EUROPEAN FEDERATION GREEN ROOFS & WALLS
GREENER CITIES IN EUROPE

Green roofs and green walls
Nature-based solutions in action

Chemnitz May 2023

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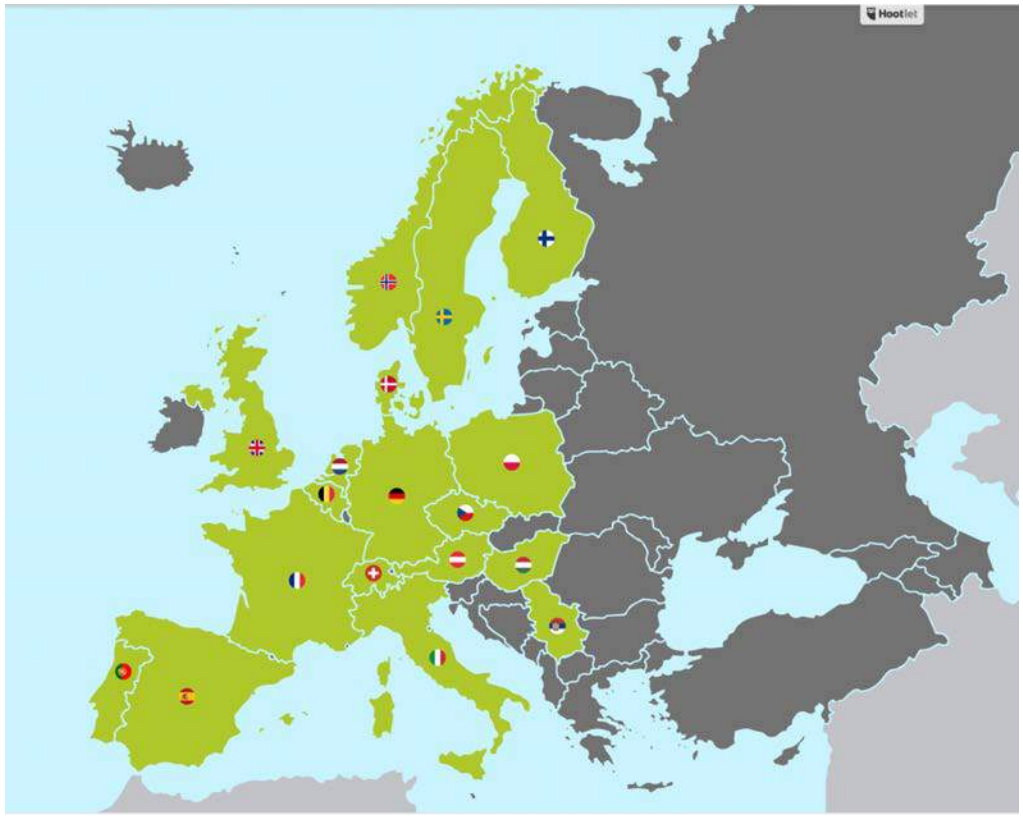

www.efb-greenroof.eu

www.progireg.eu/

proGIreg ABOUT | CITIES | NATURE-BASED SOLUTIONS

About the Project

ProGIreg uses nature for urban regeneration with and for citizens.

The project is funded by the European Commission under the Horizon 2020 programme and will run from June 2018 until 2023. ProGIreg stands for 'productive Green Infrastructure for post-industrial urban regeneration': nature for renewal.

Innovation in four front-runner cities

Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China) host Living Labs in post-industrial districts where nature-based solutions are developed, tested and implemented.

Global cities working together

Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) closely follow the progress in the Living Labs and engage in city-to-city exchange to replicate the nature-based solutions.

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GREENER CITIES IN EUROPE

Piraeus' nature-based solutions:

Piraeus will implement community-based urban farms and gardens, green corridors and pollinator friendly habitats, and is engaging local schools and universities in the co-design process.

www.metabuilding-project.eu/

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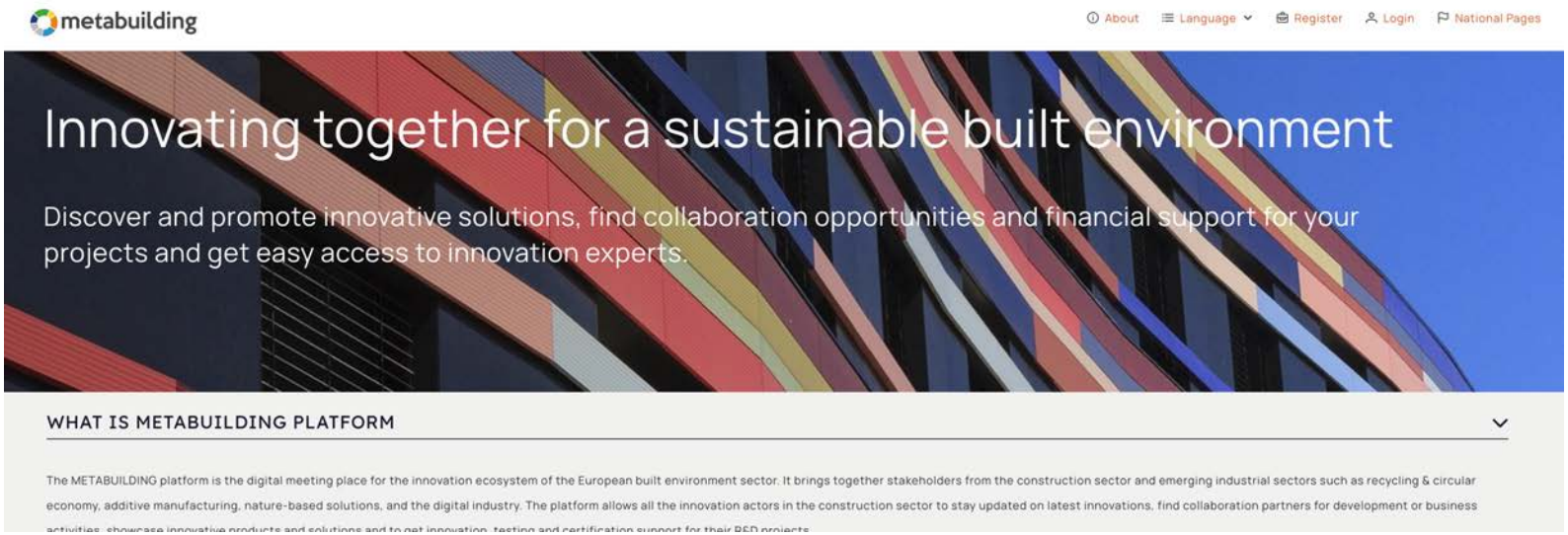

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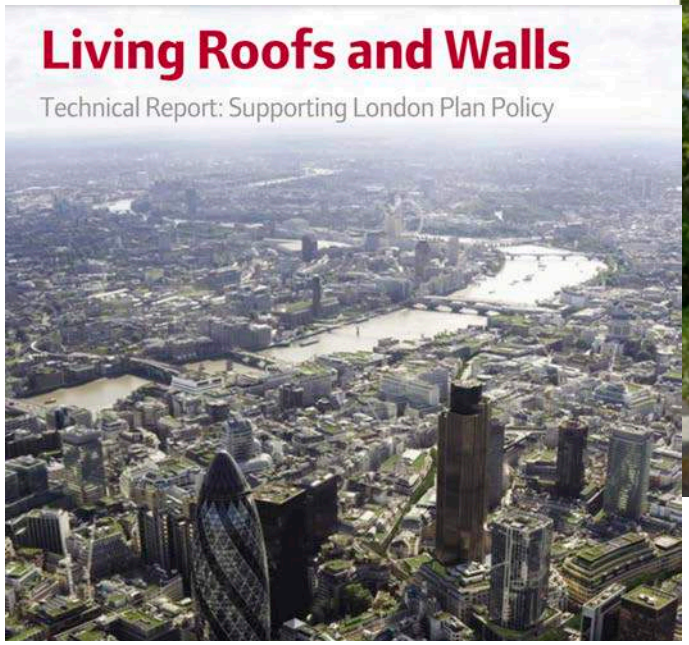

