Strategic Flood Risk Assessment Addendum

January 2022

Elmbridge Borough Council

... bridging the communities ...

Contents

1. Purpose of Addendum

1.1 This addendum is intended for the Elmbridge Borough Level 1 Strategic Flood Risk Assessment (SFRA) (February 2019). The SFRA Level 1 was produced to provide an overview of flood risk within the borough to enable effective strategic planning decisions to be made including; the direction of the spatial strategy, site allocations and development management policies in the emerging Local Plan.

1.2 Since the publication of the SFRA Level 1 (2019), the Environment Agency (EA) has published more up to date information relating to climate change allowances and updated flood mapping within the Thames Basin district for Elmbridge. Through on-going engagement with the EA, it has been queried whether the SFRA needs to be reviewed in light of these updates.

1.3 It is the purpose of this Addendum to outline the implications of the changes in data and to consider whether this affects the emerging draft Local Plan and/or if the SFRA Level 1 (2019) needs to be updated as a result. This addendum should be read alongside the SFRA Level 1 (2019).

1.4 The EA were given the opportunity to respond to a draft Addendum. Comments were received in January 2022 and have been incorporated into this Addendum.

2. Data used in the SFRA & this Addendum

Changes since SFRA Level 1 (2019)

2.1 Since the development of the SFRA Level 1 (2019) by the lead consultants Aecom, there has been changes to national policy and updated guidance on flood risk assessments and the EA's climate change allowances data.

National Planning Policy Framework (NPPF, 2021)

2.2 The NPPF requires that 'the preparation and review of all policies should be underpinned by relevant and up-date evidence. This should be adequate and proportionate, focused tightly on supporting and justifying the policies concerned, and take into account relevant market signals' (paragraph 31).

2.3 To meet the challenge of climate change, flooding and coastal change, the NPPF states in paragraph 152 that 'the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reduction in greenhouse gas emissions, minimise vulnerability and improve resilience, encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure'.

2.4 It is further stated in paragraph 153 that 'plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures (footnote 53 of the NPPF states that this is in line with the objective and provision of the Climate Change Act 2008). Policies should support appropriate measure to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure'.

2.5 In paragraph 159 it is recommended that 'inappropriate developments in areas at risk of flooding should be avoided by directing away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere'.

2.6 In addition, it is stated in paragraph 160 that 'strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards'.

Flood Mapping and implications on the SFRA and emerging Local Plan

2.7 As part of the development of the Local Plan, the council has prepared a credible and robust evidence base that will underpin and support the vision for the borough alongside the guiding principles for development and the emerging policies within the plan. National Planning Practice Guidance (PPG) makes it clear that strategic policy-making authorities should provide evidence that is proportionate and underpins policies from a variety of sources whilst consulting with the key stakeholders in identifying the issues and any relevant data that an assessment must cover (Paragraph: 038 Reference ID: 61-038-20190315).

2.8 In accordance with the NPPF and PPG, the council has reviewed the data that sits behind the SFRA Level 1 Report to understand whether the flood extent has changed since when it was prepared and whether this would have an impact on the future spatial strategy and policies of the emerging Local Plan and if the SFRA needs to be updated.

2.9 In early 2021, provision of GIS data from the EA covering The Mole (central and south of Elmbridge), The Wey and Tributaries (west Elmbridge including Weybridge) and Maidenhead and Sunbury (north Elmbridge along the River Thames) updated internal council mapping of Flood Zone 3b.

2.10 It was discovered that there was a slight increase of areas affected by Flood Zone 3b (see Table 1) in the borough. Though, it should be noted that in 2018 the flood mapping did not include the total coverage of Flood Zone 3b on the rivers. This remodelling of Flood Zone 3b now includes the borough's rivers, inflating the surface covered but accurately defining areas of flood risk. It is therefore likely, that there is a decrease in Flood Zone 3b, but it is now more accurately presented. The change in Flood Zone 3b is demonstrated below in Table 1.

Table 1 – Assessment of Flood Zone 3b from 2018 to 2021

Type of flooding	Flooding +/-
Flood Zone 3b additional	112.52 hectares
Flood Zone 3b removed	44.04 hectares
Net difference	+68.48 hectares

2.11 A comparison of Flood Zone 3b in 2018 to 2021 using the GIS shows that the additional land now 'added', is principally located within the Green Belt directly adjacent to the river network. One key area of 'additional' Flood Zone 3b particularly stands out within the borough. This is Desborough Island and land to the south of Desborough Cut. Within the emerging Local Plan, Desborough Island is being safeguarded to provide new habitat for increased biodiversity as part of the River Thames Scheme.

2.12 Furthermore, as part of the consideration of sites for allocation within the borough, the council has identified undeveloped land in Flood Zone 3b as an

'absolute constraint' to development. All sites will be reviewed following this update in the data set in addition to the publication of updated Flood Mapping.

2.13 It has been identified through internal flood monitoring (which is General Data Protection Regulation compliant) that there were several flood incidents around the borough in 2014 and 2015. Since 2014 and 2015, there has been no significant flood events in the last five years where residential properties have been flooded (internally) as a result of river levels rising and there being bank breaches. It is unclear to suggest that flooding in 2015 was because of climate change. Though, there is scope in future to monitor flood events and to mitigate urban areas located in Flood Zone 3b (annual probability of flooding 1 in 20 (5% AEP)) from future flood risk.

Climate Change Allowances[1] and the implications for the SFRA / Local Plan

2.14 On 20th July 2021, the peak river flow allowances in 'Flood risk assessments: climate change allowances' were updated to reflect the latest projections in UKCP18. Subsequent research and modelling also demonstrate how the latest rainfall projections are likely to affect peak river flows. It is expected that at the expense of Climate Change there will be a continued risk of flooding. Making allowance for Climate Change in flood risk assessments will help minimise vulnerability and provide resilience to flooding, in accordance with paragraph 153 of the NPPF (July 2021) (see paragraph 2.4 of this paper).

2.15 The range of allowances provided by UKCP18 are based on percentiles which describe the proportion of possible range of statistically generated events that fall within specified allowance levels for respective predictions. The higher central allowance is based on the 70th percentile (exceeded by 30% of statistically generated results in the range) and the upper end allowance is based on the 95% percentile (exceeded by 5% of the statistically generated results in the range). The SFRA 2019 measured the probability of future flooding impacts of both the higher and upper end allowances, testing peak river flow, peak rainfall intensity and sea level rise. The results are presented in mapping in Appendix D of the SFRA 2019 and are based on Government's guidance in February 2016 for Climate Change Allowances.

2.16 The SFRA 2019 states that it is expected that Climate Change may increase peak rainfall intensity and river flow, which would result in more frequent and severe flood events. This is perceived to represent an increased risk to low lying areas of England, and it is anticipated that the frequency and severity of flooding will change measurably within our lifetime.

2.17 However, new guidance from the Environment Agency suggests that all development except essential infrastructure should now use the 'central allowance', as there is an expectation that a 4-degree temperature increase by 2100 is approximately equivalent to 50th percentile. With support of the new

[1] Climate Change Allowances - https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

interactive mapping from the Environment Agency, the three catchment areas identified in Elmbridge have their own percentage change[2] which is different to that of the Thames Basin District. The three catchment areas are:

- The Mole (central and south of Elmbridge),
- The Wey and Tributaries (west Elmbridge including Weybridge)
- Maidenhead and Sunbury (north Elmbridge along the River Thames).

2.18 The Climate Change allowances measured in the SFRA 2019 have tested the 'Upper End' scenario which is above and beyond the current expectation (known as the Central allowance) by 45% for all development except for essential infrastructure. The likelihood of extensive flooding on the Functional Floodplain is reduced and as a result of the positioning of 'more vulnerable' development in the urban area. Mapping in Appendix 2 outlines areas at risk of increased flooding at the expense of Climate Change.

