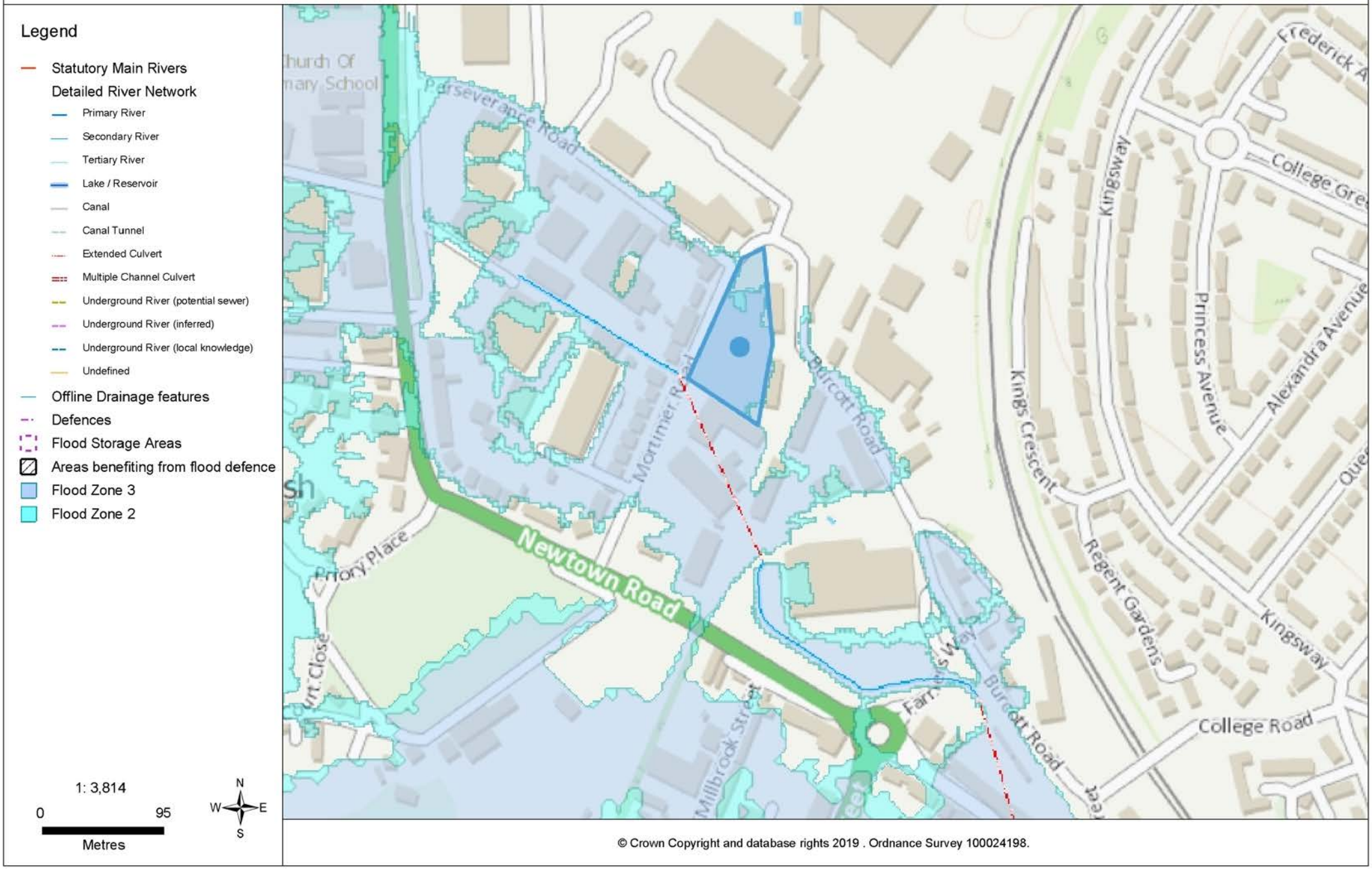
APPENDIX C

Environment Agency Flood Data

Flood Map for Planning

Environment Agency



Flood Risk and Coastal Change

Climate Change allowances for planning (SHWG area)

March 2016
(updated Feb 2019)

The National Planning Practice Guidance refers to Environment Agency guidance on considering climate change in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

This has been updated and replaces the September 2013 guidance.

It should be used to help planners, developers and advisors implement the National Planning Policy Framework (NPPF)'s policies and practice guidance on flood risk. It will help inform Flood Risk Assessments (FRA's) for planning applications, local plans, neighbourhood plans and other projects.

Fluvial flooding – peak river flows

Table 1 of the guidance advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to a river basin district catchment.

In Shropshire, Herefordshire, Worcestershire and Gloucestershire area, we would refer you to the relevant extract from Table 1 below. This outlines the **'peak river flows'** within the 'Severn River Basin District', and specifies the range of percentage allowances to reflect individual development's lifetime and vulnerability. For example, residential would be 100 years (so 2070-2115).

Table 1 Extract

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069 (less vulnerable)	2070-2115 (more vulnerable)
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

Sea Level rise allowances

Table 3 of the guidance (extract below) indicates that net sea level risk remains unchanged from the 2013 version.

Area of England	1990 - 2025	2026 - 2050	2051 - 2080	2081 - 2115	Cumulative (1990 - 2115)
South West	3.5mm p/a	8mm p/a	11.5mm p/a	14.5mm p/a	1.14m

Note - For sites utilising the Severn tidal model there is no need to add in the above sea level allowances as climate change sea level rise has already been factored in. For all other locations the above allowances should be considered and applied.

Flood Risk Assessment considerations:

The design flood (1% flood level fluvial, or 0.5% tidal, plus climate change allowance) should be used to inform the sequential test, including appropriate location of built development; consideration of flood risk impacts, mitigation/enhancement and ensure 'safe' development.

Vulnerability classification

- Development classed as 'Essential Infrastructure' (as defined within Table 2 - Flood Risk Vulnerability Classification, Paragraph: 066 Reference ID: 7-066-20140306 of the NPPG) should be designed to the 'upper end' climate change allowance (70%).

- For highly vulnerable or more vulnerable development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

- For water compatible or less vulnerable development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Modelling approach

- Major Development:

  For 'major' development (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015)*, see definition note below, we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the 1% with relevant climate change ranges.

  There are two options:

  Scenario 1 - Produce a model and incorporate relevant climate change allowances in Table 1.

  Scenario 2 - Re-run an existing model and incorporate relevant climate change allowances in Table 1.

- Non Major Development:

  For 'non major' development, we would advise that a model is produced or existing model is re-run, similar to the above approach (Scenario 1 and 2). This would give a greater degree of certainty on the design flood extent to inform a safe development.

  However, for 'non major' development only, in the absence of modelled climate change information it may be reasonable to utilise an alternative approach. To assist applicants and Local Planning Authorities we have provided some 'nominal' climate change allowances within the 'Table of nominal allowances' below. These should be considered as appropriate within any FRA. There are three additional options:

  Scenario 3 - Where previous modelled data (for a variety of return periods) is available, you could interpolate your own climate change figure (see note iv below).

  Scenario 4 - Where the 1% level is available from an existing model add on the relevant 'nominal climate change allowance' provided in the 'Table of nominal allowances' below.

  Scenario 5 - Establish the 1% level, for example using topographical levels (including LiDAR) and assessment of watercourse flow and nature and then add on the relevant 'nominal climate change allowances' provided in the 'Table of nominal allowances' below.

*Note: For definitions of 'major' development see 'Interpretation 2.—(1)', on page 5, at www.legislation.gov.uk/uksi/2015/595/pdfs/uksi_20150595_en.pdf

Table of Nominal Allowances

Watercourse	20% - 25%	35% - 40%	70%
Upper Severn	600mm	850mm	1500mm
River Wye			
River Teme			
River Avon	400mm	600mm	1000mm
Lower Severn	400mm	600mm	1000mm
Tributaries and 'ordinary watercourses'	200mm	300mm	500mm

Notes to above:-

(i) Watercourse definition:
The "Upper Severn"/"Lower Severn" boundary is taken as Lincomb Weir, Worcestershire (national grid reference SO8196869458).

An 'Ordinary Watercourse' is a watercourse that does not form part of a main river. Main Rivers are indicated on our Flood Map. You can also check the classification of the watercourse with the LLFA, some of which have produced Drainage and Flooding Interactive Maps.

(ii) Where a site is near the confluence of two, or more, watercourses, the FRA should use the larger river climate change allowances.

(iii) We may hold more precise information for some of the "tributaries". We would recommend that you seek this information from us via a 'pre-planning enquiry/data request', to the email address below.

(iv) We would also recommend that you contact us for our modelled '20%' allowances and associated flow data. This is available for some rivers. This data may help inform a more detailed climate change analysis (where necessary), including any interpolation of levels or flow to create a 'stage discharge rating' in order to estimate the required percentage; or be of assistance to inform 'less vulnerable' or 'water compatible' development proposals.

IMPORTANT NOTE
Please note the nominal climate change allowances are provided as a pragmatic approach, for consideration, in the absence of a modelled flood level and the applicant undertaking a detailed model of the watercourse. Use of nominal climate change allowances are not provided/ recommended as a preference to detailed modelling and historical data.

