Visualising plant health and biosecurity impacts in urban and rural landscape assessments:

https://www.geograph.org.uk/photo/4819427

Develop awareness of techniques that can be used to model landscape change

National Library of Scotland - https://maps.nls.uk/geo/explore/spy

SHEFFIELD LANDSCAPE ARCHITECTURE

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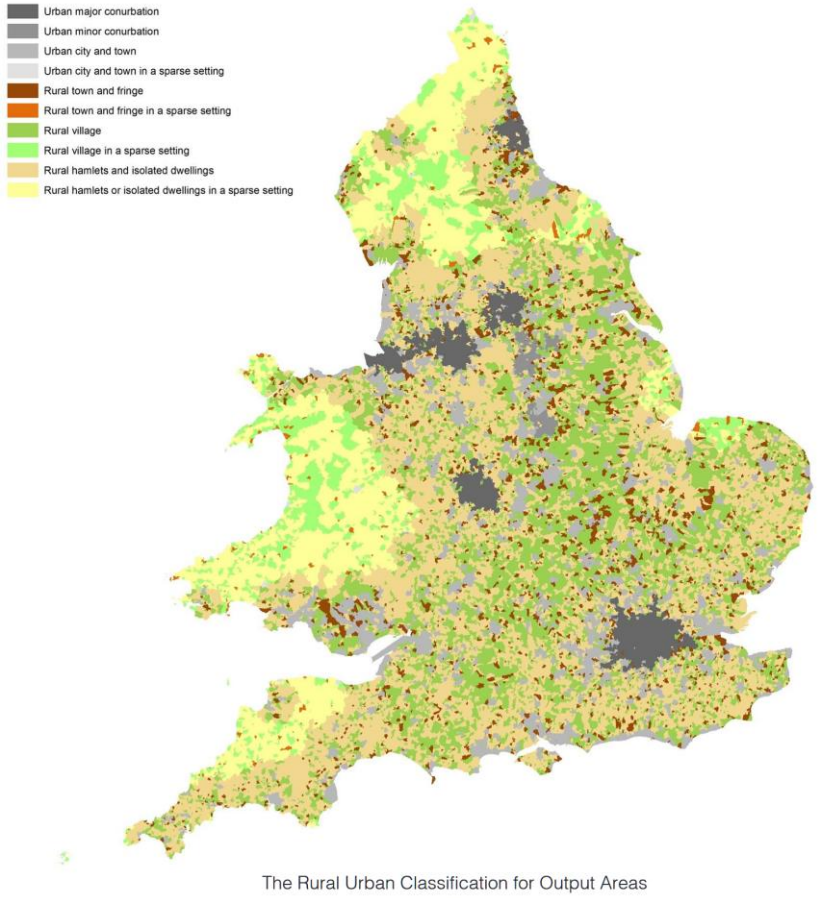
The University Of Sheffield.

Contents

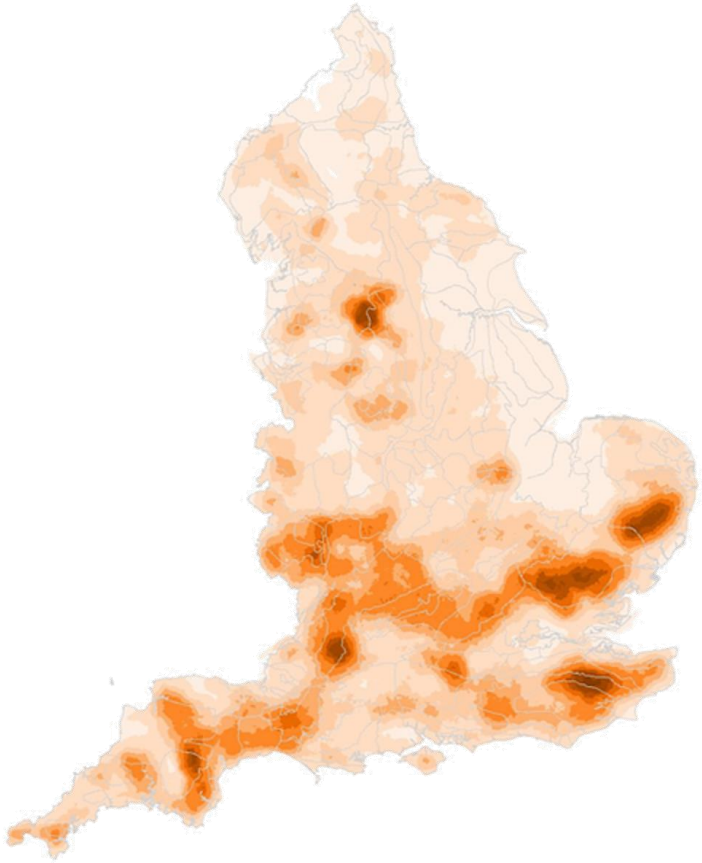
1. Who am I?
2. Detecting landscape change?
3. Visualising future landscape change

1. Who am I?



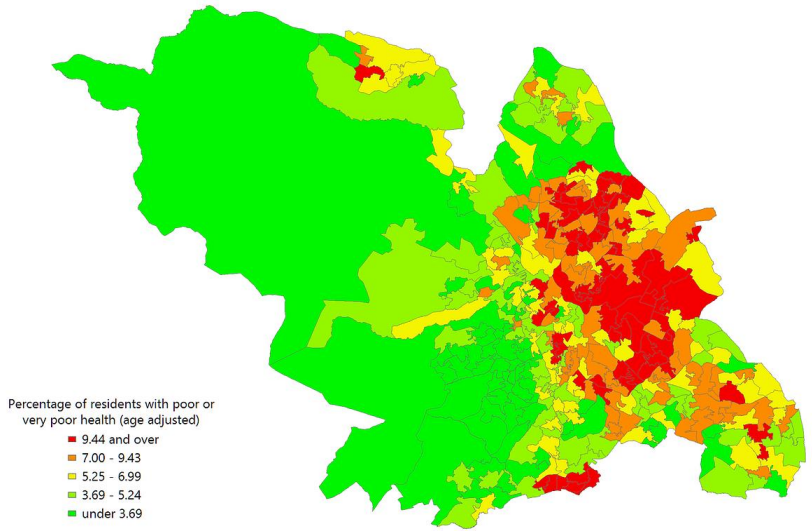
The Rural Urban Classification for Output Areas

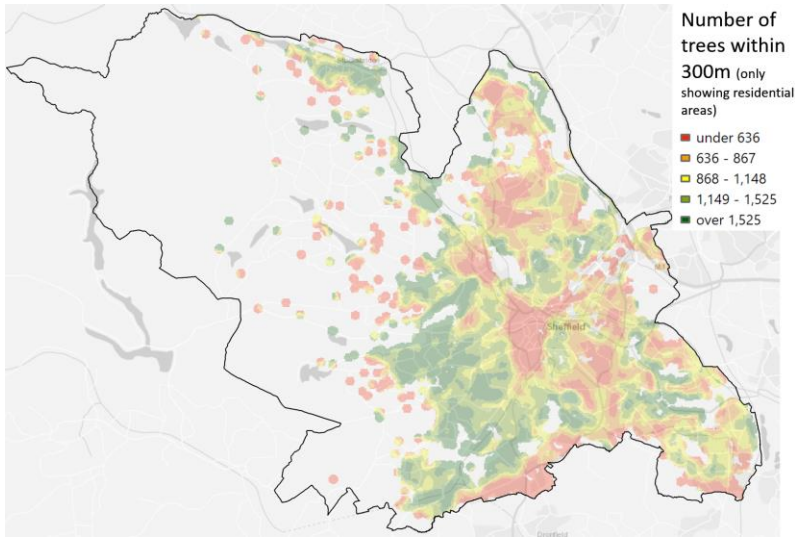
Rural Urban Classification for England and Wales



Development patterns in urban and rural areas

Self reported general health in Sheffield (Census 2011)