[2] The precise percentage changes per catchment area are found in the interactive map provided by the Government - https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=363522b846b842a4a905829a8d8b3d0c

3. Conclusion

3.1 From a review and consideration of the EA's updated flood mapping and climate change allowances, the implications for Elmbridge Borough and the council's local plan preparation are not considered to be significant and warrant the need to undertake a full review of the SFRA Level 1 (2019). In accordance with updated national policy and guidance, the council considers this Addendum to provide a proportionate and pragmatic approach to the consideration of the updated mapping and data.

3.2 As set out in Section 2 of this Addendum, the implications of the updated data are most likely to affect land that is located within the Green Belt. As with the SFRA Level 1 (2019), this information will be used to continue to help inform the council's site selection process which already excludes the consideration of land affected by undeveloped land within Flood Zone 3b.

3.3 In addition to this, the council intends to undertake further work to ensure that its approach to climate change adaption, mitigation and resilience is credible and robust. Further details of this work are set out below.

Article 4 Directions

3.4 Where Flood Zone 3b is expected to increase in the future it is likely to only be of high impact in the 'developed areas'. These 'developed areas' are considered in the SFRA 2019 to be areas that can exclude floodwater. Therefore, they are not defined to be within the 'Functional Floodplain' and are not associated with Flood Zone 3b. These areas include:

- Wey Road and Round Oak Road, Weybridge
- The Crescent and Felix Lane, Walton-on-Thames
- Wheatley's Eyot, Walton-on-Thames
- Beastley's Eyot, Walton-on-Thames
- Shaw Drive, Walton-on-Thames
- Molesey Road, Walton-on-Thames
- Immediately upstream of Sunbury Weir, Walton-on-Thames[3]
- Monks Avenue, East and West Molesey
- Thames Ditton Island, Thames Ditton
- Station Road and Winston Drive, Stoke D'Abernon

3.5 There are additional areas not considered in the SFRA 2019 which the council recommend including in Article 4 Directions. These areas are:

- The Rythe in Thames Ditton
- The Rythe in Hinchley Wood
    a. Heathside and Medina Avenue, south of the Kingston by-pass

[3] Developed area located in neighbouring Spelthorne District Council.

b. Properties fronting Couchmore Avenue

- The Rythe in Oxshott

3.6 These additional locations may not be considered as 'developed areas' but are important flow paths and flood storage areas which are susceptible to flood risk. Therefore, care must be given to the sustainability from future development. Where redevelopment is proposed in the above areas, schemes should not increase the vulnerability classification of the site. All schemes must result in a net reduction in flood risk and ensure that floodplain storage and flow routes are not affected.

3.7 To protect our developed areas already located in the existing Functional Floodplain it is proposed that Article 4 Directions will be designated to remove permitted development rights from private landowners. The removal of permitted development rights will ensure that planning and site-specific FRAs will be required for any development in these areas reducing any future impact of flood risk.

Update to the Flood Risk SPD upon the adoption of the new Local Plan

3.8 The council will update the Flood Risk Supplementary Planning Document (SPD) (May 2016) in accordance with updated NPPF, the PPG, advice set out by the EA and evidence produced in this Addendum.

3.9 The purpose of the SPD is to increase the awareness of the nature of flood risk in Elmbridge, give advice to developers and others about the Authority's approach to the issue of development and flood risk, and stress the need to maintain a high standard of design in areas of significant flood risk.

3.10 The SPD will be updated to take account of changes to flood mapping and new Article 4 Directions removing permitted development rights from landowners to develop certain features to a property that would otherwise increase flood risk. The NPPF states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing and causing flood risk and damage to wider properties and infrastructure elsewhere.

3.11 As a result, updating the SPD will outline the importance for continued strategic flood risk assessments, sequential testing, and the exception test in accordance with updated policy guidance from the NPPF where local plan preparation and / or proposed development where flood risk mitigation requires justification.

4. Appendix 1 – Climate Change Allowances July 2021

In accordance with new Climate Change Allowances, there are three catchment areas which divide the Thames River Basin for Elmbridge. The updated CC allowances for these catchments' areas and the percentage change are as follows:

Thames Basis District

Timeframe	2020s	2050s	2080s
H++	25%	40%	80%
Upper End	25%	35%	70%
Higher Central	15%	25%	35%
Central	10%	15%	25%

Mole Catchment (central and south of Elmbridge)

Timeframe	2020s	2050s	2080s
Upper End	27% (+2%)	26% (-9%)	40% (-30%)
Higher Central	16% (+1%)	12% (-13%)	20% (-15%)
Central*	11% (+1%)	6% (-9%)	12% (-13%)

Wey and Tributaries Catchment (west Elmbridge including Weybridge)

Timeframe	2020s	2050s	2080s
Upper End	28% (+3%)	36% (+1%)	71% (+9%)
Higher Central	15%	17% (-8%)	36% (+1%)
Central*	10%	9% (-6%)	24% (-1%)

Maidenhead and Sunbury Catchment (north Elmbridge along the River Thames)

Timeframe	2020s	2050s	2080s
Upper End	32% (+7%)	45% (+10%)	81% (+11%)
Higher Central	19% (+4%)	25%	47% (+12%)
Central*	14% (+4%)	17% (+2%)	35% (+10%)

*Environment Agency have stated that all development except essential infrastructure will now use the central allowance. Apart from the Maidenhead and Sunbury catchment area there is no significant change. However, in the Maidenhead and Sunbury catchment areas the SFRA 2019 has tested 70% (the former Upper End scenario percentage) and when considered against the highest rate of the 'Central' category (25%) the SFRA 2019 tested 45% beyond of what is now required.

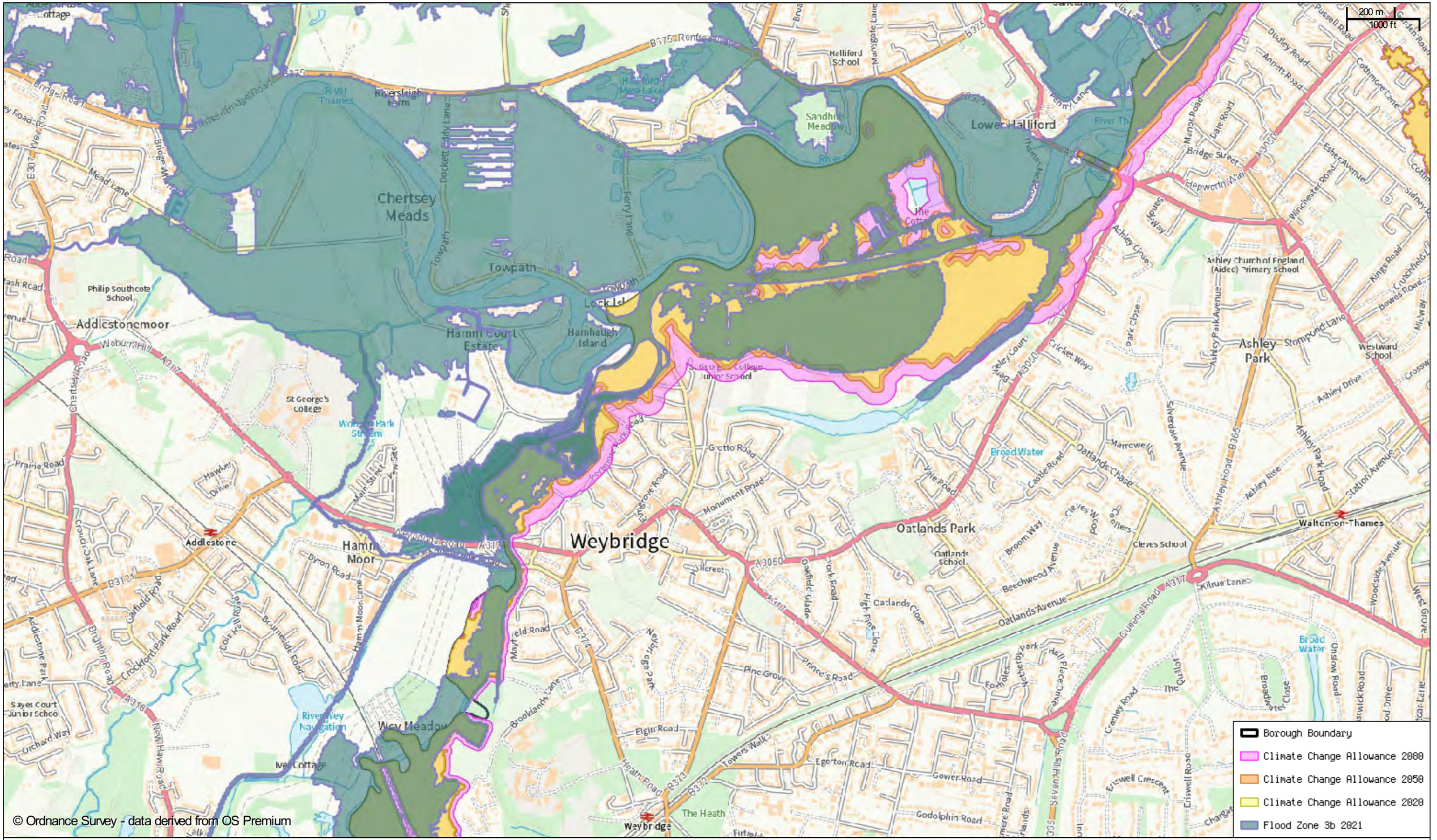
5. Appendix 2 – Climate Change Allowances mapping

