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Update analysis on the number of properties located in areas at risk from flooding and/or coastal erosion in England

Final report

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Contents

1. Updated analysis on the number of properties located in areas at risk from flooding and/or coastal erosion

In 2012 the ASC commissioned HR Wallingford (HR Wallingford, 2012) to develop indicators and carry out spatial analysis to understand changes and trends in exposure and vulnerability of property to flooding. It also examined the uptake of measures to mitigate flood risk.

This project updates and extends some of those indicators to make use of more recent property information from 2014 and updated versions of the National Flood Risk Assessment (NaFRA) and the Updated Flood Map for Surface Water (uFMfSW).

The updates focussed on indicators assessing the number of properties (residential and non-residential) in areas:

- Identified as high, moderate, low and very low likelihood of river/coastal flooding;
- Identified as having a 1 in 30, 1 in 100 and 1 in 1000 likelihood of a mid-depth (30cm – 1.2m) and deep (>1.2m) surface water flooding;
- Identified as being at risk of coastal erosion in the next 25 years, 50 years and 100 years, categorized by the different Shoreline Management Plan policy options (hold the line, no active intervention and managed realignment).

1.1. Property information

The location of properties was determined using address products from the Ordnance Survey. These were:

- AddressPoint for 2001;
- MasterMap AddressLayer for 2008, 2011 and 2014;
- AddressBase Premium for 2014.

For 2001, 2008 and 2011 'rolled back' copies of the Ordnance Survey address product were used. These are datasets where the change-only updates have been iteratively reversed in order to create an earlier snapshot of the data.

AddressBase Premium takes information from the National Land and Property Gazetteer (NLPG), local authority gazetteers, the Royal Mail Postcode Address File and Ordnance Survey Address Layer 2 addresses. This meant that a significant number of properties were identified that hadn't been counted in previous work that used AddressLayer. As a result AddressLayer from 2014 was also used in the analysis so that, as near as possible, a comparison could be made between the two datasets for the same snapshot. This enables the differences due to the change in the underpinning data product to be determined and hence considered within the interpretation of the results.

AddressBase Premium properties were included that were single addresses or 'child' addresses, in use or unoccupied, and approved.

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The properties were classified into residential and non-residential for 2001 and 2008. More information was available on the properties for 2011 and 2014 so these were classified using Multi-coloured manual (MCM, 2014) codes. Non-residential classes were retail, offices, warehouses, leisure, public buildings, industry and other.

1.2. Hazard data

The datasets used for assessing flooding were:

- NaFRA 2013;
- uFMfSW December 2013;
- NCERM (dated Feb 2012).

1.3. Method of analysis

The property datasets and the hazard datasets were clipped into 10km tiles that covered England. Breaking the datasets down into smaller tiles was undertaken in order to facilitate the spatial analysis, meaning that the data was more manageable.

The hazard datasets were overlayed with a 100m 'Reference Grid' in order that they can be matched with other datasets. Relevant attribute information was retained so that the correct classifications could be made.

The hazard datasets were then overlaid with the property datasets and the results entered into a data base so that the hectare grids could be aggregated to the local authority level.

1.4. Results

The results were extracted from the database and presented in Excel spreadsheets reporting figures by local authority and nationally.

1.5. Identifying Minor Developments

This analysis identified minor developments (new developments of nine properties or less) between 2008 and 2011 and between 2011 and 2014. Two methods were used; one used AddressBase Premium with the other used AddressLayer.

1.5.1. AddressBase Premium method

The total count of new properties was identified using attribute information in the AddressBase Premium dataset. These were then analysed to see if they were in close proximity (within a distance of 100m) to other new properties with the same 'START_DATE'.

1.5.2. AddressLayer method

This method used a TOID matching process to identify properties that had the same TOID between the years and picked out properties from the later year that didn't have a TOID in the previous year to identify the new properties. These were similarly analysed to identify other new properties within close (100m) proximity.
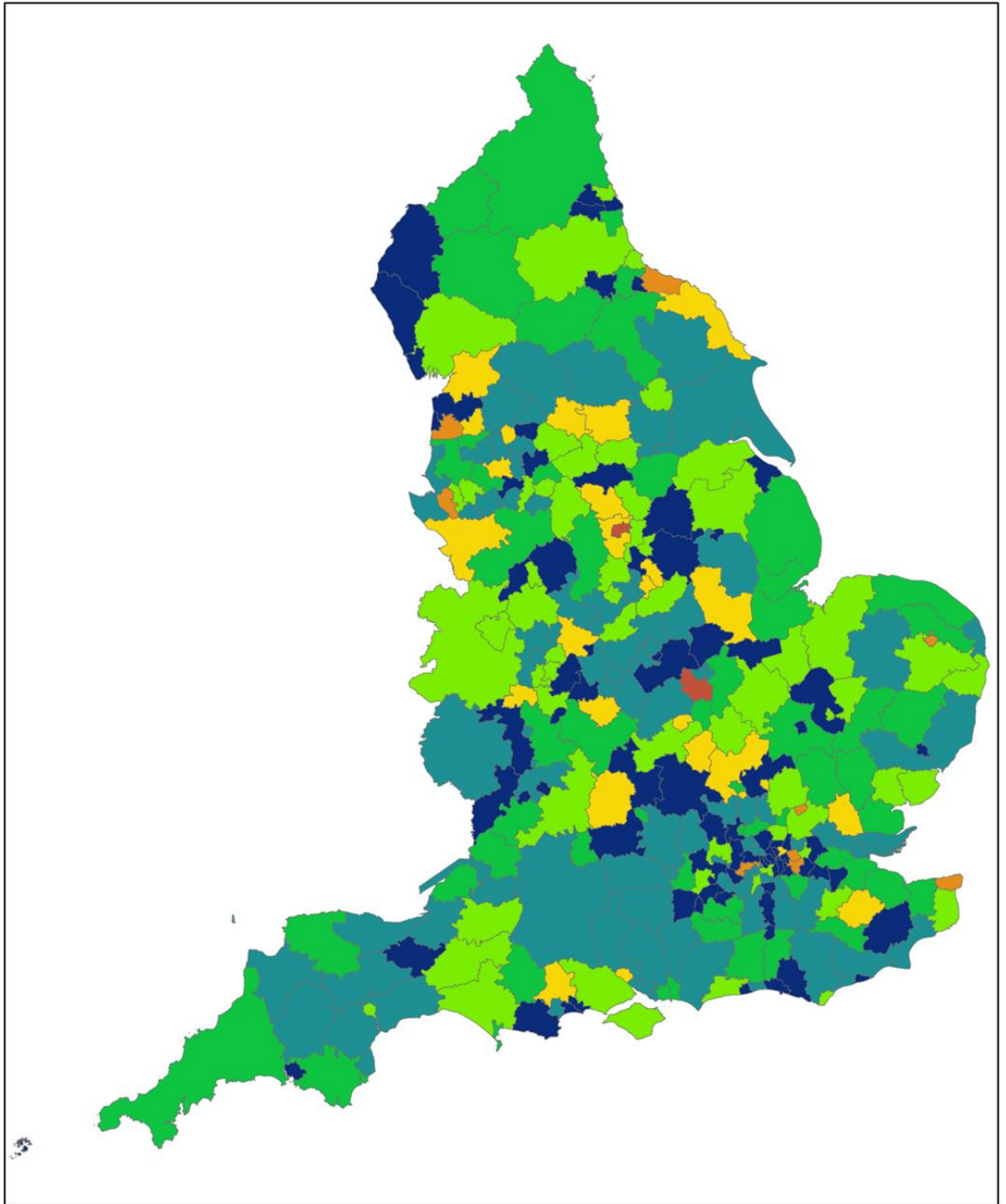
2. References

HR Wallingford Ltd (2012), Developing Indicators to Assess England's Vulnerability to Flood Risk Task 1: Development of indicators Technical Note MCS0743-01

