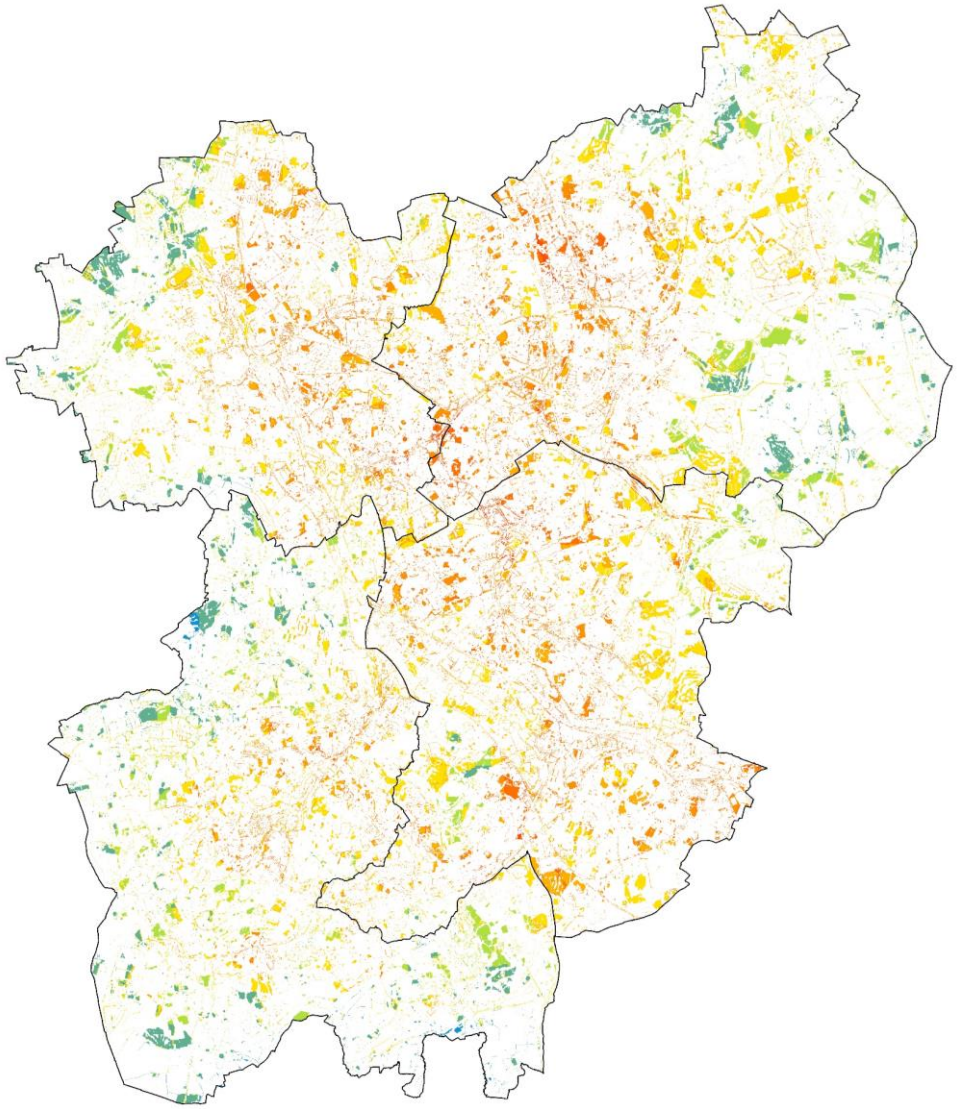


Tree Planting Opportunity Map

The Economic Intelligence Unit

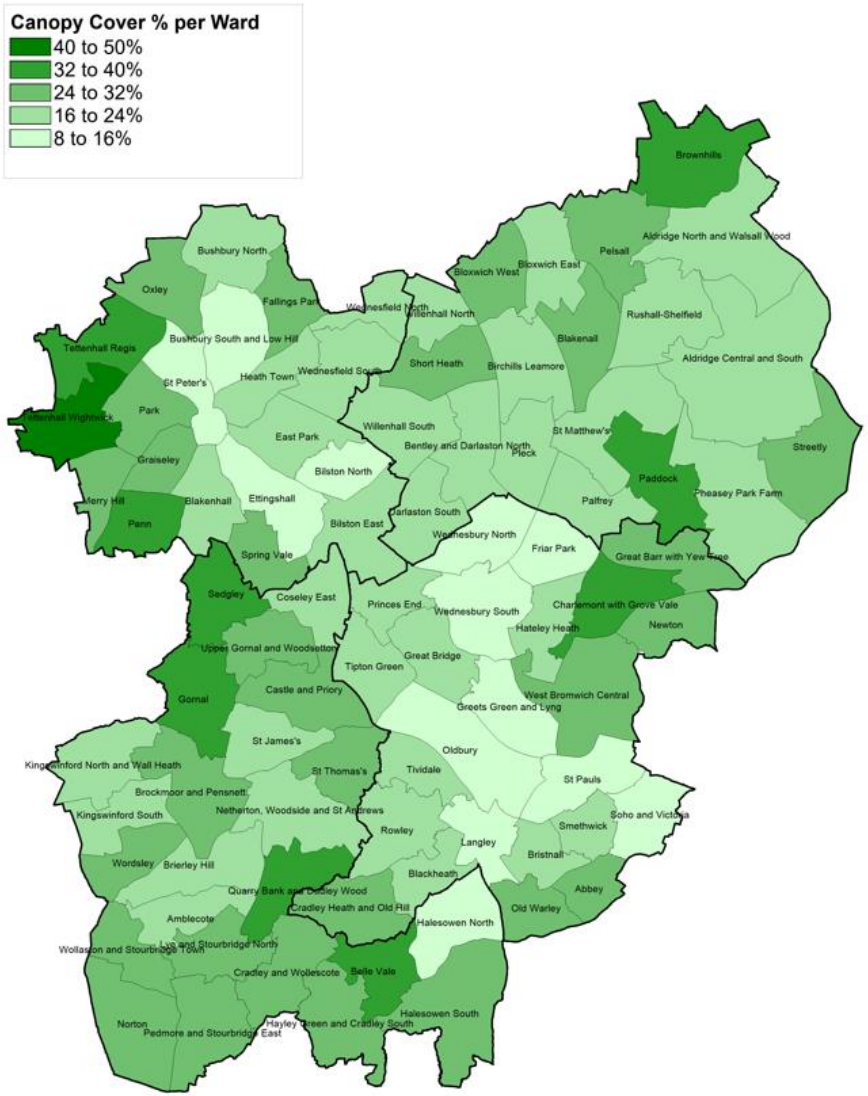
Actual Plantable Space

- 1 - Areas that would benefit least from tree planting
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Areas that would benefit most from tree planting



Canopy Cover Map

The Economic Intelligence Unit



Online Storymap

The Economic Intelligence Unit

Black Country iTree Eco Project

Black Country iTree Eco Project

December 2022

Christopher Styche & Emma Forde, Black Country Economic Intelligence Unit

Emma Forde

Emma.Forde@theeiu.org

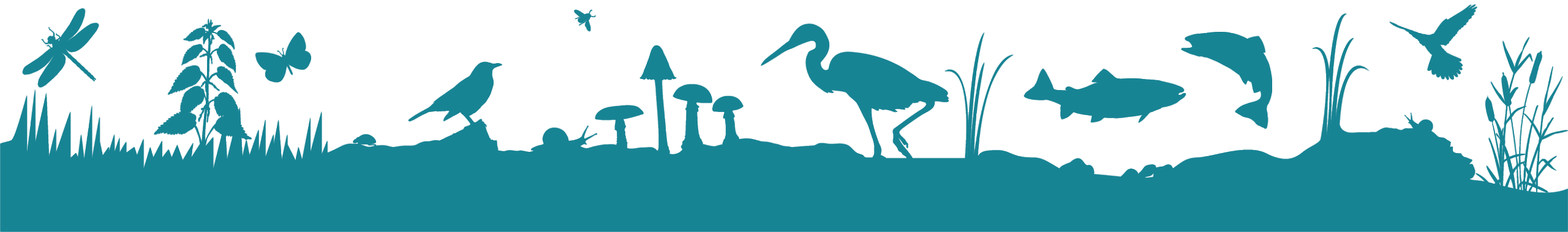
Project 2: Stafford Brooks

Dave Cadman, Staffordshire Wildlife Trust

Staffordshire Wildlife Trust

Stafford Brooks

David Cadman, Head of Nature Recovery Networks



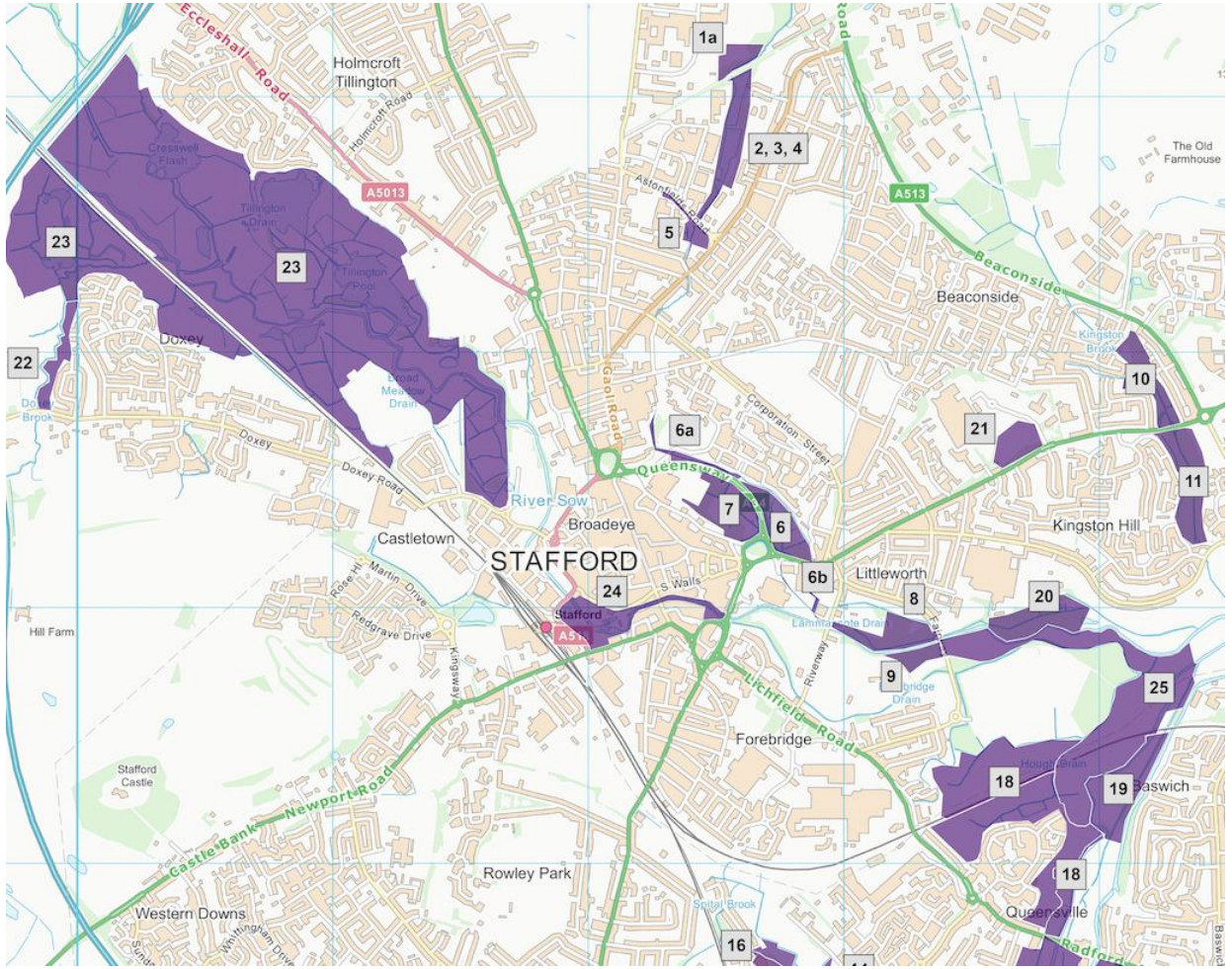
A Nature Recovery Network Restoration Project