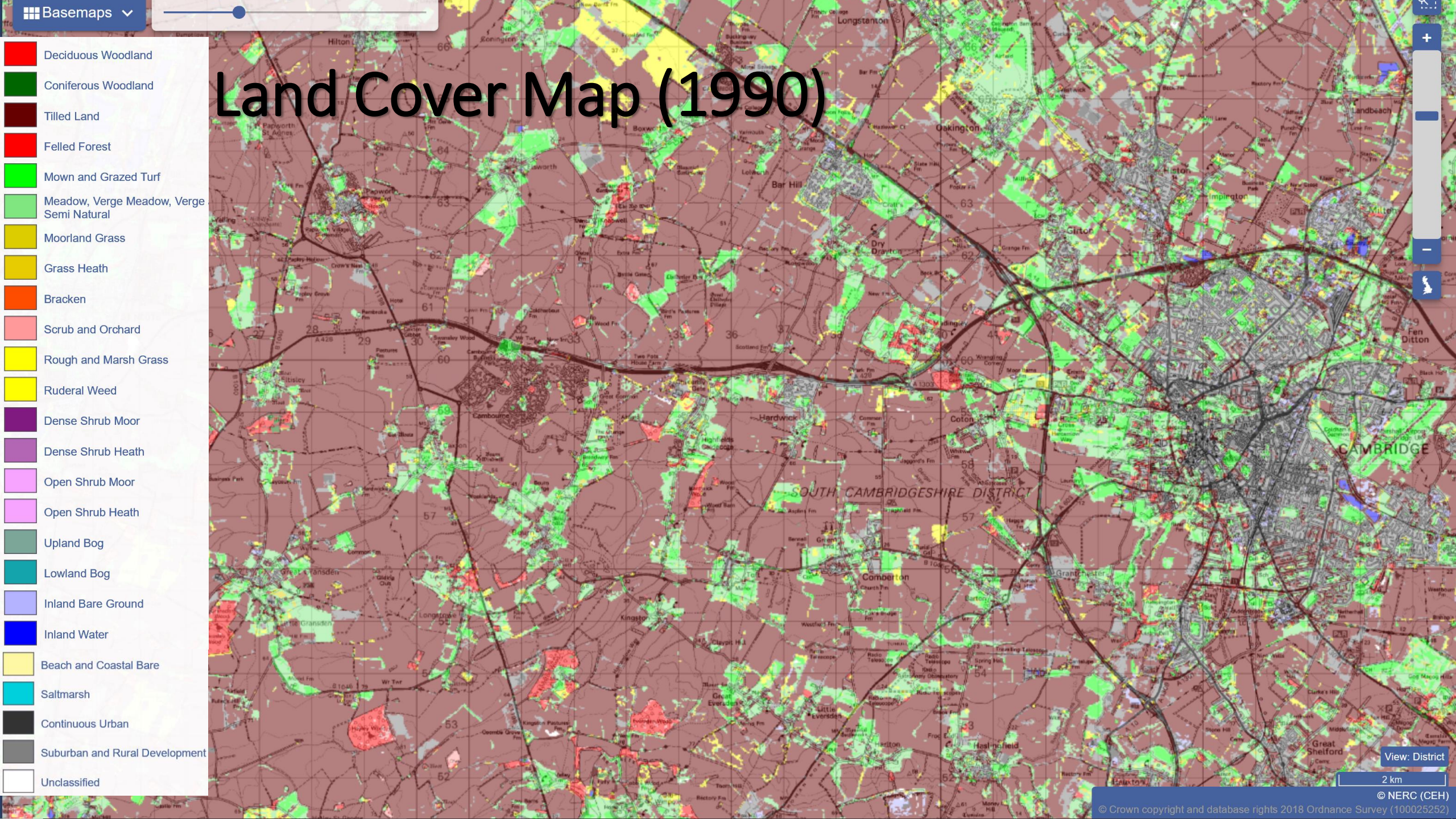
Statistical analysis of health and wellbeing effects of greenspace

2. Detecting landscape change?

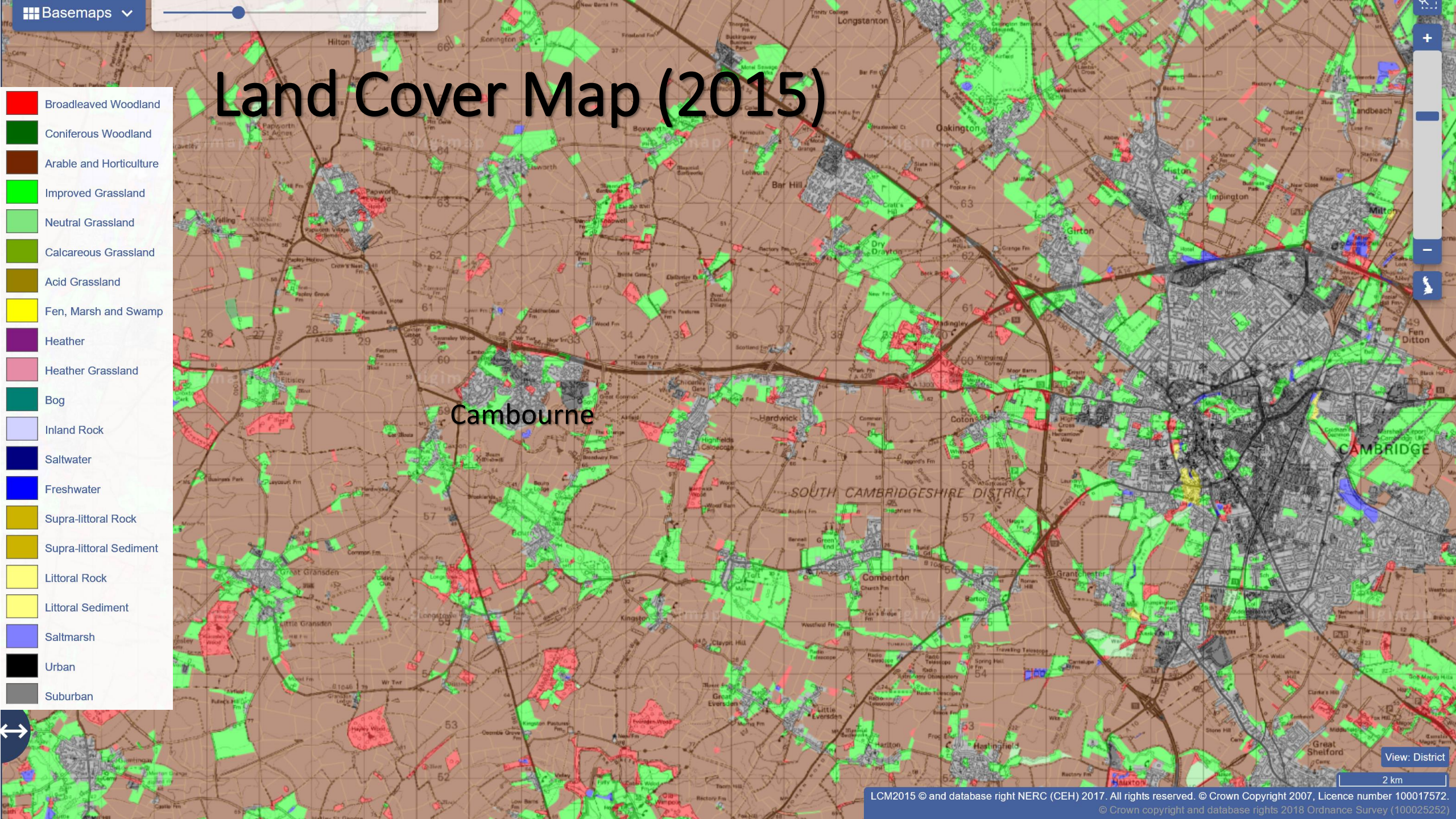
Data for monitoring landscape change

- Land Cover Map
- Ordnance Survey: MasterMap
  Land Use change Statistics (LUCS)
- Open Street Map
- Satellite data
- Google: Google Earth
  Google Street View

Land Cover Map (1990)

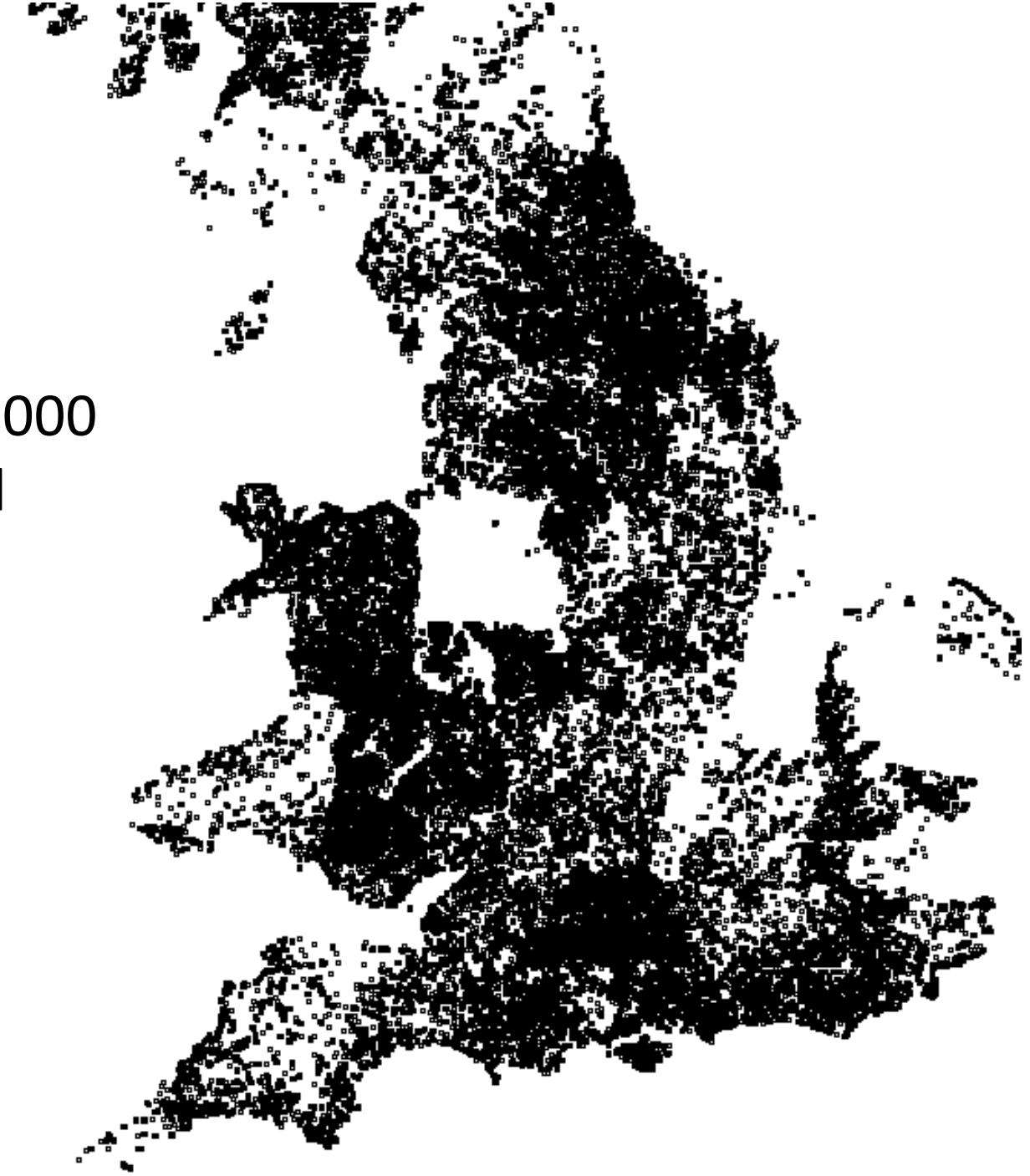


Land Cover Map (2015)