MCM (2014) MCM-Online, Data and Techniques, Chapter 5 – Non-Residential Property Version 2, www.mcm-online.co.uk
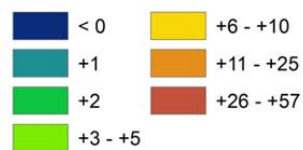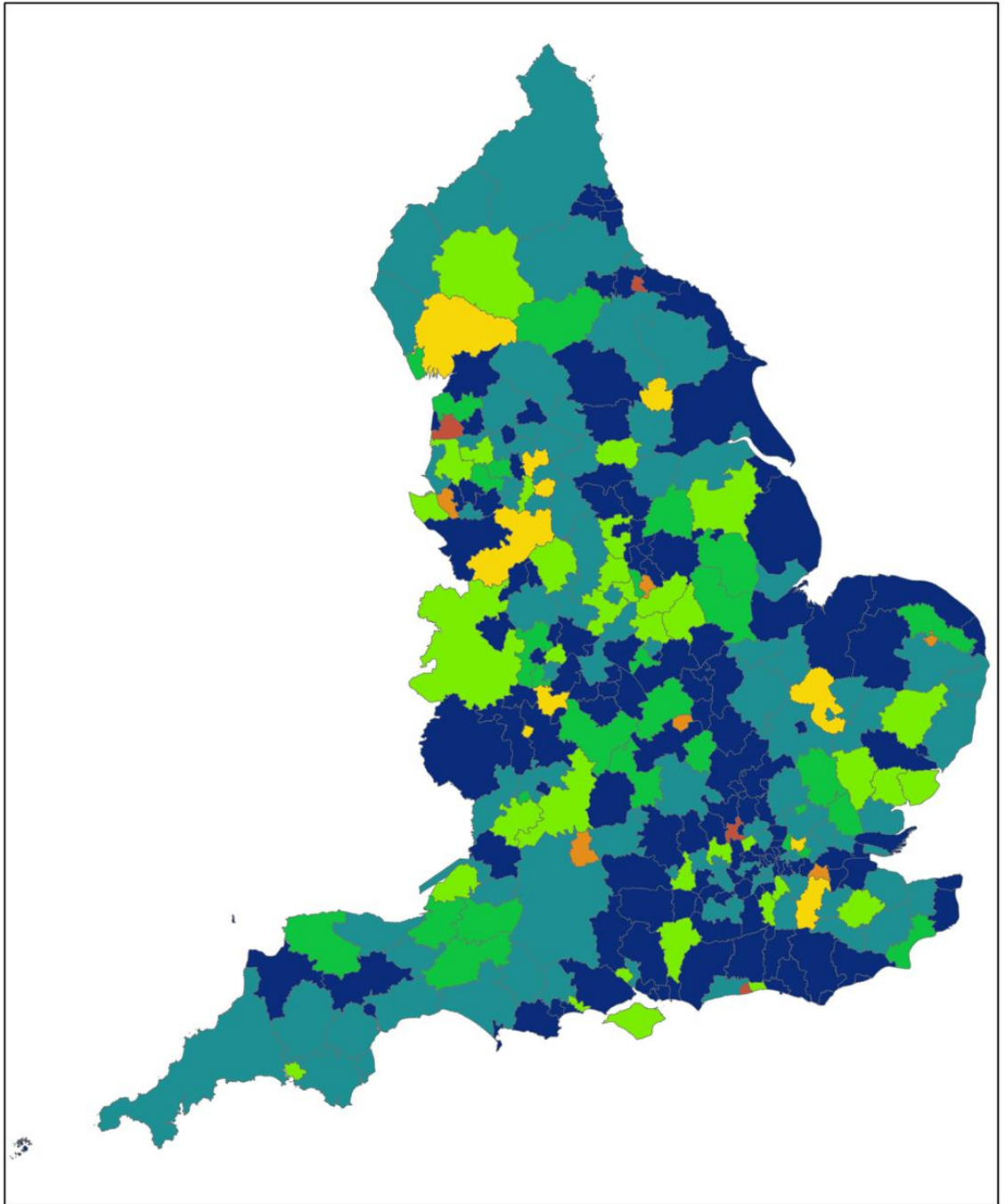
Appendices

A. Map outputs

Annual average growth rate of residential development in the floodplain (high likelihood of flooding from rivers and the sea) between November 2001 and July 2008.
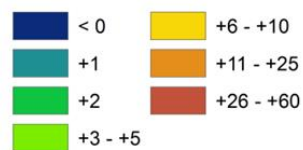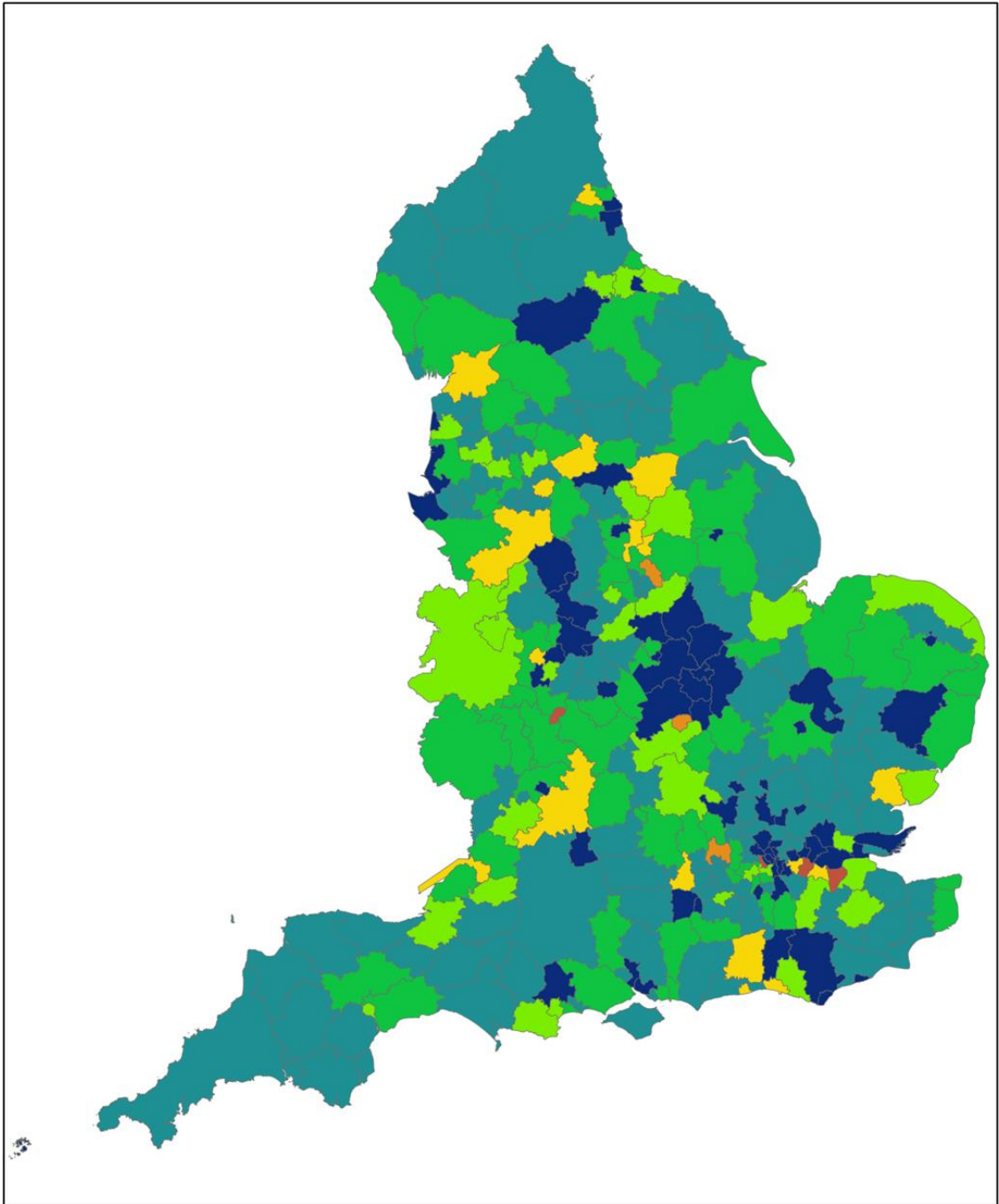
Annual average growth (%)