Stafford flooding, October 2019

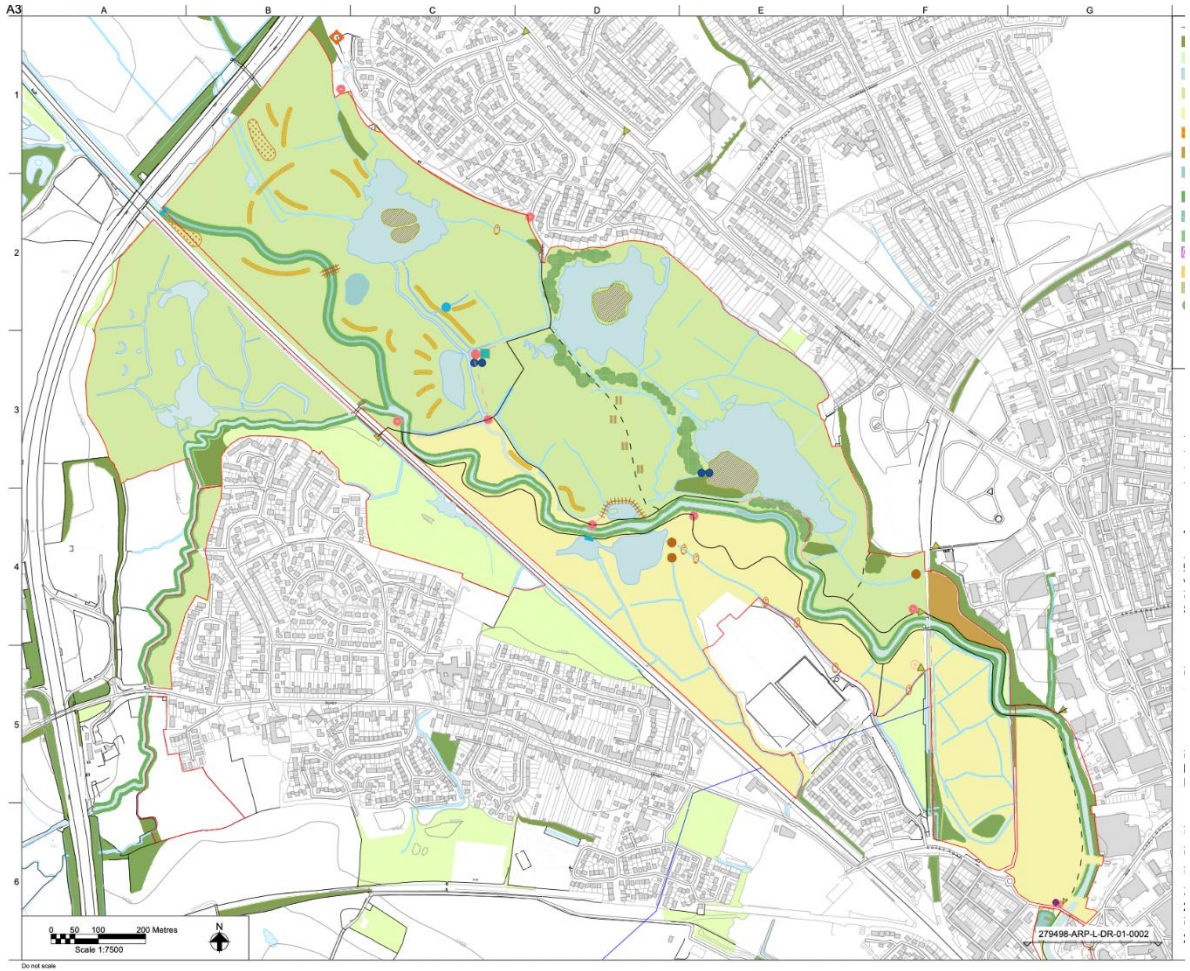
August 2019

October 2019

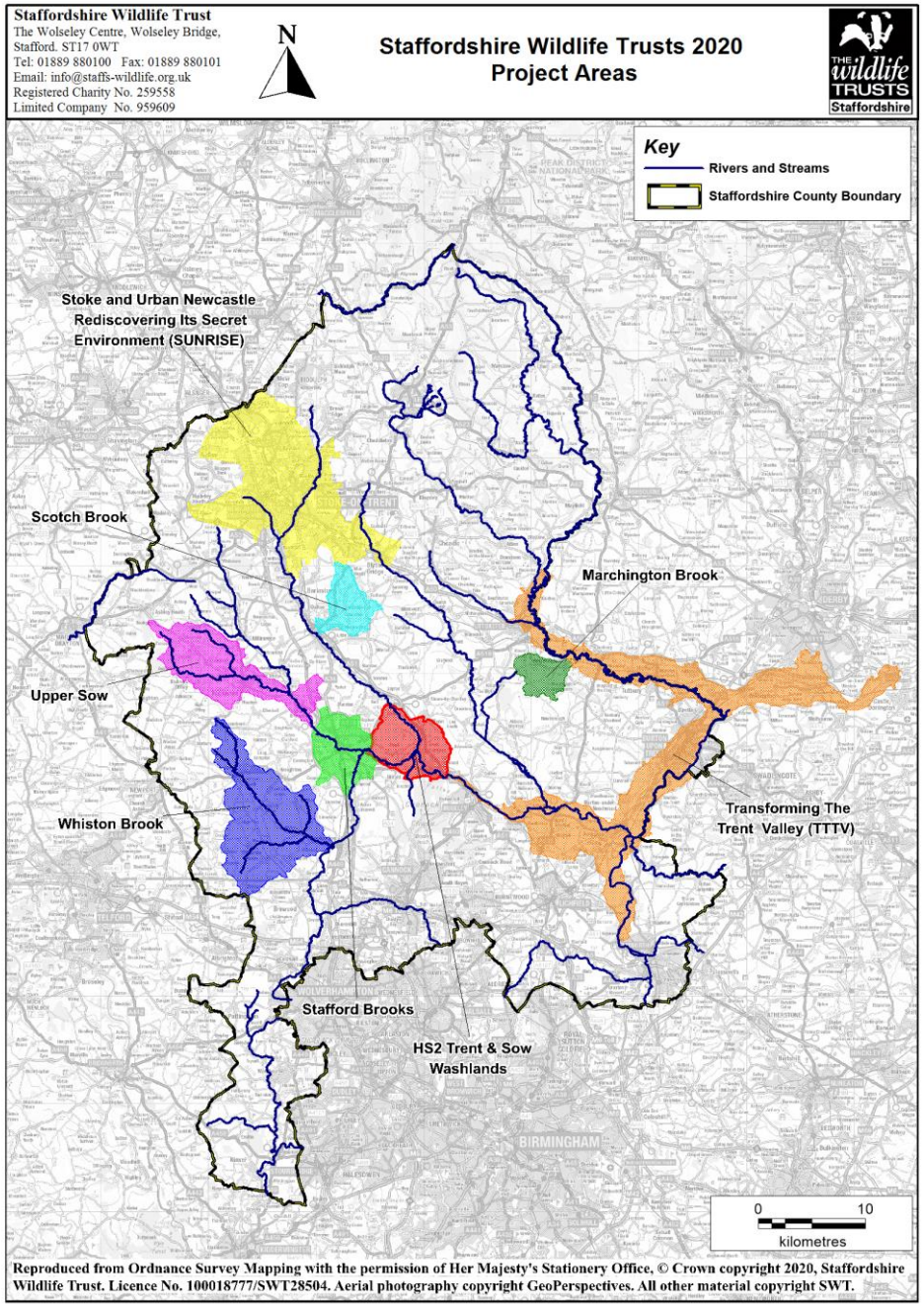
- National Highway's Designated Funds.
- Working with partners including Environment Agency and Stafford Borough Council.
- Adopting NRN approach, linking 25 sites (over 150ha) across Stafford town centre.
- Improve biodiversity, water quality, flood mitigation and access to greenspace.



- Awarded £150K to conduct feasibility study of the 25 sites.
- Feasibility Study was to establish how the project helped achieve HE's KPIs relating to the environment.
- Key to link the project to the wider aims of mitigating flood issues in the town.
- Ground swell of support to improve biodiversity of public greenspace in Stafford.



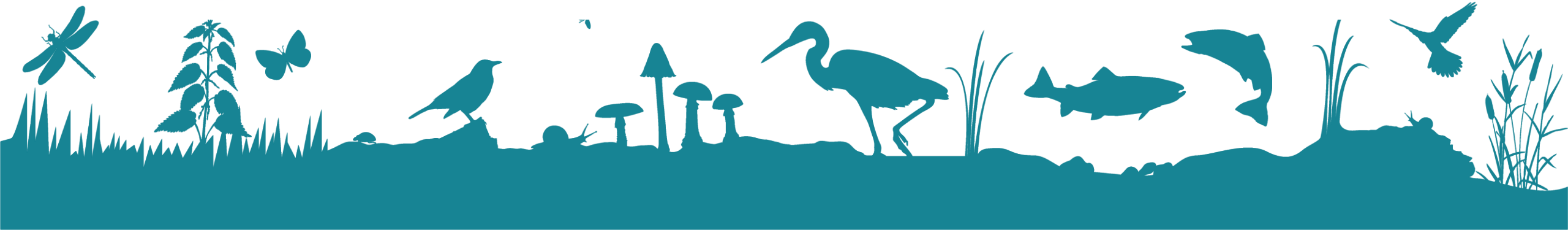
- Our vision of a connected landscape across Staffordshire.
- Project work referenced in Stafford Borough Council's Local Plan.
- Links with existing projects in the Trent catchment with SUNRISE, Trent & Sow, Rugeley Power Station and TTTV.



£4.1m scheme to enhance riverways and wildlife habitats announced

Published 04 Jul 2022

A £4.1 million scheme which will create havens for wildlife to flourish, alleviate flooding and give residents in a Staffordshire town better access to their rivers and green spaces has been unveiled.