The Local Planning Authority may hold data within their Strategic Flood Risk Assessment (SFRA), or any future updates, which may help inform the above.

FREEBOARD NOTE
It is advised that Finished Floor Levels should be set no lower than '600mm' above the 1% river flood level plus climate change. Flood proofing techniques might be considered where floor levels cannot be raised (where appropriate). This 600mm freeboard takes into account any uncertainties in modelling/flood levels and wave action (or storm surge effects).

Surface Water

Table 2 of the guidance also indicates the relevant increases that surface water FRA should consider for an increase in peak rainfall intensity.

The following table is for **'peak rainfall intensity'** allowance in small and urban catchments. Please note that **surface water (peak rainfall intensity) climate change allowances should be discussed with the Lead Local Flood Authority (LLFA).**

Peak Rainfall Intensity - Applies across all of England	Total potential change anticipated for 2010-2039	Total potential change anticipated for 2040-2069	Total potential change anticipated for 2070-2115
Upper end	10%	20%	40%
Central	5%	10%	20%

Note to above:-

For river catchments around or over 5 square kilometres, the peak river flow allowances are appropriate.

Produced by: shwgplanning@environment-agency.gov.uk

West Midlands Area -

Shropshire, Herefordshire, Worcestershire and Gloucestershire Sustainable Places Team.

Development Guidance

Environment Agency (West Midlands Area)

Revised: August 2018

This is to guide on environmental planning and regulatory issues, at pre-application/application stage.

We offer a **preliminary** and **pre-planning advice (cost recovery) service**. Further information is available at: https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions
Please contact our Area Sustainable Places (Planning) Team at shwgplanning@environment-agency.gov.uk

Flooding and Flood Risk Assessments (FRAs) incl. Climate Change:
For information on which 'flood zone' and river classification (main or ordinary watercourse) is relevant see our website: https://flood-map-for-planning.service.gov.uk

The National Planning Policy Framework (NPPF) and its Planning Practice Guidance (PPG) guides on the consideration of flood risk. It has information on climate change (Section 14 of NPPF and 'Climate Change' and Flood Risk and Coastal Change sections of PPG); the Sequential & Exception Tests and vulnerability of land use types (Para. 158 & 159 of NPPF and sub-sections within the Flood Risk and Coastal Change section of PPG); and preparation of detailed FRAs (see this link to the NPPF and PPG). http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/

FRAs must assess the risks of river (fluvial), sea (tidal) as appropriate, surface water and all other sources of flooding. Once the risks have been assessed mitigation measures should be identified to reduce/manage the risk on and off site to an acceptable level. Sustainable Drainage Systems (SuDS) should be included to manage surface water run-off and to prevent it from exacerbating flood risk. They can also help protect and improve water quality, and add amenity value. See SUDS Manual (C753) updated November 2015. For guidance view: http://www.susdrain.org/
For advice on 'flood proofing': http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

Climate change allowances for planning matters were published on 19 February 2016: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances. For local application of these see our area guidance.

National 'standing advice' can be viewed at: https://www.gov.uk/flood-risk-standing-advice-frsa-for-local-planning-authorities
In West Midlands area, we use a detailed local version. We may/may not be consulted or make comment on some applications or enquiries. This does not remove the need to submit FRAs for consideration by the Council. We do have local FRA Guidance notes to assist production of FRAs.

You will need to contact the Lead Local Flood Authority Land Drainage Team (LLFA) to discuss proposals in or adjacent to ordinary watercourses and related local flooding issues. They may also advise on detailed surface water management proposals. Your County or Unitary Council is the authority to contact.

We may have flood level data to assist in preparing a FRA. This can be provided by our Area Customers & Engagement Team on 03708 506506: Enquiries_WestMids@environment-agency.gov.uk we do not recommend individual FRA consultants but the following website may help you to source a suitably qualified person http://www.endsdirectory.com/

Land Contamination:
The NPPF takes a precautionary approach to land contamination. Before the principle of development can be determined, land contamination should be investigated to see whether it could preclude certain development due to environmental risk or cost of clean up (remediation).
Where contamination is known or suspected, a desk study, investigation, remediation and other works may be required to enable safe development (Para. 178 of the NPPF). Minimum requirements for submission with a planning application are a desk study and preliminary risk assessment, such as a site walkover or conceptual model. Site Investigation and Remediation Strategy reports may be required for submission with a planning application for sensitive land use types or where significant contamination or uncertainty is found. You should contact the Council Environmental Health team who may hold records on known/potential land contamination. If during site works, contaminated material is suspected, you are advised to stop works and seek further guidance. Remediation of contaminated land may also require an authorisation under environmental permitting legislation. For information: we do not recommend individual environmental consultants but the following website link may help find environmental consultants that undertake contaminated land assessments http://www.endsdirectory.com/ Further advice on how land contamination should be assessed is available in our local Land Contamination Guidance note.

Foul Drainage – domestic and trade effluent
Government policy states that, where practicable, foul drainage should be discharged to the mains sewer. Where this is not possible and private sewage treatment/disposal facilities are utilised, they must be installed and maintained in accordance with British Standard 6297:2007+A1:2008 and Approved Document H of the Building Regulations 2015. You should also have regard to the advice within the 'Water supply, wastewater and water quality' section of the PPG in respect of planning requirements for non mains sewerage. We have prepared a Foul Drainage Assessment Form to assist in your consideration of these matters. We can send this for you to submit to the Council with your application. Alternatively, the Council may have its own assessment form. The treatment of trade effluent will often require an environmental permit which may not be granted. Please see contact details below.

Water Protection
It is a requirement of the **Water Framework Directive (WFD)** to cause no overall deterioration in water quality or the ecological status of any waterbody. Information on WFD and the current status of water bodies can be found in our River Basin Management Plans at: https://www.gov.uk/government/collections/river-basin-management-plans Use of SUDS in development, removal of structures in watercourses and habitat enhancement are examples of how to help deliver the WFD aim of 'good' status/potential by 2027. You should incorporate pollution prevention measures to protect ground and surface water. Previous Pollution Prevention Guidance maintained by the Environment Agency has been withdrawn but is still available in the national archives at: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg
We would refer you to the latest Pollution Prevention Guidance targeted at specific activities, available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses
The location of features such as **Source Protection Zones** can be found at http://apps.environment-agency.gov.uk/wiyby/37833.aspx and our approach to **Groundwater protection** can be seen at https://www.gov.uk/government/publications/groundwater-protection-position-statements (This replaces Groundwater protection: Principles and practice (GP3)). For below ground petrol tanks or storage of contaminants, a Groundwater Risk Assessment report, including water features survey, may be required to address Position statements D2 and D3.

Cemetery/burial site
A tier 1 hydrogeological risk assessment should be undertaken, including a water features survey. Where the tier 1 risk assessment shows that there is a need for more detailed assessment (i.e. the best practice controls cannot be met) a tier 2 risk assessment may be required. Information requirements for tier 1 and tier 2 assessments are set out within our guidance 'Cemeteries and burials: prevent groundwater pollution'. https://www.gov.uk/guidance/cemeteries-and-burials-prevent-groundwater-pollution

Water Resources
We encourage water efficiency in all development. Minimum residential requirements (125 litres per person per day) will be secured through Building Regulations, with Local Plans able to secure a higher standard (of 110 l/pppd). Code for Sustainable Homes will only apply to legacy cases. For info see: https://www.gov.uk/government/publications/2010-to-2015-government-policy-energy-efficiency-in-buildings/2010-to-2015-government-policy-energy-efficiency-in-buildings For commercial use, please refer to www.breeam.org and consider rainwater harvesting and grey water recycling.

Ecology
The NPPF aims to conserve and enhance biodiversity. An ecological survey may be required to inform 'protected species' assessment and biodiversity enhancement. Mitigation measures and WFD compliance assessment may be required.

Landfill/Landfill Gas
Proposals near to a landfill site can be affected by gas or contamination issues. Environmental consultants that undertake technical assessments can be found at: http://www.endsdirectory.com/ For location of authorised and historic landfills see:
http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=waste

Environmental Permits – (Note: You may also need Planning Permission)

For advice on the need for a Standard/Bespoke Environmental Permit (EP) or Exemption see:
https://www.gov.uk/topic/environmental-management/environmental-permits.These may have been known by a different name including flood defence consents, discharge consents, abstraction licences, and waste management licences.