- < 0
- +1
- +2
- +3 - +5
- +6 - +10
- +11 - +25
- +26 - +57

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Annual average growth rate of residential development in the floodplain (high likelihood of flooding from rivers and the sea) between July 2008 and September 2011.
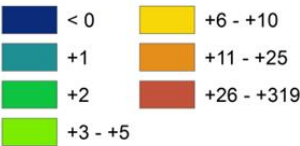
Annual average growth (%)

< 0	+6 - +10
+1	+11 - +25
+2	+26 - +60
+3 - +5	

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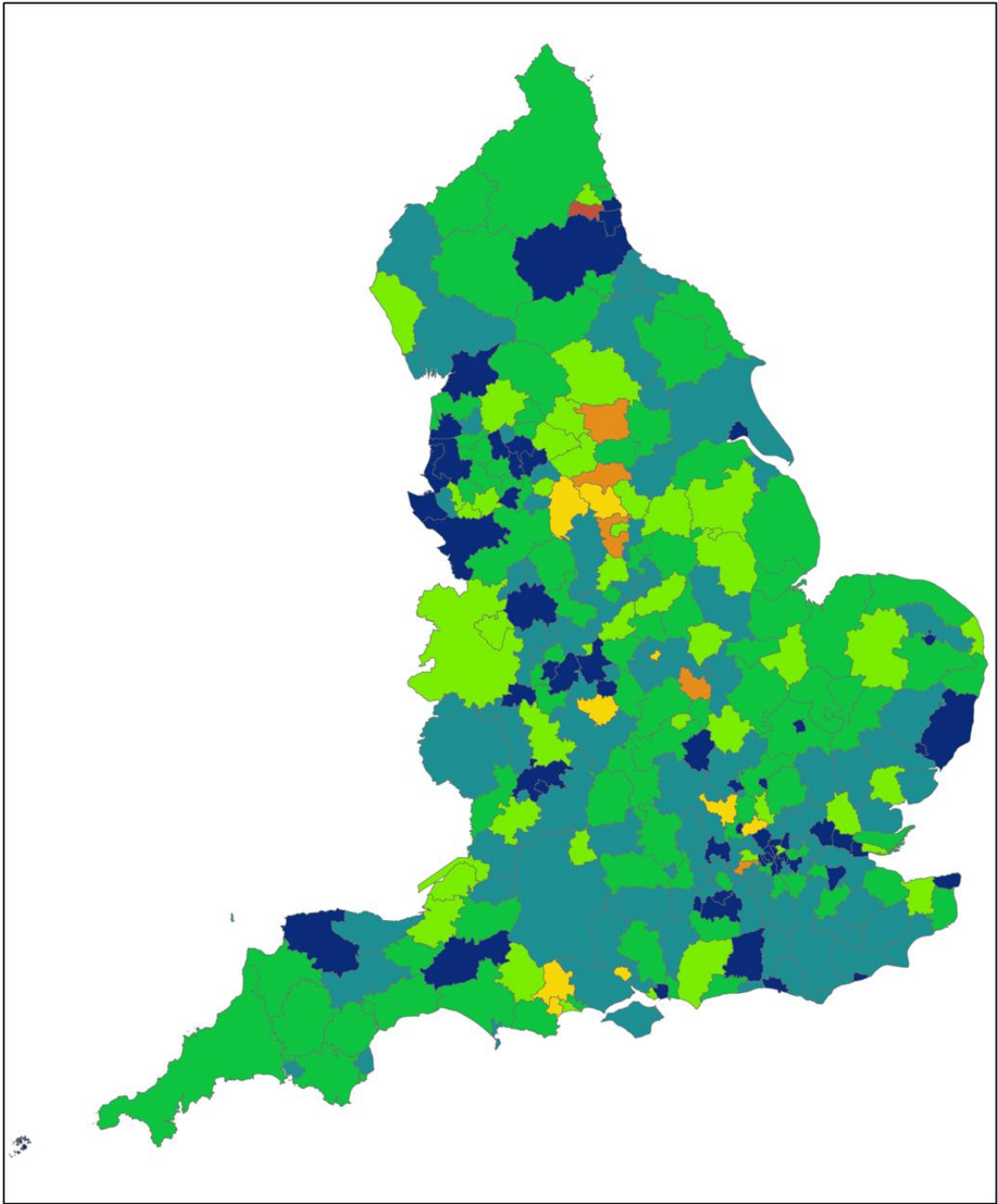Working with water
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Annual average growth rate of residential development in the floodplain (high likelihood of flooding from rivers and the sea) between September 2011 and May 2014.
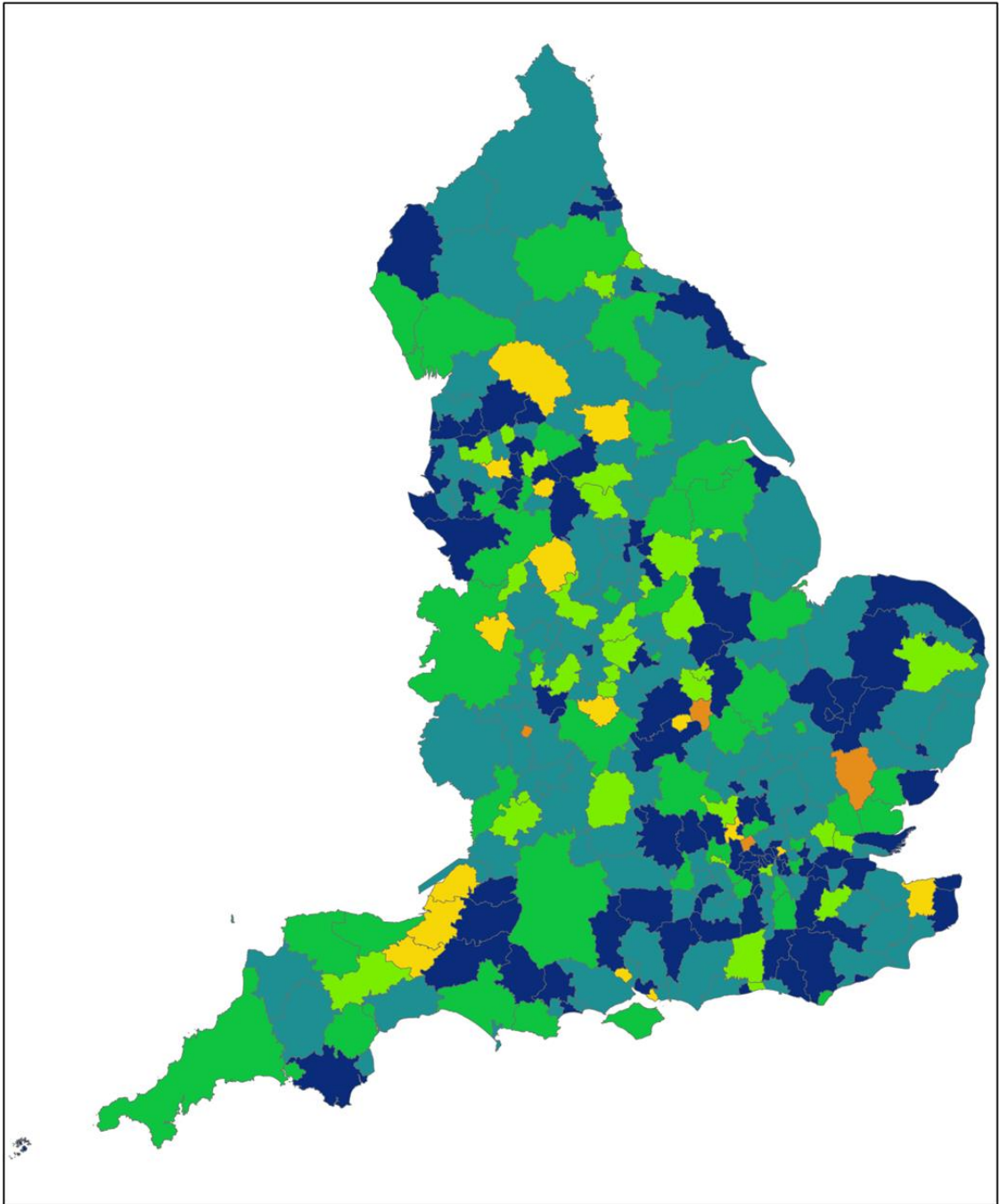
Annual average growth (%)