Comfort break

Project 3: Combining climate adaptation outcomes with LNRS and BNG

Sophie Spencer, West of England Combined Authority

sustainability west midlands

Environment Agency

Greening the urban

Sophie Spencer,
Senior Environment Manager, Nature Recovery
West of England Combined Authority

WEST OF ENGLAND
Combined Authority

Background

West of England Combined Authority

Community Pollinator Fund

- £1m fund for creating/enhancing pollinator habitats
- 13 projects funded in Round 1
- 1,367 volunteers, 6,687 volunteering hours
- Seeding/planting meadows, running or attending planting workshops, creating and installing pollinator shelters – bug hotels, bee banks, log piles
- Round 2 Projects: selection is underway. 21 medium and large applications received and 60 small applications

Staple Hill Community Hub

- Gardening and nature clubs for young people, including with disabilities
- Skill-building sessions for adults on pollinator-friendly gardening.
- Planting a wildflower meadow in Page Park
- Community action days – Improving neglected local green spaces
- Replanting planters on high street with pollinator-friendly plants

Heart of BS13

- Area with high indicators of deprivation
- Pollinator Trail
- Pollinator sculptures
  - Engaging with young people
  - Turning fly tipped waste into artwork
- Consulting with residents on improving green spaces
- Focus on young families, children, teenagers
- QR code and app

Somer Valley Rediscovered

WEST OF ENGLAND Combined Authority

- Area profoundly influenced by former coal mining industry – includes towns, villages and surrounding countryside.
- Aims to improve biodiversity and health and wellbeing (by increasing people's connections to nature).
- Response to growing evidence that access to greenspace has positive effects on both physical and mental health

Somer Valley social prescribing pilot

- Recognising that the natural environment is an important health asset.
- Wessex Water piloting social prescribing project aiming to reduce levels of pharmaceuticals in the water to improve water quality.
- Work with Health Authorities to identify groups where patients can be signposted to outdoor activities as an alternative to prescribed medicine.
- Natural England funded an officer

Natural England Green Infrastructure Framework

- Provide fresh impetus around GI agenda: a powerful tool to help deliver Nature Recovery Network and climate adaptation both for nature and people.
- Voluntary but anticipated that will become the norm: straightforward way to achieve better outcomes from GI with strong links to mandatory tools like BNG and LNRS.
- Accessibility standard (‘green in 15’): responding to the post Covid value placed on having good quality green infrastructure on your doorstep. This needs to be GI retrofitting as well as a consideration for new development.
- Urban Greening Factor: interventions are rated and scoring works bit like BNG.

West of England Combined Authority

Priorities include:

- support people, reduce emissions and restore habitats across the region
- to be the bee and pollinator capital of the U.K.

Why is nature important?

Tackle three of society's biggest challenges: biodiversity loss, climate change and health and wellbeing.

Parks and greenspaces in England deliver an estimated £6.6 billion of health, climate change and environmental benefits every year.

80% of people now living in towns and cities, one third of people do not have access to good quality green and blue space within 15 minutes of their home.

Environmental Improvement Plan includes a commitment that the public should be able to access green space or water, such as woodlands, wetlands, parks and rivers, within a 15-minute walk from their home.

Keeping Bristol Cool (BCC)

Cities have a high concentration of:

- people
- infrastructure systems, for example transport, energy, and water networks
- buildings

This makes them more at risk during heatwaves.

High temperatures and heatwaves and their potential impact affect communities differently within a city (e.g. homes overheating or roads melting).

- How vulnerable a person is to heat (their heat vulnerability) is made-up of many factors, including:
- sensitivity to heat
- ability to adapt to high temperatures
- exposure to high temperatures indoors and outside

What's next?

- Role of the LNRS to set priority areas and channel funding towards nature recovery and manage climate adaptation
- Prioritising our Green Infrastructure Strategy according to the GI Framework to plan for climate adaptation for people and nature
- Make clearer links between the role of nature recovery in health and wellbeing to support more green social prescribing type interventions through our nature recovery projects
- Opportunities to use BNG and other funding to be channel through the LNRS

Project 4: Greening The City for Biodiversity and Climate Change Adaptation

Simon Needle, Birmingham City Council

Greening The City

Environmental Justice and Climate Vulnerability

Simon Needle – Urban Forestry and Nature Lead

THE
QUEEN'S GREEN
CANOPY
THE PLATINUM JUBILEE 2022

Champion City

Birmingham City Council


BULLRING
Premier Inn
Premier Inn

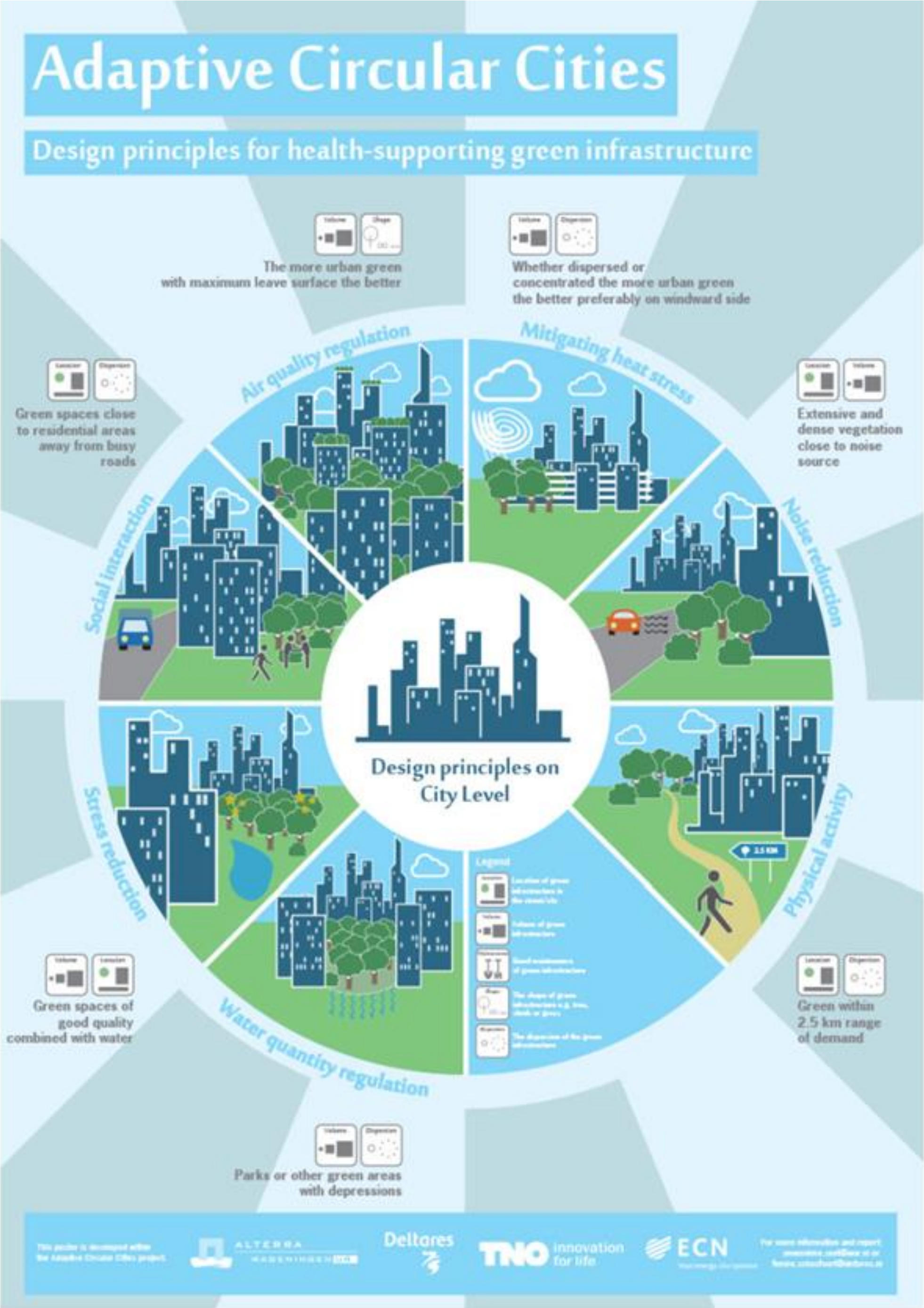
The Challenges

- Population at 1.1million and rising
- One of the youngest populations in Europe
- Significant number of wards in top 10 percentile IMD
- High levels YLL in certain quarters
- Air Pollution
- UHI
- Pluvial and Fluvial flooding
- Demand for housing.

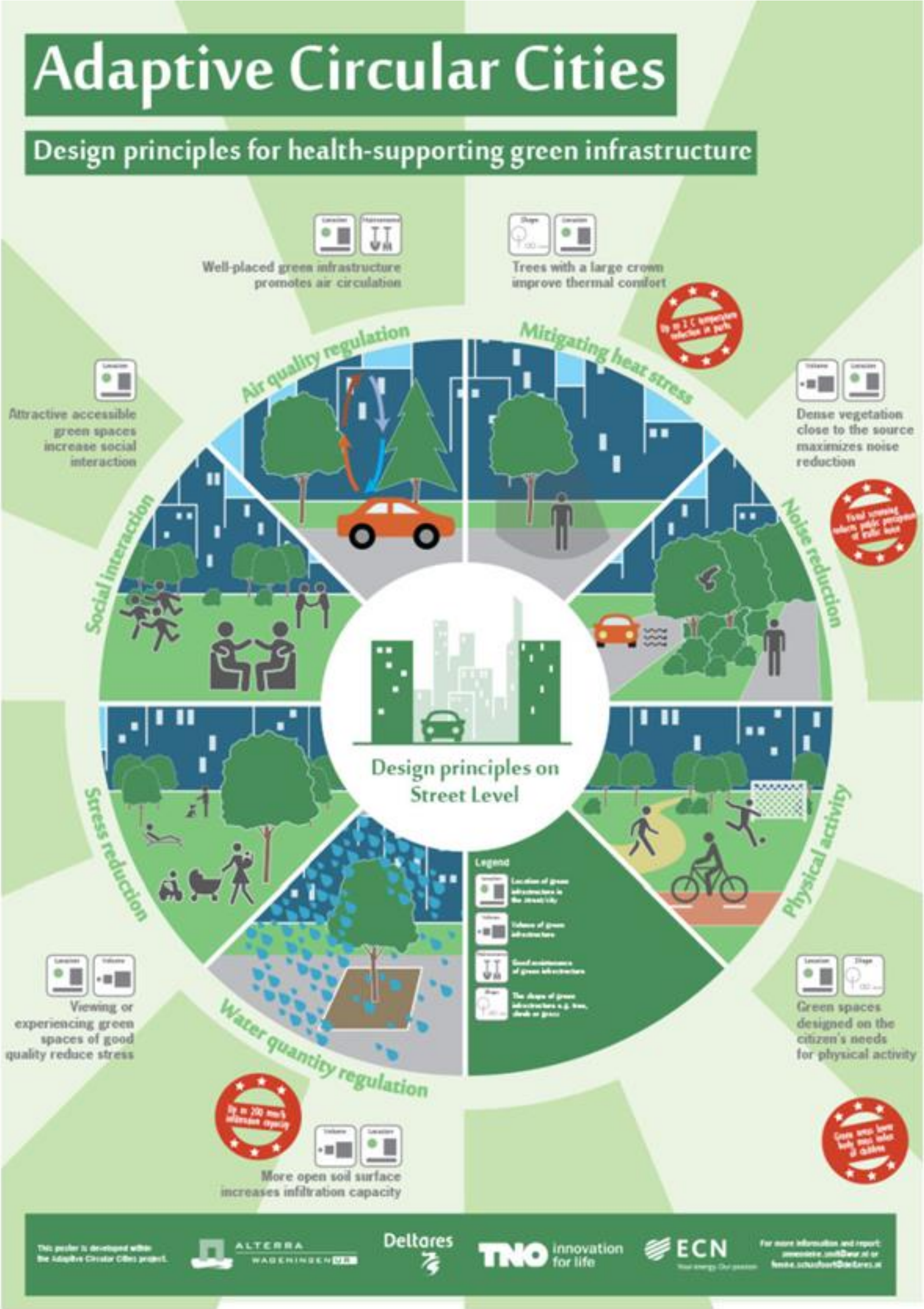
COVID19 pandemic has brought to the fore the inequality of accessible green space
BAME more impacted by pandemic

Higher levels of BAME in areas of low GI, poorer air quality and high UHI.

Liaison with other Departments such as Public Health are critical to understanding impacts and benefits.