Flood Risk Permit – Works in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits Contact the local Partnerships and Strategic Overview Team. (Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your Lead Local Flood Authority). To discuss our role in **reservoir management** contact the EA Reservoir Safety Team https://www.gov.uk/reservoirs-a-guide-for-owners-and-operators

For other initial permit advice ring 03708 506506 and ask to speak to **the EA National Permitting Service**.
Detailed pre-permit application discussion may then be referred to the relevant Area Team. Examples:
Discharge of trade or 'domestic' effluent to ground or surface water - You may need a Permit or Exemption if you wish to discharge anything apart from uncontaminated surface water to a watercourse/ditch or to allow discharges to ground.
Intensive Pig & Poultry activities – some of these activities will be regulated by us and require an EP.
Industrial and Waste management facilities - If you are proposing a waste management facility e.g. landfill, energy from waste incinerator, transfer/recycling centre, scrap yard, contaminated land remediation site, anaerobic digestion plant, composting area, or select industrial process plant an EP will be required.
Waste – Importing waste material (e.g. hardcore for construction) will require an EP or registered Exemption. Large projects might benefit from a Site Waste Management Plan to document reuse, recycling and disposal of waste.
Mining Waste: https://www.gov.uk/government/publications/regulatory-framework-for-the-implementation-of-the-mining-waste-directive
Water – You may need an EP to abstract ground or surface water, or to impound/obstruct/transfer water e.g. as part of a hydro electric power project. https://www.gov.uk/government/collections/hydropower-schemes-guidelines-and-applying-for-permission
Other Agricultural regulation - Proposals for slurry lagoons and field silage stores need to comply with the **Water resources (control of pollution, silage, slurry and agricultural fuel oil) regulations (SSAFO).** 14 day prior notification must be provided to us. See: https://www.gov.uk/guidance/storing-silage-slurry-and-agricultural-fuel-oil For advice contact the Local Land and Water Team.
For guidance on Water Storage Reservoirs and Rural SuDS to help meet **Water Framework Directive** objectives:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291508/scho0612buwh-e-e.pdf and http://www.ukia.org/

Flood Risk Assessment (FRA) Guidance Note (West Midlands Area)

Shropshire, Herefordshire, Worcestershire & Gloucestershire Area – 'Planning – FRA Guidance note 3' - For all development within Flood Zone 2 and 3 (excluding minor development – see definition of minor development at Sub-section 17 within the Flood Risk and Coastal Change Section of the Government's National Planning Practice Guidance - NPPG)

The following is advice to assist in the production of a Flood Risk Assessment (FRA).

Meeting and/or detailed document review
If you would like to discuss your proposals further, or for us to review technical reports/documents/flood modelling, this will be chargeable in line with our cost recovery service. This may help to ensure that they are comprehensive before formal submission or where concerns have been raised on a planning application.

Please contact our Sustainable Places team directly by email at: <SHWGplanning@environment-agency.gov.uk>

Note: We do not recommend individual FRA consultants but the following website may help you to source a suitably qualified person http://www.endsdirectory.com/

FRA requirements: Planning applications must be accompanied by a FRA that is submitted to the Local Planning Authority (LPA). The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. To be acceptable as a FRA the applicant should confirm as a minimum:

1. A level survey to Ordnance Datum/GPS showing the known or modelled 1% (1 in 100 chance each year) river flood level, including **climate change*,** or where relevant 0.5% (1 in 200 chance each year) tidal & coastal flood level relative to proposed site levels. For sites in Flood Zone 3, this should include the 5% (1 in 20 year) flood event, or equivalent.

2. An assessment of the risks posed to the site including that based on 1% modelled flooding (including climate change*), any documented historic flooding and risks associated with surface water runoff from the site (including climate change).

3. Flood Risk to the development and users - Proposed mitigation measures to control those risks for the lifetime of the development, based on a 1% event, including climate change, e.g. setting appropriate floor levels**, providing 'flood proofing'; safe access & egress*** for occupiers (especially important where 'more vulnerable'[1] users or overnight accommodation);

4. Impact on flood risk elsewhere – The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and

flow routes through the layout, form and design of the building/structure; providing surface water disposal****.

5. Residual risks after mitigation, including risk during an extreme 0.1% (1 in 1000 year) event.

NOTES:

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (new allowances were published on 19 February 2016).

Please refer to our separate 'Climate Change Allowances for Planning Guidance' (March 2016) for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to river basin district catchment.

The table below is for **'peak river flows'** within the Severn River Basin district, and specifies the range of allowances to reflect individual development's lifetime and vulnerability. For example residential would be 100 years (so 2070-2115).

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069	2070-2115
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

For 'major development' (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015), we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the relevant climate change ranges.

For non-major development, in the absence of modelled information it may be reasonable to utilise a nominal climate change allowance i.e. an alternative appropriate figure. To assist applicants and LPA's we have provided some 'nominal' climate change allowances within our area climate change guidance. These nominal allowances should be considered as appropriate within any FRA.

The design flood (1% with climate change) should be used to inform the sequential test including appropriate location of built development and ensure 'safe' development.

- For '**more vulnerable'** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

- Development classed as **'Essential Infrastructure'** (as defined within Table 2 - Flood Risk Vulnerability Classification, Paragraph: 066 Reference ID: 7-066-20140306 of the NPPG) should be designed to the 'upper end' climate change allowance (70%).

** It is advised that **Finished Floor Levels** should be set no lower than 600mm above the 1% river flood level plus climate change with flood proofing techniques considered (where appropriate). For more information on resistance and resilience techniques see: http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

– For **'water compatible'** or **'less vulnerable'** development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Some 'water compatible' and 'less vulnerable' development such as agricultural developments/structures, or stables etc, by their nature may be floodable and therefore the raising of floor levels may not be feasible/practicable. In these cases, we would suggest that any storage in these buildings, including any flood susceptible electrics, or items that may be damaged should be sited above possible flood levels, in order to prevent flood risk and associated pollution.

*** For '**more vulnerable' and 'highly vulnerable'** development, where overnight accommodation is proposed, the FRA should demonstrate that the development has **safe, pedestrian access** above the 1% river flood level plus climate change*. Pedestrian access should preferably remain flood free in a 1% river flood event plus climate change. However, in cases where this may not be achievable, the FRA may demonstrate that pedestrian access is acceptable based on an appropriate assessment of 'hazard risk' including water depth, velocity and distance to higher ground (above the 1% river flood level plus climate change). Reference should be made to DEFRA Hazard risk (FD2320) – 'Danger to People for Combinations of Depth & Velocity' (see Table 13.1 – DEFRA/EA Flood Risk Assessment Guidance for New Development FD2320 at: http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/FD2320_3364_TRP_pdf.sflb.ashx

Given our role and responsibilities we would not make comment on the safety of the access or object on this basis. This does not mean we consider that the access is safe or the proposals acceptable in this regard. We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider this to be safe in accordance with the guiding principles of the NPPG.

Furthermore access and egress by vehicular means is also a matter for your Emergency Planners and the Emergency Services.

A Flood Evacuation Management Plan may also be appropriate, see note below.

- Applications involving intensification of use, for example conversion of buildings to provide additional residential units, should consider safe access as a risk. It may be possible to reduce the risk of flooding to an existing access through minor modifications to ground levels or alternative provision.

- For '**less vulnerable**' development (especially those uses where there are people occupying the building and/or vehicles are present, e.g. office, retail) the FRA should consider **safe access** above the 1% river flood level plus climate change. However, given the nature of this type of proposal we would advise that this is considered as a less critical risk i.e. future occupants may not be able to access the proposed development (building and/or any car park) in design flood events. On this basis, this risk could be managed by implementation of a flood evacuation plan (see below) in consultation with your Emergency Planners.

Flood Evacuation Management Plan: The NPPG (paragraph 056) states that one of the considerations for safe occupation is whether adequate 'flood warning' would be available to people using the development.

Flood Warning: For your consideration, where no Flood Warning service is in place we would be unable to offer any notification of potential danger from rising levels.

Where the Flood Warning service consists of a Flood Alert, whilst this gives a level of flood awareness, it will not provide a detailed local warning to comprehensively inform evacuation. Where a comprehensive Flood Warning service operates, a trigger level may be sought to assist in evacuation.

For information on developing a Flood Evacuation Management Plan see sub-section 22 of the Flood Risk and Coastal Change Section of the NPPG and our guidance online at: https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider the FEMP secures safe and sustainable development.

Financial Contributions – It may be appropriate for financial contributions to be provided for development, at this location, towards our flood warning service.

**** For surface water management advice, please contact your Lead Local Flood Authority (LLFA).

Background: Need for a FRA

There are three main flood risk considerations –

- The flood risk to the site, and any occupiers, resulting from a 1% event and an extreme flood event (i.e. a flood with between a 0.1% and 1% chance each year from rivers or between 0.1% and 0.5% chance each year from the sea) – **including climate change**.
- The flood risk resulting from the change of use of greenfield land to developed land which will reduce the natural drainage permeability of that land leading to increased flood risk elsewhere.
- The risk to occupiers and /or others of surface water flooding due to increased run-off. Even at outline stage the applicant needs to be able to demonstrate that surface water balancing can be achieved to a 1% (plus climate change) standard. All sites should aim to provide flood risk reduction/betterment.

The FRA should use available historic information, surveys and local knowledge to establish what the impact of flooding would have been based on previous events. This can then be used to establish any mitigation measures necessary to protect the development from future events.

It is possible that flooding may occur from a source other than that identified by the Agency's 'indicative' Flood Zones, which may occur due to local sewer or other drainage constraints, groundwater and surface water run off problems in the area. These may be identified within Strategic Flood Risk Assessment for the relevant local authority. The FRA will need to investigate the cause and effect of such local flooding as well as identifying appropriate mitigation/flood risk reduction.