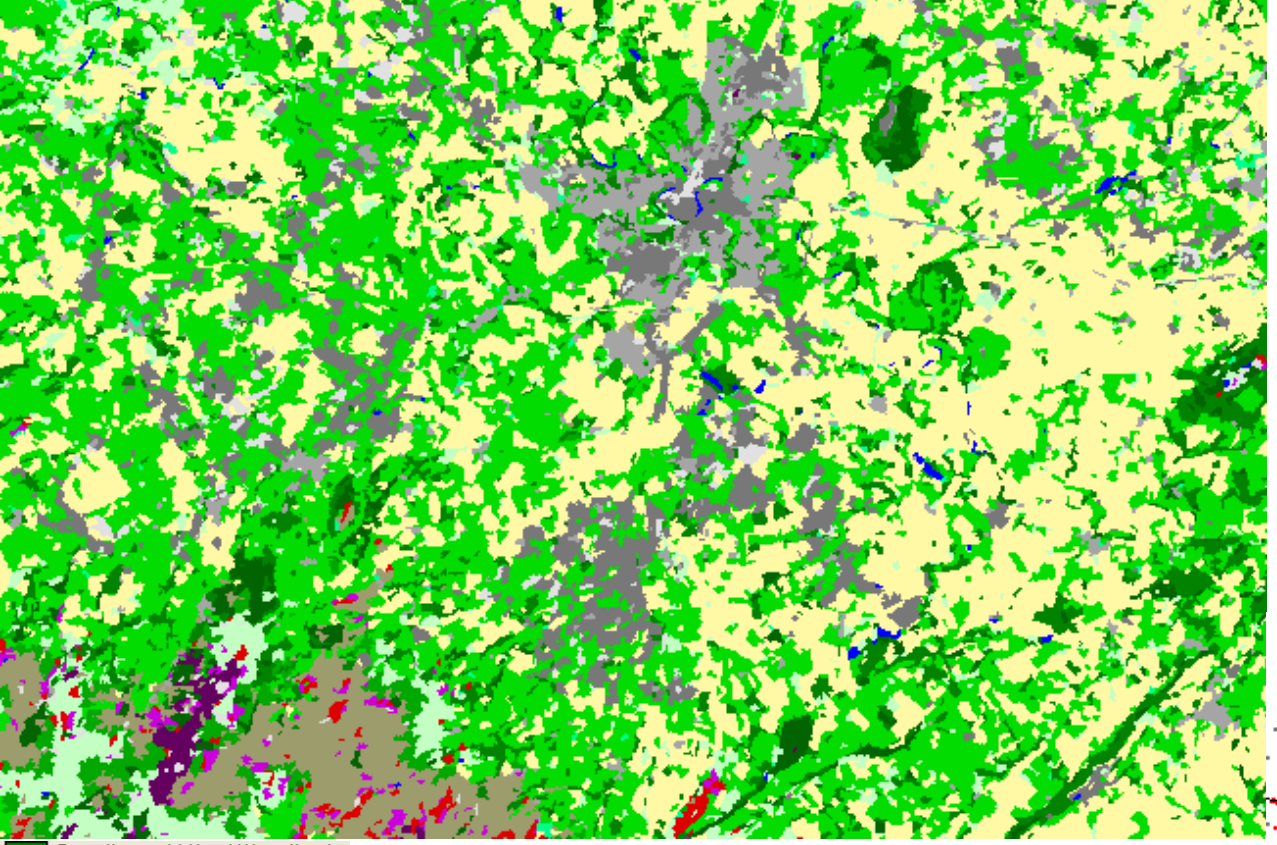


LCM2015 © and database right NERC (CEH) 2017. All rights reserved. © Crown Copyright 2007, Licence number 100017572.
© Crown copyright and database rights 2018 Ordnance Survey (100025252)

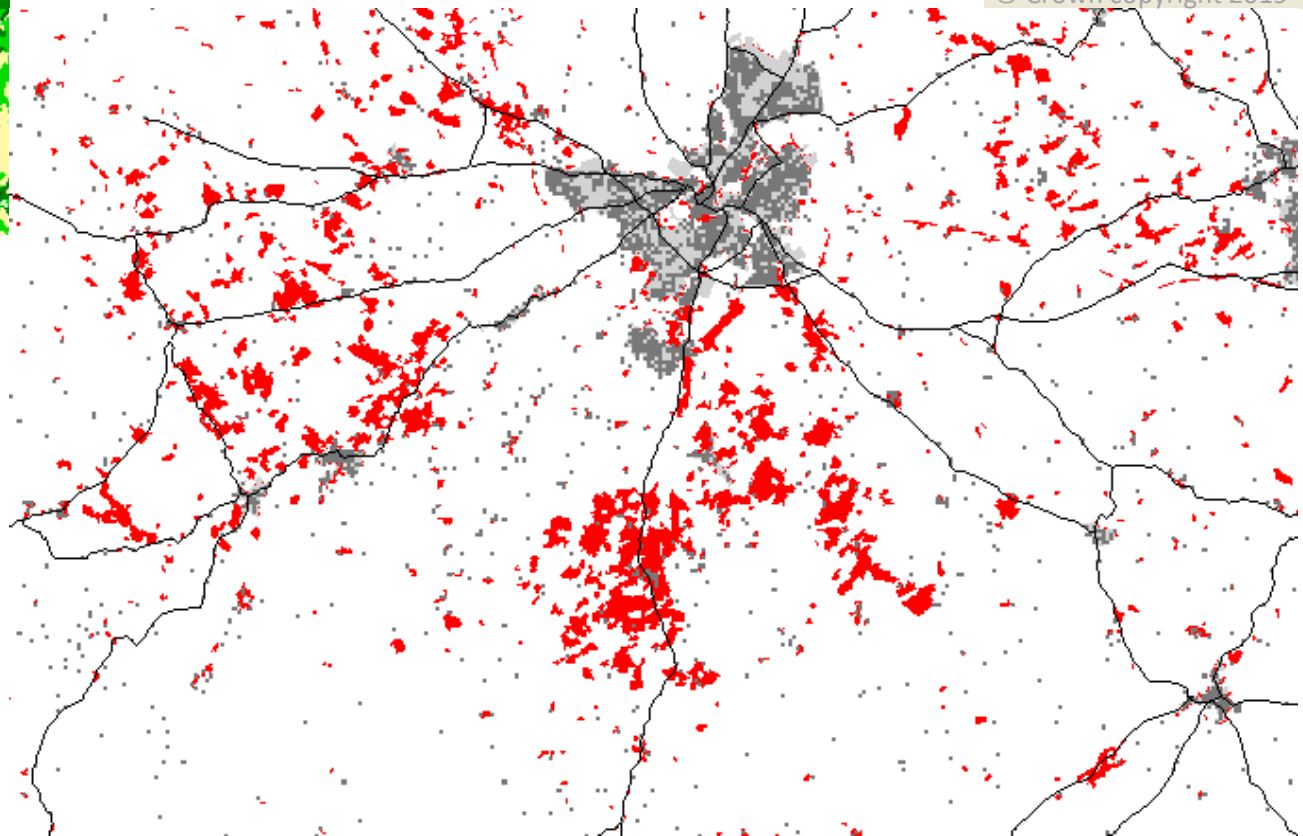
Land Cover Map 2000 class of ‘inland bare ground’



Land Cover Map 2000 for the area to the south of Shrewsbury



- Broadleaved Mixed Woodland
- Coniferous Woodland
- Arable Cereals
- Arable Horticulture
- Non-rotational Arable
- Improved Grassland
- Setaside Grass
- Neutral Grass
- Calcareous Grass
- Acid Grass
- Bracken
- Dense Dwarf Shrub Heath
- Open Dwarf Shrub Heath
- Fen, Marsh, Swamp
- Bogs (Deep Peat)
- Inland water
- Montane Habitts
- Inland Bare Ground
- Suburban/ Rural developed
- Continuous Urban
- Supra-littoral Rock
- Supra-Littoral sediment
- Littoral Rock
- Littoral sediment
- Saltmarsh