It should be noted that updated mapping of Climate Change Allowances (CCA) was based on buffer adjustments not considering topography and permeability of the previous modelling undertaken by Aecom. In table 2.2 of the SFRA Level 1 (2019), Aecom used hydraulic modelling for the main rivers in Elmbridge which were provided by the Environment Agency. Previous mapping in 2018 forecasted flooding on a worst-case scenario and considered topography and permeability. However, new CCA guidance suggests that there are fewer areas prone to flooding over the next century and the approach taken is considered to be appropriate.

Flood mapping	**Source**	**Notes**
Elmbridge Borough Boundary	EBC	N/A
Flood Zone 3b	EA	Flood Zone 3b was updated in 2021 to include new modelling at The Mole (central and south of Elmbridge), The Wey and Tributaries (west Elmbridge including Weybridge) and Maidenhead and Sunbury (north Elmbridge along the River Thames).
River Thames Model	EA	Mapping in Appendix 2 takes account of former modelling used in the SFRA Level 1 by Aecom. The council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Maidenhead & Sunbury catchment.
Dead River Model	JBA Consulting	Mapping in Appendix 2 takes account of former modelling used in the SFRA Level 1 by Aecom. The council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Mole Catchment.
River Rythe Model	Jackson Hyder	Mapping in Appendix 2 takes account of former modelling used in the SFRA Level 1 by Aecom. The council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Mole Catchment.
Middle Mole Model	CH2M	Mapping in Appendix 2 takes account of former modelling used in the SFRA Level 1 by Aecom. The council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Mole Catchment.
Lower Mole Model	Halcrow Group Ltd	Mapping in Appendix 2 takes account of former modelling used in the SFRA Level 1 by Aecom. The

		council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Mole Catchment.
River Wey Model	Capita AECOM	Mapping in Appendix 2 takes of account former modelling used in the SFRA Level 1 by Aecom. The council's internal GIS team made adjustments to address updates made to the Climate Change Allowances in the Wey and Tributaries catchment.

Figure 1



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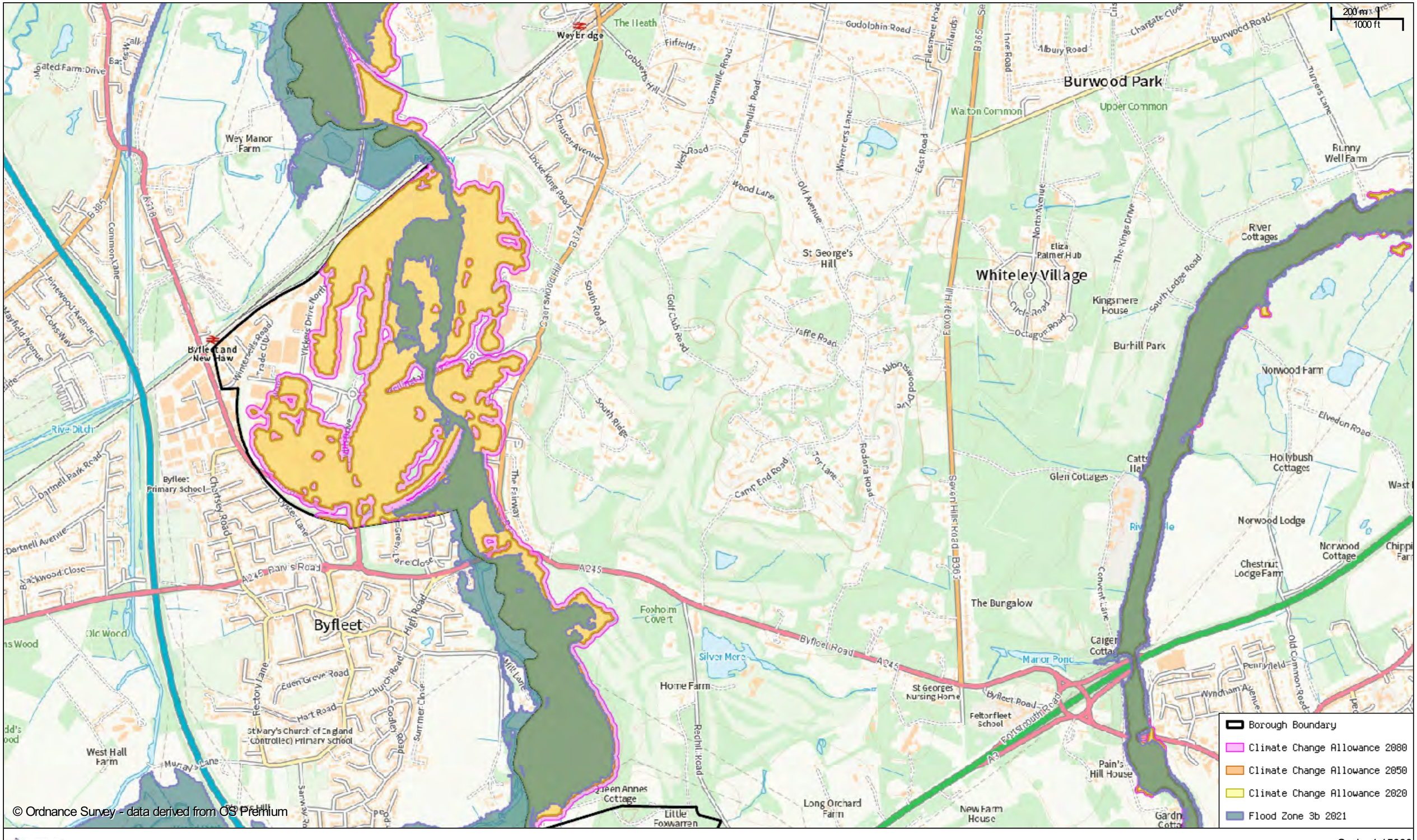