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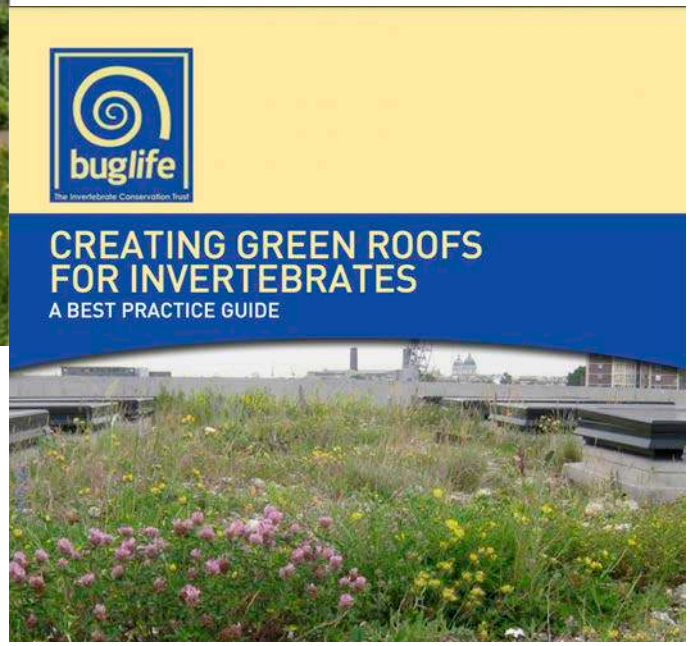
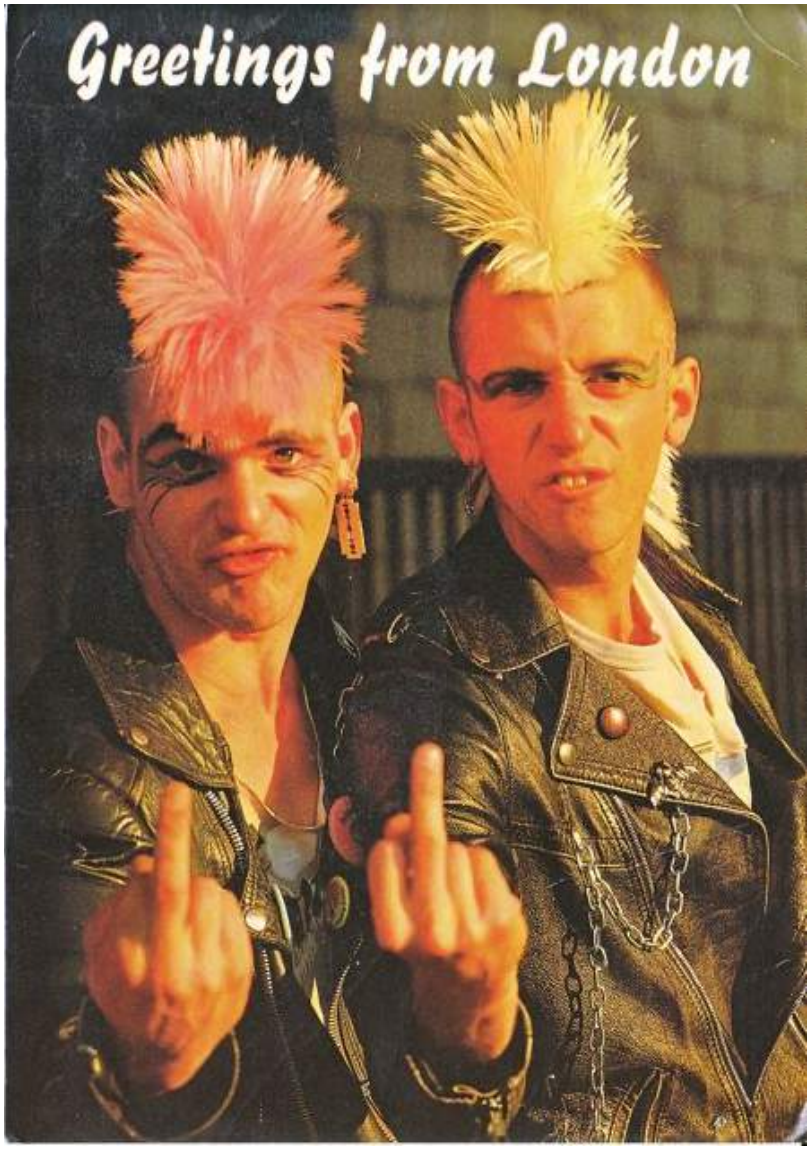


New green roof biodiversity metric 3.1 to be published end of October Natural England



EFB
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GREENER CITIES IN EUROPE

FROM *PUNK* TO PRESIDENT

BUT YOU CAN'T TAKE

*THE **PUNK** OUT*

OF THE PRESIDENT

Types

INTENSIVE GREEN ROOF

SEMI-INTENSIVE GREEN ROOF

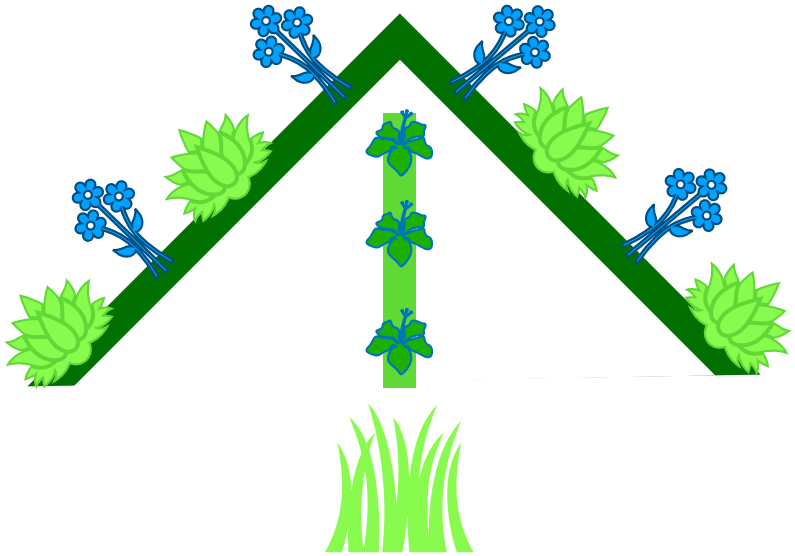
BIODIVERSE EXTENSIVE GREEN ROOF

SEDUM EXTENSIVE GREEN ROOF

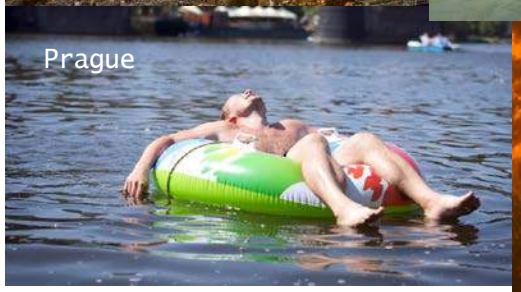
Why Green (roof) cities are the future?