- < 0
- +1
- +2
- +3 - +5
- +6 - +10
- +11 - +25
- +26 - +319

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Annual average growth rate of residential development in the floodplain (medium likelihood of flooding from rivers and the sea) between November 2001 and July 2008.

Annual average growth (%)

- < 0
- +1
- +2
- +3 - +5
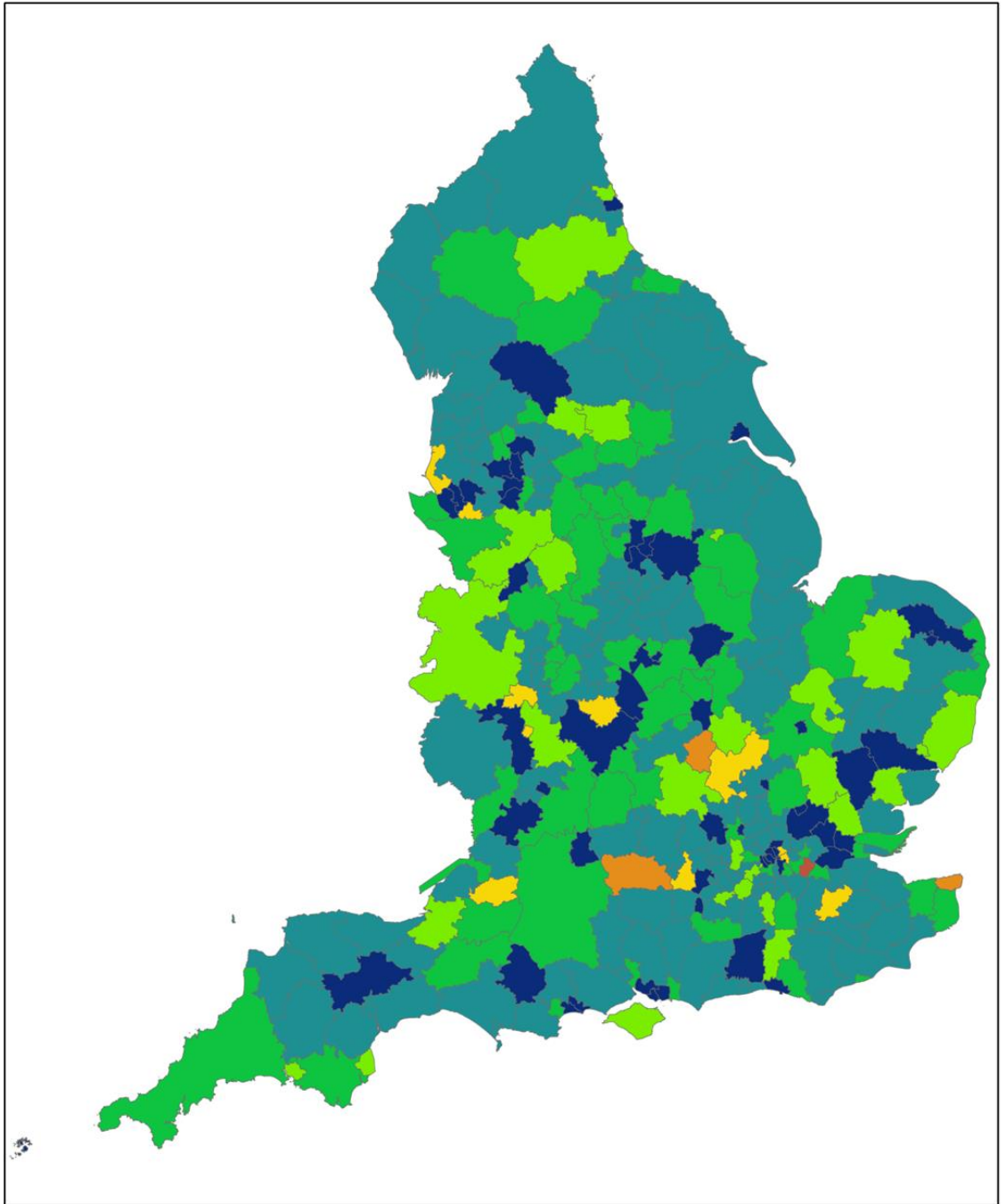- +6 - +10
- +11 - +25
- +26 - +34

Annual average growth rate of residential development in the floodplain (medium likelihood of flooding from rivers and the sea) between July 2008 and September 2011.
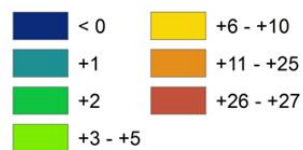
Annual average growth (%)

- < 0
- +1
- +2
- +3 - +5
- +6 - +10
- +11 - +21
- +22 - +25

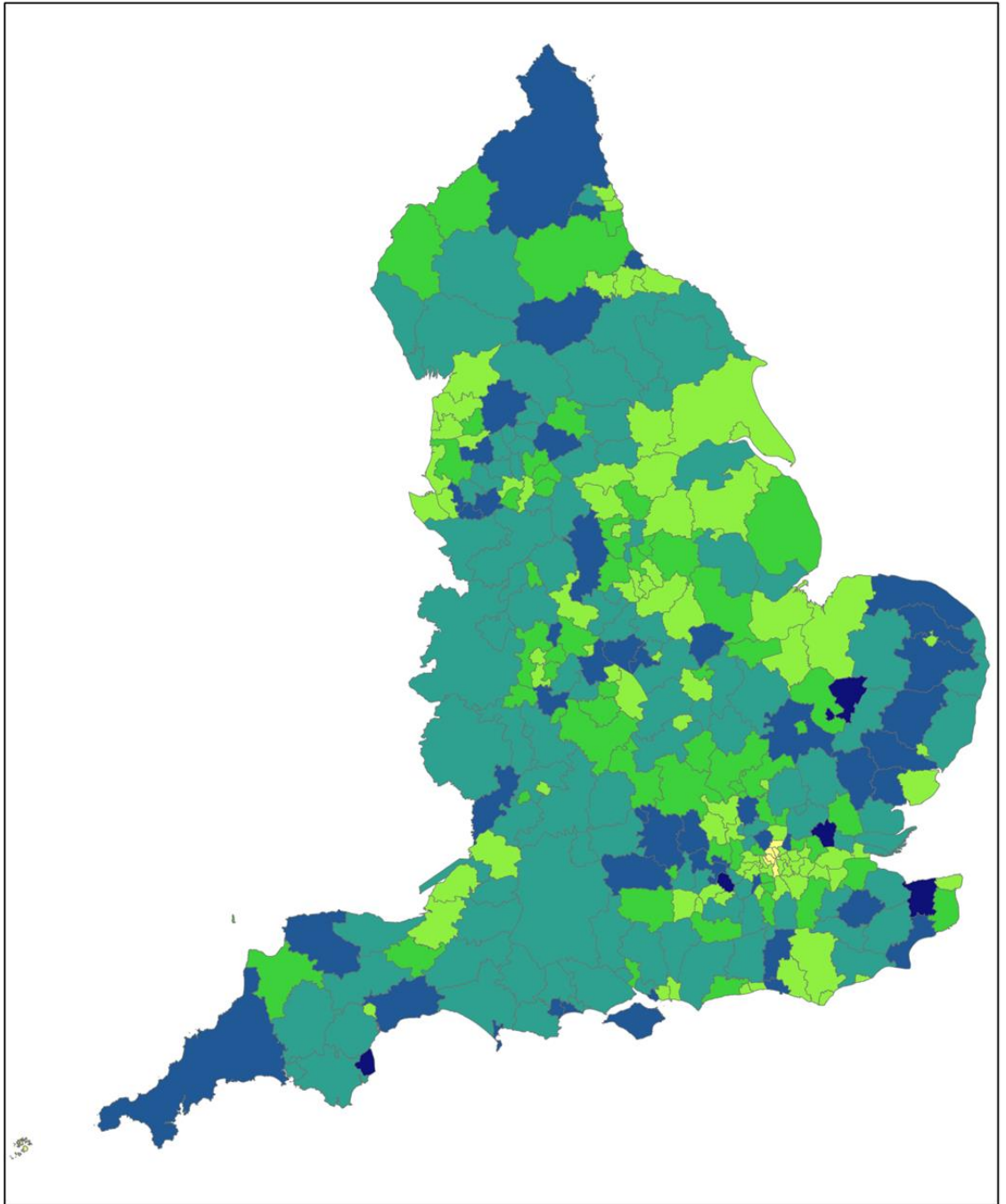HR Wallingford
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Annual average growth rate of residential development in the floodplain (medium likelihood of flooding from rivers and the sea) between September 2011 and May 2014.
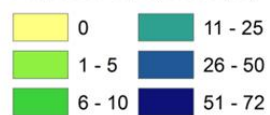
Annual average growth (%)