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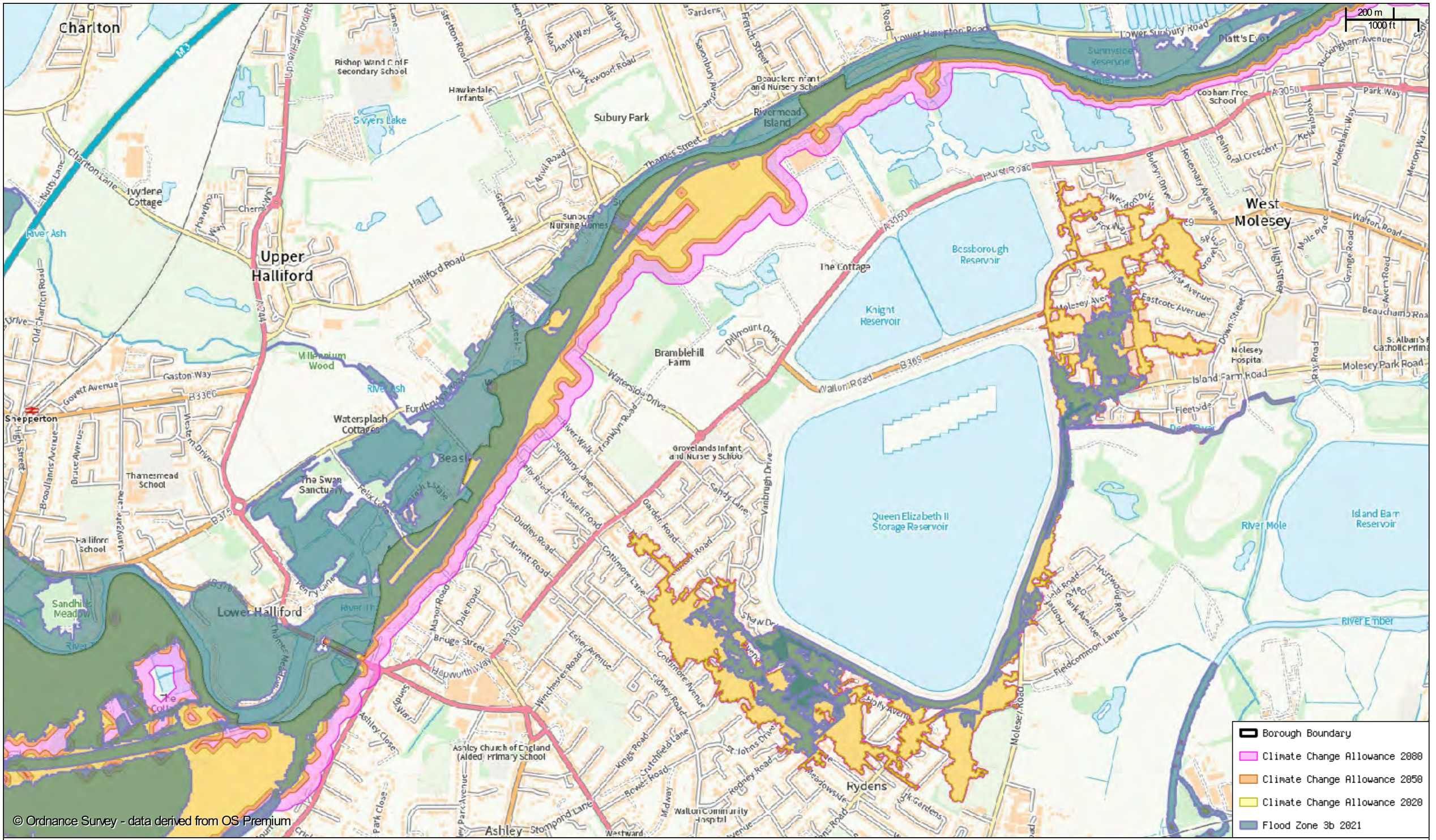

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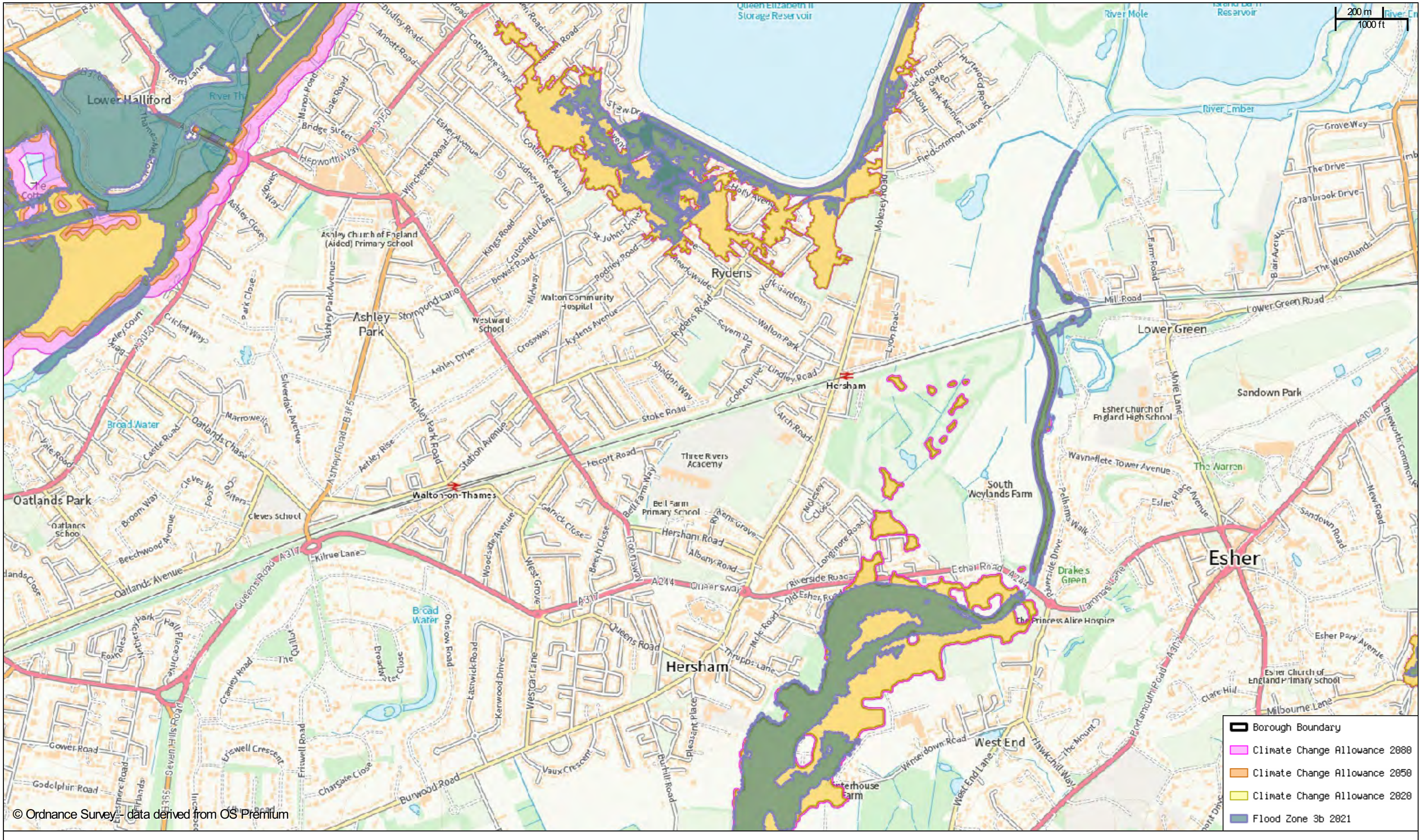