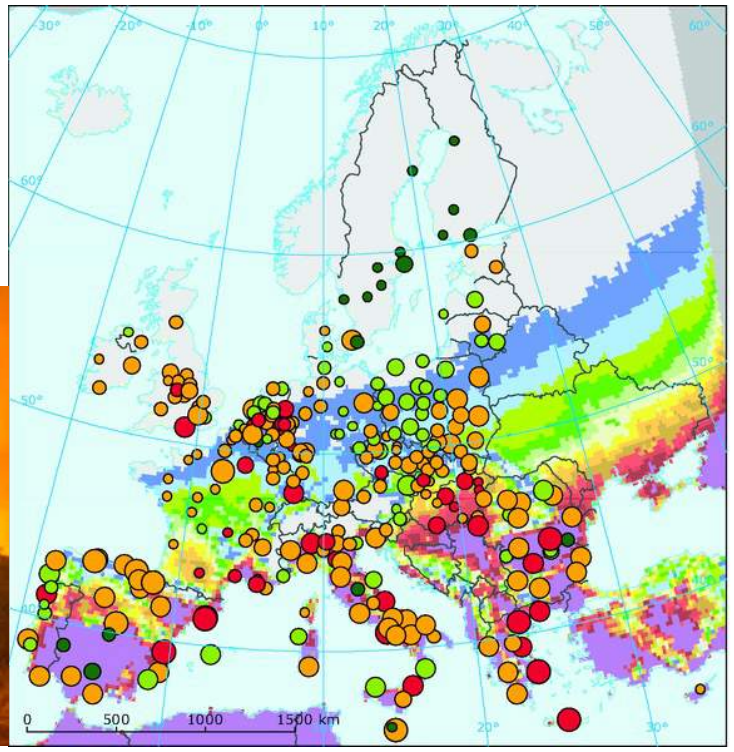
$O_2 + C0_2$

+ UHI



+ UHI





Heat waves — both a low share of green and blue urban areas and high population densities contribute potentially to the urban heat island in cities

Green/blue areas per city (UMZ), 2006 (%)

- ≥ 40
- 30–39
- 20–29
- < 20

Population density per city (UMZ), 2004 (inh./km²)

- < 3 000
- 3 000–4 000
- 4 000–5 000
- 5 000–10 000
- > 10 000

Number of combined tropical nights (> 20 °C) and hot days (> 35 °C), 2070–2100

2 10 18 26 34 38 42 50

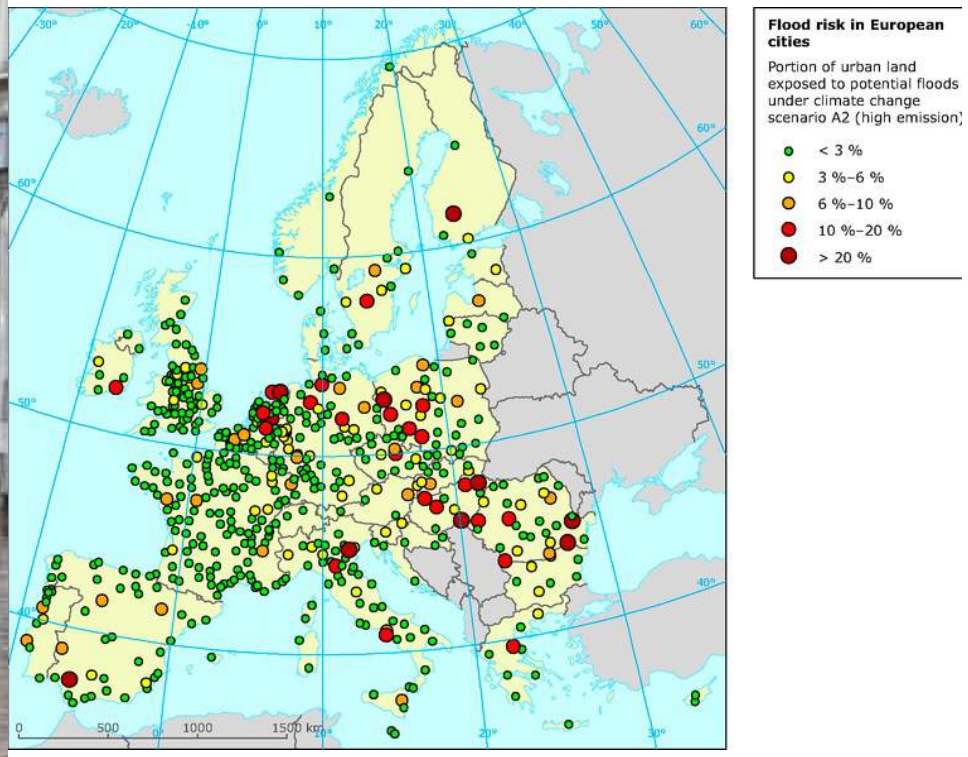
Why European cities need to adapt to climate change **- heat waves**

+ UHI

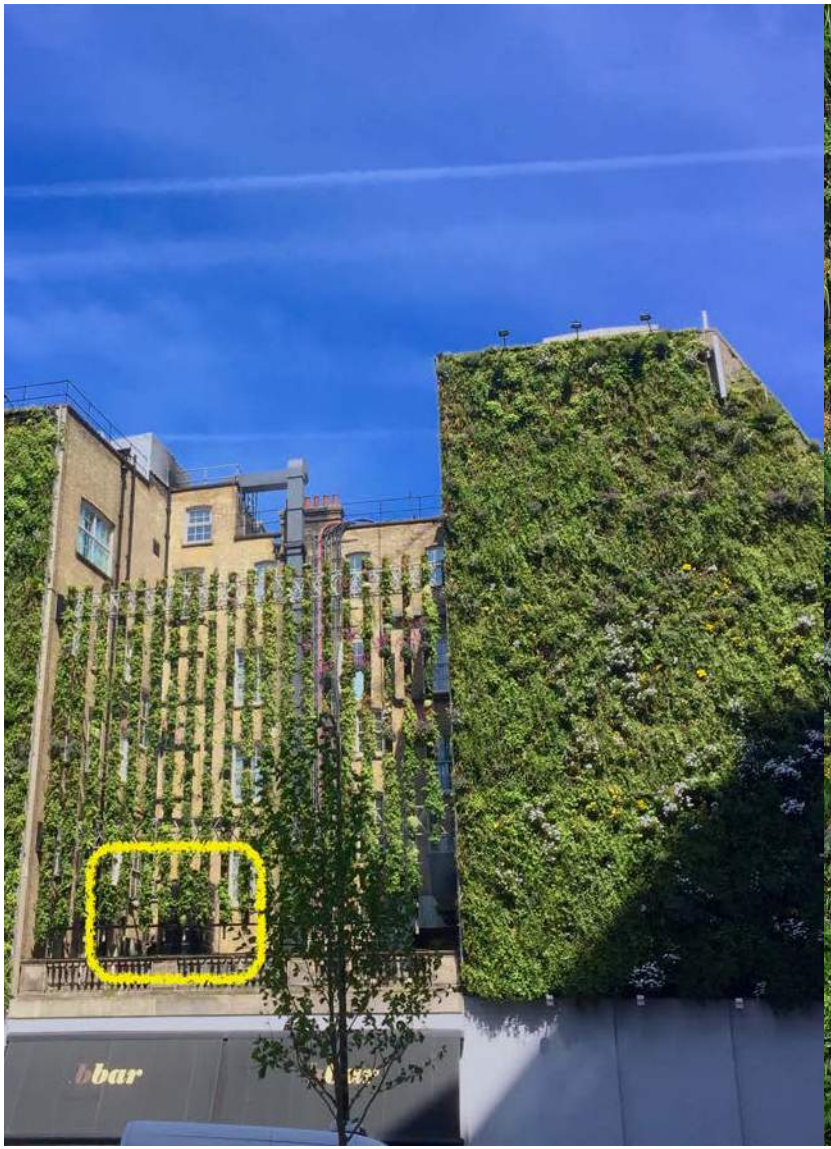
+ UHI

cools the city

cools the ‘canyon'