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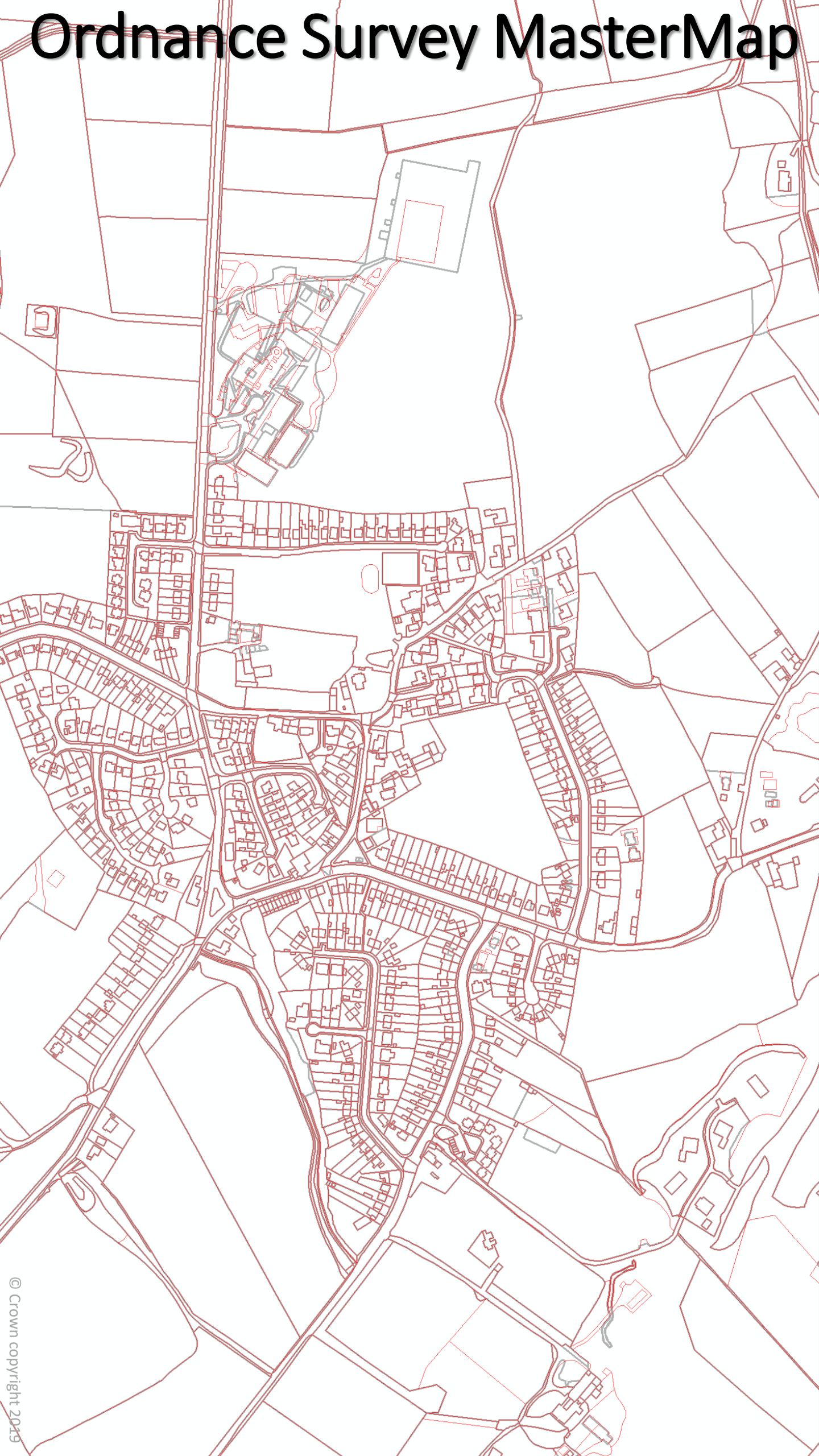
Ordnance Survey MasterMap



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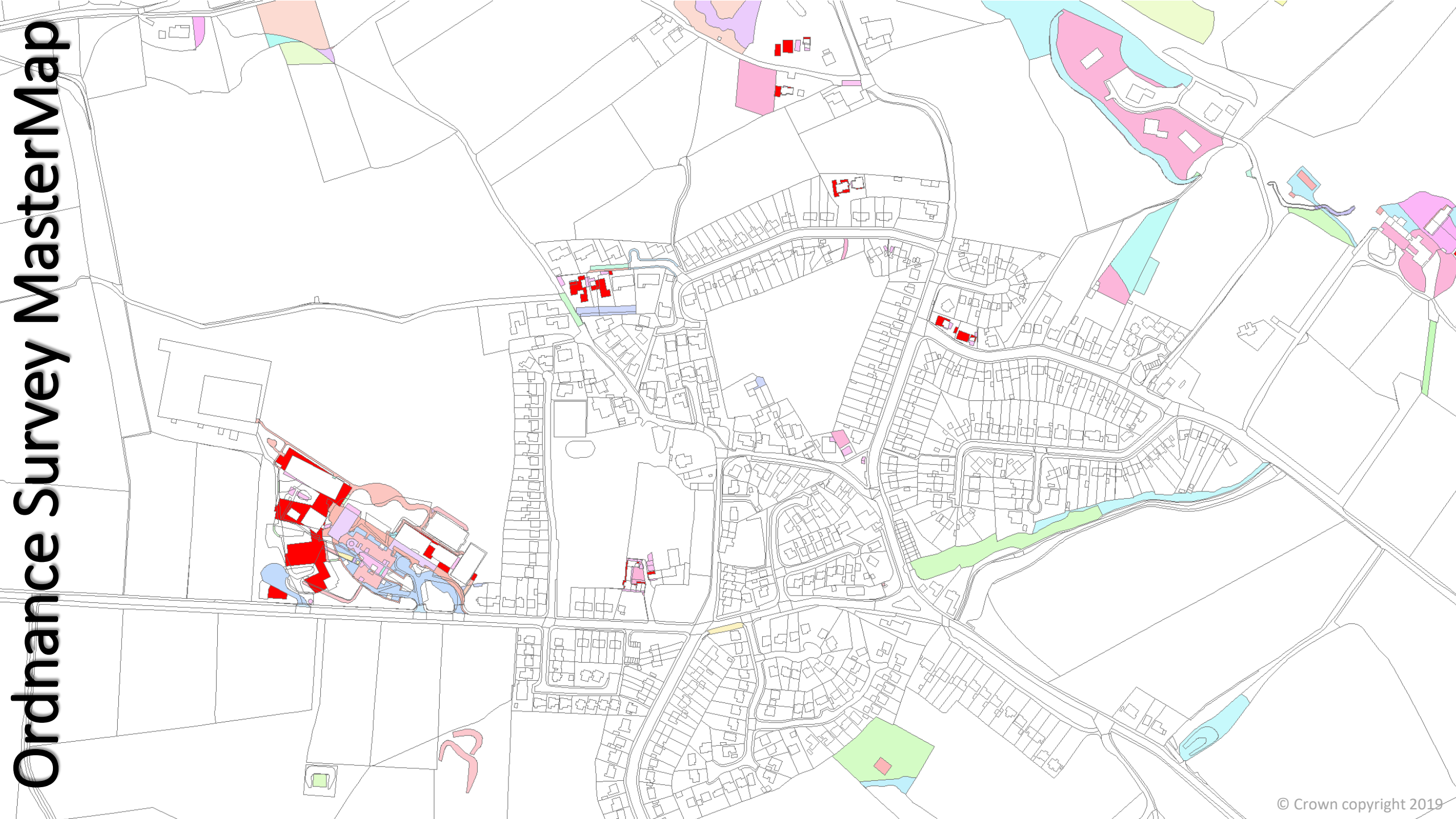

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Element of change	Area (square m)	% coverage
unchanged	25,910,991	97.16
General Surface to Natural Environment Rough Grassland,Scrub	118,244	0.44
General Surface to Natural Environment Rough Grassland	73,696	0.28
General Surface to Natural Environment Nonconiferous Trees,Scrub	72,765	0.27
General Surface to General Surface Multi Surface	70,870	0.27
Building to General Surface	62,229	0.23
Natural Environment Rough Grassland to Natural Environment Nonconiferous Trees,Scrub	29,873	0.11
General Surface to Natural Environment Nonconiferous Trees	24,724	0.09
General Surface to Building	18,321	0.07
General Surface to Path	14,937	0.06
General Surface to Road Or Track Track	14,252	0.05
Natural Environment Scrub,Rough Grassland,Boulders (Scattered) to Natural Environment Nonconiferous Trees,Scrub	13,999	0.05
Natural Environment Boulders (Scattered),Scrub,Rough Grassland to Natural Environment Rough Grassland,Scrub	13,278	0.05
Natural Environment Nonconiferous Trees to General Surface	12,754	0.05
Natural Environment Rough Grassland,Boulders (Scattered),Scrub to Natural Environment Nonconiferous Trees,Scrub	12,505	0.05
Natural Environment Rough Grassland to General Surface	10,768	0.04
Natural Environment Rough Grassland,Scrub,Nonconiferous Trees to Natural Environment Nonconiferous Trees,Scrub	9,557	0.04
General Surface to Natural Environment Coniferous Trees (Scattered),Nonconiferous Trees (Scattered),Rough Grassland	8,853	0.03
Natural Environment Scrub to Natural Environment Nonconiferous Trees,Scrub	8,849	0.03
Roadside to General Surface	7,937	0.03
General Surface to Road Or Track	7,020	0.03
Natural Environment Nonconiferous Trees,Scrub to General Surface	6,963	0.03
Natural Environment Scrub,Nonconiferous Trees to Natural Environment Scrub	6,673	0.03
Natural Environment Scrub to Natural Environment Nonconiferous Trees (Scattered),Rough Grassland	6,605	0.02
Natural Environment Scrub,Rough Grassland to Natural Environment Rough Grassland	6,418	0.02
Natural Environment Rough Grassland,Nonconiferous Trees to General Surface	6,182	0.02
Natural Environment Scrub to General Surface Multi Surface	6,171	0.02
Natural Environment Scrub,Nonconiferous Trees to General Surface	6,146	0.02
General Surface to Natural Environment Scrub,Nonconiferous Trees	5,841	0.02
Natural Environment Scrub,Nonconiferous Trees (Scattered) to Natural Environment Scrub	5,026	0.02
Natural Environment Rough Grassland to Natural Environment Nonconiferous Trees	5,004	0.02
Other	91,328	0.34