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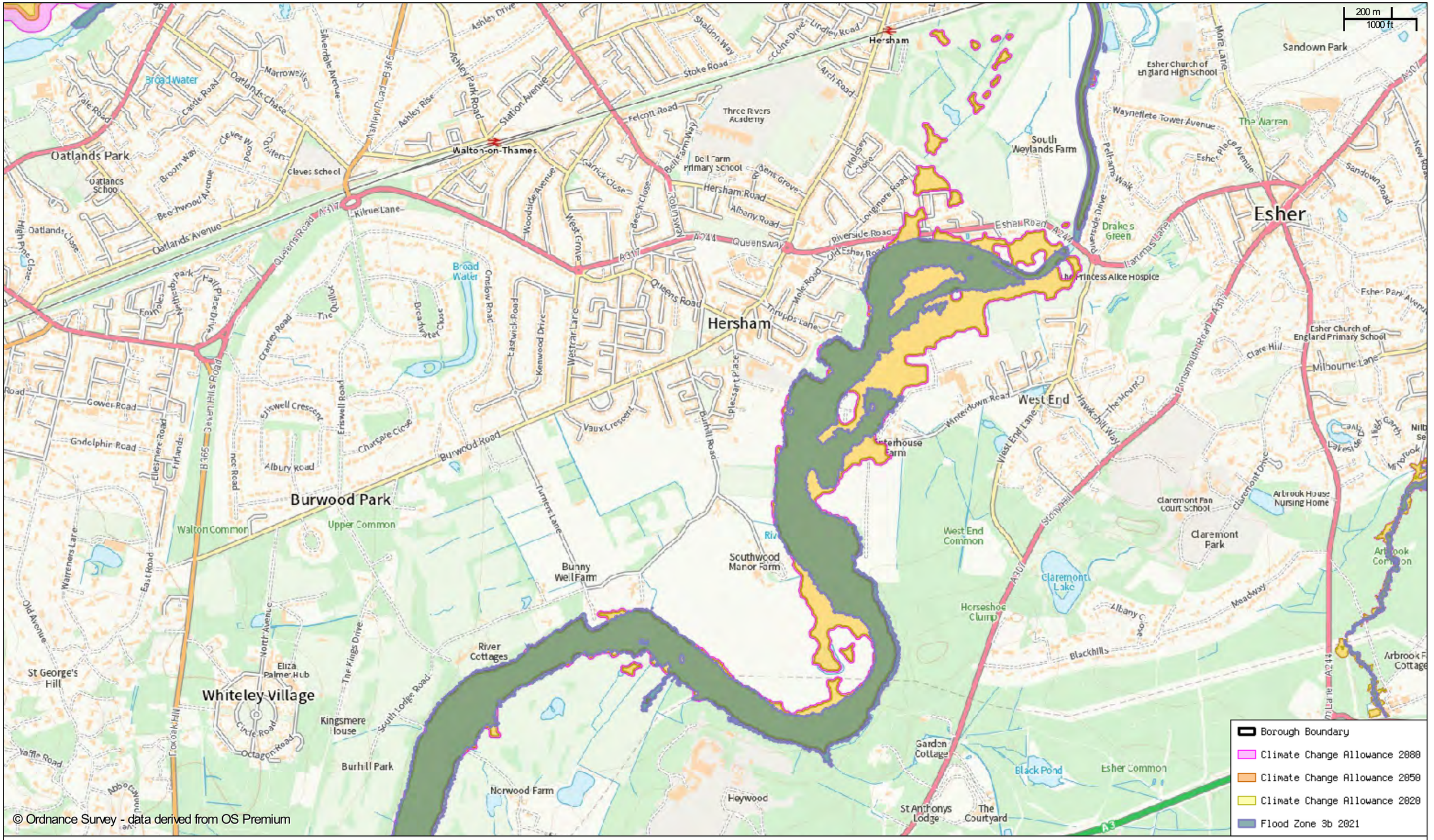

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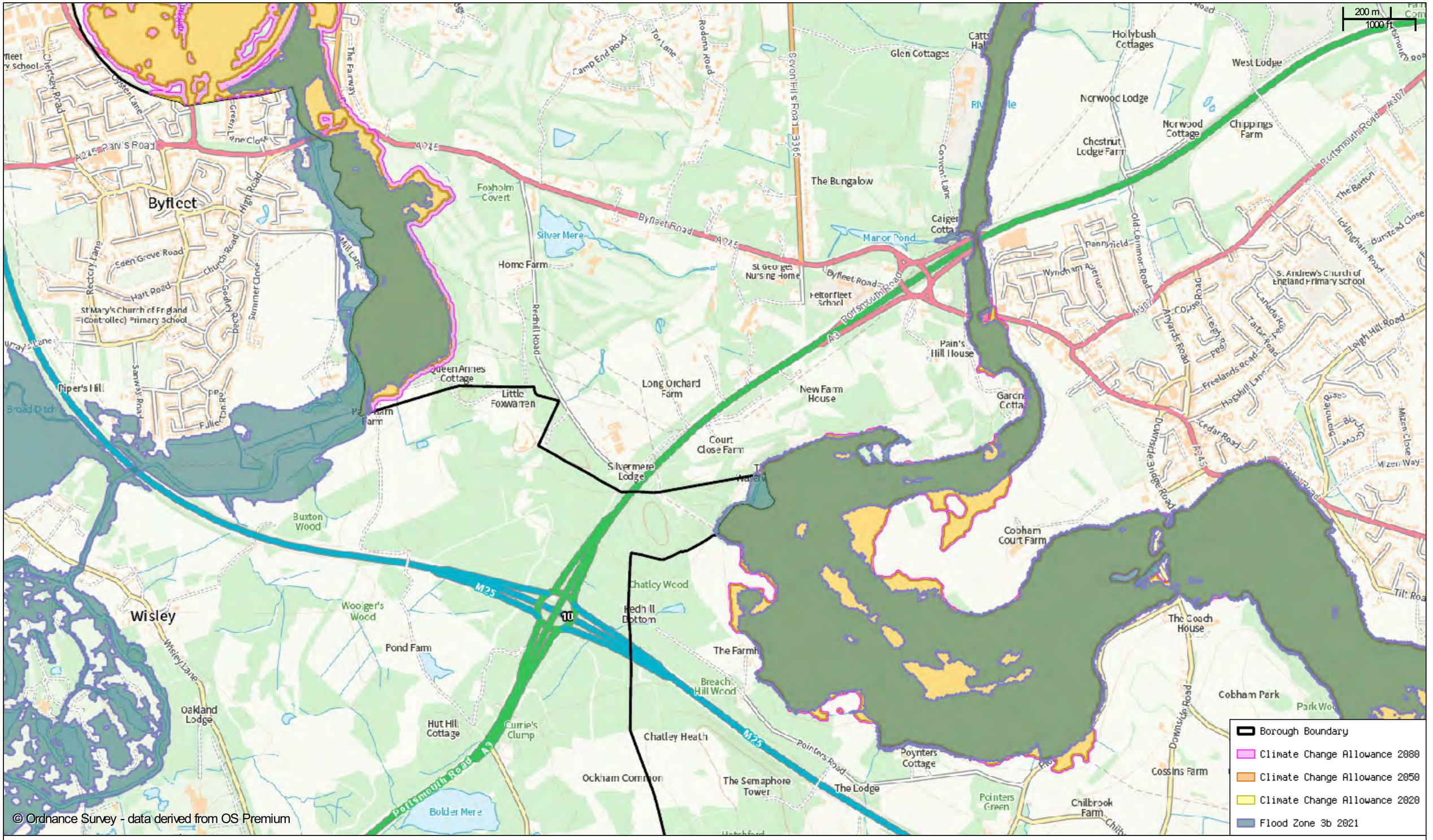