Intense summer storms are happening in cities because of climate change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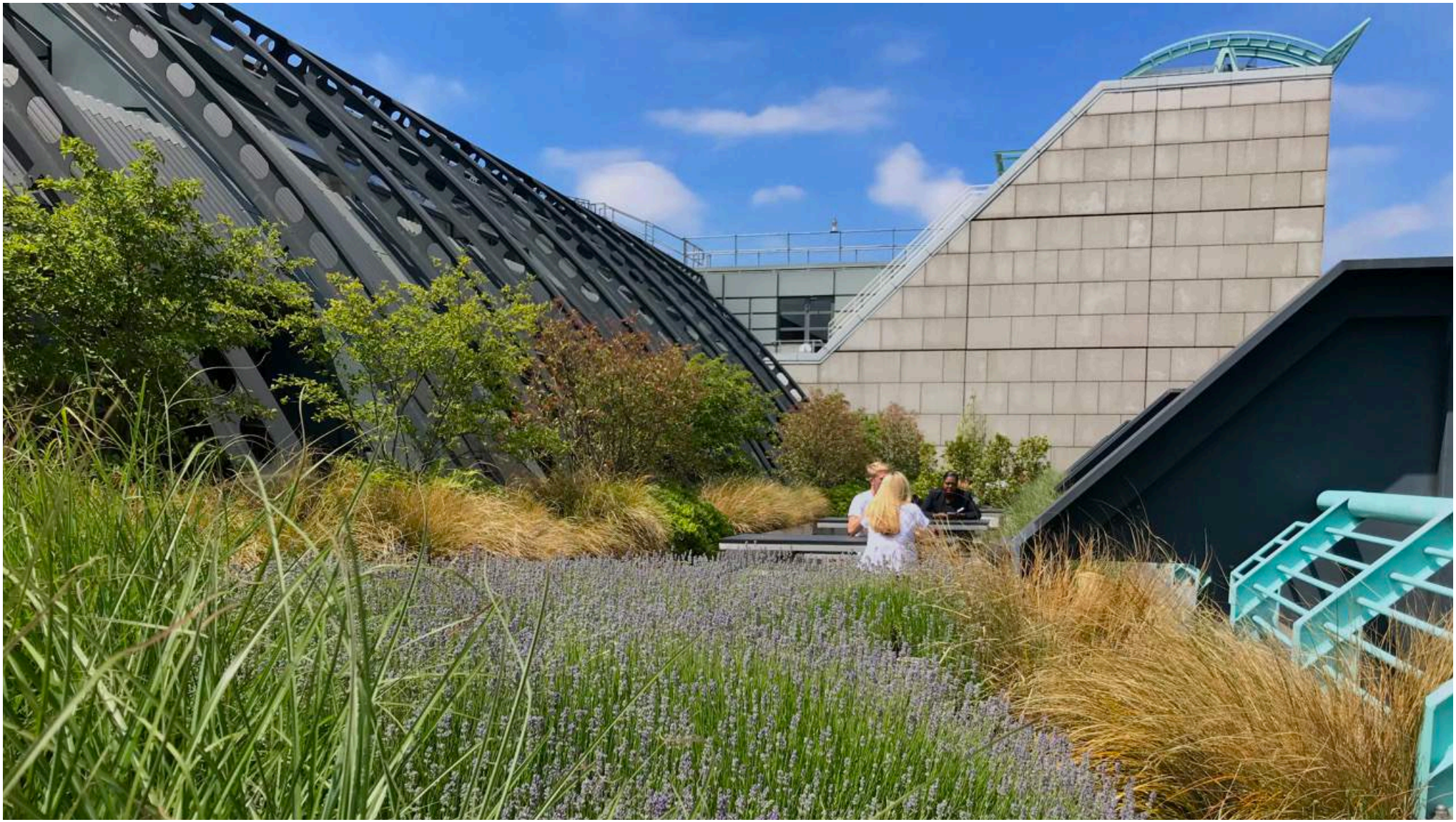
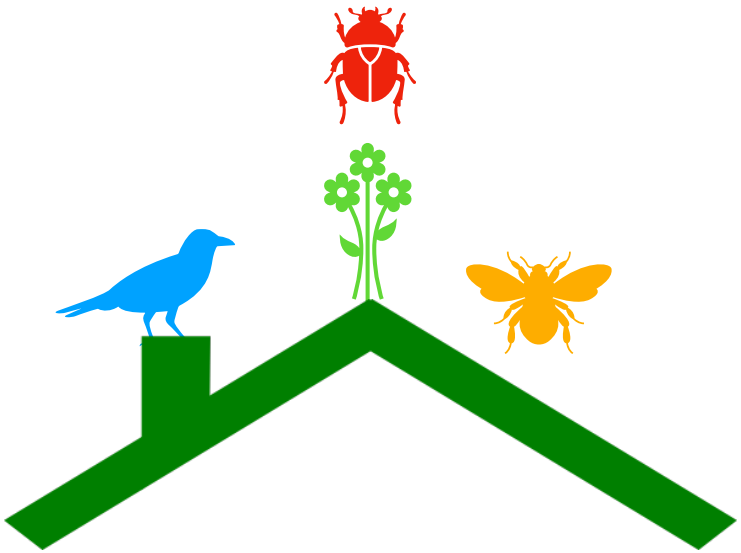
Health and Well-being