OS Land Use Change Statistics

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Open Street Map (OSM)

https://osmhistory.appspot.com/node/331793432/1

OSM History Viewer Home Help

Node 331793432

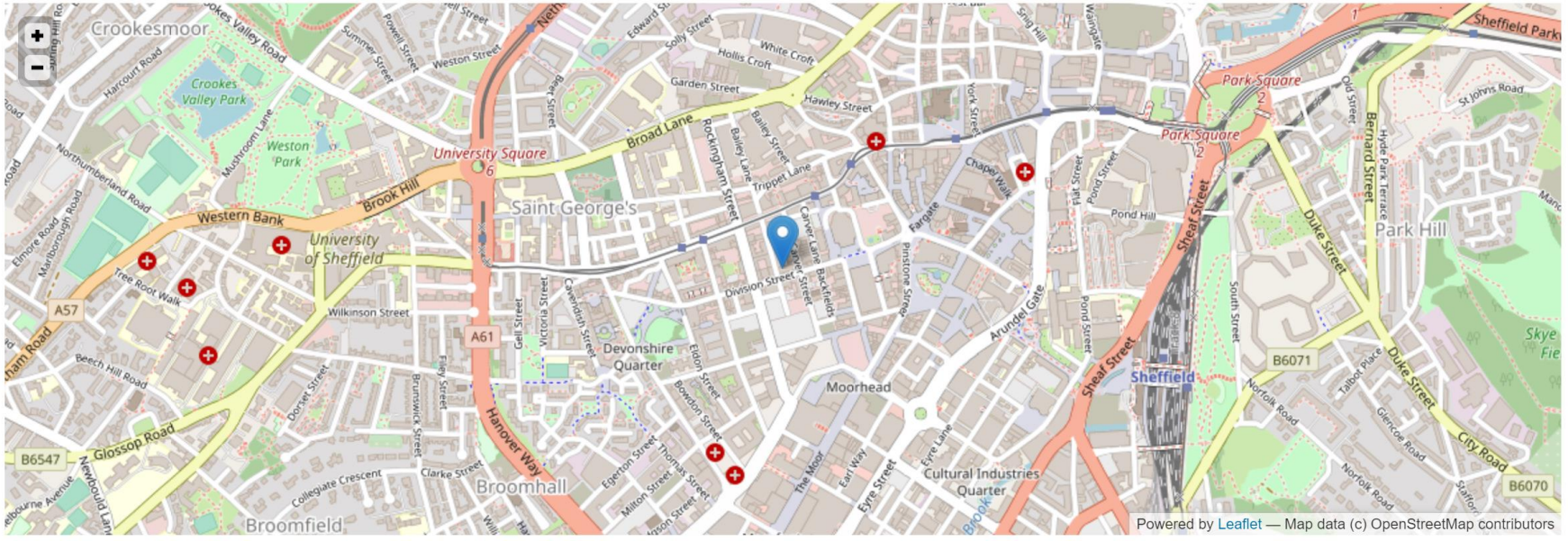
versions:

Prev 1 2 3 4 5 6 Next

`lat: 53.3800681` `lon: -1.4744119` `user: Frankie Roberto (uid=515)` `visible: True` `timestamp: 2009-01-13 12:13:25` `version: 1`

Key	Value
amenity	cafe
created_by	Potlatch 0.10f
name	Costa

Map



Open Street Map (OSM)

https://osmhistory.appspot.com/node/331793432/6

OSM History Viewer Home Help

Node 331793432

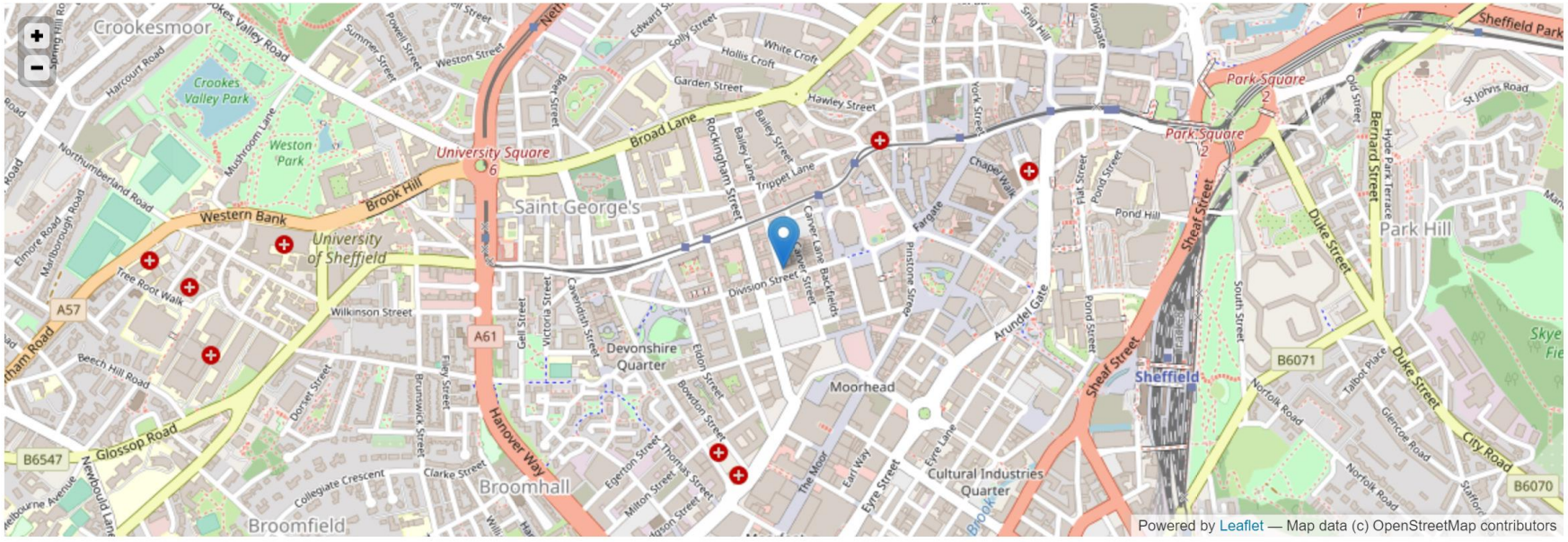
versions:

Prev 1 2 3 4 5 6 Next

lat: 53.3800477 lon: -1.4745063 user: John Stanworth (uid=6739258) visible: True timestamp: 2019-06-09 09:35:59 version: 6

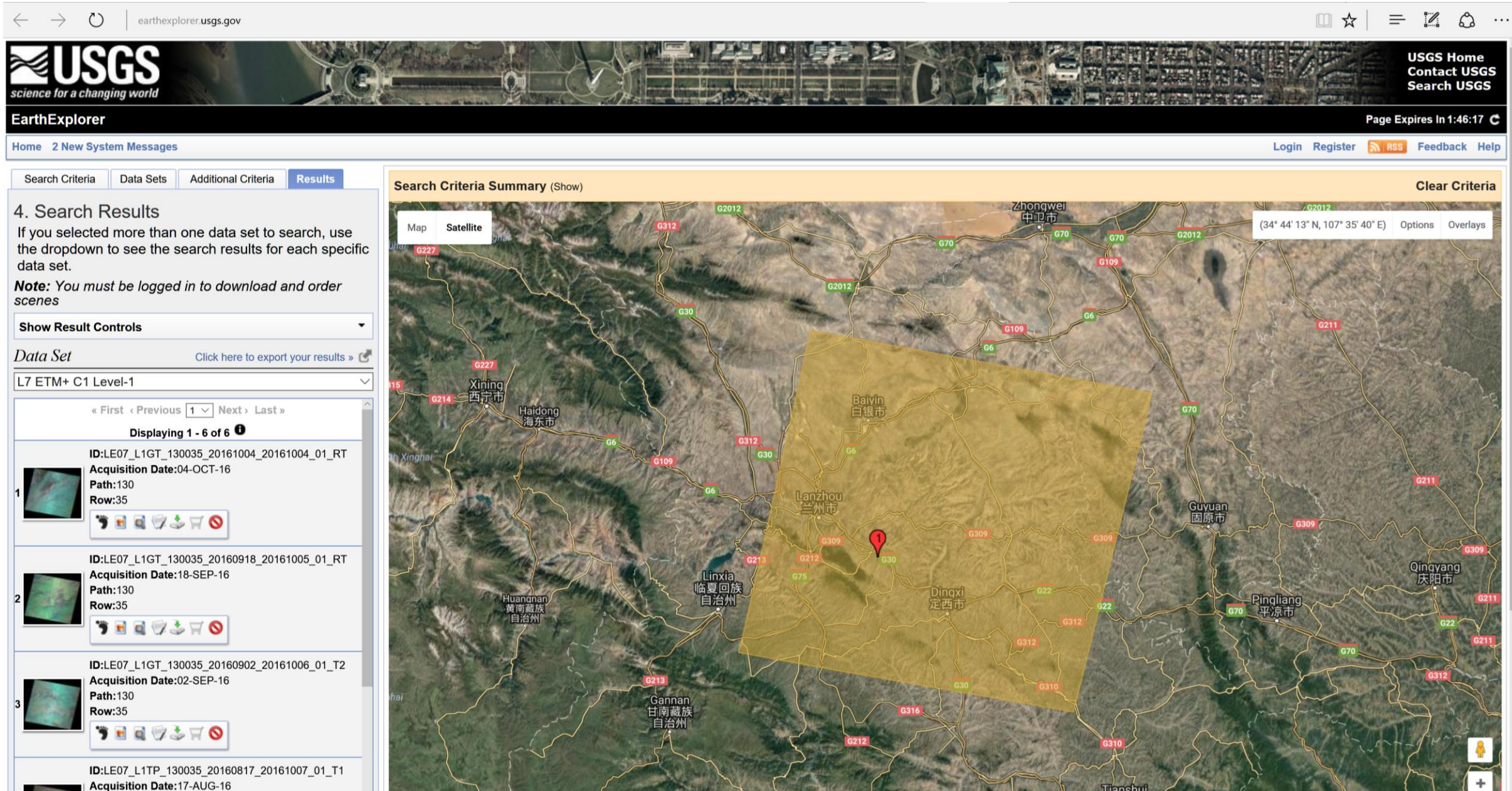
Key	Value
opening_hours	Mo-Sa 06:30-19:30, Su 08:30-18:30
shop	vacant