INFORMATION:

Other flood risk issues to consider for development in Flood Zones 1 or 2 - Dry Islands: There are some areas within Flood Zones 1 or 2 that are surrounded by areas at a higher risk of flooding i.e. areas falling within Flood Zones 3. In certain cases development upon such 'dry islands' can present particular hazards to public safety and risks such as those associated with maintaining safe access and exit for occupants during flood events. The distribution of dry islands and risks posed by them in terms of access/exit vary considerably across the country. (If there is a concern on this issue, contact the local Environment Agency Sustainable Places Team).

Where planning conditions have been imposed to deal with flood risk mitigation and management etc, we can offer advice prior to your formal submission. This will be chargeable in line with our cost recovery service. Please contact us.

FURTHER INFORMATION:

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; Enquiries_WestMids@environment-agency.gov.uk

Flood Risk Permit (Flood Defence Consents until 6 April 2016)
Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.

(Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your LLFA).

As of November 2012 (Flood Map update) in Shropshire, Herefordshire, Worcestershire & Gloucestershire Area, the Flood Zone 2 outline includes historical flooding data.

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1 Flood risk 'Vulnerability' classification of development - see Table 2 at sub-section 25 of the Flood Risk and Coastal Change section of the NPPG.

[redacted]

Our ref: SV/2019/110468/01-L01
Your ref: n/a

Date: 07 November 2019

Dear Mr[redacted]

PRELIMINARY ENQUIRY IN RELATION TO PROPOSED RESIDENTIAL DEVELOPMENT ON LAND OFF MORTIMER ROAD, HEREFORD

I refer to your email of the 21 October 2019 in relation to the above development. I would offer the following preliminary comments for your consideration at this time.

Flood Risk: This site is predominantly located in Flood Zone 3, which is the high risk zone and is defined for mapping purposes by the Agency's Flood Zone Map. In accordance with Table 1: Flood Zones (Reference ID: 7-065-201-20140306) within the National Planning Practice Guidance (NPPG) Flood Zone 3 is considered 'high probability' of fluvial flooding and comprises land assessed as having a 1 in 100 year, or greater, annual probability of river flooding.

The flood risk associated with the site derives from the Ayles Brook (Ordinary Watercouse) which flows from the west of the site before entering into culvert on Mortimer Road and progressing south east. I have attached a copy of the Flood Map for information.

This stretch of the Ayles Brook has not been subject to detailed modelling although Herefordshire Council have data for the Yazor/Widemarsh Brook, in close proximity, and have done some assessment work in this location (including and broad assessment of flows that the Mortimer Road culvert can accommodate). Herefordshire Council may be able to provide you with data to use as a starting point for any site specific modelling exercise, subject to a charge.

Further information on the above and other environmental constraints can be found via the following link: http://apps.environment-agency.gov.uk/wiyby/

For planning advice please find attached a copy of our *Development Guidance*

Sequential Test and Exception Test: For sites in Flood Zone 3 and 2, a Sequential Test may be required. Paragraph 157-158 of the National Planning Policy Framework

(NPPF) aims to steer new development to areas at the lowest risk of flooding. Failure to undertake a satisfactory Sequential test may lead to refusal of a planning application. Further detail on applying the Sequential Test to individual planning applications is provided in National Planning Practice Guidance (NPPG) at: https://www.gov.uk/guidance/flood-risk-assessment-the-sequential-test-for-applicants

Following the Sequential Test a Flood Risk Assessment (FRA) will be required. In some cases the Exception Test will need to be carried out (see Paragraph 160 of the NPPF).

The Flood Zone Maps are a starting point for the Sequential Test, along with the Council's Strategic Flood Risk Assessment (SFRA), but climate change levels provided within a FRA, will also inform the suitability of sites.

Flood Risk Assessment: A Flood Risk Assessment (FRA) will need to be submitted in line with the NPPF and NPPG. The proposed development is classed as '*more vulnerable*', with reference to Table 2 in the Flood Risk and Coastal Change Section of the NPPG. Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (betterment) through the layout and form of the development and the appropriate application of sustainable drainage techniques.

To assist we would draw your attention to our *FRA Guidance Note 3* (attached*).

It is not clear, at this stage, as to the scale of the development proposed. However, it should be noted, that should it be classed a major development (10 or more dwellings), we would require that the applicant provides hydraulic modelling of the watercourse, undertaken by a suitably qualified consultant, to determine the potential flood risk at the site. They should assess the flows in the watercourse for a 1 in 20 year, 1 in 100 year, 1 in 100 plus climate change (35% increase in peak flows) and 1 in 1000 year flood event. Further detail is provided in the abovementioned Guidance Note and our climate change guidance, also attached. As stated above Herefordshire Council may be able to provide data to form the basis of such work.

It should also be noted that should the proposals be for less than 10 dwellings the Environment Agency are unlikely to provide a bespoke comment on the planning application but would refer to our Standing Advice and defer to Herefordshire Council and their internal drainage team. I would recommend discussing the proposal with the drainage team at Herefordshire Council who may also be able to offer insight into the flooding mechanisms in the immediate vicinity. I have not copied this response to the drainage team but would be happy to provide a contact if required.

Flood risk climate change allowances: The NPPG refers to Environment Agency guidance on considering climate change in planning decisions. This is available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances This update replaces the September 2013 guidance.

The FRA will need to consider advice within our area *Climate Change Allowances for Planning Guidance* *, copy attached.

Pollution control: Developers should incorporate pollution prevention measures to protect ground and surface water. Previous Pollution Prevention Guidance maintained by the Environment Agency has been withdrawn but is still available in the national archives at: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg

We would refer you to the latest Pollution Prevention Guidance targeted at specific activities, available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses

Summary: Based on the information submitted, with reference to the above environmental constraints the key consideration is fluvial flooding from the Ayles Brook.

You may wish to discuss this further for example to establish whether detailed assessment/design detail could demonstrate that the location and/or proposals are appropriate. This would be without prejudice to our formal position. As stated above you would also be advised to contact Herefordshire Council and their drainage team to discuss flood data in this area and their views on a residential development in an area of high flood risk.

Meeting and/or detailed document review: If you would like to discuss your proposals further, or for us to review technical reports/documents, this will be chargeable in line with our cost recovery service.

This may help to ensure that your submissions are suitably comprehensive and save time at a formal consultation stage.

Please contact our Sustainable Places team directly by telephone below or email at: SHWGplanning@environment-agency.gov.uk

Advice Meeting: A meeting at our offices attended by two officers would usually be a standard £600 plus VAT (sometimes plus travel time). Prior review of documents and additional attendance can be discussed. If more beneficial, a site meeting might be considered.

Technical Advice and Review: Further advice on proposed scoping of work/flood modelling, and/or a technical review of modelling or detailed assessment/mitigation can be considered. A quotation and timescale for this service can be provided.

Disclaimer: Our comments are based on the information available to us at the time of the enquiry. Our position may change to reflect environmental risk or evidence, and/or planning policy or guidance.

Yours sincerely

Mr. Graeme Irwin
Senior Planning Advisor
Direct dial: 02030 251624
Direct e-mail: graeme.irwin@environment-agency.gov.uk

***Attachments**:

Flood Map for Planning
Development Guidance Note
FRA Guidance Note
Climate Change Allowances for Planning Guidance

End

APPENDIX C

Flood Maps

Flood map for planning

Your reference	Location (easting/northing)	Created
hereford	**350861/241199**	**9 Sep 2019 12:31**

Your selected location is in flood zone 3, an area with a high probability of flooding.