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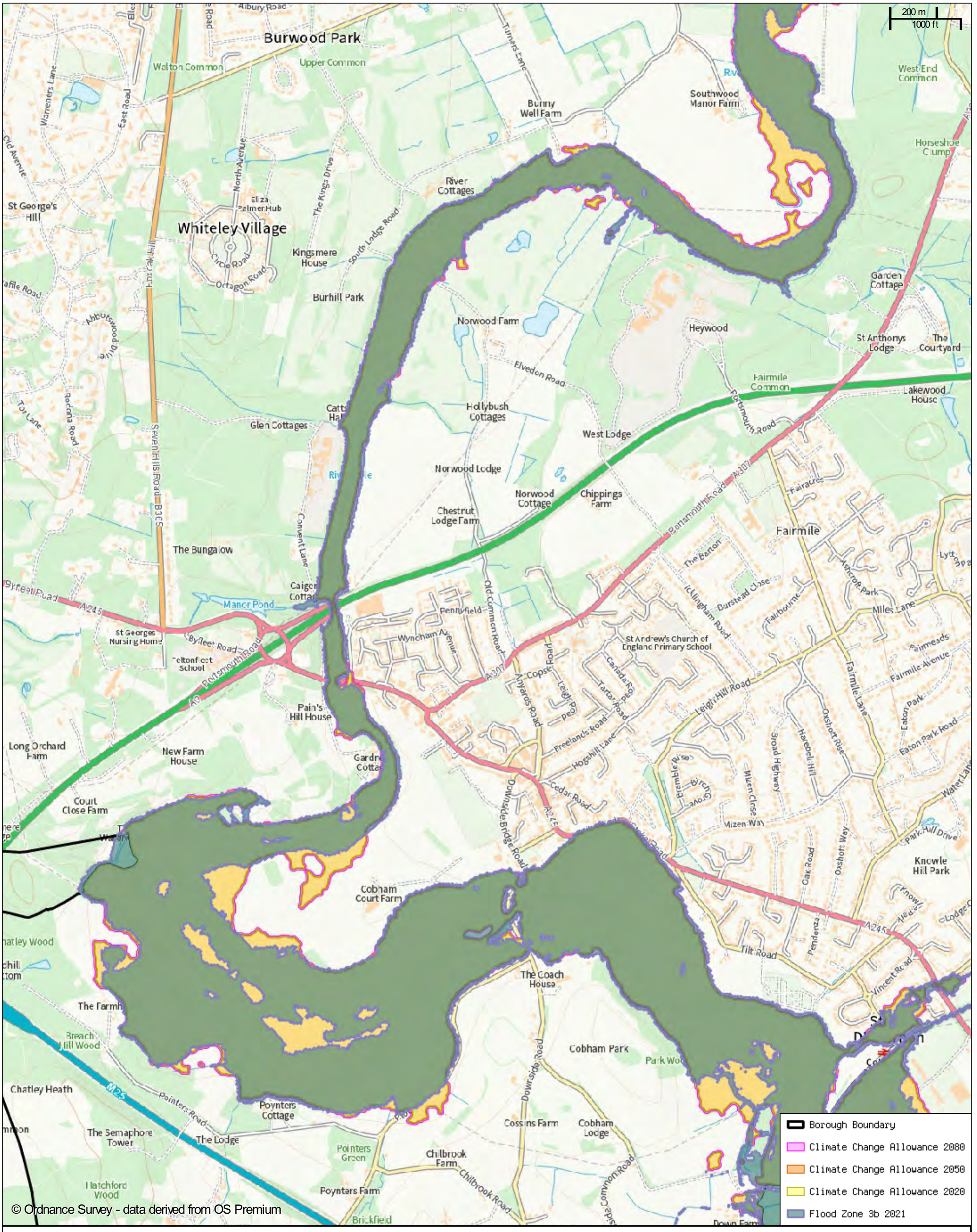

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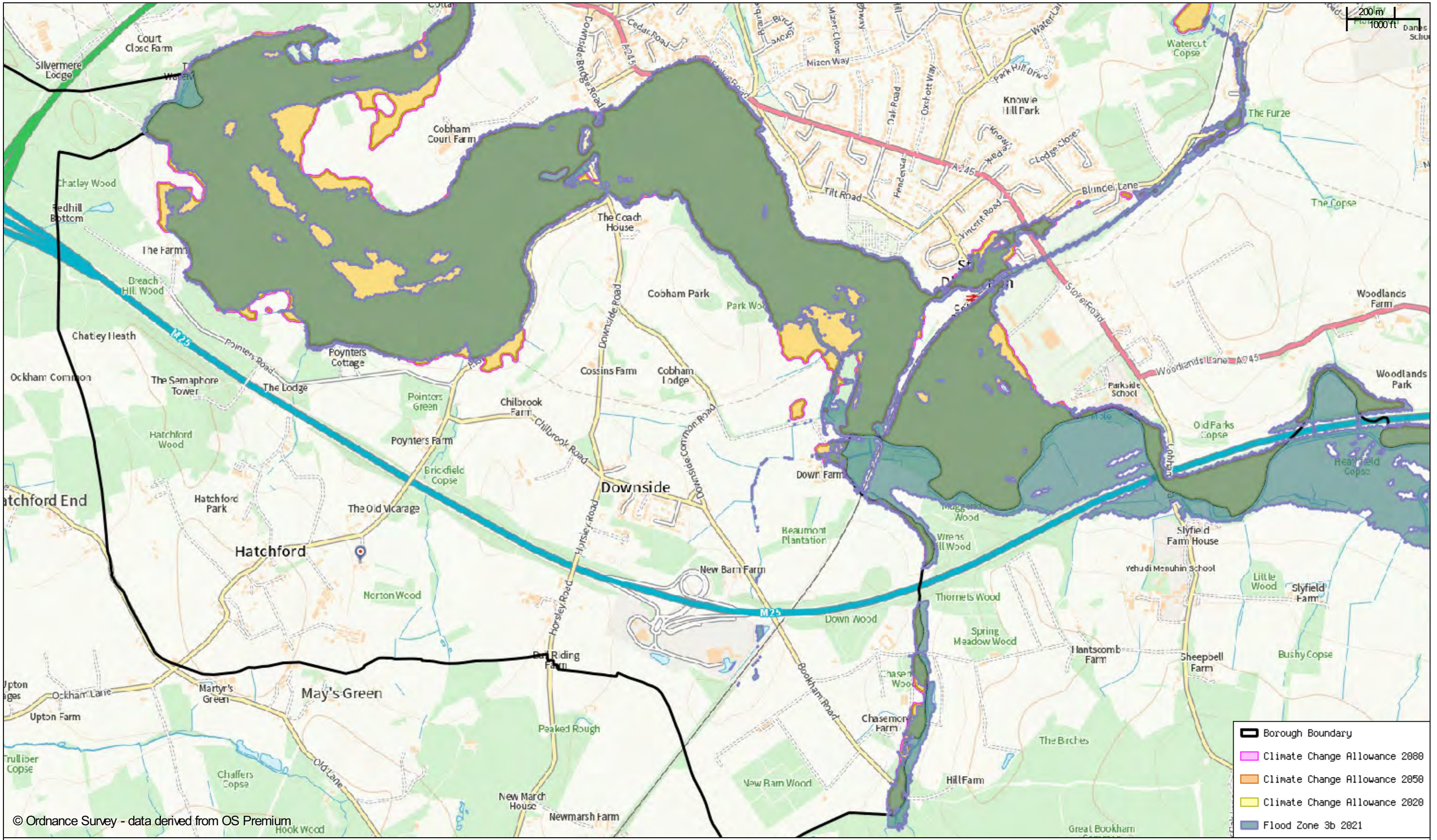