Adaptive Circular Cities
Design principles for health-supporting green infrastructure
The more urban green with maximum leave surface the better
Whether dispersed or concentrated the more urban green the better preferably on windward side
Air quality regulation
Mitigating heat stress
Green spaces close to residential areas away from busy roads
Extensive and dense vegetation close to noise source
Social interaction
Noise reduction
Design principles on City Level
Stress reduction
Physical activity
2.5 KM
Green spaces of good quality combined with water
Green within 2.5 km range of demand
Water quantity regulation
Parks or other green areas with depressions
Deltares
TNO innovation for life
ECN

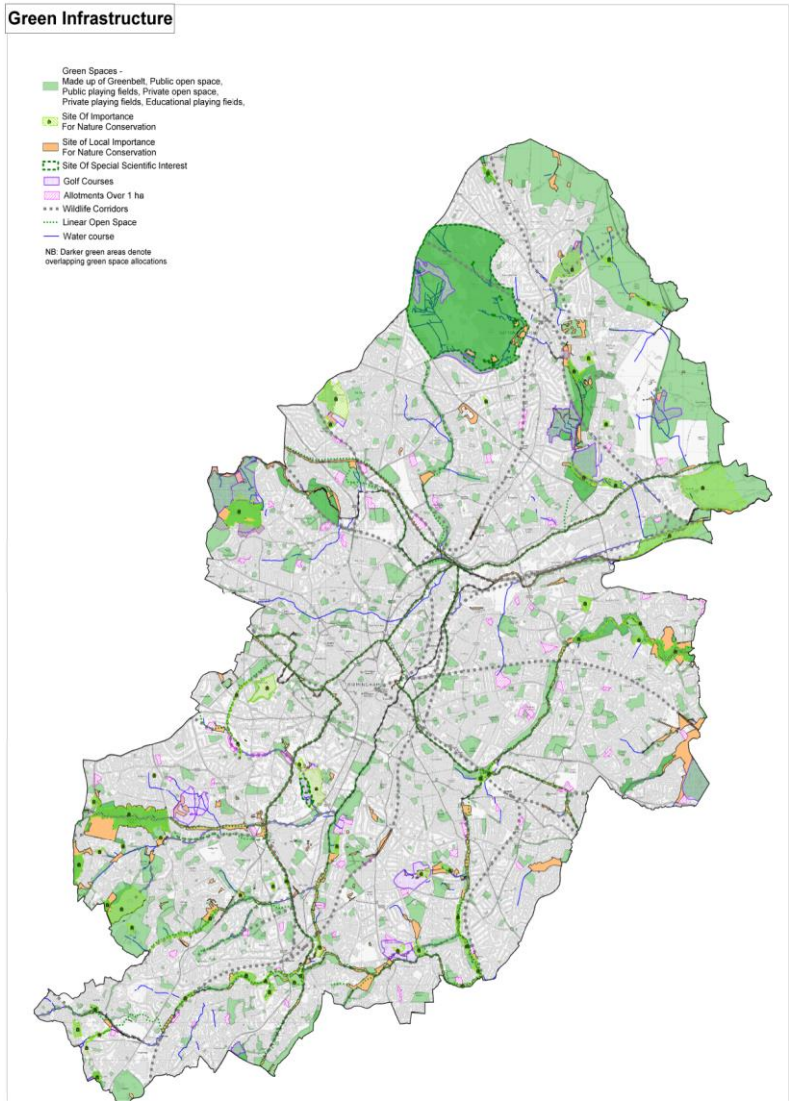


Adaptive Circular Cities
Design principles for health-supporting green infrastructure
Well-placed green infrastructure promotes air circulation
Trees with a large crown improve thermal comfort
Air quality regulation
Mitigating heat stress
Attractive accessible green spaces increase social interaction
Dense vegetation close to the source maximizes noise reduction
Social interaction
Noise reduction
Design principles on Street Level
Stress reduction
Physical activity
Viewing or experiencing green spaces of good quality reduce stress
Green spaces designed on the citizen's needs for physical activity
Water quantity regulation
More open soil surface increases infiltration capacity
Deltares
TNO innovation for life
ECN

- Birmingham - total land area 103.5 Square miles

- 13.5 Square miles of Public Open Space
- 9.2 Square miles of designated Nature Conservation sites
- 5.4 Square miles of designated woodlands (in Parks and open spaces).
- 250 miles of rivers, brooks and *streams*
- *35 miles of canals*

- *Delivers a lot of climate regulating services BUT is it equitably distributed and can all benefit from this provision?*



An Urban Forest Master Plan for Birmingham 2021-2051

Executive Report

Birmingham City Council

NATURE BASED SOLUTIONS INSTITUTE

Treeconomics

R4 Environmental Justice, Cultural Values and Equity

Birmingham is the UK's most diverse city, with around 50% of the population being of ethnic minority backgrounds. The urban forest should reflect the diversity of people and cultures at a neighbourhood level, and planting and management should respect the views and values of the many different communities it serves. Birmingham's Community Cohesion Strategy aims to progress equality in all spheres of social and economic life and empower and engage neighbourhoods.

Urban forests are connected to a range of socio-economic factors, with studies linking canopy cover to health, wealth, education, and crime. Typically, lower income areas have fewer trees, and this inequality should be addressed across Birmingham. Lack of tree canopy cover can also be linked to the level of urban intensification and lack of physical space to plant trees (low cost housing with small gardens are not always suitable for trees). Therefore utilising other aspects of the urban forest such as green walls/roofs may be a part of the solution. The benefits of trees should be made available to all people in all areas of the city. Tree planting should not always go hand in hand with new development and land repurposing, as this can lead to those with lower income becoming priced out of areas as they develop. The city must recognise that trees and green space should be a right for all people, and environmental exclusion must be avoided.

This target aims to ensure that the planting and management of the urban forest can be focussed in the areas where it will most benefit the local people, by increasing planting in the areas with the lowest canopy cover. Tree management plans in these areas should include community engagement and neighbourhood outreach to maximise the benefits of trees in the area. The multi-faceted meanings of trees to different people should be recognised.

Actions

1. *Develop and monitor specific tools for assessing fair access to all;*
2. *Produce a 'Tree Equity map';*
3. *Ensure that new tree planting is linked to local need and involves local communities.*

Priority	Responsibility for Action	For Review:
High	1-3. The Tree Board	April 2022 - Medium to long term project

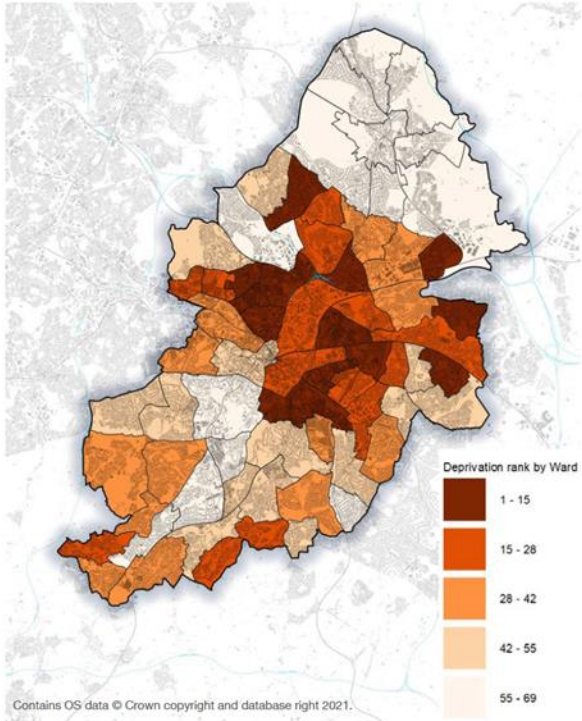


Figure 16: Indices of Multiple Deprivation Ranking by Ward (1=most deprived)

Sources and references:

BCNUEJ, 2021: Policy and Planning Tools for Urban Green Justice-Fighting displacement and gentrification and improving accessibility and inclusiveness to green amenities.

Nesbitt, L., Meitner, M.J., Sheppard, S.R. and Girling, C., 2018. The dimensions of urban green equity: A framework for analysis. Urban forestry & urban greening, 34, pp.240-248.

Performance level	Performance Indicators			
	Low	Moderate	Good	Optimal
Low	Tree planting and outreach is not determined equitably by canopy cover or need for benefits.	Planting and outreach includes attention to low canopy neighbourhoods or areas.	Planting and outreach targets neighbourhoods with low canopy and a high need for tree benefits.	Equitable planting and outreach at the neighbourhood level is guided by strong citizen engagement in those low-canopy/ high-need areas.

R3 Canopy Cover Assessment and Goals

Assessing canopy cover is vital, as this metric is used frequently as a figure which is clear and easy to compare with other areas. Whilst canopy cover is not a thorough study of the health and diversity and therefore overall benefit of the urban forest, it is an important aspect which should not be overlooked simply for its simplicity.

This target involves assessing the existing canopy cover in detail, and setting goals based on reasonable potential canopy cover and achievable steps to maximising cover. This leads into T1-'Relative Tree Canopy Cover'- and would provide the necessary baseline for achieving that target. It is important that any tree canopy target is achievable within a reasonable time frame, and considered within the wider context of the Master Plan.

Birmingham has set a target of Carbon net neutrality by 2030, and this increase in canopy cover would contribute immensely. It should also be noted that tree planting does not necessarily provide an instant increase to canopy cover; in an urban setting trees are constantly being felled for any number of reasons, so insufficient planting can contribute to making up the deficit without actually increasing canopy cover.

City	London	Bristol	Plymouth	Cambridge	Torbay
Existing Canopy Cover	21% (2015)	18% (2018)	18.5% (2017)	17% (2008)	12% (2011)
2050 Target	30%	30%	20%	19%	20%

Table 2: Comparable Cities' Canopy Cover Estimates and Goals

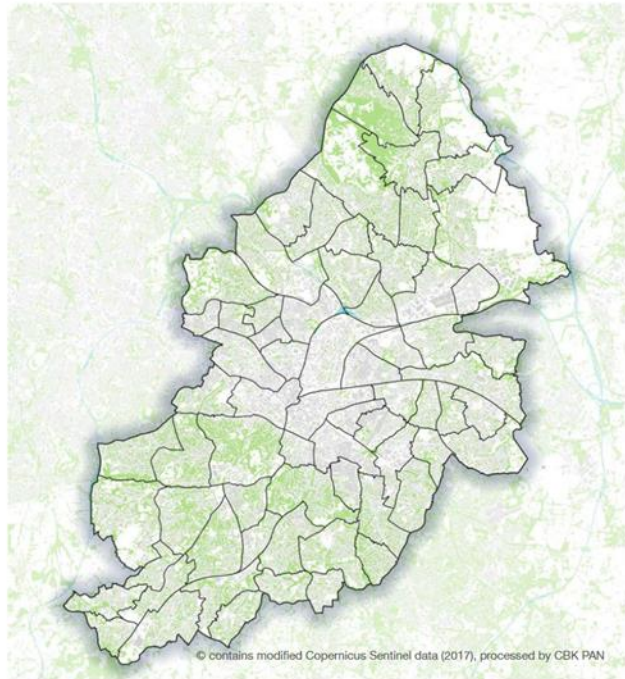


Figure 15: Tree Canopy Cover across Birmingham from National Tree Map (NTM) Satellite Data

Actions

1. *Once a basic assessment has been done, then T1 canopy targets can be established and further analysis undertaken.*

Priority	Responsibility for Action	For Review:
High	1. BCC	April 2022 - Medium to Long term project

Performance level	Performance Indicators			
	Low	Moderate	Good	Optimal
Low	No assessment or goals.	Low-resolution and/or point-based sampling of canopy cover using aerial photographs or satellite imagery – and limited or no goal-setting.	Complete, detailed, and spatially explicit, high-resolution Urban Tree Canopy (UTC) assessment based on enhanced data (such as LiDAR) – accompanied by comprehensive set of goals by land use and other parameters.	As described for "Good" rating – and all utilised effectively to drive urban forest policy and practice municipality-wide and at neighbourhood or smaller management level.