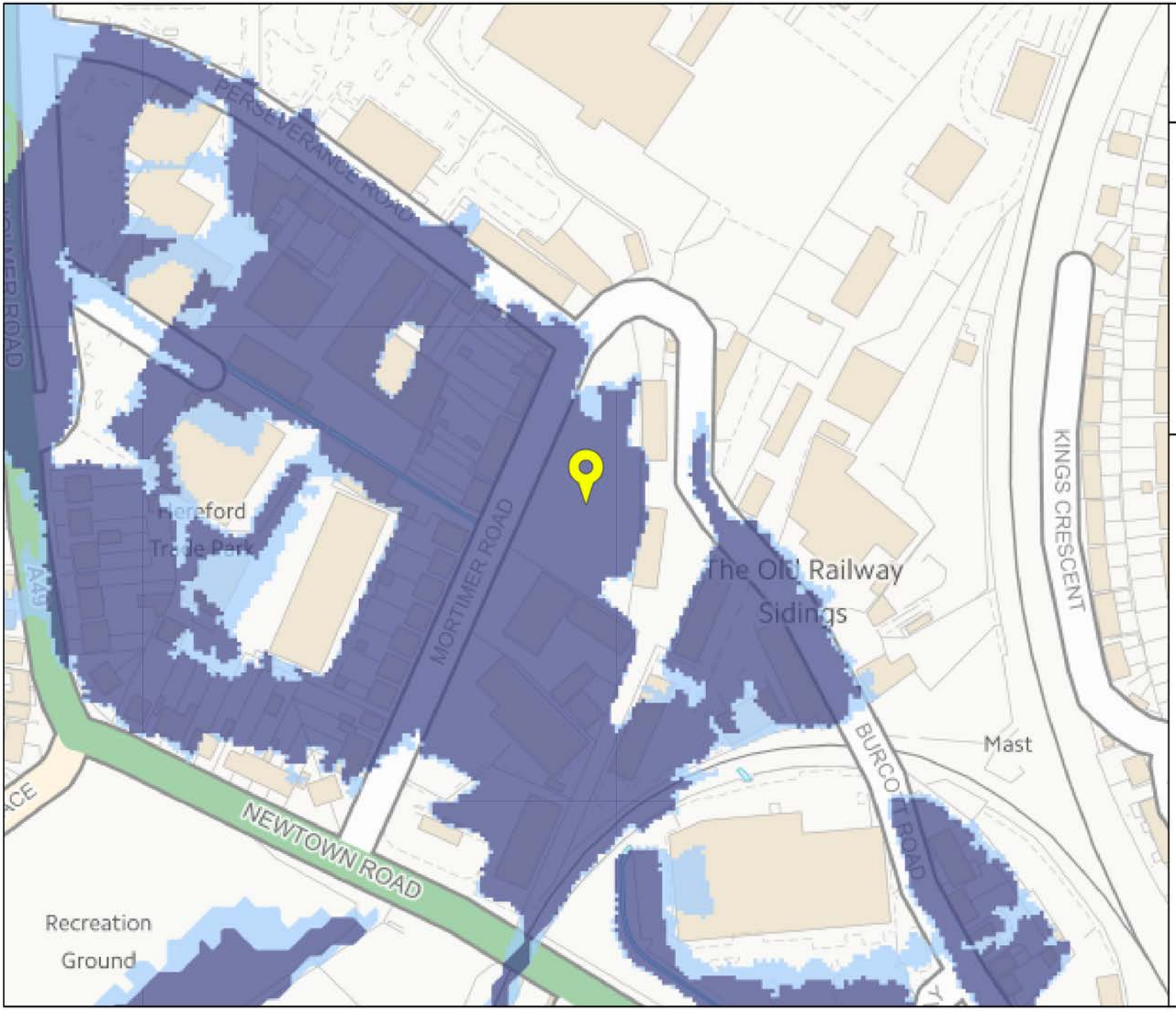
This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
hereford

Location (easting/northing)
350861/241199

Scale
1:2500

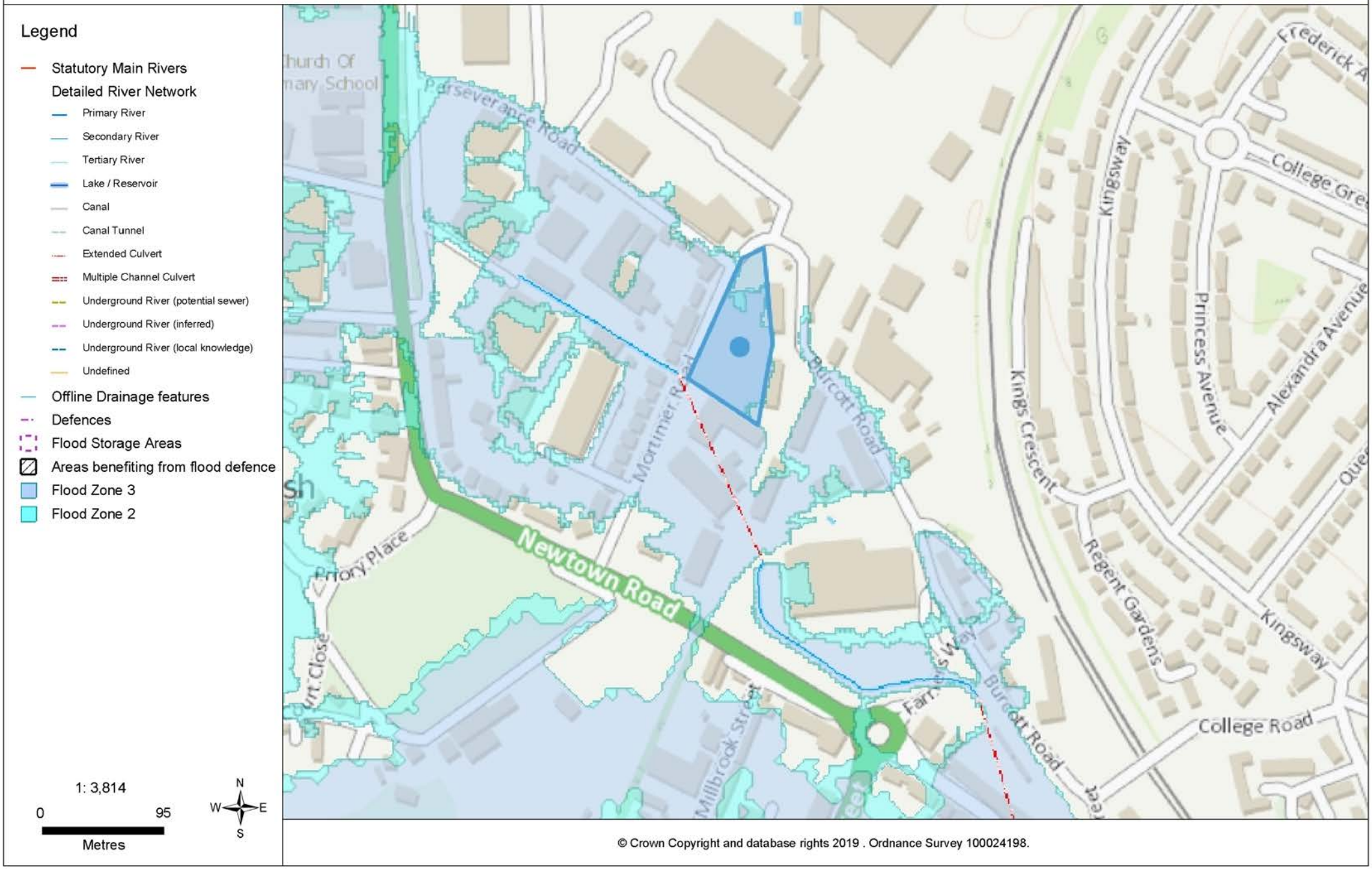
Created
9 Sep 2019 12:31

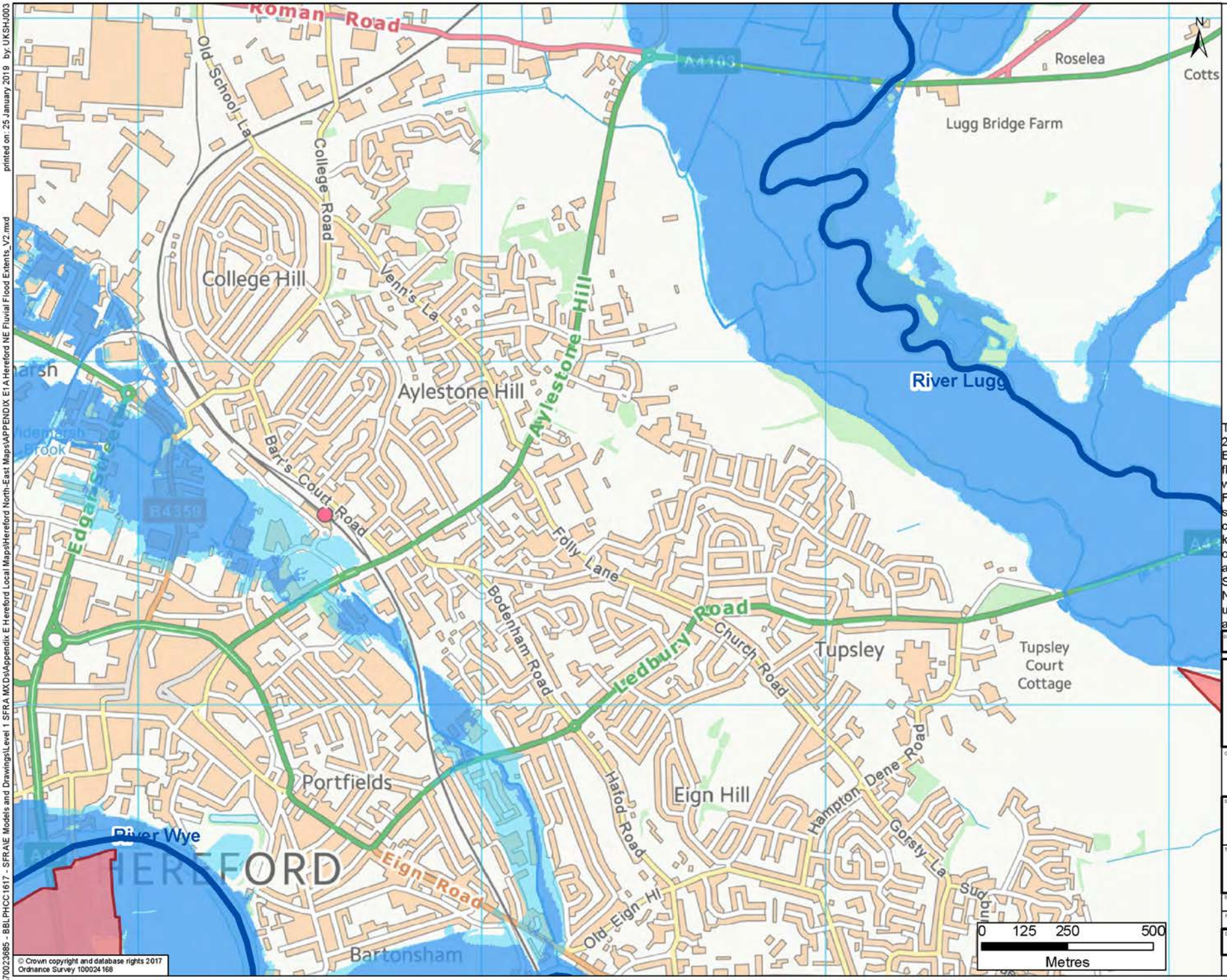
- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

Flood Map for Planning

Environment Agency





Main Rivers
Flood Zone 2
Flood Zone 3
Area benefitting from the River Wye Hereford Flood Defence Scheme up to 0.5% (1 in 200) annual probability

The mapped extent of Flood Zone 2 and Flood Zone 3 replicate the EA Flood Map for Planning, with flood extents as downloaded from www.gov.uk in February 2017. Fluvial flood risk associated with smaller watercourses with a catchment of less than c.3 square kilometres may not be illustrated on these maps. The reader is advised to refer to the Map of Surface Water Flood Extents in North-East Hereford to understand the potential risks associated with these features.