- ■ < 0
- ■ +1
- ■ +2
- ■ +3 - +5
- ■ +6 - +10
- ■ +11 - +25
- ■ +26 - +27

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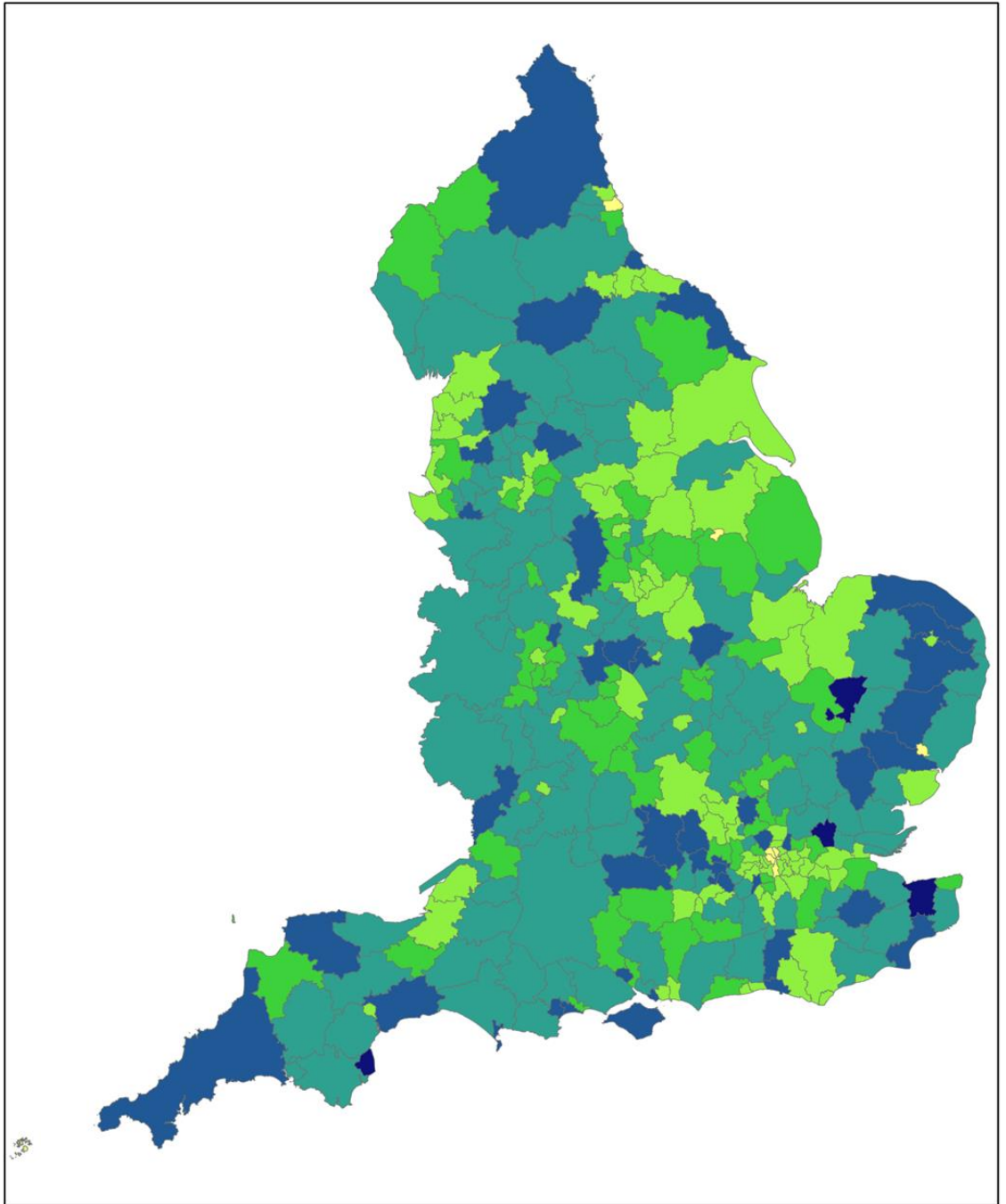Working with water
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Proportion of residential properties within the floodplain that are located in areas of high likelihood of flooding from rivers and the sea (snapshot November 2001).
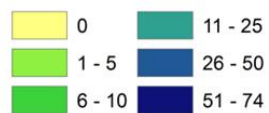
Proportion of properties (%)