Biodiversity

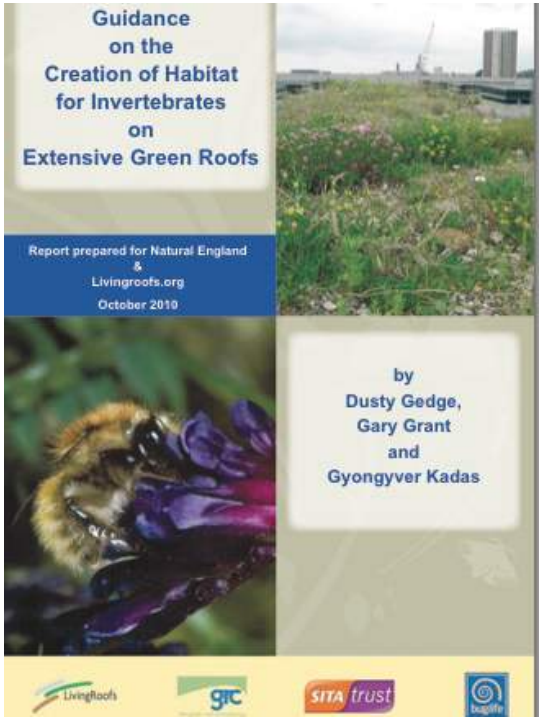
Black redstart

Rare species in UK

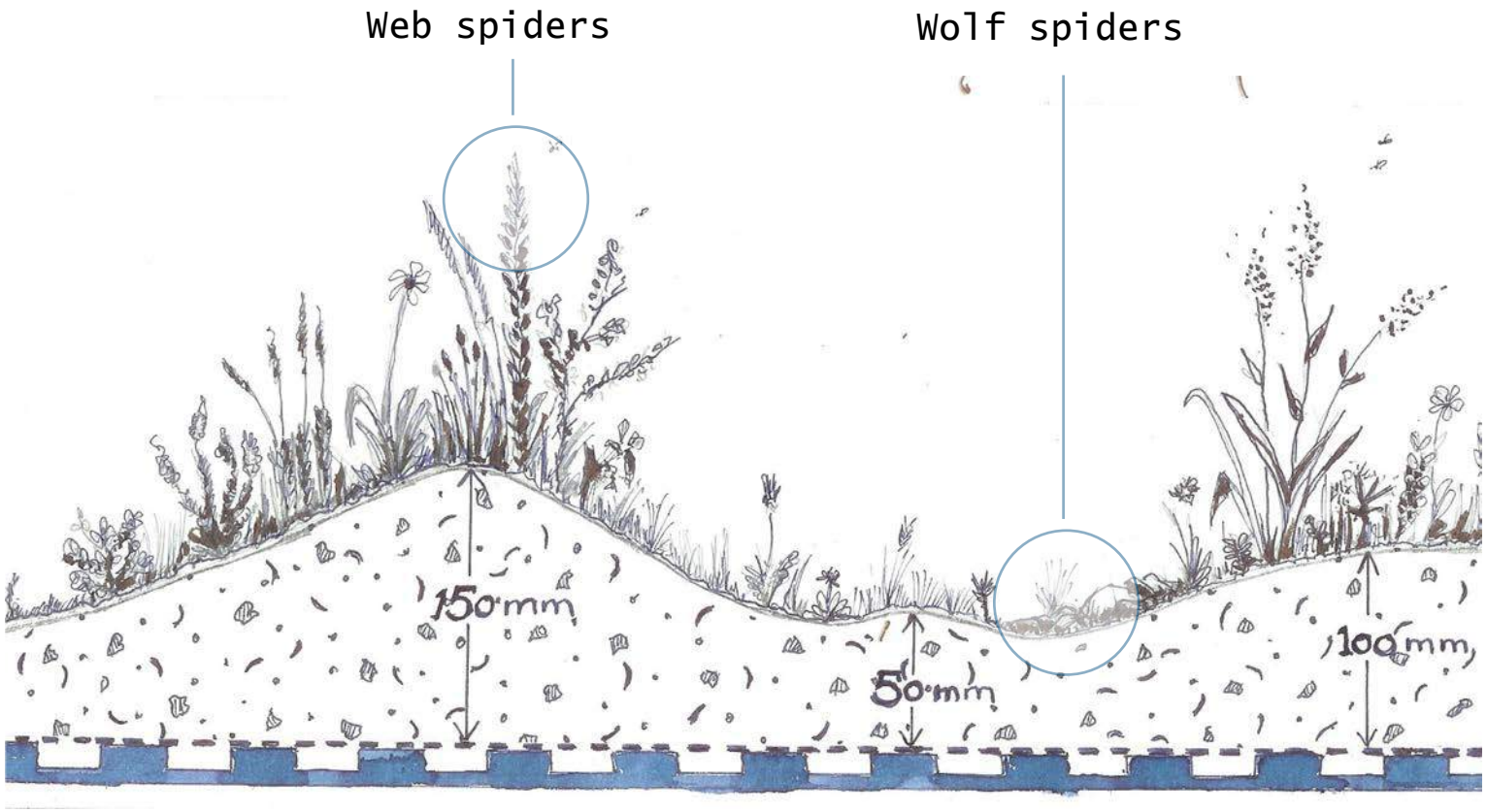
Protected status

Designing extensive green roofs for biodiversity

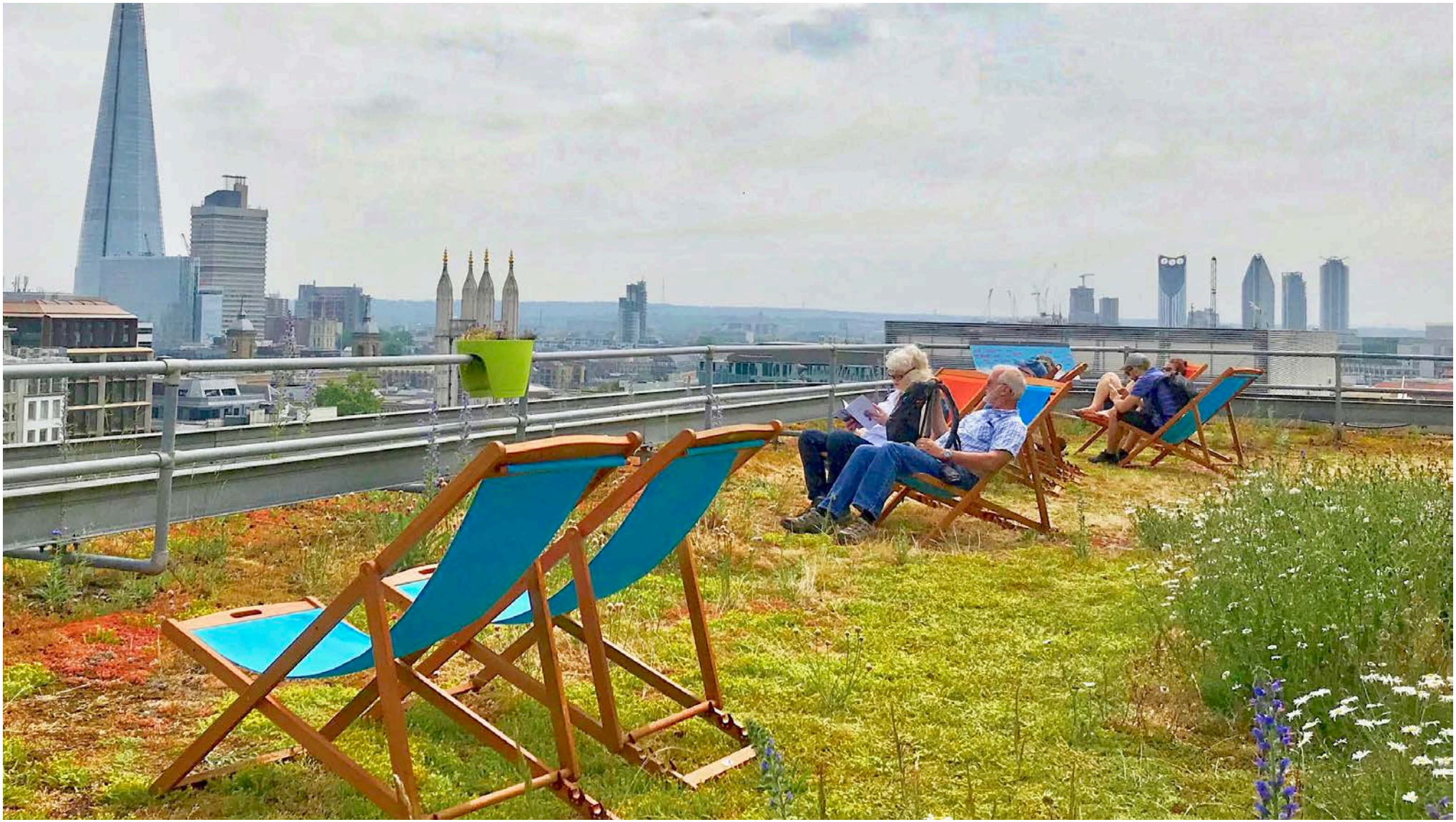
- Topographic variety - 80mmc - 150mm
- Seeded with native wildflowers associated with dry grasslands
- Additional habitat features - dead world, rubble mounds