DRAWING STATUS: FOR INFORMATION ONLY

wsp
Kings Orchard, 1 Queen St, Bristol, BS2 0HQ
T +44 (0)1179 306200

CLIENT: Balfour Beatty / Herefordshire Council – Working for Herefordshire

SITE/PROJECT: HEREFORDSHIRE LEVEL 1 SFRA

TITLE: MAP 1 OF 4: MAP OF FLUVIAL FLOOD EXTENTS IN NORTH-EAST HEREFORD

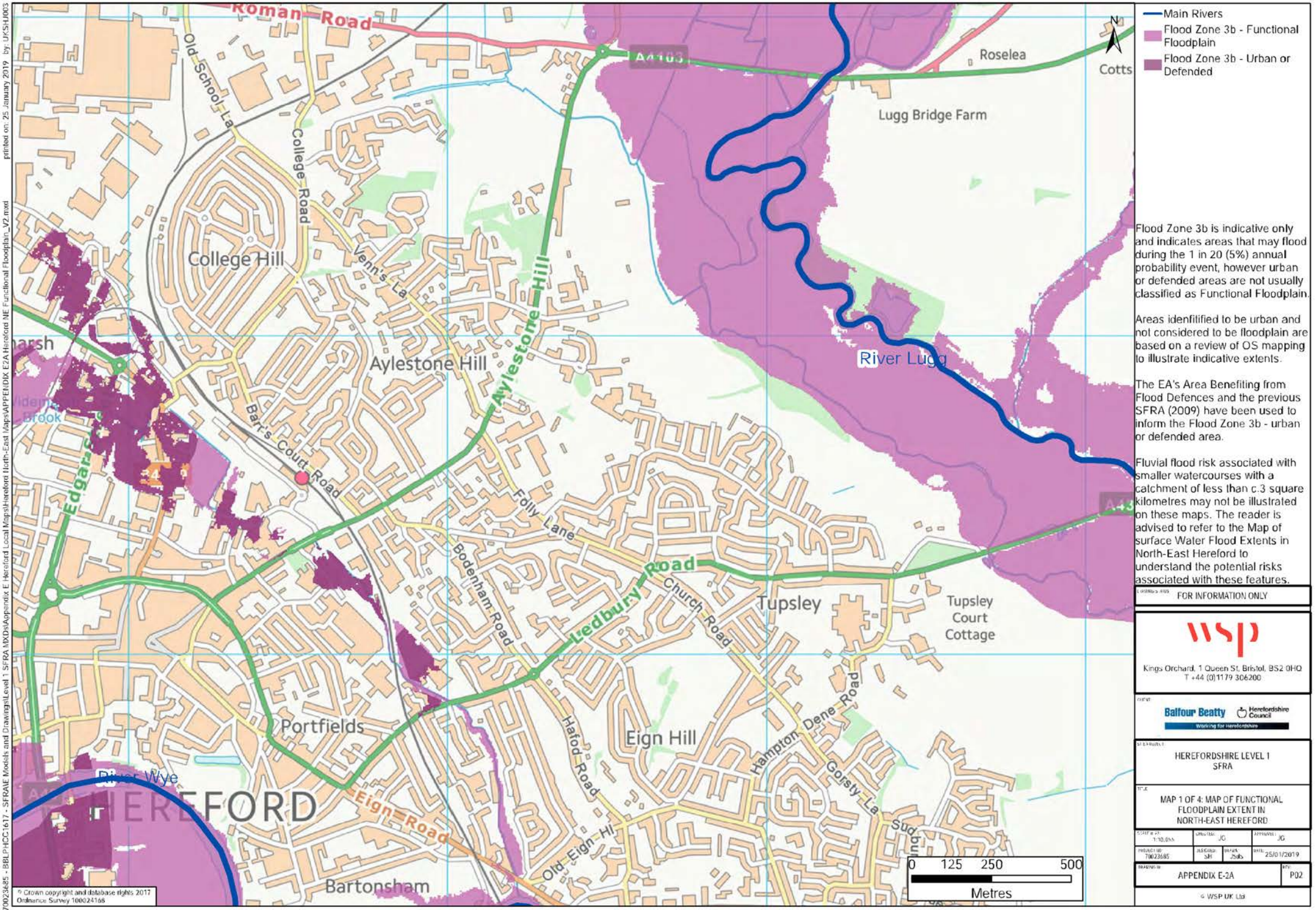
SCALE @ A3	CHECKED	APPROVED
1:10,050	JG	JG

PROJECT NO	DESIGNED	DRAWN	DATE
70023685	SH	JSdS	25/01/2019

DRAWING No: APPENDIX E-1A | REV: P02

printed on: 25 January 2019 by: UKSHJ003

36xx\70023685 - BBLPHCC1617 - SFRA\E Models and Drawings\Level 1 SFRA MXDs\Appendix E Hereford Local Maps\Hereford North-East Maps\APPENDIX E1A Hereford NE Fluvial Flood Extents_V2.mxd



Flood Zone 3b is indicative only and indicates areas that may flood during the 1 in 20 (5%) annual probability event, however urban or defended areas are not usually classified as Functional Floodplain.

Areas idenfitified to be urban and not considered to be floodplain are based on a review of OS mapping to illustrate indicative extents.

The EA's Area Benefiting from Flood Defences and the previous SFRA (2009) have been used to inform the Flood Zone 3b - urban or defended area.

Fluvial flood risk associated with smaller watercourses with a catchment of less than c.3 square kilometres may not be illustrated on these maps. The reader is advised to refer to the Map of surface Water Flood Extents in North-East Hereford to understand the potential risks associated with these features.

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HEREFORDSHIRE LEVEL 1 SFRA

MAP 1 OF 4: MAP OF FUNCTIONAL FLOODPLAIN EXTENT IN NORTH-EAST HEREFORD

SCALE @ A1: 1:10,000	DRAWN: JG		APPROVED: JG
PROJECT ID: 70023685	RESPONSIBLE: SR	CHECK: JSelb	DATE: 25/01/2019
DRAWING NO: APPENDIX E-2A			REV: P02

printed on: 25 January 2019 by: UKSHU003
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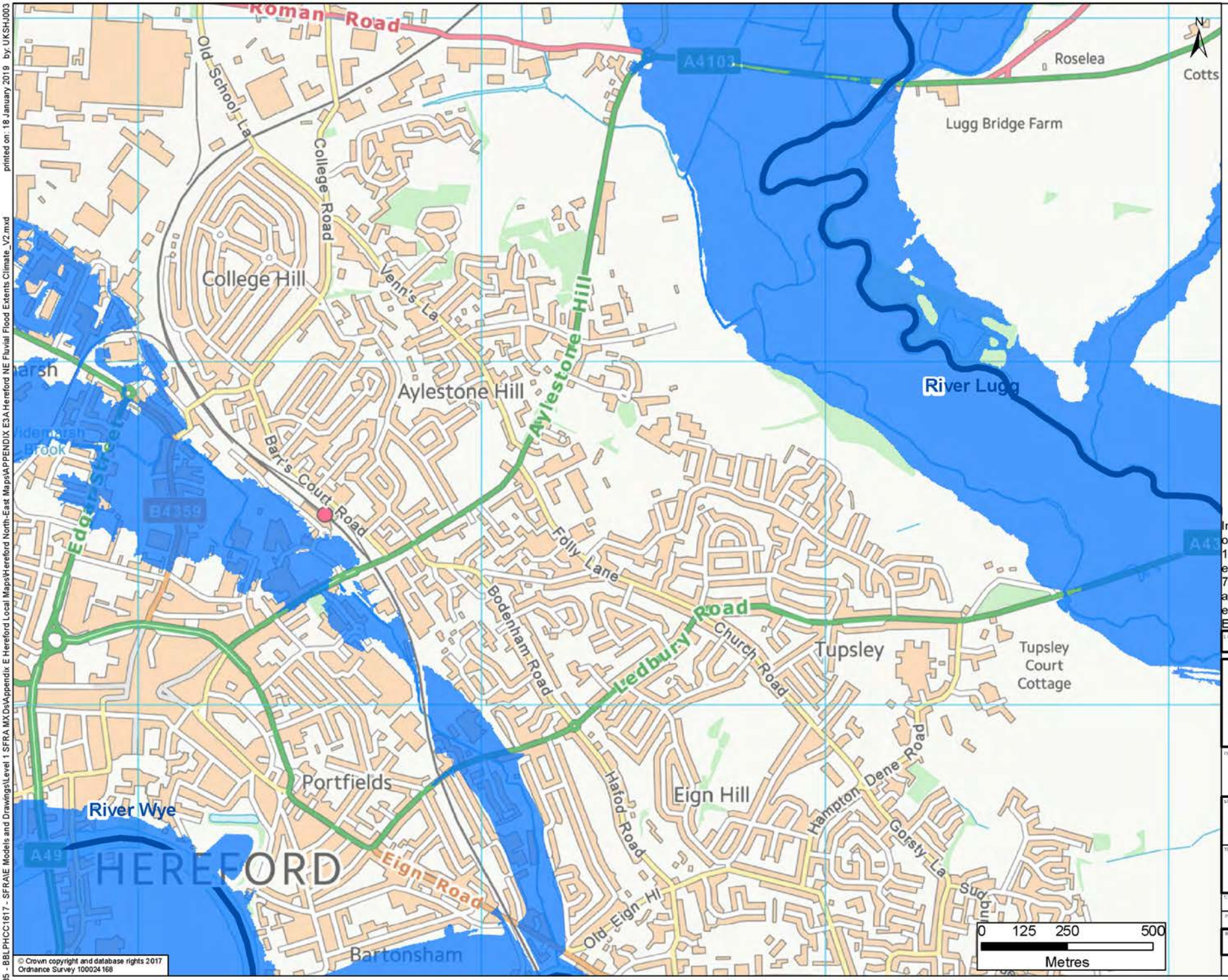