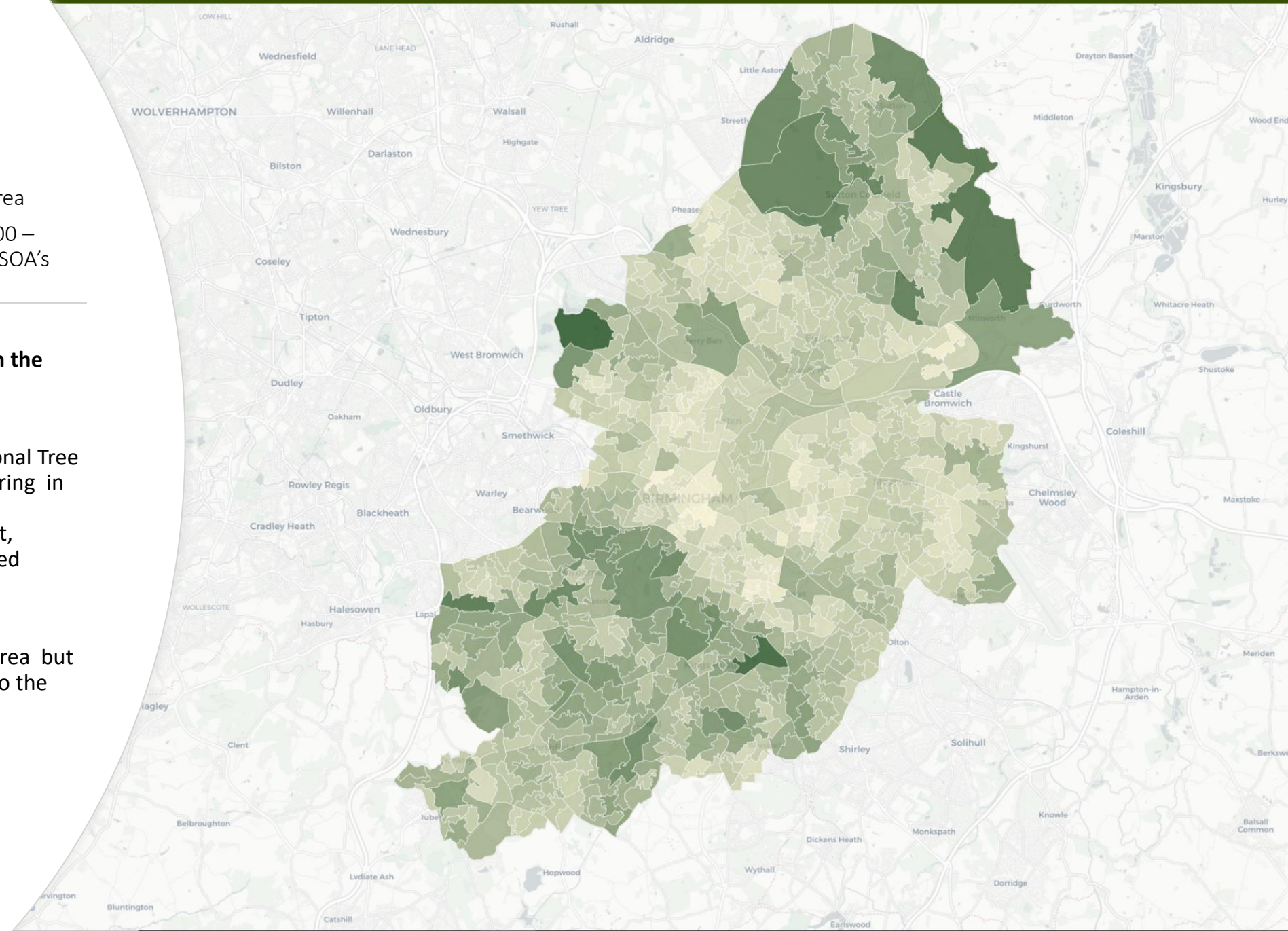
Canopy Cover by Lower Super Output Area

Smallest unit for ONS stats – approx. 1000 – 1500 residents/ 650 households – 639 LSOA's

- **Establishing Canopy Cover levels in the City**

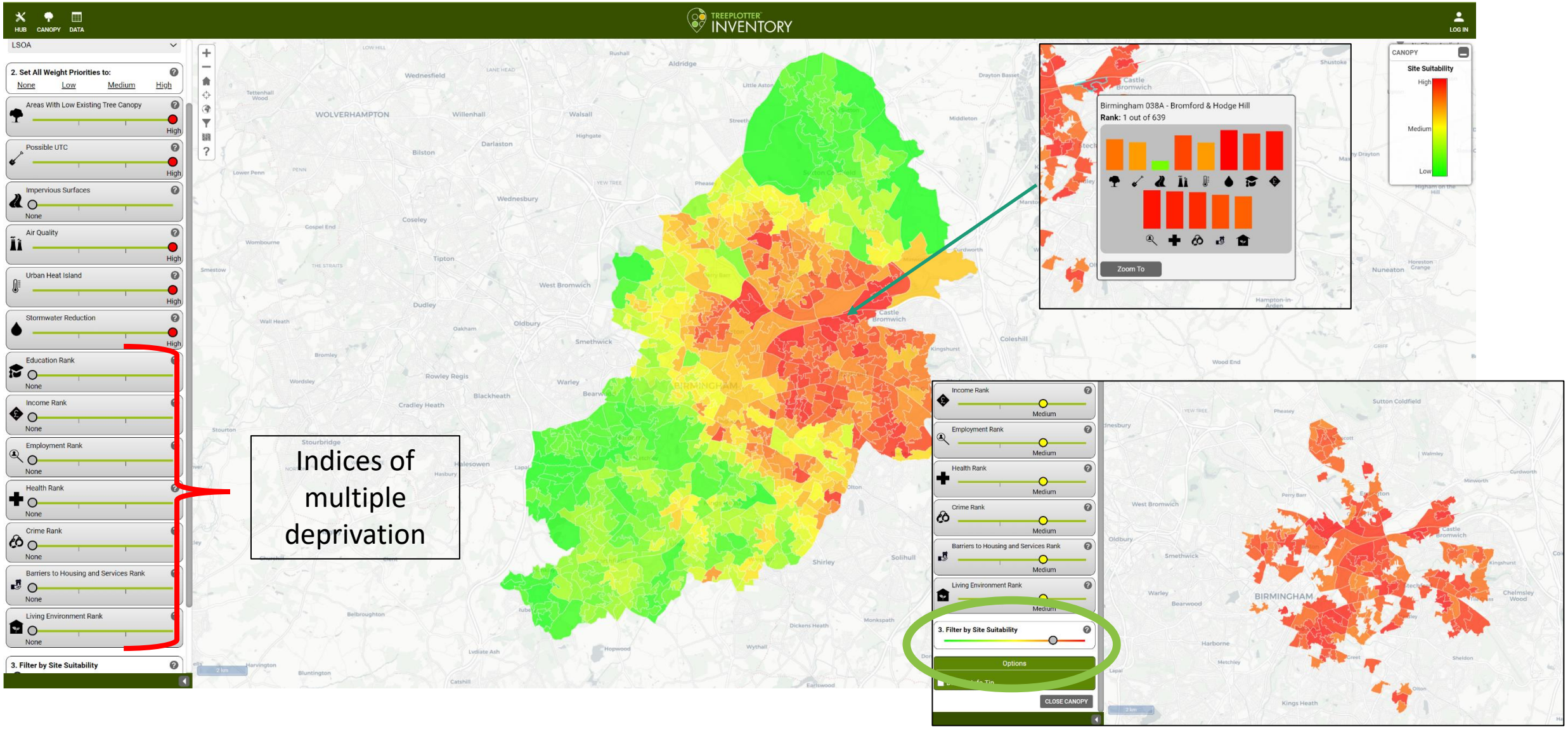
- Canopy cover derived from UK National Tree Map (Blue Sky) and land area but factoring in area of exclusion such as water bodies, dedicated sporting areas (stadia, cricket, football, bowls etc.) and some designated nature conservation sites such as SSSI's.

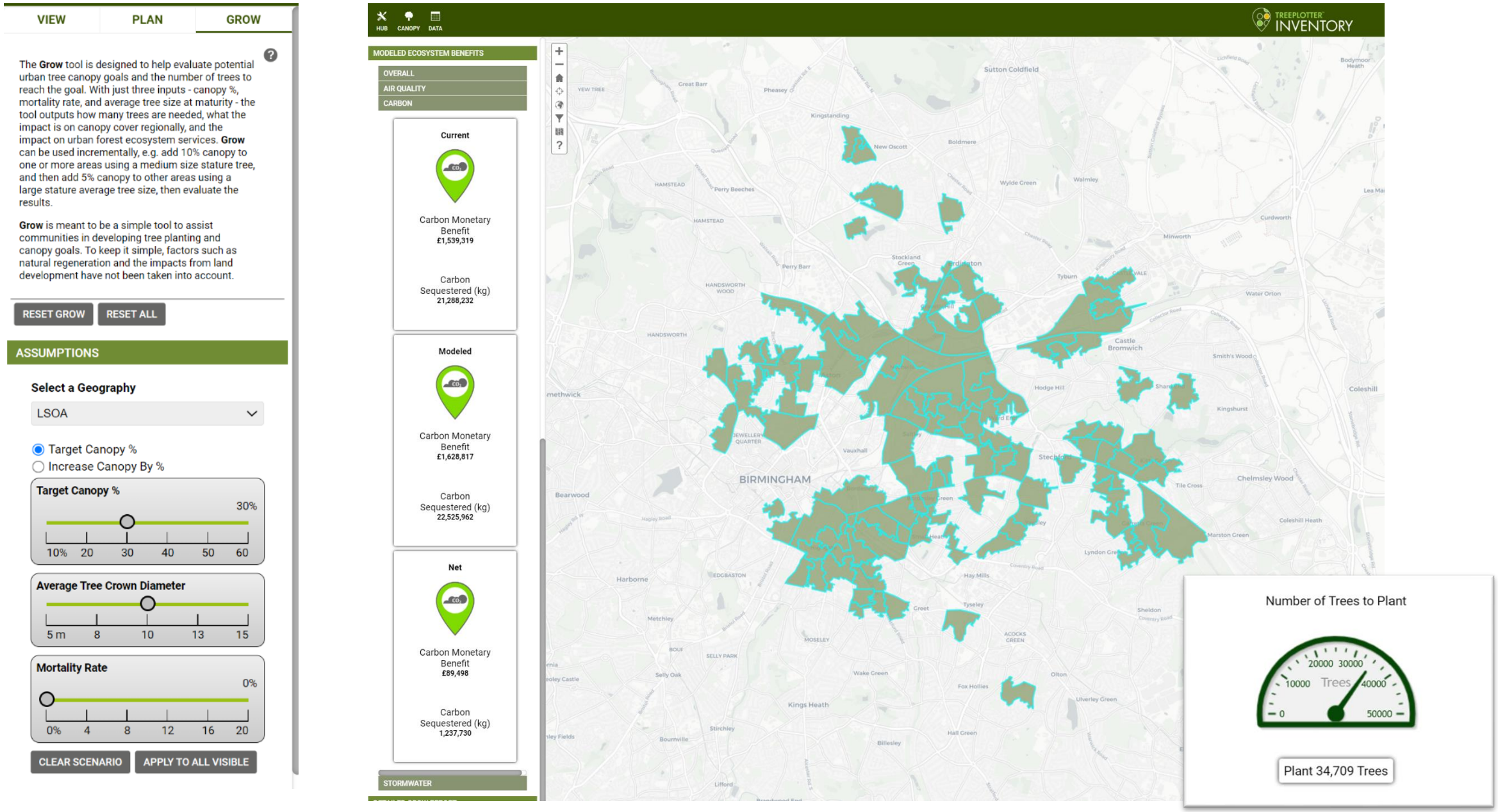
- Overall, approx. 18.6% CC by total area but with excluded areas that increases in to the low 20% range.
Distribution uneven across the city.