0	11 - 25
1 - 5	26 - 50
6 - 10	51 - 72

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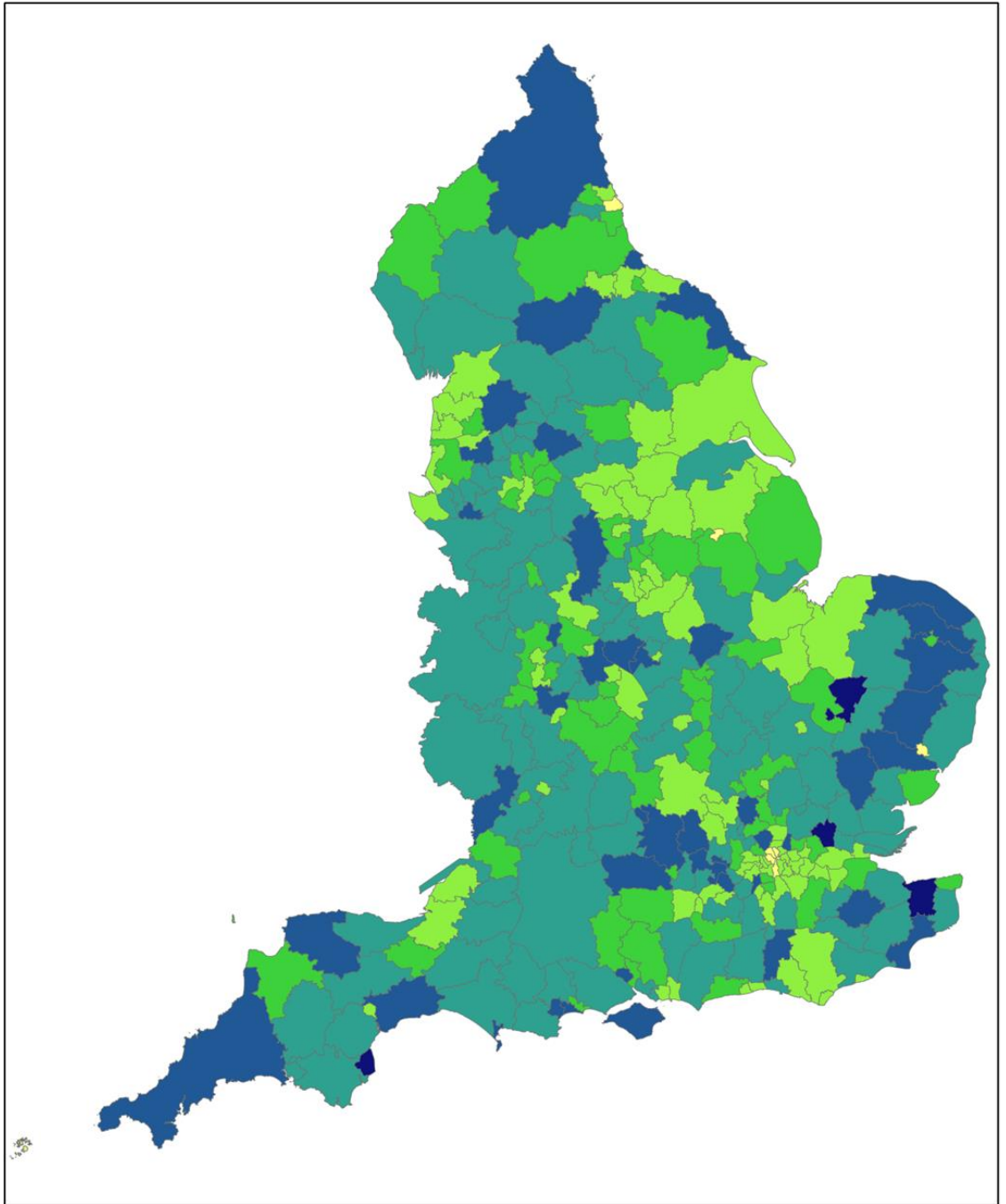*Working with water*
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Proportion of residential properties within the floodplain that are located in areas of high likelihood of flooding from rivers and the sea (snapshot July 2008).
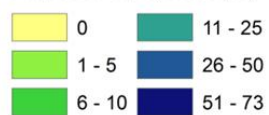
Proportion of properties (%)

0	11 - 25
1 - 5	26 - 50
6 - 10	51 - 74

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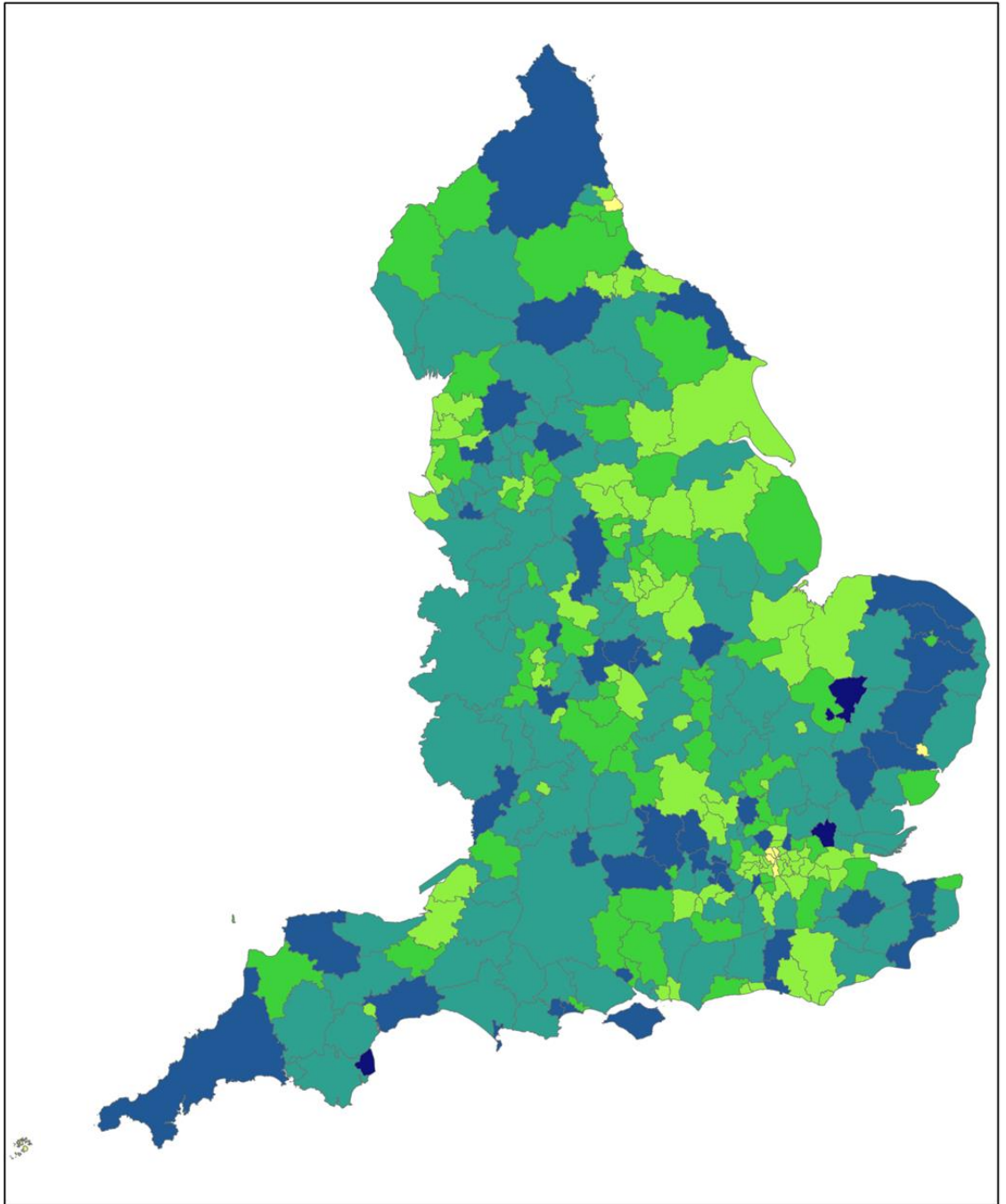*Working with water*

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Proportion of residential properties within the floodplain that are located in areas of high likelihood of flooding from rivers and the sea (snapshot September 2011).