In line with current guidance outlined in the Herefordshire Level 1 SFRA the current Flood Zone 2 extent has been used to indicate a 70% increase in peak river flow and the future Flood Zone 3 extent in accordance with Environment Agency guidance.

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HEREFORDSHIRE LEVEL 1 SFRA

MAP 1 OF 4: MAP OF FLUVIAL FLOOD EXTENTS WITH CLIMATE CHANGE IN NORTH-EAST HEREFORD

SCALE @ A1	DRAWN	CHECKED
1:10,050	JG	JG
PROJECT NO	DESIGNED	DRAWN
70023685	SR	JSabb

DATE: 18/01/2019

DRAWING NO: APPENDIX E-3A

REV: P02

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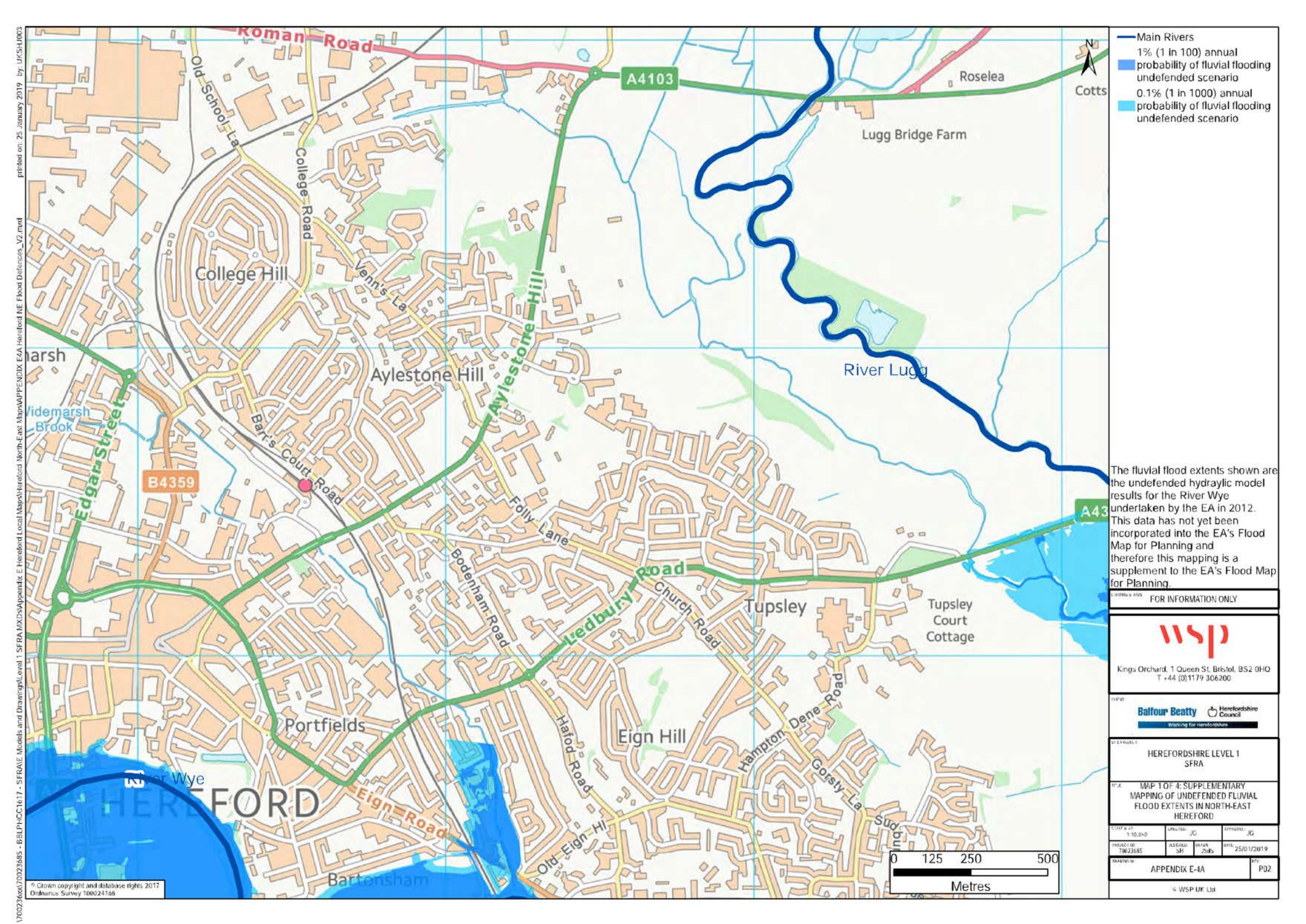
023685 - BBLPHCC1617 - SFRAIE Models and Drawings\Level 1 SFRA MXDs\Appendix E Hereford Local Maps\Hereford North-East Maps\APPENDIX E3A Hereford NE Fluvial Flood Extents Climate_V2.mxd


Roman Road
A4103
Roselea
Cotts
Lugg Bridge Farm
River Lugg
Old School La
College Road
College Hill
Venn's La
Aylestone Hill
Aylestone Hill
Edgar Street
Bar's Court Road
B4359
Folly Lane
Bodenham Road
Ledbury Road
Church Road
Tupsley
Tupsley Court Cottage
Hampton Dene Road
Gorsty La
Hafod Road
Eign Hill
Old Eign Hl
Eign Road
Portfields
River Wye
HEREFORD
Bartonsham
0 125 250 500
Metres
N
Main Rivers
1% (1 in 100) annual probability of fluvial flooding undefended scenario
0.1% (1 in 1000) annual probability of fluvial flooding undefended scenario
The fluvial flood extents shown are the undefended hydraulic model results for the River Wye undertaken by the EA in 2012. This data has not yet been incorporated into the EA's Flood Map for Planning and therefore this mapping is a supplement to the EA's Flood Map for Planning.
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T +44 (0)1179 306200
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Herefordshire Council
Working for Herefordshire
HEREFORDSHIRE LEVEL 1 SFRA
MAP 1 OF 4: SUPPLEMENTARY MAPPING OF UNDEFENDED FLUVIAL FLOOD EXTENTS IN NORTH-EAST HEREFORD
SCALE @ A1: 1:10,000
DRAWN: JG
APPROVED: JG
PROJECT NO: 70023685
DESIGNED: SR
CHKD: JSells
DATE: 25/01/2019
APPENDIX E-4A
REV: P02
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printed on: 25 January 2019 by: UKSHJ003
V:\70023xxx\70023685 - B&LPHCC1617 - SFRAIE Models and Drawings\Level 1 SFRA MXDs\Appendix E Hereford Local Maps\Hereford North-East Maps\APPENDIX E4A Hereford NE Flood Defences_V2.mxd

The mapped surface water flood extents were provided by the EA in February 2017.