Climate Vulnerability Risk and using trees for Climate Adaptation
Prioritising areas for action

Map changes dynamically based on selected priorities and weighting given to each.




VIEW
PLAN
GROW
The Grow tool is designed to help evaluate potential urban tree canopy goals and the number of trees to reach the goal. With just three inputs - canopy %, mortality rate, and average tree size at maturity - the tool outputs how many trees are needed, what the impact is on canopy cover regionally, and the impact on urban forest ecosystem services. Grow can be used incrementally, e.g. add 10% canopy to one or more areas using a medium size stature tree, and then add 5% canopy to other areas using a large stature average tree size, and then evaluate the results.
Grow is meant to be a simple tool to assist communities in developing tree planting and canopy goals. To keep it simple, factors such as natural regeneration and the impacts from land development have not been taken into account.
RESET GROW
RESET ALL
ASSUMPTIONS
Select a Geography
LSOA
Target Canopy %
Increase Canopy By %
Target Canopy %
30%
10% 20 30 40 50 60
Average Tree Crown Diameter
5 m 8 10 13 15
Mortality Rate
0%
0% 4 8 12 16 20
CLEAR SCENARIO
APPLY TO ALL VISIBLE
HUB
CANOPY
DATA
TREEPLOTTER INVENTORY
MODELED ECOSYSTEM BENEFITS
OVERALL
AIR QUALITY
CARBON
Current
Carbon Monetary Benefit
£1,539,319
Carbon Sequestered (kg)
21,288,232
Modeled
Carbon Monetary Benefit
£1,628,817
Carbon Sequestered (kg)
22,525,962
Net
Carbon Monetary Benefit
£89,498
Carbon Sequestered (kg)
1,237,730
STORMWATER
Sutton Coldfield
Great Barr
Pheasey
Kingstanding
New Oscott
Boldmere
Wylde Green
Walmley
Perry Beeches
HAMSTEAD
Perry Barr
HANDSWORTH WOOD
HANDSWORTH
Stockland Green
Tyburn
Minworth
Curdworth
Water Orton
Castle Bromwich
Smith's Wood
Hodge Hill
Kingshurst
Coleshill
Vauxhall
JEWELLERY QUARTER
BIRMINGHAM
Bearwood
Harborne
EDGBASTON
Hay Mills
Tyseley
Chelmsley Wood
Tile Cross
Coleshill Heath
Marston Green
Metchley
MOSELEY
ACOCKS GREEN
Sheldon
Olton
Selly Oak
Wake Green
Fox Hollies
Ulverley Green
Kings Heath
Stirchley
Bournville
Billesley
Hall Green
Lifford
Number of Trees to Plant
0
10000
20000
30000
40000
50000
Trees
Plant 34,709 Trees

Our Future City Plan – Central Birmingham 2040

By meeting our vision and aims we will ensure Birmingham becomes a healthier, walkable, liveable, thriving city and by 2040 we will aim to deliver across Central Birmingham:

30% GREEN SPACES
Doubling green space to 30%
Like Vienna!

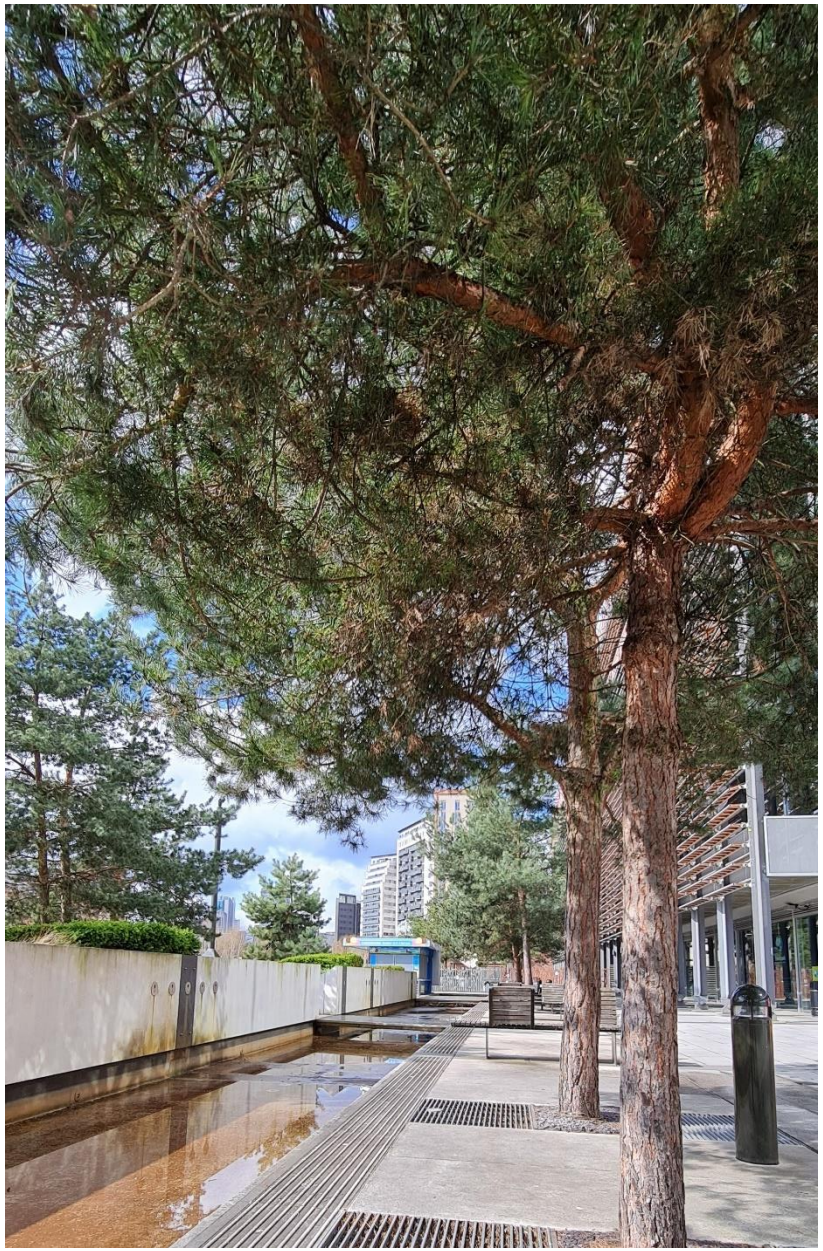
200KM OF ACTIVE TRAVEL ROUTES
100% increase in healthy transport infrastructure
Copenhagen has the same level

20,000 PP/KM^2
250% increase in residential density
Closer to successful European cities

74,100 NEW JOBS
80% increase in employment capacity

Up to 35,000 new homes

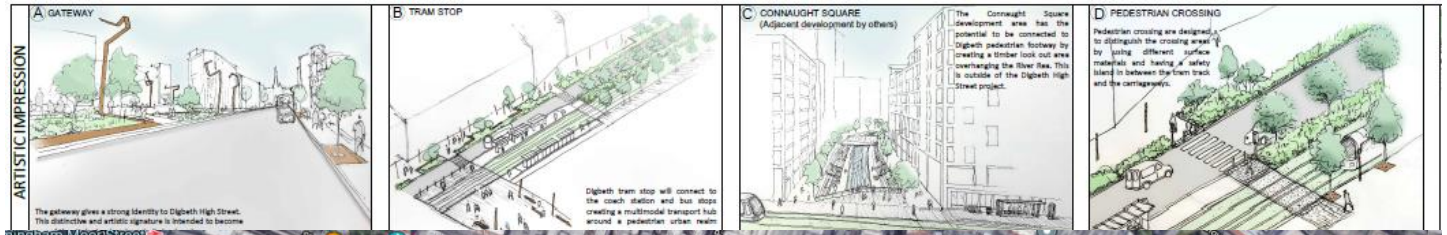
The Computer Generated Images included in this document are conceptual and illustrative to demonstrate the overall vision. All future developments would be subject to planning.

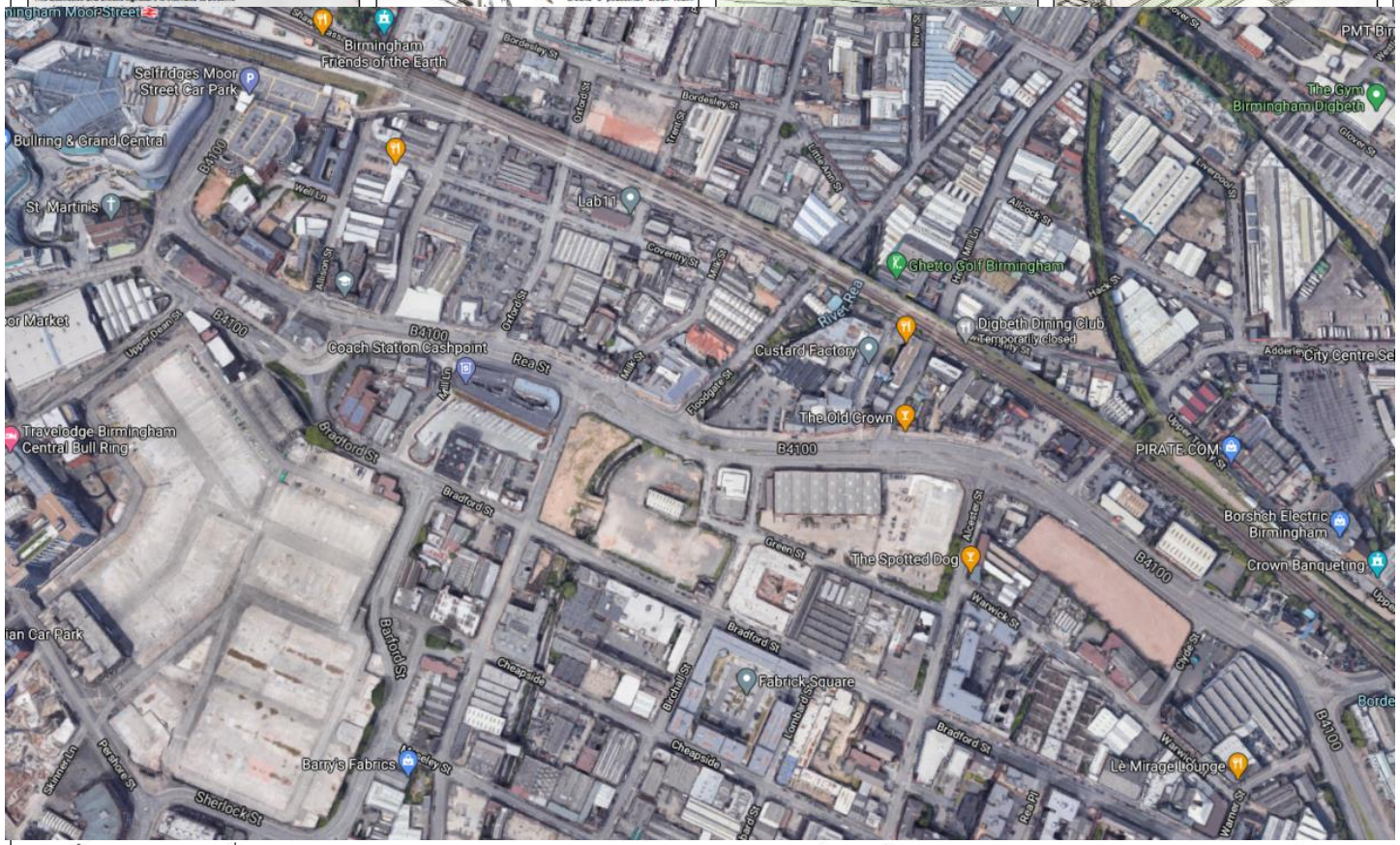


Birmingham

City of NATURE

Creating a lasting legacy for future generations





As we work to tackle climate change, fuel poverty and affordability of homes, opportunities will be explored with the community to identify priorities and develop proposals for improving their neighbourhoods. A range of measures could be considered from retrofit of greener heating systems, improved insulation, to assessing the longer-term lifespan of some building types and their suitability for 21st century living, with possible replacement with new homes. Identifying opportunities to increase the number of affordable, social and family homes will be a priority, alongside remodelling and improvements to public spaces, with access predominantly via sustainable transport modes. Three Housing Action areas are proposed in the Central South area:

Highgate Neighbourhood

The Highgate neighbourhood has roots back to the expansion of the city outwards in the Victorian period. Through the post-war clearance programmes of the 1950s and 1960s much of Highgate was rebuilt as social housing with a range of terraced family houses, walk-up maisonettes, and multi-storey tower blocks. Several listed building such as the Conybere Gardens alms houses, St Alban & St Patrick Church, and Samuel Heath works provide some of the only links to the past. During the 1990s, an Estate Action Programme replaced unpopular housing with new homes, and others were remodelled and improved alongside improvements to open spaces. The Ark St Albans Academy school has been completely rebuilt and together with Chandos Primary School provides a strong foundation for local families. There is potential for improvement to existing homes, including retrofitting, and new homes, alongside an expanded Highgate Park. The Housing Action Area proposals will be progressed by working with the community on a long-term masterplan for the area.

Pershore Road Corridor

The Pershore Road corridor has the potential for new and improved housing and will be a Housing Action Area. New housing has been developed adjacent to Edgbaston Cricket Ground and areas such as the Benmore Estate have been the subject of previous improvement programmes in the 1990s and early 2000s. A framework for the corridor will be prepared which explores the opportunity for new housing and the potential for improvements and the retrofitting of existing properties to improve thermal efficiency, reduce carbon emissions and provide energy savings for occupiers.

Balsall Heath Road /Sherbourne Road Estate

A small residential estate to the South of Sherbourne Road and surrounding the Clevedon Road public open space will be looked at with options developed to improve or replace existing housing with new family, social and affordable homes, and to seek to maximise the potential of the open space with better access, natural surveillance through more active edges, and improved informal sports and play provision.

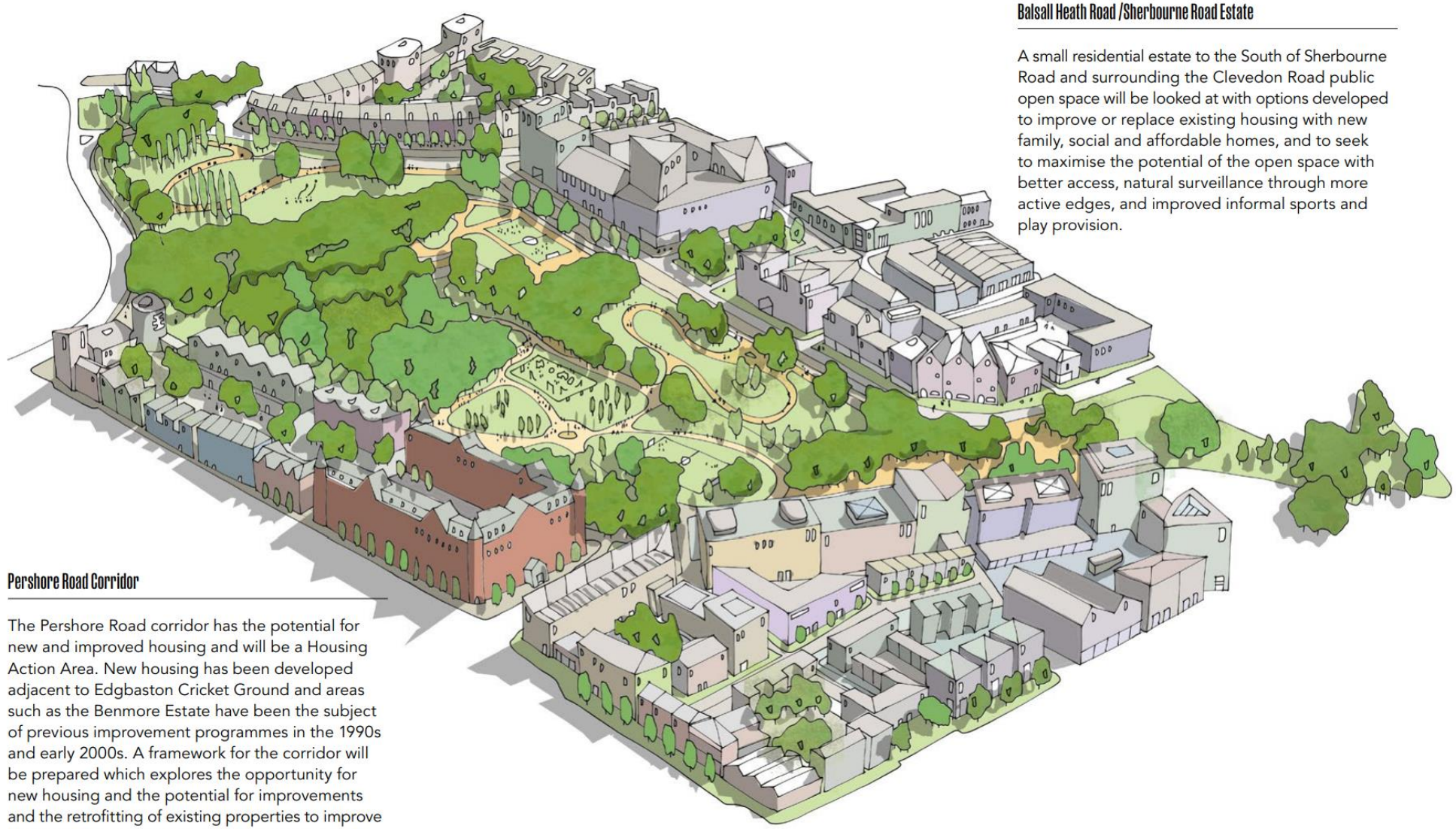
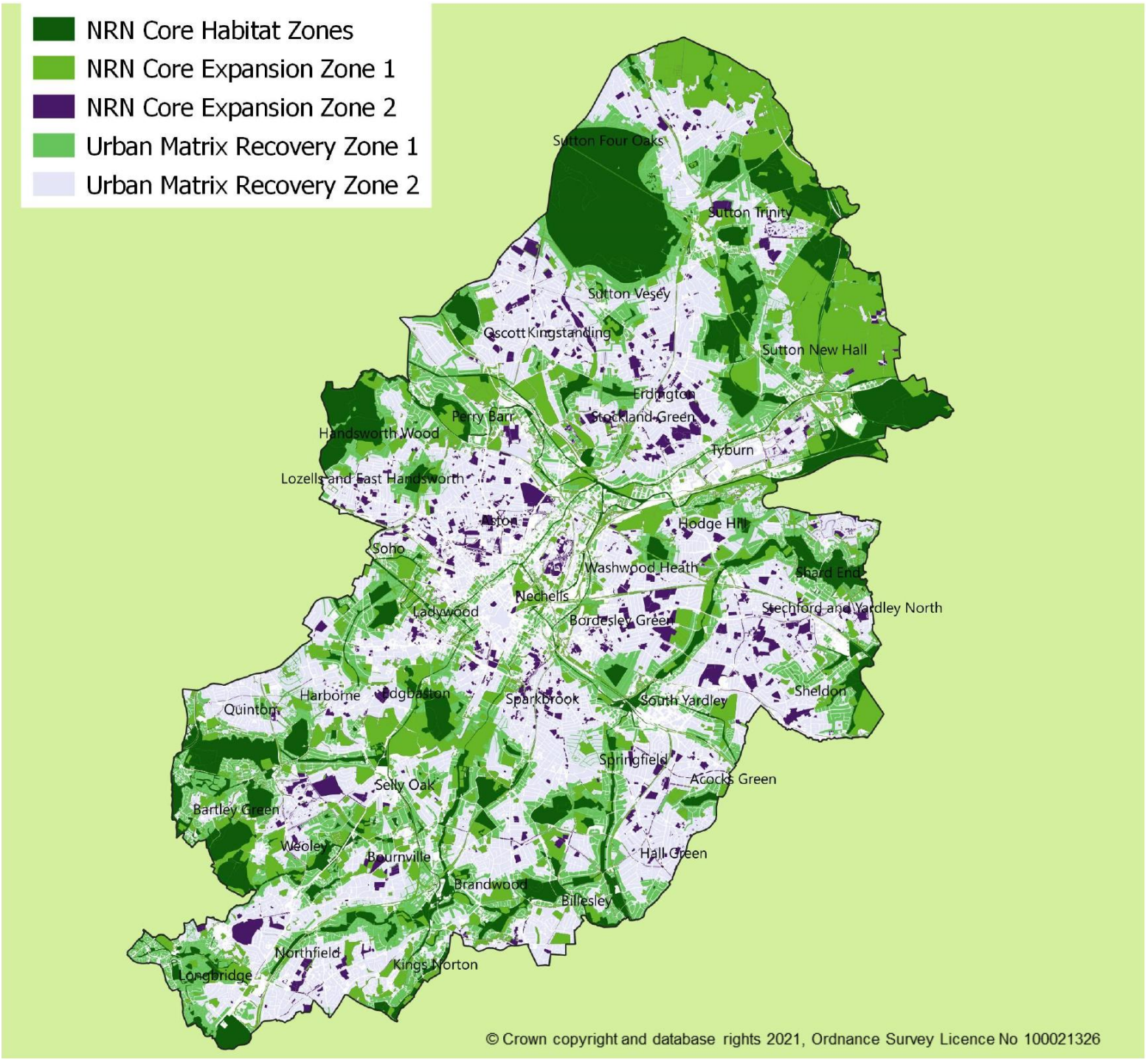


FIG 26. AN ARTIST'S IMPRESSION OF HIGHGATE



Local Nature Recovery Networks

LNRN's identify areas that provide greatest benefit/ opportunities for supporting ecological networks – established as part of the Environment Act 2021.

Using Climate vulnerability data and LNRN mapping can show delivery of multiple benefits.

Woodland created after the 30th January 2020 could be eligible for Habitat Banking through the mandatory Biodiversity Net Gain requirements. (potentially securing funds for 30 years management) if suitable pre intervention habitat mapping exists.

NRN Core Habitat Zone: These are the areas that contain the most valuable habitat.

The strategic objectives for these areas are Protection, Restoration, Enhancement

NRN Core Expansion Zones: The purpose of these areas is to make the core areas bigger and better connected. Within this category, two zone are identified as follows:

Core Expansion Zone 1: Comprises those land parcels that are of lower ecological value than those in the Core Habitat Zone but due to inherent value or location have the most potential to contribute to a coherent ecological network.

Core Expansion Zone 2: Comprises all areas of green space that do not meet the criteria for inclusion in Zone 1. These provide an opportunity for the restoration and creation of new habitats but investment in these areas is a lower ecological priority than those areas in Zone 1 but may be higher priority from an environmental justice point of view.

The strategic objectives for these areas are Restoration, Enhancement, Creation

NRN Urban Matrix Recovery Zones: The remaining areas of the Urban Landscape Matrix form part of this category. Within this category, two zones were identified as follows:

Urban Matrix Recovery Zone 1: Comprises all features of the built environment within 100 meters of the Core Habitat Zones and may include residential and commercial properties, gardens, road verges, street trees and minor water courses.