Map



Satellite data

http://earthexplorer.usgs.gov
https://scihub.copernicus.eu/dhus/#/home



Google Earth

Google Earth

Google Earth

Google Street View

Google Street View

Google Street View

https://sheffieldtreemap.com

Sheffield
TREE MAP

INFO

Filter

Tree Genus

Fraxinus - Ash

Tree Age Class

- All Ages -

Ward

- All Wards -

Options

Map Display

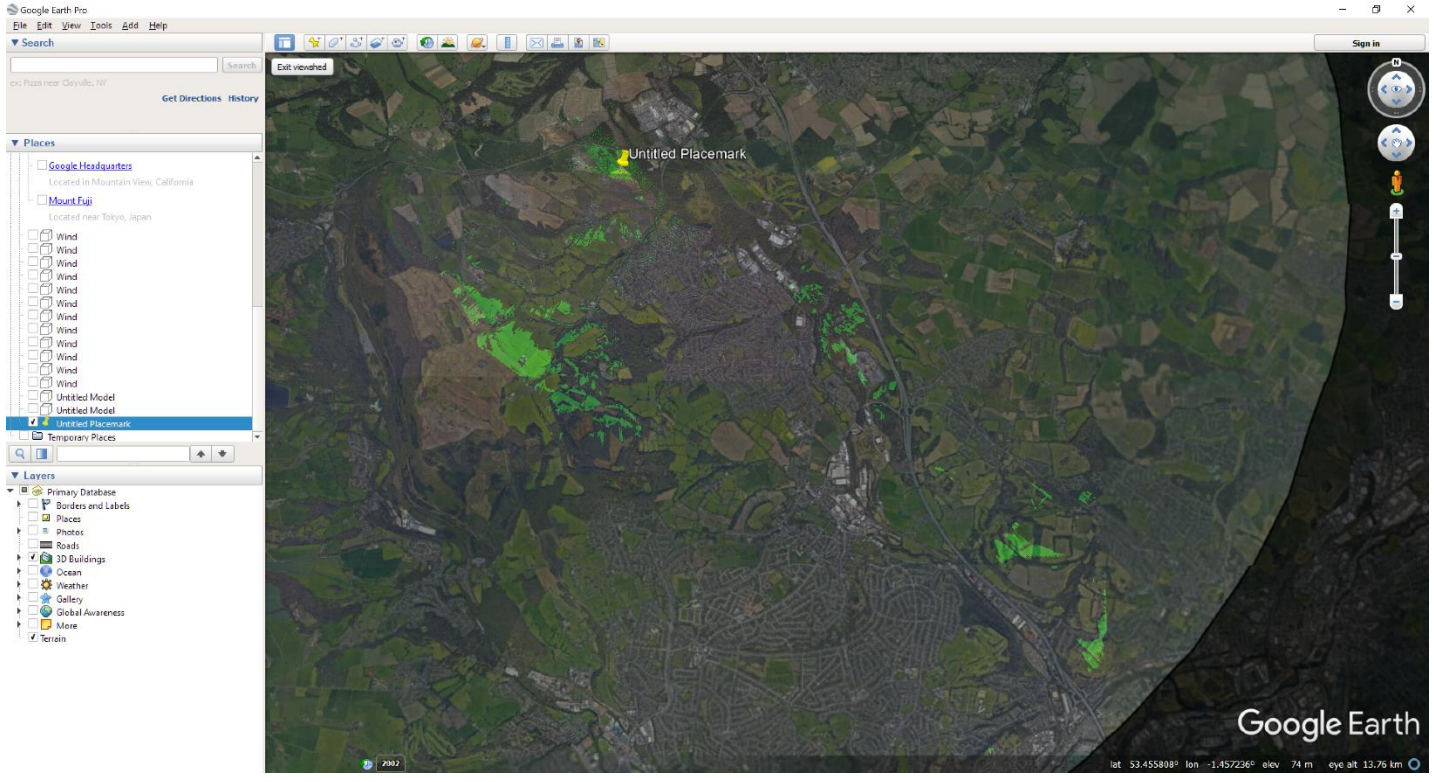
Streets Satellite Dark

Extras

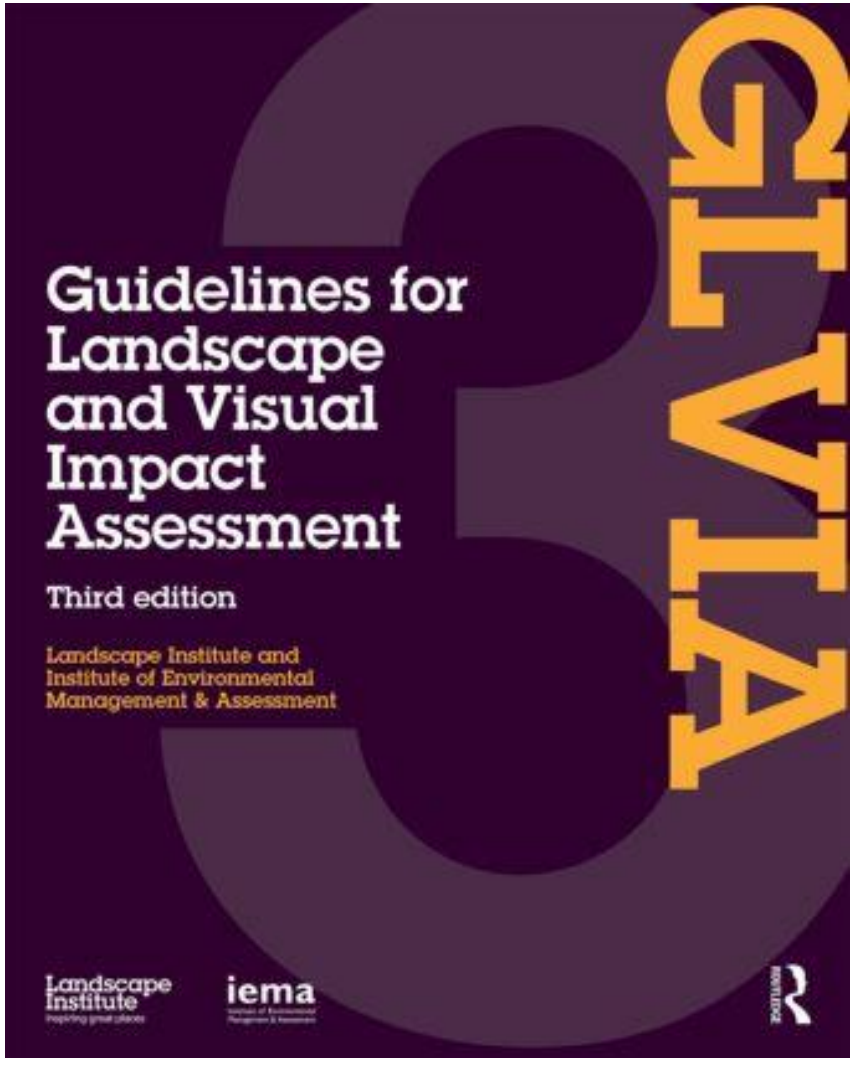
- [ ] Ward Boundaries
- [x] Ward Labels
- [ ] Buildings
- [ ] POI's