Proportion of properties (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 73

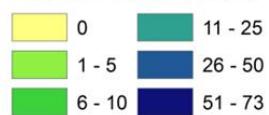HR Wallingford
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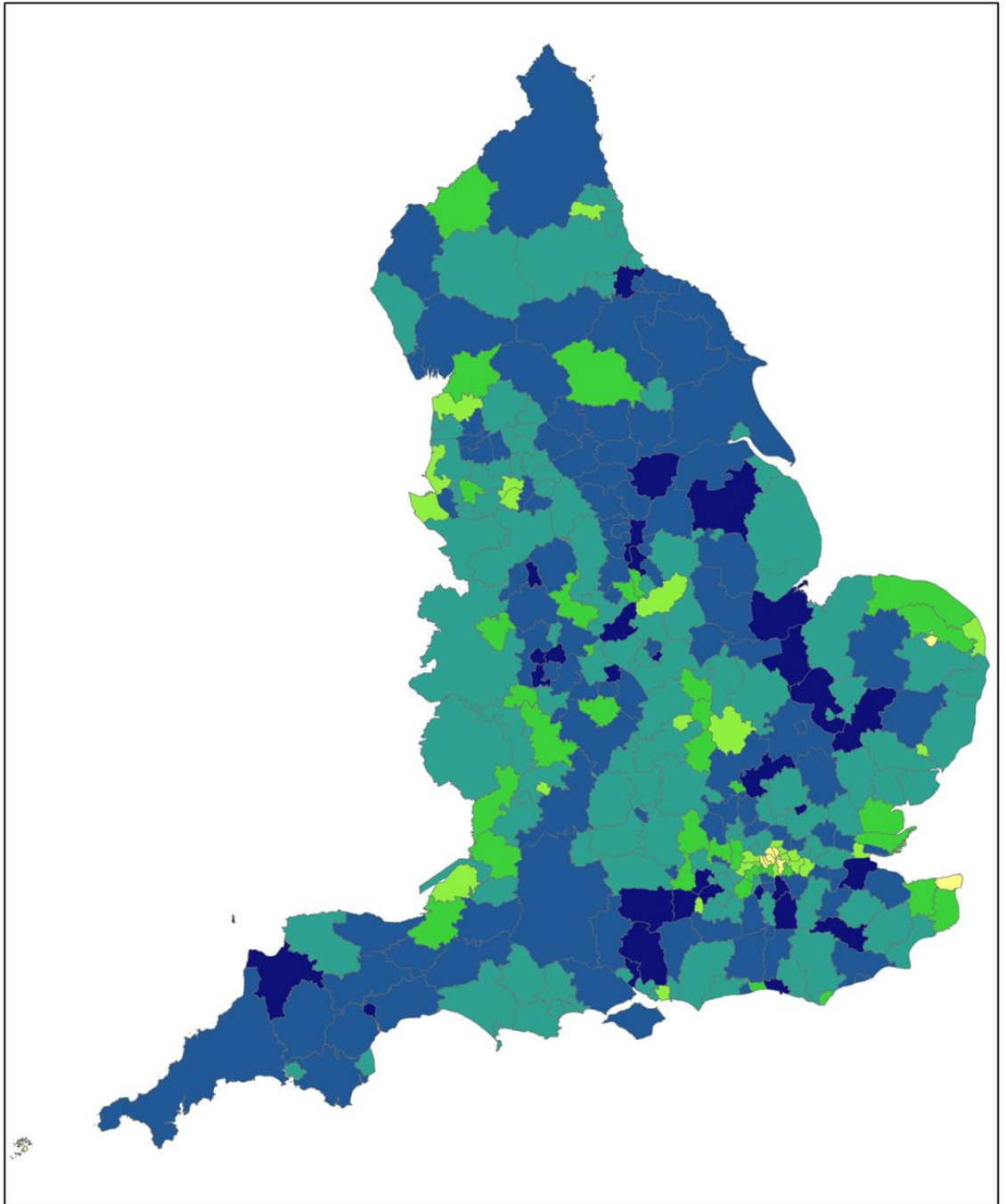
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Proportion of residential properties within the floodplain that are located in areas of high likelihood of flooding from rivers and the sea (snapshot May 2014).
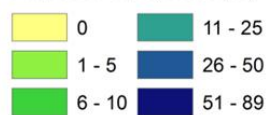
Proportion of properties (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 73

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Proportion of residential properties within the floodplain that are located in areas of medium likelihood of flooding from rivers and the sea (snapshot November 2001).

Proportion of properties (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 89

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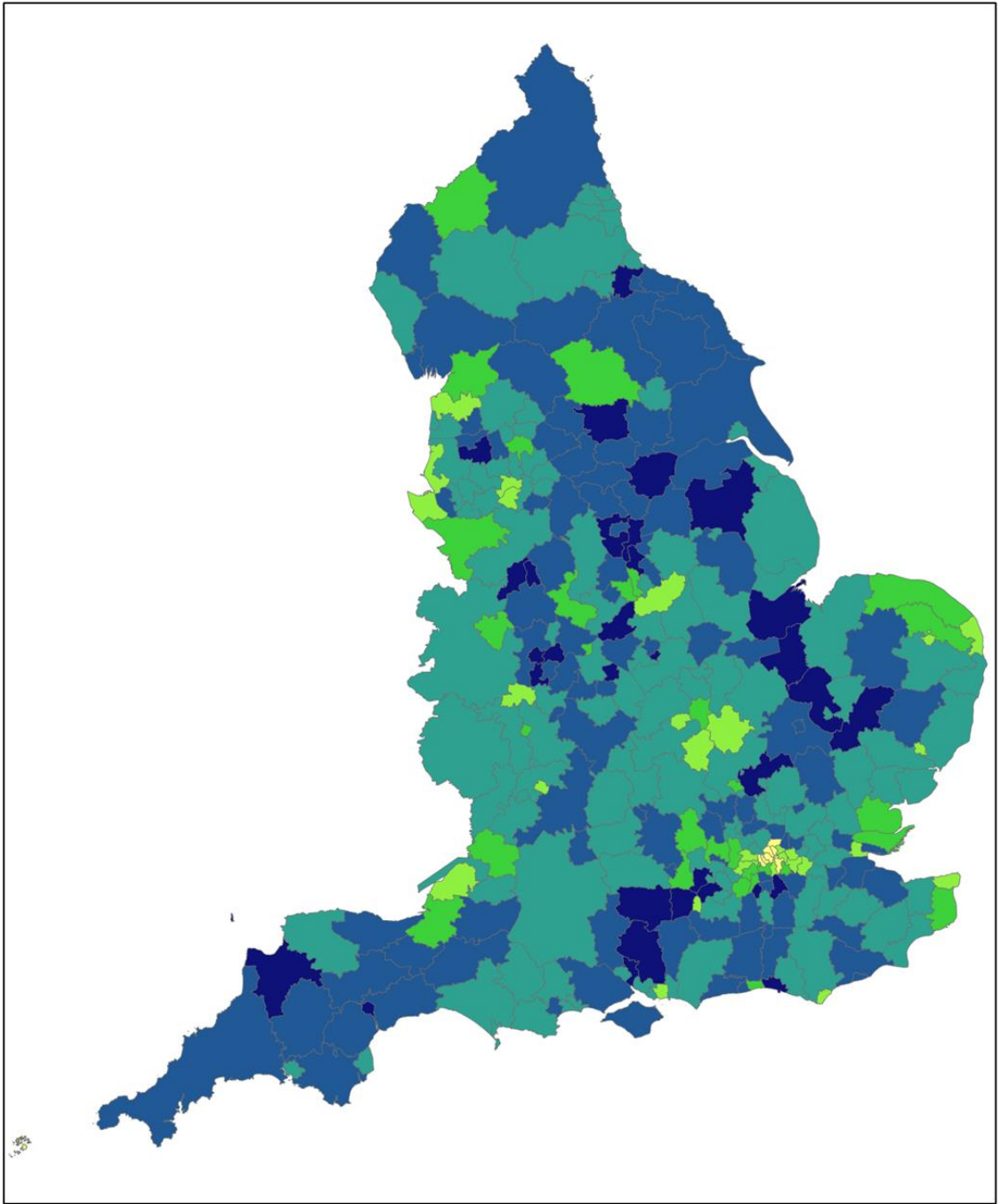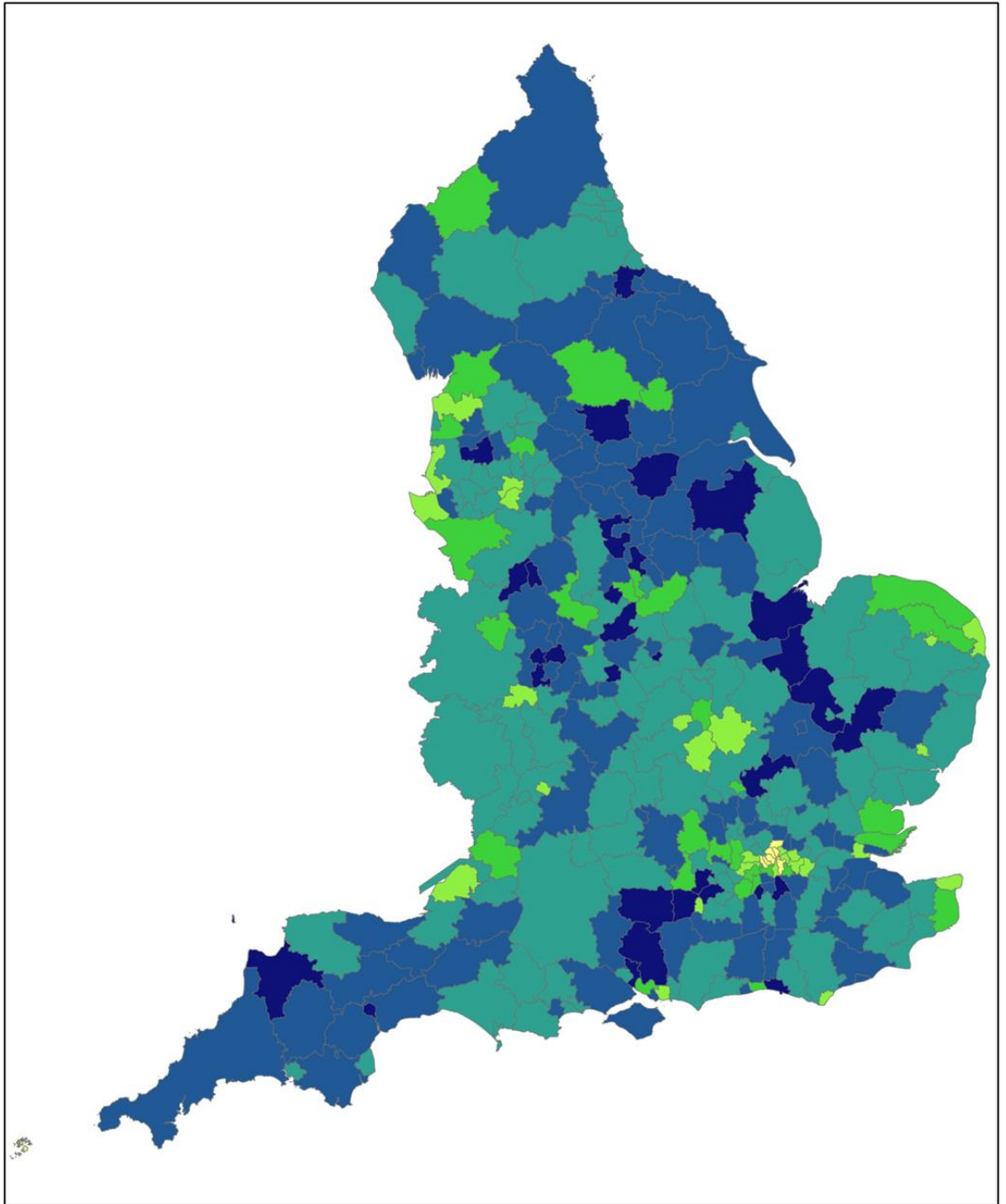
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Proportion of residential properties within the floodplain that are located in areas of medium likelihood of flooding from rivers and the sea (snapshot July 2008).