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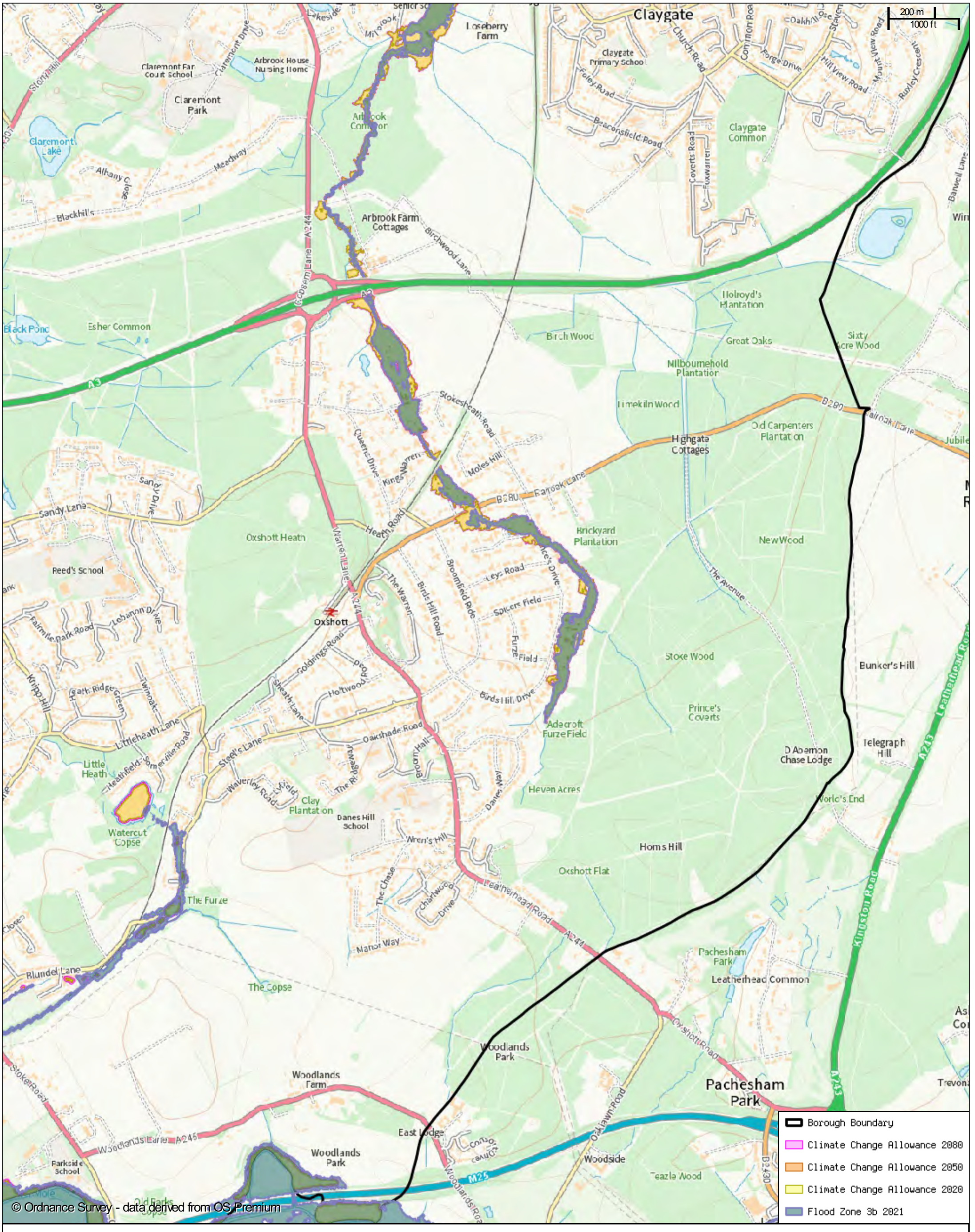

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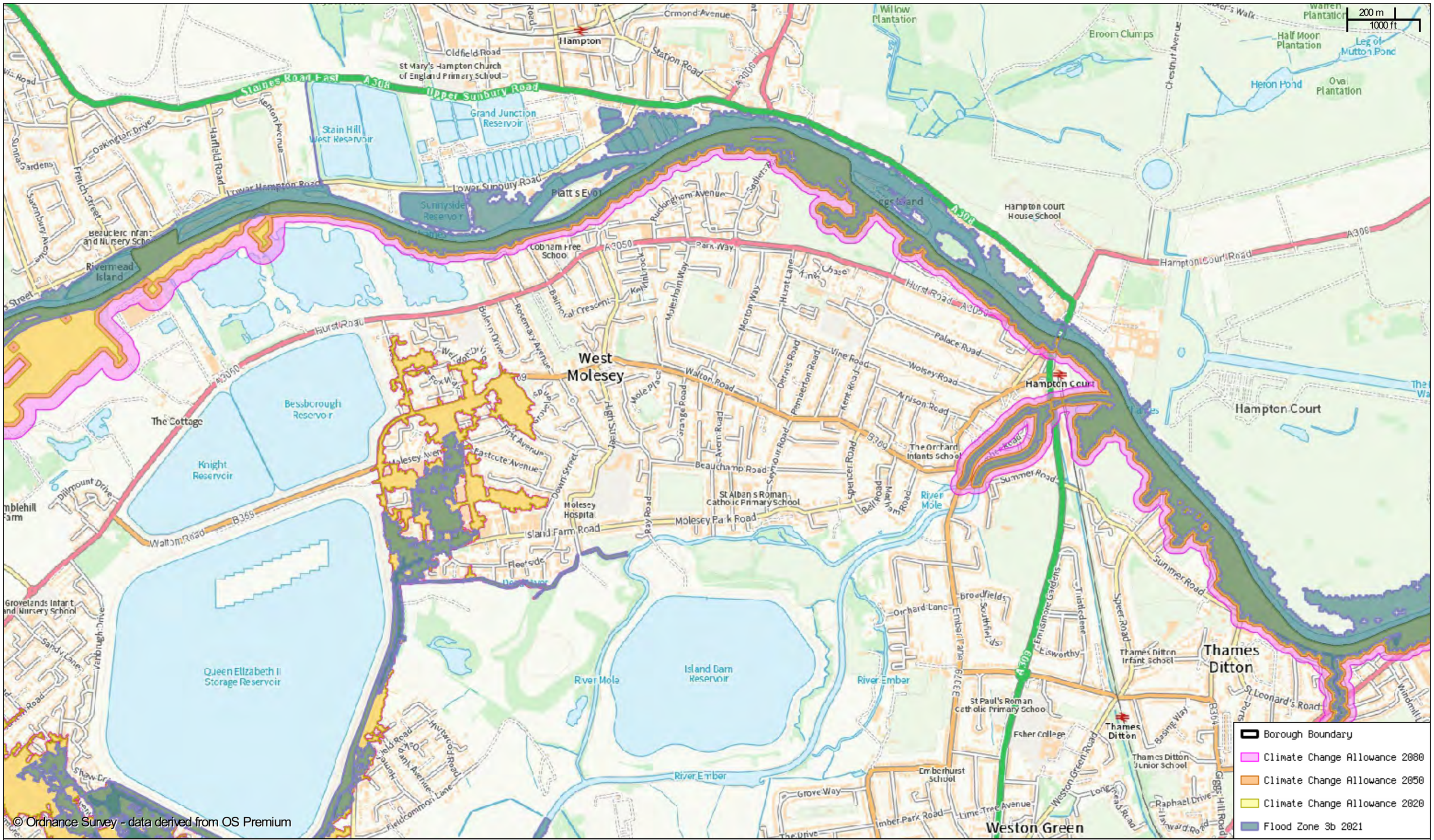