3. Visualising future landscape change

- Drawing on techniques from Landscape and Visual Impact Assessment (LVIA)



https://www.landscapeinstitute.org/technical/glvia3-panel/

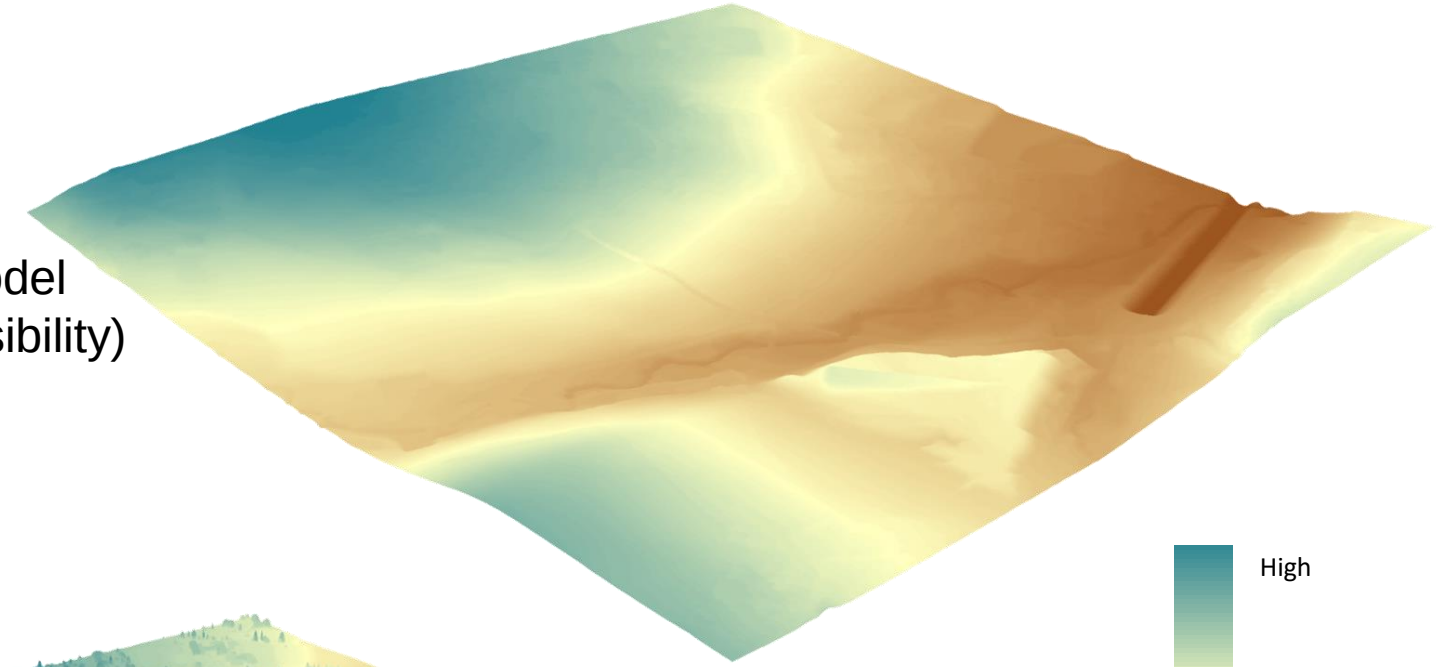


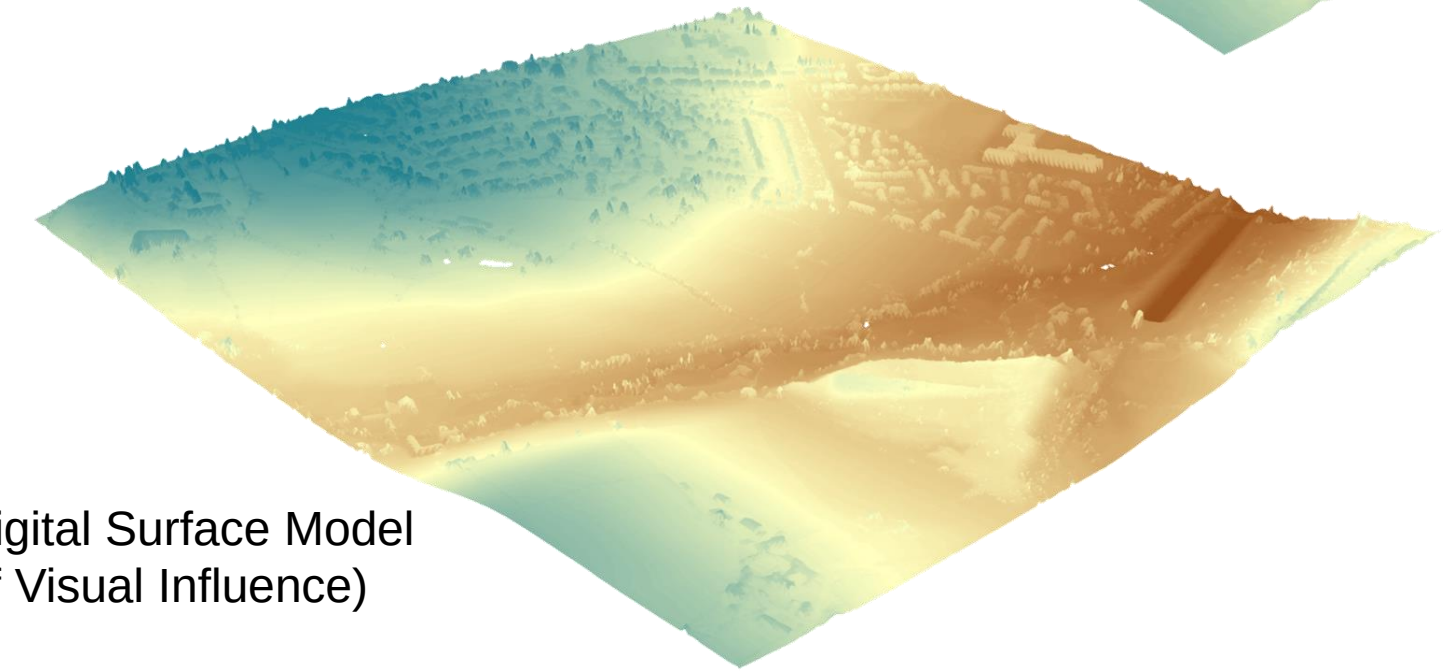
https://www.woodlandtrust.org.uk/press-centre/2019/05/ash-dieback-predicted-to-cost-15-billion/

https://www.forestresearch.gov.uk/documents/2344/Dutch_Elm_info_sheet.pdf

Environment Agency data: Lidar data

DTM – Digital Terrain Model
(Zones of Theoretical Visibility)



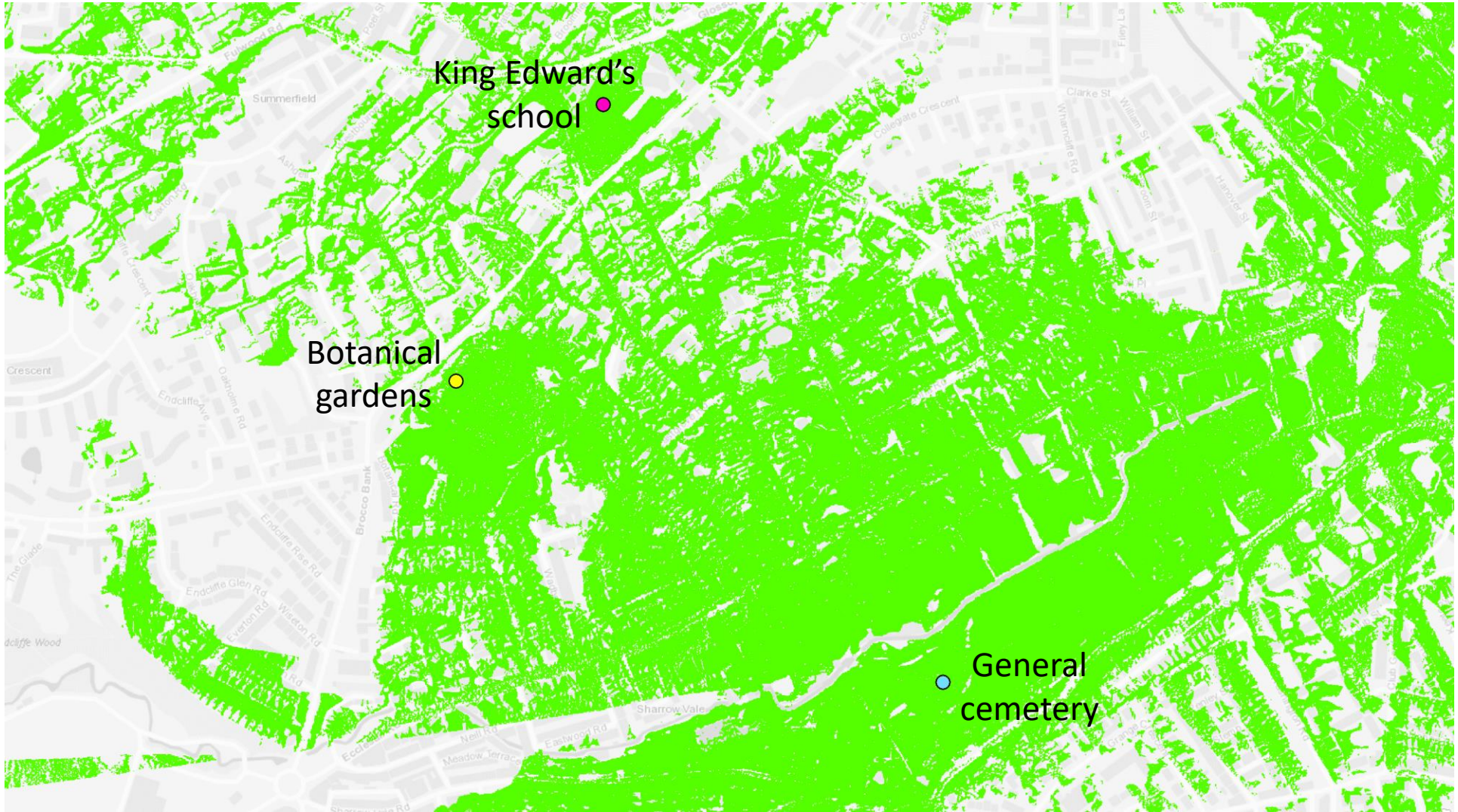


DSM – Digital Surface Model
(Zones of Visual Influence)