Proportion of properties (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 93

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Proportion of residential properties within the floodplain that are located in areas of medium likelihood of flooding from rivers and the sea (snapshot September 2011).

Proportion of properties (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 93

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Proportion of residential properties within the floodplain that are located in areas of medium likelihood of flooding from rivers and the sea (snapshot May 2014).
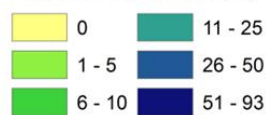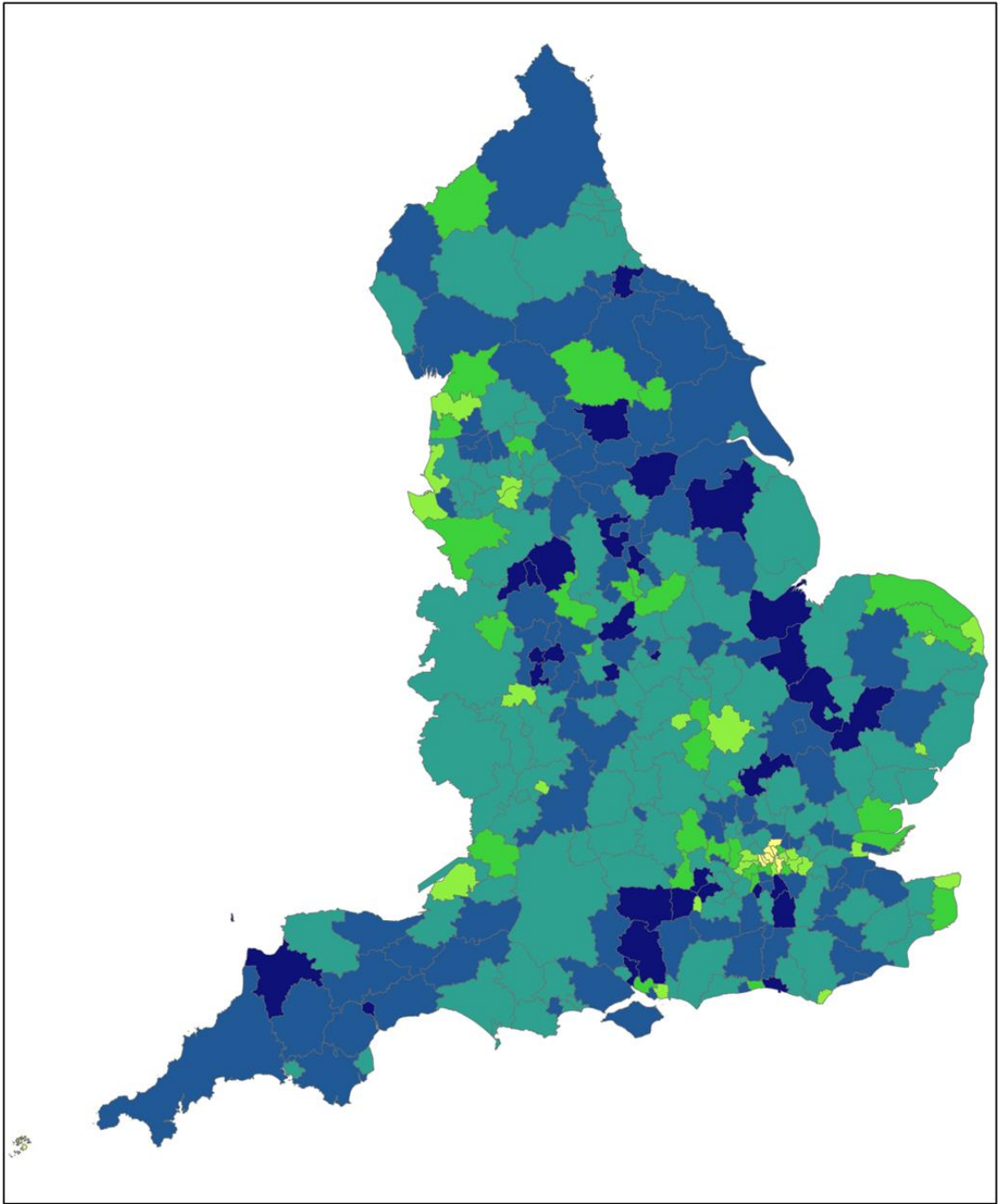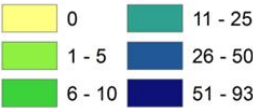
Annual average growth (%)

- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 93

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