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MAP 1 OF 4: MAP OF SURFACE WATER FLOOD EXTENTS IN NORTH-EAST HEREFORD

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DATE: 25/01/2019

APPENDIX E-5A

P02

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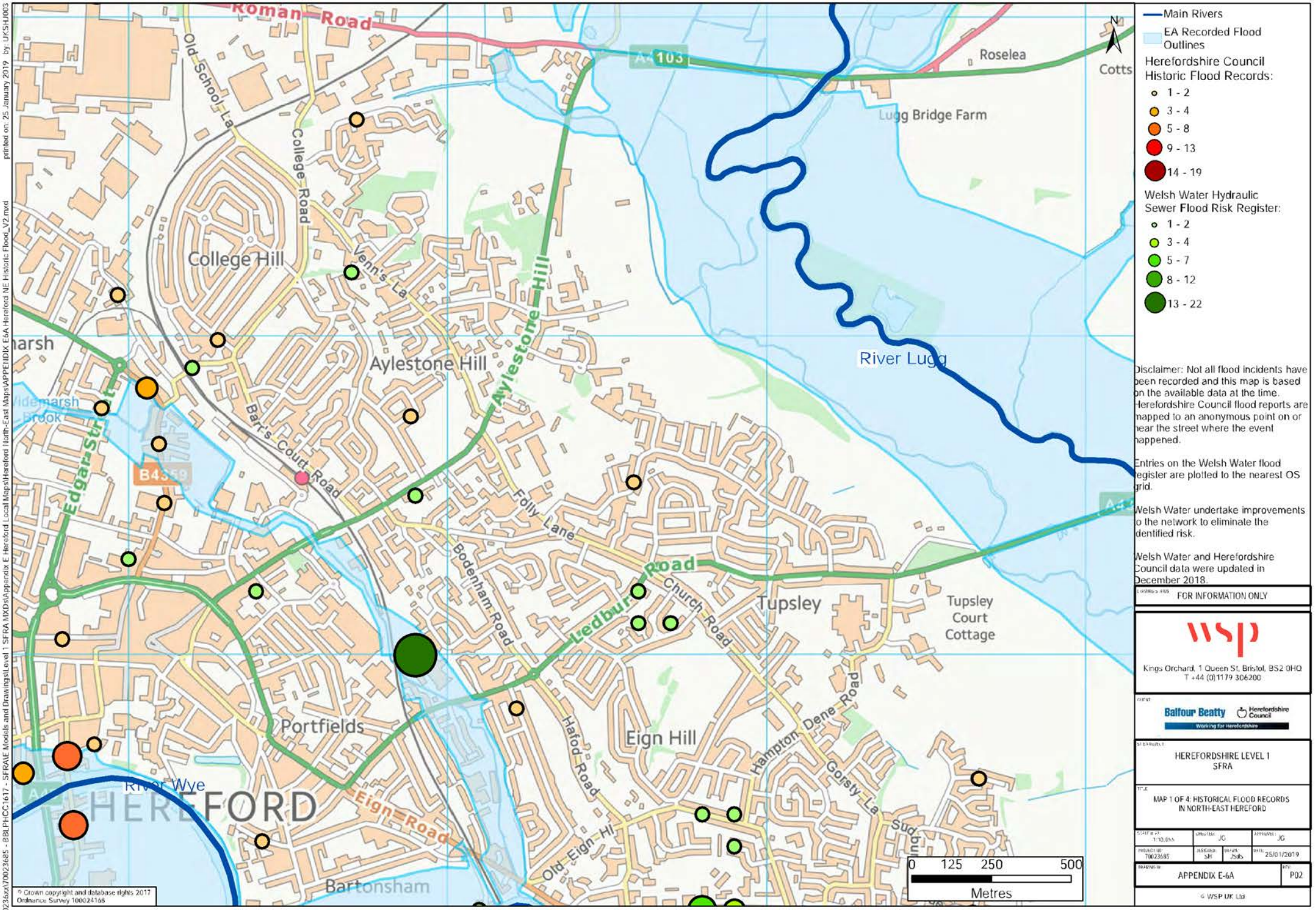

Disclaimer: Not all flood incidents have been recorded and this map is based on the available data at the time. Herefordshire Council flood reports are mapped to an anonymous point on or near the street where the event happened.

Entries on the Welsh Water flood register are plotted to the nearest OS grid.

Welsh Water undertake improvements to the network to eliminate the identified risk.

Welsh Water and Herefordshire Council data were updated in December 2018.

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MAP 1 OF 4: HISTORICAL FLOOD RECORDS IN NORTH-EAST HEREFORD

SCALE @ A1: 1:10,000	DRAWN: JG	APPROVED: JG	
PROJECT NO: 70023685	RESPONSIBLE: SR	CHECK: JSells	DATE: 25/01/2019

DRAWING NO: APPENDIX E-6A | REV: P02

printed on: 25 January 2019 by: UKSH1003
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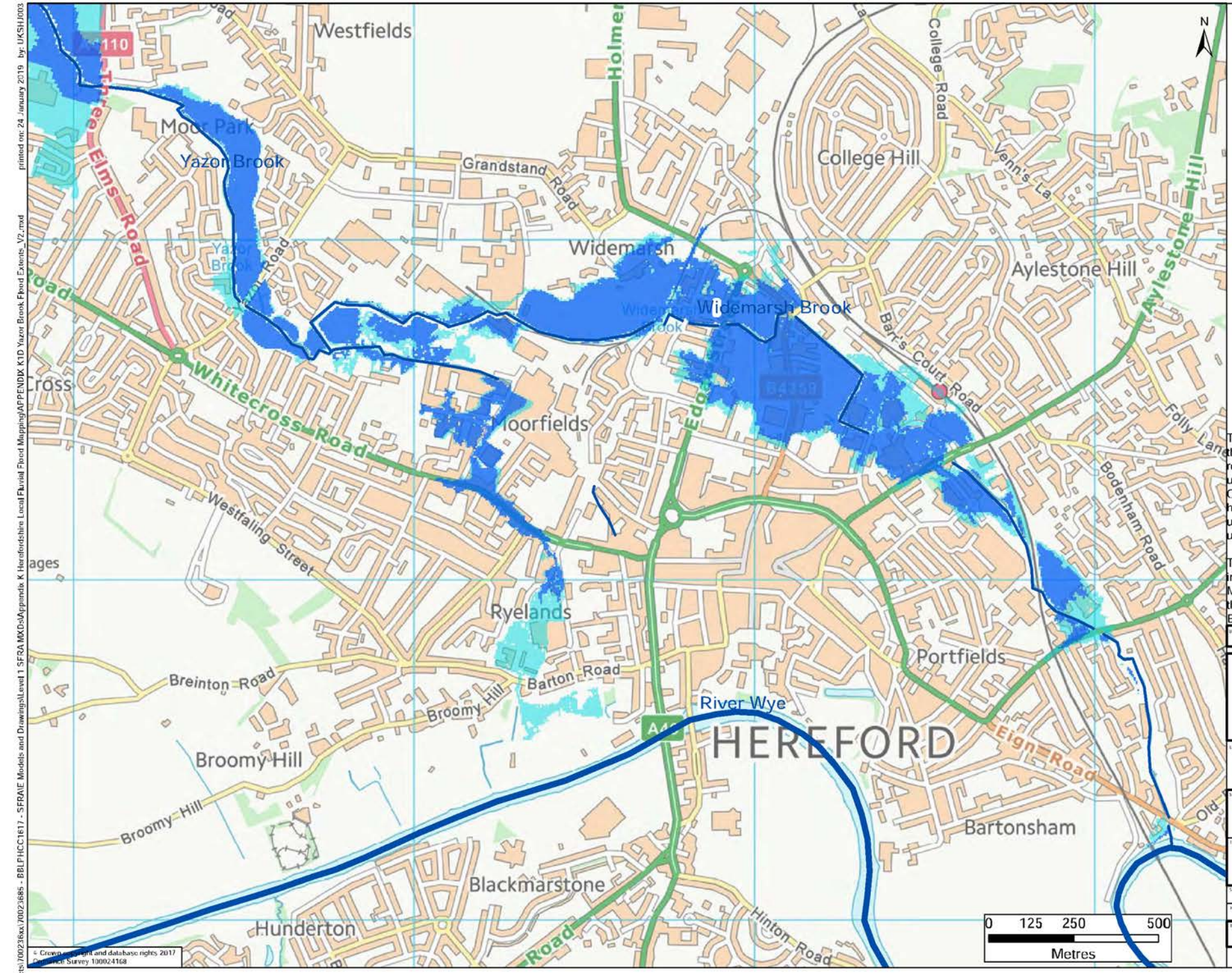

The fluvial flood extents shown are the undefended hydraulic model results for the Yazor Brook undertaken by Herefordshire Council initally in 2005 and has since undergone a number of updates. This mapping was updated in 2016.

This data has not been incorporated into the EA's Flood Map for Planning and therefore this mapping is a supplement to the EA's Flood Map for Planning.

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T +44 (0)1179 306200

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TITLE: MAP 4 OF 4: SUPPLEMENTARY MAPPING OF UNDEFENDED FLUVIAL FLOOD EXTENTS OF THE YAZOR BROOK IN HEREFORD - EAST

SCALE @ A3: 1:10,000	CHECKED: JG	APPROVED: JG	
JOB NO: 70023685	DRAWN: SH	DRAWING: JSdS	DATE: 24/01/2019

DRAWING NO: APPENDIX K-1D — REV: P02

printed on: 24 January 2019 by: UKSHJ003
Projects\70023xx\70023685 - BBLPHCC1617 - SFRA\E Models and Drawings\Level 1 SFRA MXDs\Appendix K Herefordshire Local Fluvial Flood Mapping\APPENDIX K1D Yazor Brook Flood Extents_V2.mxd