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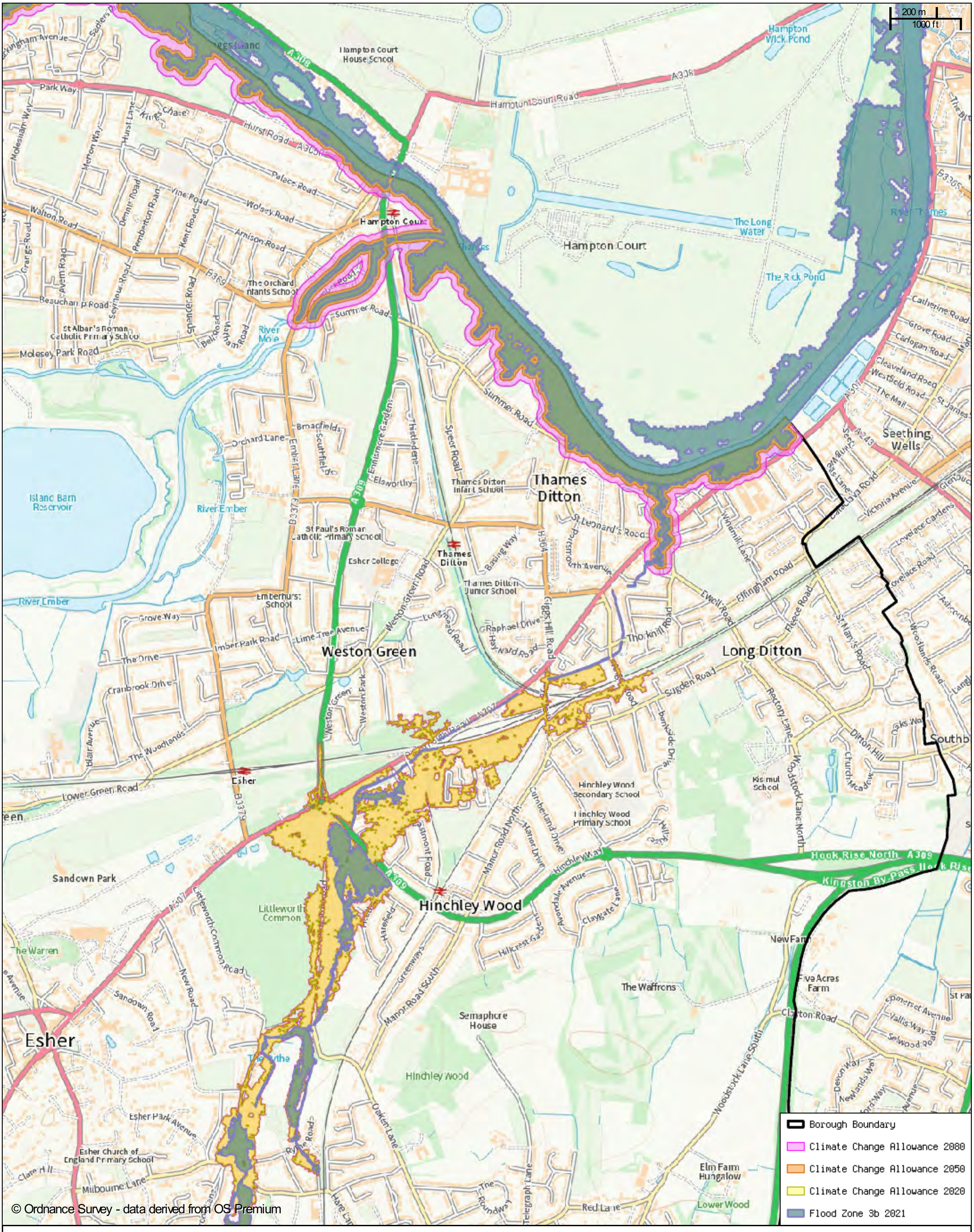

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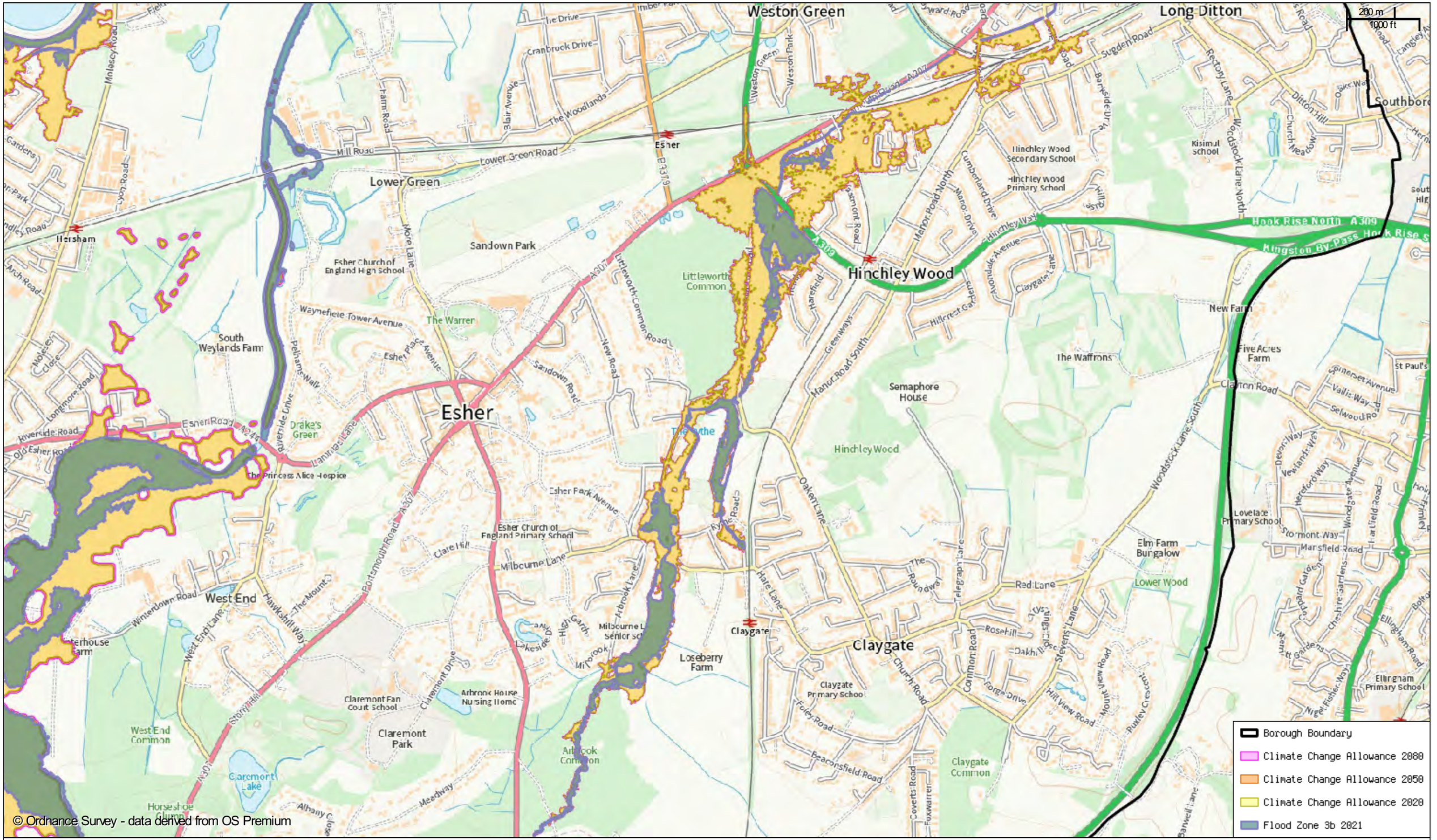

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