The protection, enhancement, and creation of green infrastructure within these areas is a priority.

Urban Matrix Recovery Zone 2: Comprises all features of the built environment outside of Zone1. These areas provide an opportunity for the protection, enhancement, and creation of green infrastructure.

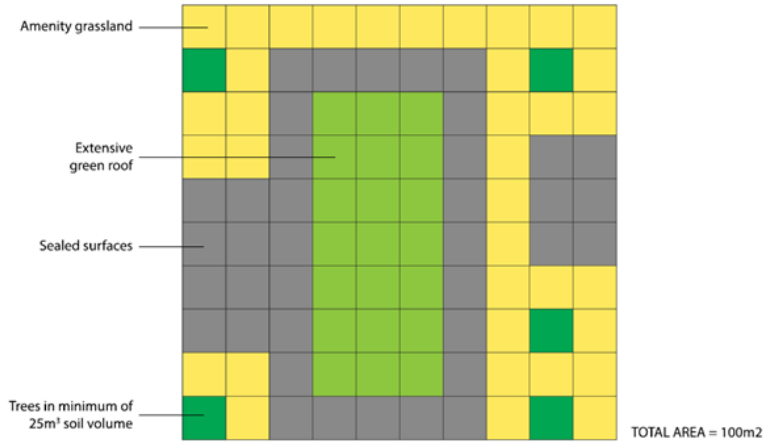
What is the Urban Greening Factor and how does it work?

The “Green Space Factor” (GSF) is a planning policy tool that originated in Berlin and has been adopted and adapted in a number of other cities in Europe and North America to encourage urban greening. GSF schemes work by assigning a factor of between 0 and 1 for various surface cover types, with sealed surfaces given 0 and the most natural cover, 1.

To calculate a UGF for a site, the factor for a particular surface cover is multiplied by its area.
This is repeated for each surface cover type.
The multiplied sums are added together and then divided by the overall site area to give an overall GSF score for a site of between 0 and 1.

A planning authority can set a minimum target (typically 0.3, although this varies according to the type of development and class of land use).
This can provide certainty to developers as to what is expected from new developments in terms of urban greening.
It can also identify planning proposals with insufficient quantity and functionality of greening in order to encourage improvements to a proposal.
It can also be useful in determining the scale and benefit of subsequent improvements to plans.

1. Measure site area, measure various surface cover types



2. Table showing areas of each cover type and factor assigned to each:

		Factor	Area (m^2)
	Extensive green roof	0.7	21
	Sealed surfaces	0.0	38
	Amenity grassland	0.4	36
	Trees in minimum of $25m^3$ soil volume	0.8	5
			100

3. Calculation of the overall score for the site

$$\frac{(0.7 \times 21) + (0 \times 38) + (0.4 \times 36) + (0.8 \times 5)}{100}$$

Score = 0.33

The main elements that need to be considered are:

- Source of water for irrigation;
- Reference habitat/s and focal species; and
- Management.

Any wall can be designed to have biodiversity value

Typology	Description	Notes
Modular green wall	System built structures with plants in pockets, troughs (soil based) or rooted in fabric (hydroponic).	Irrigation is typically needed and can be expensive. Can be costly to maintain. Some designs can provide nesting opportunities for birds.
Traditional, climbing green wall	Climbing plants rooted in the ground and provided with support (e.g. trellis, steel cables etc.).	Irrigation not usually needed. Less able to provide nesting habitat until mature or well established.
Balcony planters	Planting space integrated into balcony architecture.	Less irrigation needed, so easier to maintain. Can be subject to windburn.
Window boxes	Often temporary planters installed by resident.	Regular watering needed due to desiccation and windburn.
Nest boxes	A range of bird and bat nest boxes can be intergrated into facades and green walls.	Some species are territorial and will not use boxes close together. Aspect and height also matters.

The Athenaeum Hotel near Green Park, Mayfair, has a large and diverse living wall designed by Patrick Blanc in 2003. Its features include shrubs, climbers, grasses and mosses.

Many vertical surfaces can be greened, such as fences, low walls, pillars, parapets, and railings, as here near Moorgate, City of London.

Try to	Avoid
• Use rainwater and/or grey water to irrigate the wall. • Add native grasses and herbs that provide homes as well as food for butterflies and moths. • Think about natural vertical habitats and mimic plant groupings and structure into wall design. • Provide artificial nesting and roosting sites for bats, birds and solitary bees. • Encourage residents' participation by providing balcony planters and window boxes on residential or office schemes.	• Lighting green walls, which will deter nocturnal wildlife such as moths and bats. • Use of combustible materials. • Only using non-native plant species that are not able to provide homes or food for the early life-stages of most invertebrate species.

Table 1: Proposed surface cover type descriptions and factors

Surface Cover Type	Factor
Semi-natural vegetation (e.g. woodland, flower-rich grassland) created on site.	1
Wetland or open water (semi-natural; not chlorinated) created on site.	1
Intensive green roof or vegetation over structure. Vegetated sections only. Substrate minimum settled depth of 150mm – see livingroofs.org for descriptions[6].	0.8
Standard trees planted in natural soils or with a minimum of 25 cubic metres soil volume per tree (preferably with load-bearing substrates and connected pits) – see Trees in Hard Landscapes for overview[7].	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code (2014).	0.7
Flower-rich perennial planting – see Centre for Designed Ecology for case-studies[8].	0.7
Rain gardens and other vegetated sustainable drainage elements – See CIRIA for case-studies[9].	0.7
Hedges (line of mature shrubs one or two shrubs wide) – see RHS for guidance[10].	0.6
Standard trees planted in individual pits with less than 25 cubic metres soil volume.-	0.6
Green wall –modular system or climbers rooted in soil – see NBS Guide to Façade Greening for overview[11].	.0.6
Groundcover planting – see RHS Groundcover Plants for overview[12].	0.5
Amenity grassland (species-poor regularly mown lawn).	0.4
Extensive green roof of sedum mat without substrate or other systems that do not meet GRO Code (2014)[13].	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable paving - see CIRIA for overview[14].	0.1
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0


Thank You for listening.

Q&A

Workshop: What are the ingredients needed to create a successful nature-based climate change project?

- **What are the barriers to implementing nature-based projects?**
- **What do we need to overcome these?**
- **Who are the partners we need to work with, and what are our funding options?**
- **What other projects are you aware of that you can share with us?**

- Work in small groups round your tables
- Nominate a scribe and write your thoughts on the provided paper
- Grab some lunch first – this is a working lunch!
- *If you want to connect with a fellow delegate, write down who on your flipchart paper, along with who you are, and we'll broker an introduction for you!*

sustainability west midlands

Environment Agency

SUNRISE: Stoke and Urban Newcastle Rediscovering Its Secret Environment

Matt Lawrence, Environment Agency

sustainability west midlands

Environment Agency

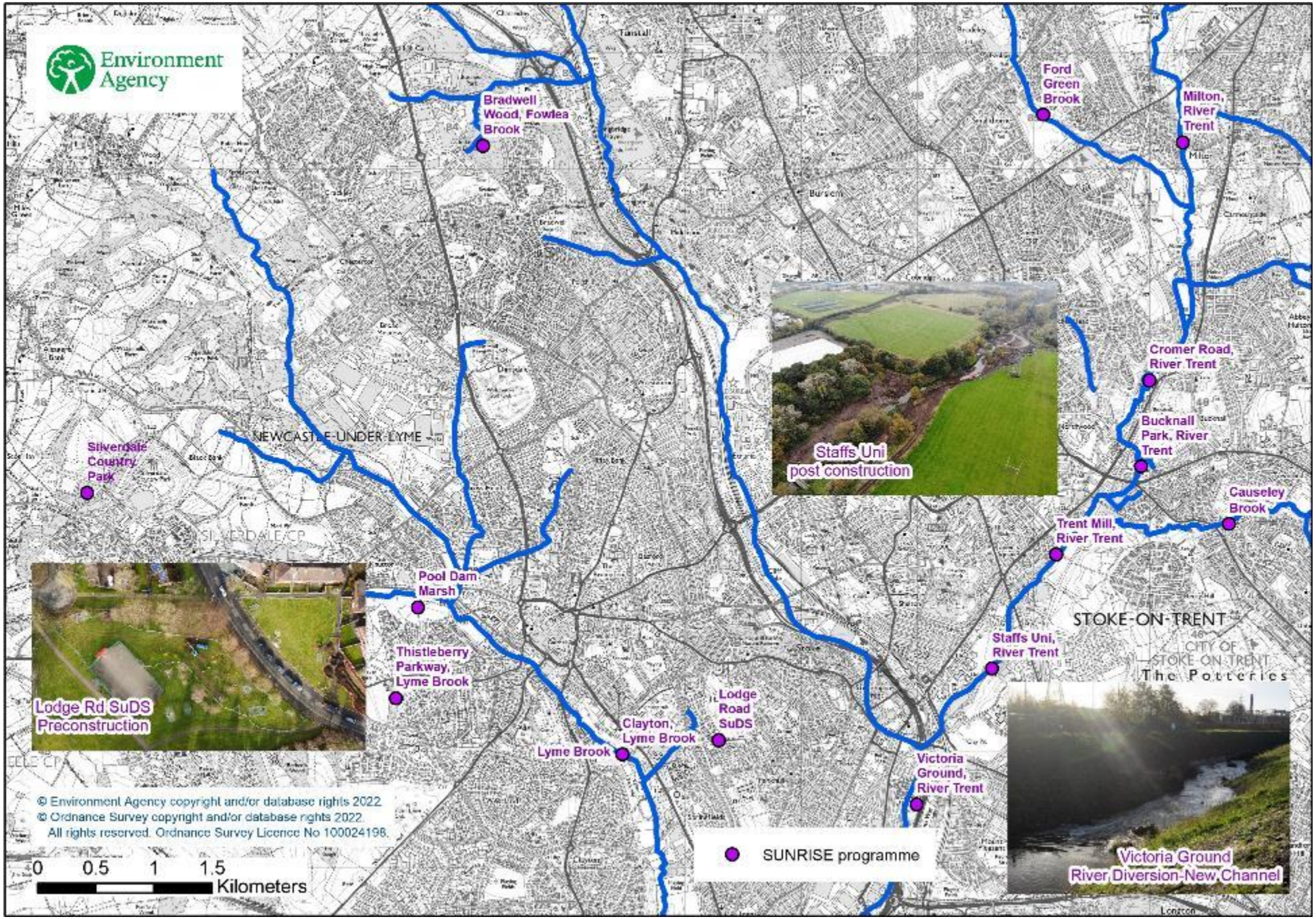
SUNRISE – Stoke and Urban Newcastle Rediscovering its Secret Environments

Matt Lawrence
Environment Programme Manager

Environment Agency

The value of the project is £3.6million and outputs include:

- 130 ha of improved grassland, woodland and wetland habitats.
- 25 km of enhanced and improved river and brook corridor.
- 0.5ha of remediated land.
- More resilient river ecology to mitigate against the effects of urban diffuse pollution.
- Communities better connected to their local green spaces
- Reduced flood risk



Environment Agency

River Trent – Staffordshire University

Environment Agency

River Trent – Victoria Ground

Environment Agency

For further information:

- https://www.erdf-sunrise.co.uk/
- Staffordshire Uni - River Trent
- Victoria Ground - River Trent

Environment Agency

Site visit: Impact of SUNRISE

Matt Lawrence, Environment Agency

Delegates can keep their belongings in the conference room until afterwards if preferred – someone will stay and look after them.

sustainability west midlands

Environment Agency