Topographic diversity - diversity of floral structure



Diversity of spiders = diversity of invertebrates



Biosolar roofs - deliver greater biodiversity

Wind and sun shade = greater diversity of native wildflowers behind panels -

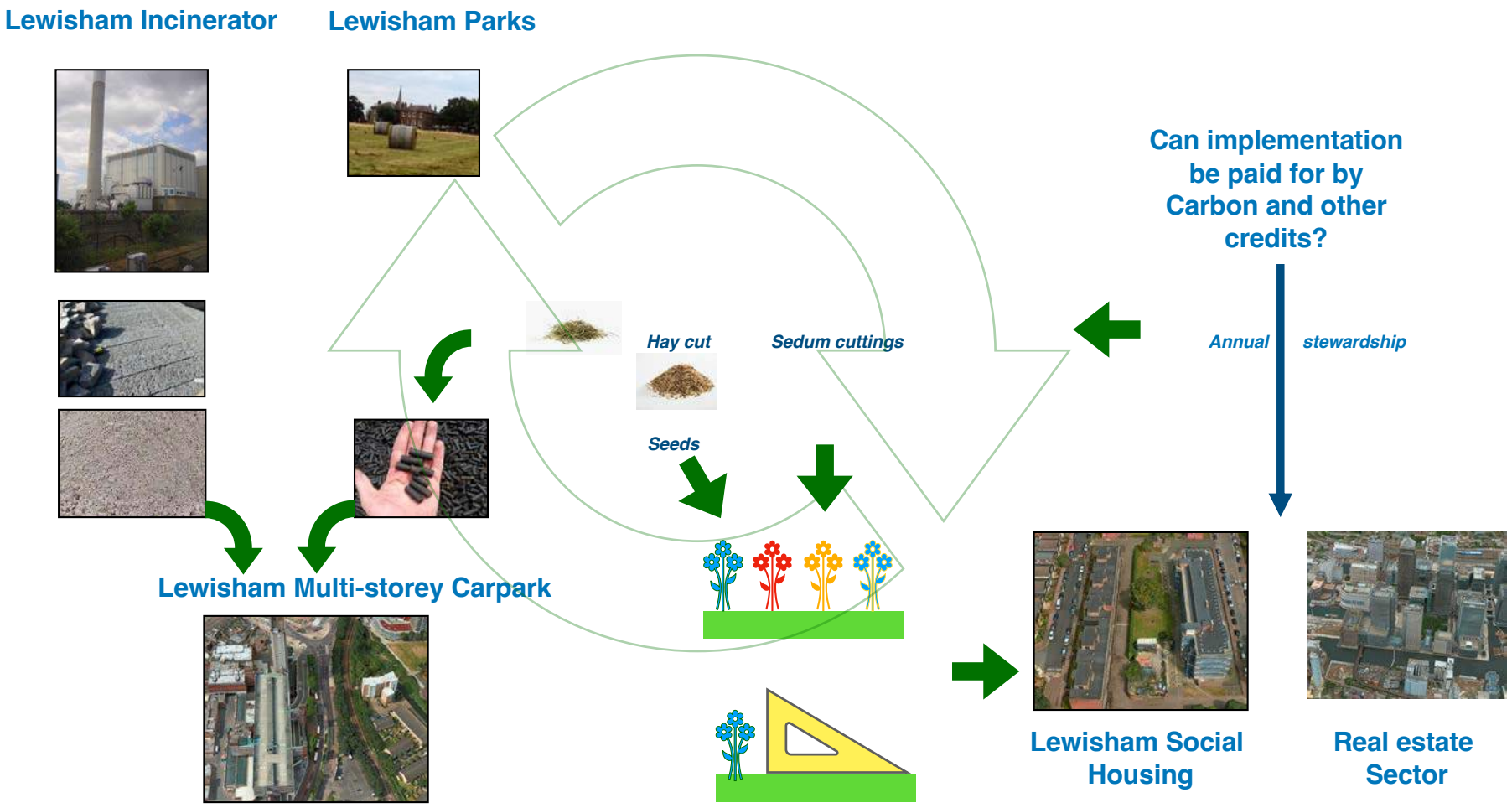
Vegetation and soil can increase solar production by 3.6%

Improving the carbon story of green roofs

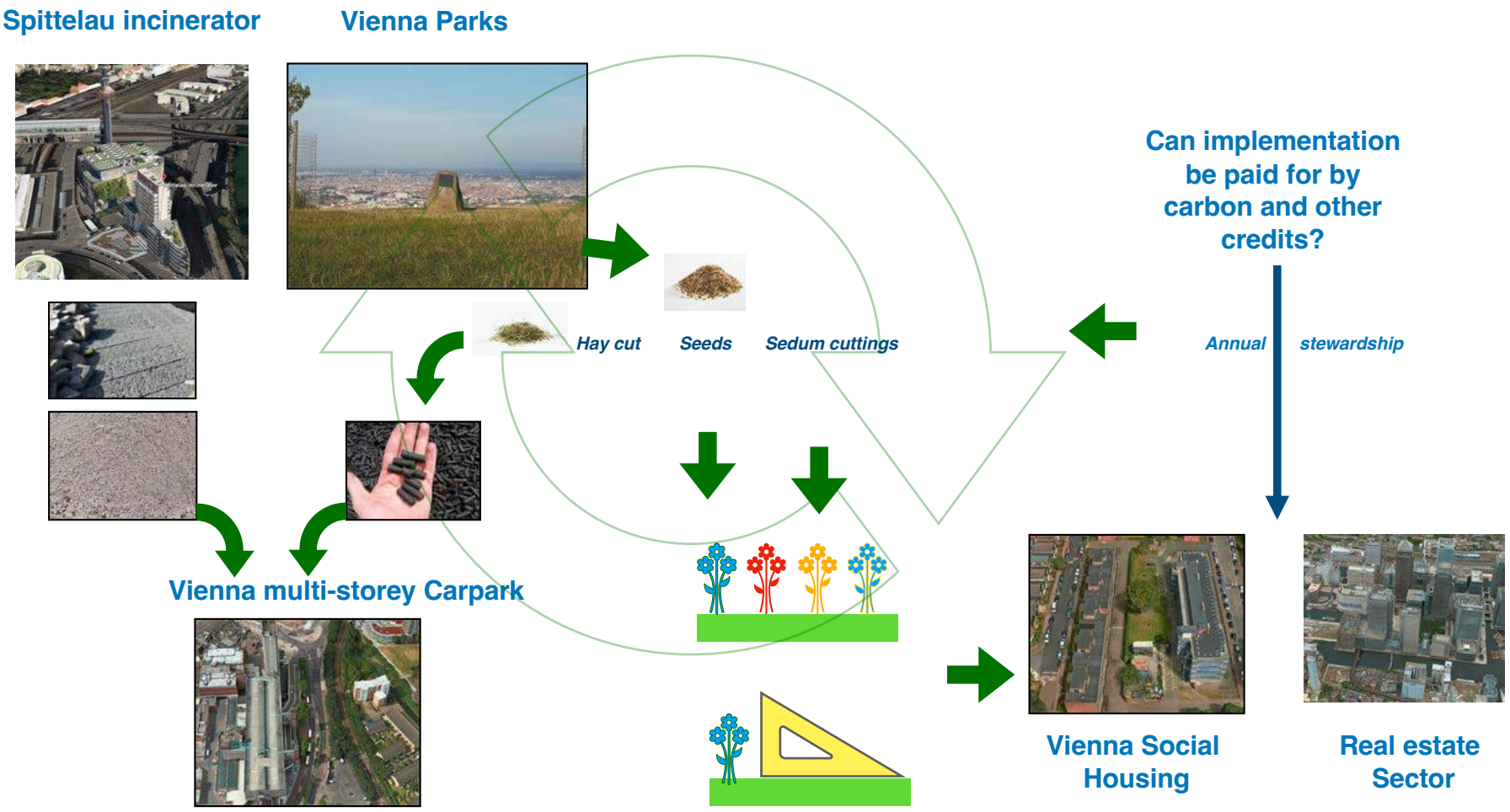
Carbon story

- Investigating materials that have high embedded carbon
- Engineered items
- Substrates
- Aim to develop systems that can be given a carbon credit value
- With CC value - will this lead to a mechanism to pay 4 retrofit