Zones of Theoretical Visibility

Areas visible from any of the three sites

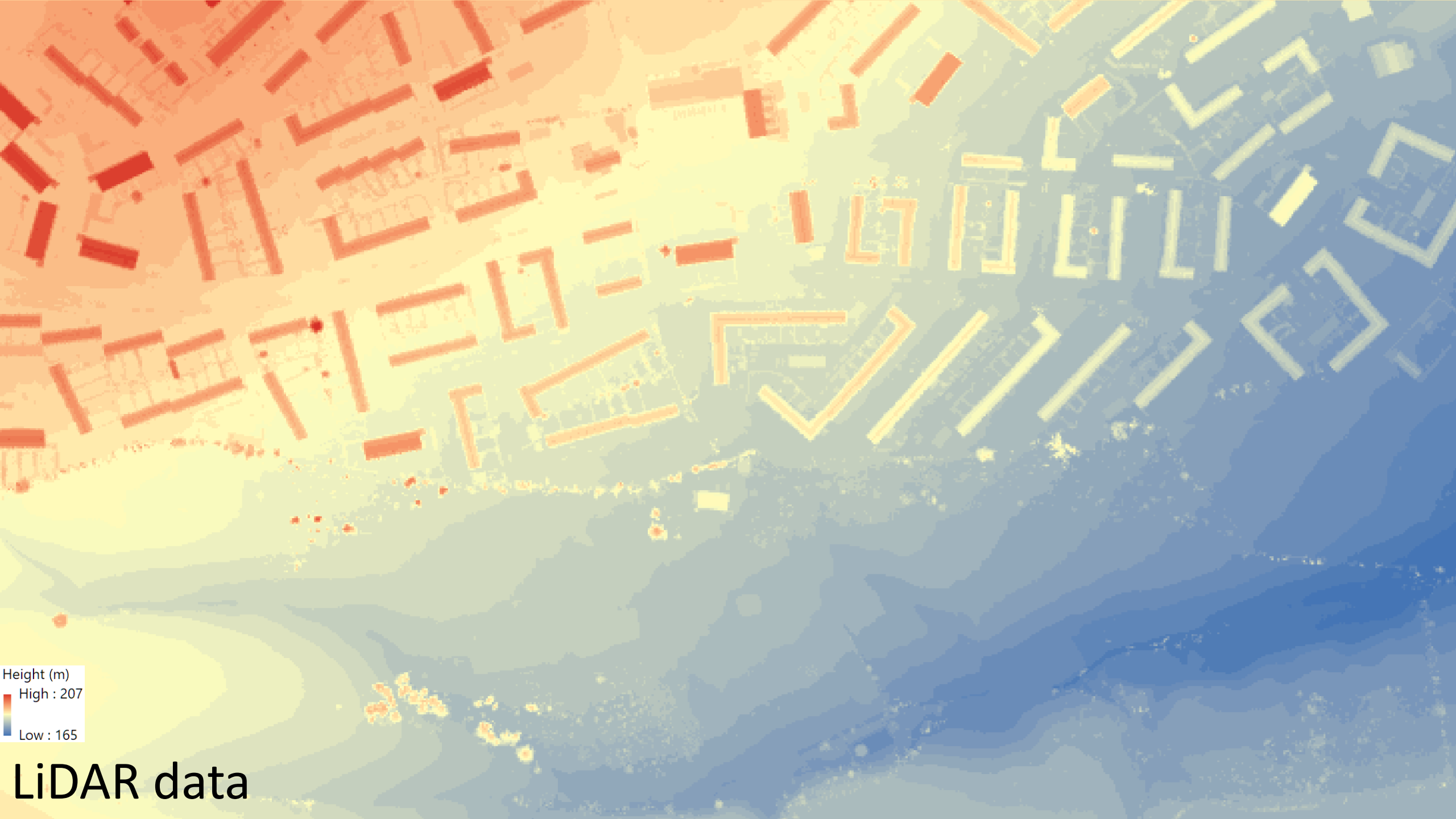
Sheffield:



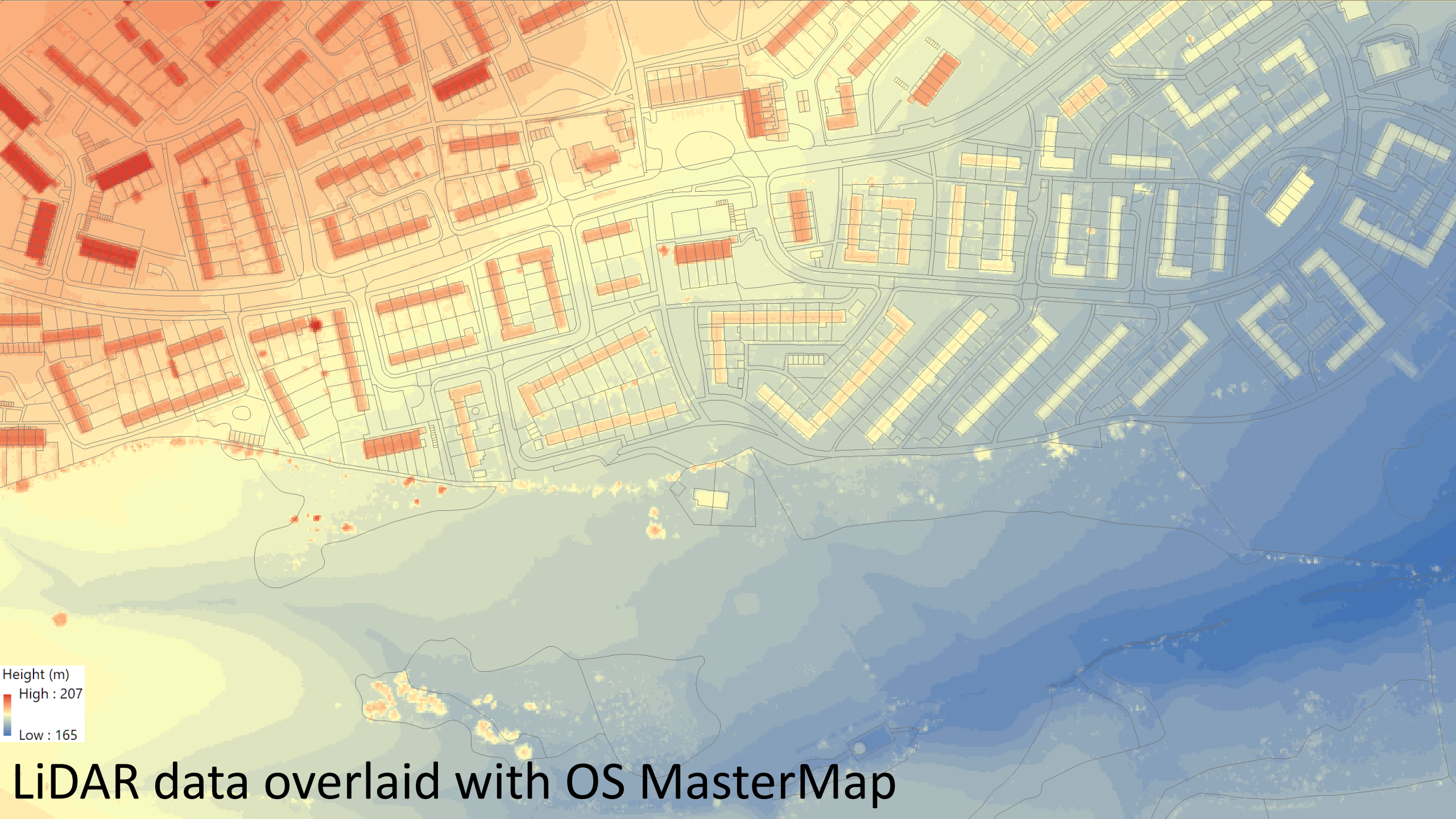
Zones of Visual Influence

Areas visible from any of the three sites

Sheffield:



LiDAR data



LiDAR data overlaid with OS MasterMap

Hybrid – buildings block the view but vegetation is ignored

Areas visible from any of the three sites

Sheffield:

Red = area not visible from yellow reference point
Green = area is visible from yellow reference point

Red = area not visible from yellow reference point
Green = area is visible from yellow reference point

Conclusion

- Mapping is more complex than it looks
- Mapping change is even harder!

- But it can provide a tool to monitor and evaluate
- with the potential for identifying areas for further investigation
- and explore the visual impacts

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