London Borough of Lewisham



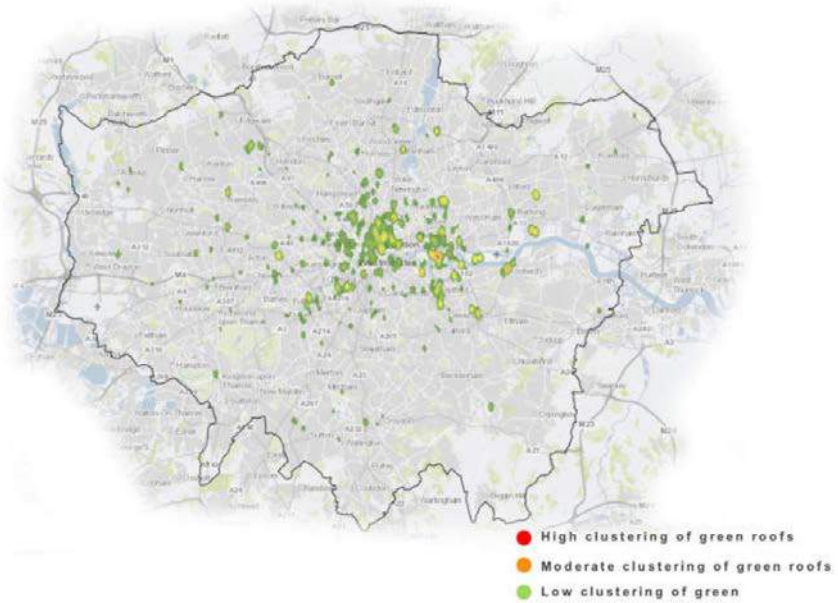
City of Vienna



Gentian

Contract with European Space Agency
Mapping green roofs and retrofit potential

Greater London: Green Roof Areas Hot Spot



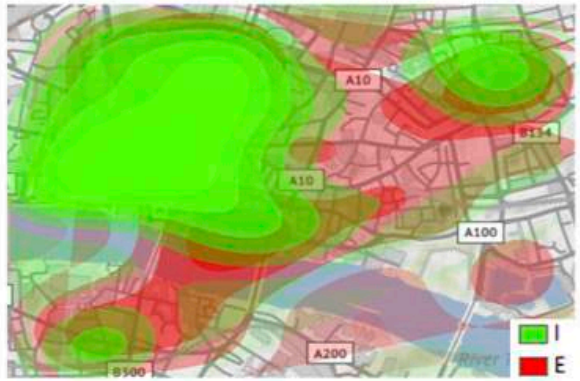
City Of London: Green Roof Areas Hotspot Map

https://livingroofs.org/london-map-green-roof-boroughs/

[GR ID] Green Roof Identification

- Ability to distinguish between Intensive and Extensive GR, and Astroturf (with a high level of accuracy)

- Ability to create GR statistics and heat maps, enhancing the value of the data you recieve



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[GR RF] Green Roof Retrofit

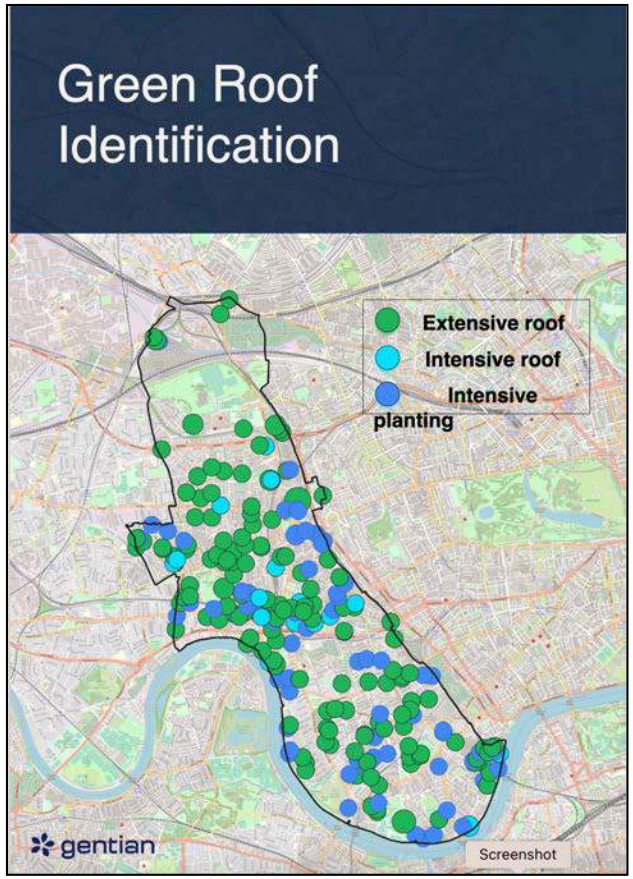
- Identifying roofs suitable for Green Roof retrofitting using material automatic detection
- Successful pilot completed with Manchester City Council

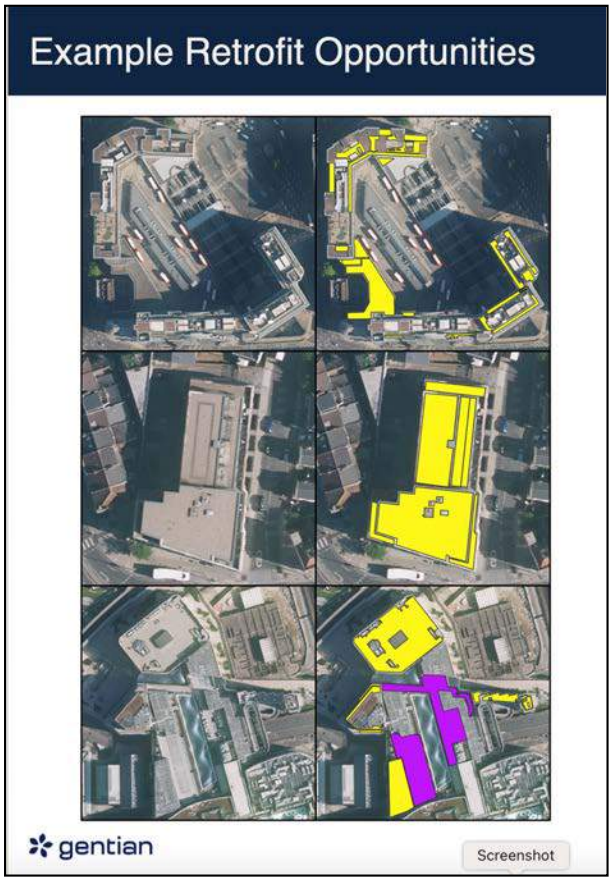
Pilot sites

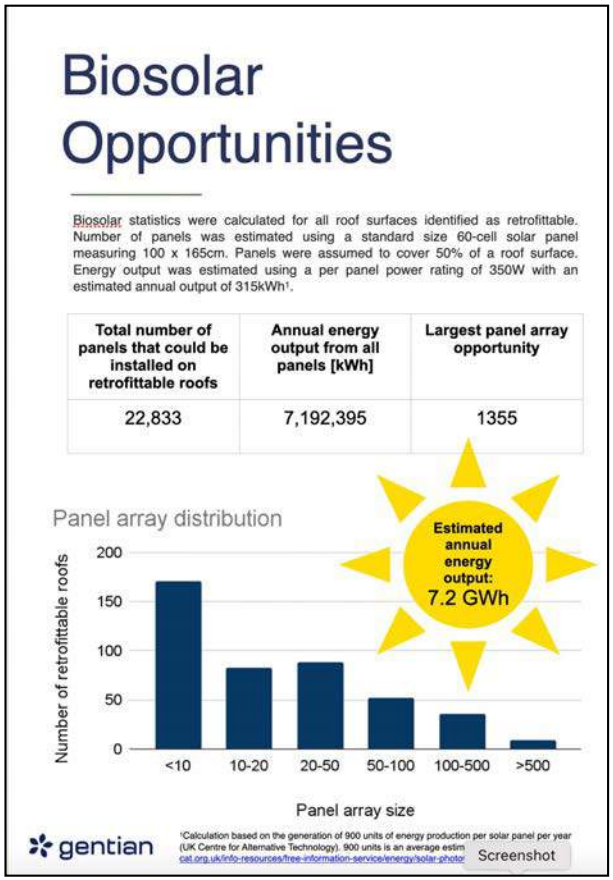
1. *Central London (Bloomsbury):*
   Date: April 2021- now
   Size: 3.5km^2
   Comments: Area selected as part of a partnership with Wild Bloomsbury project and UCL. Suitable buildings for GR retrofit manually identified by Gentian's urban ecology expert. Polygons mapped in partnership with UCL.

2. *Greater Manchester*
   Date: June-July, 2021
   Size: 13km^2
   Comments: Paying client requested two products (GR ID and GR RF). Suitable buildings for GR retrofit manually identified by Gentian's urban ecology expert. Polygons mapped manually by the Gentian Tech team.

info@gentian.teams

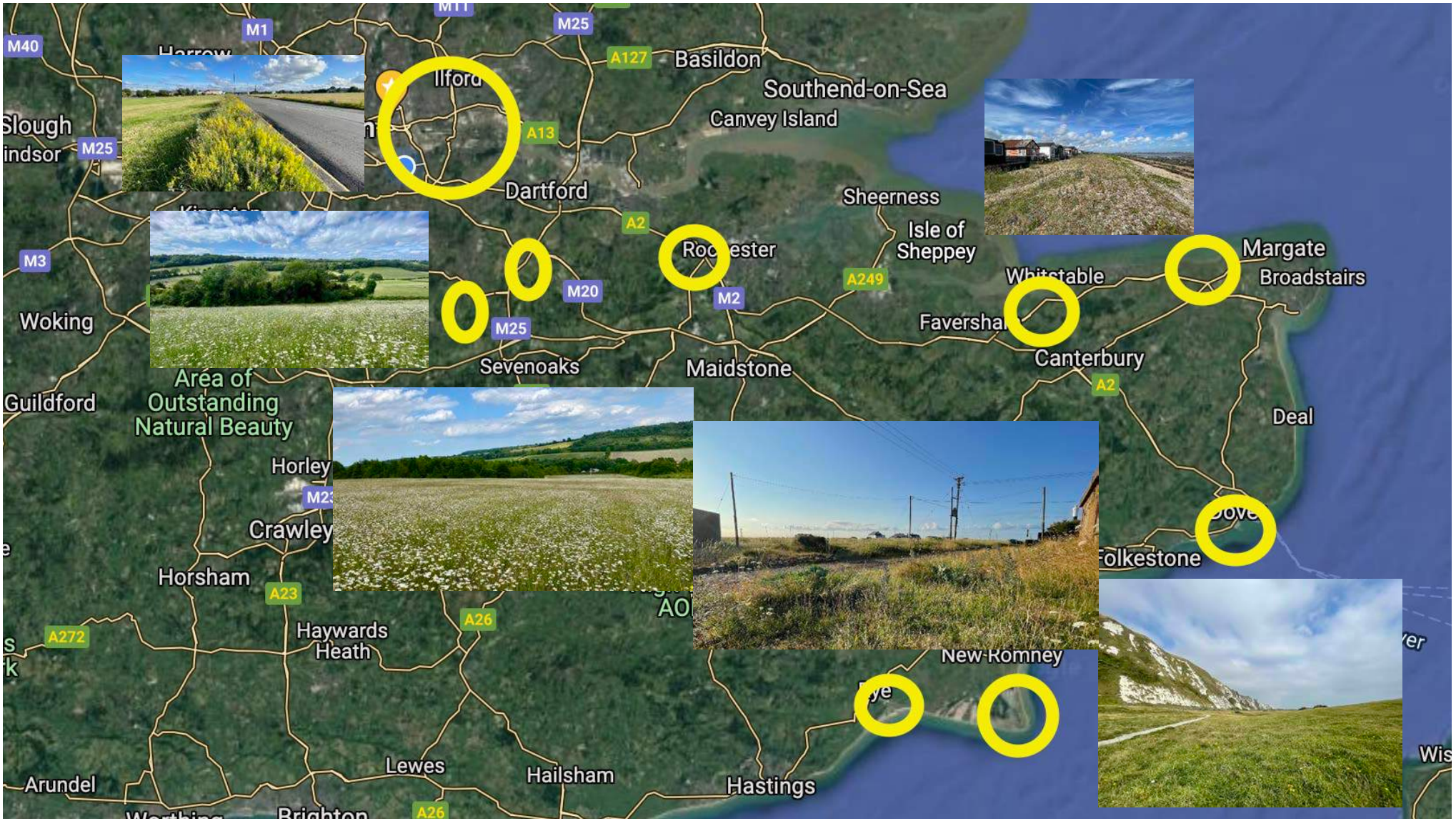






REMOTE MAPPING OF GREEN ROOFS/POTENTIAL RETROFIT/BIOSOLAR POTENTIAL

Weight may restrict to non-integrated system


M40
M1
M25
A127
Basildon
Southend-on-Sea
Canvey Island
Ilford
A13
Slough
M25
Dartford
Sheerness
A2
Isle of
Sheppey
M3
M20
M2
A249
Margate
Broadstairs
Whitstable
Woking
M25
Sevenoaks
Maidstone
Canterbury
A2
Area of
Outstanding
Natural Beauty
Guildford
Deal
Horley
Crawley
Folkestone
Horsham
A23
A26
A272
Haywards
Heath
New Romney
Lewes
Hailsham
Hastings
Arundel

CBC/BBS England 1966–2019
Linnet
Index (100 in 2018)
400
300
200
100
1970
1980
1990
2000
2010

IKEA Greenwich
15- 20 Pairs of Linnets on Greenwich Peninsula 2021

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Sainsbury's, Greenwich, London

most sustainable retail store be in 2019
What will be the most sustainable retail store in 2039?

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Thank you

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