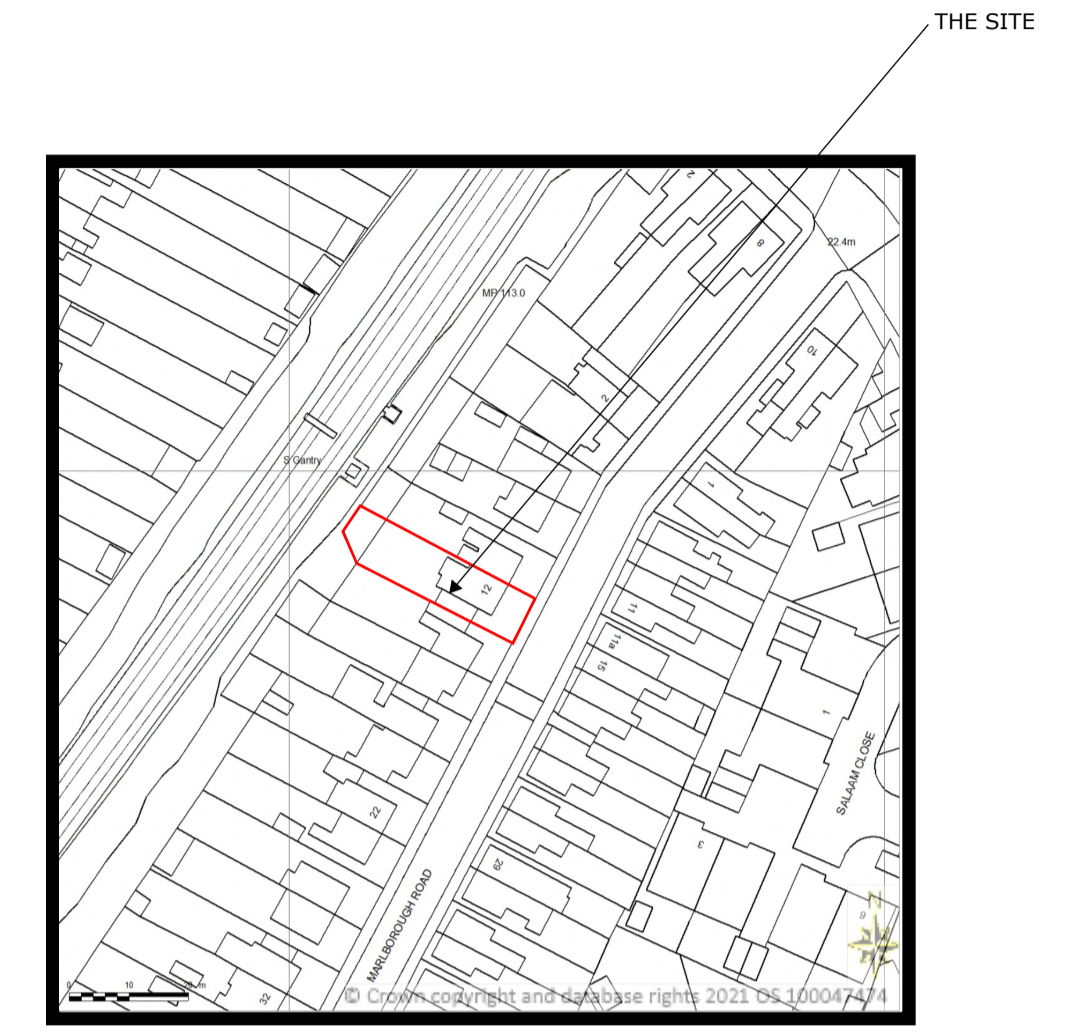


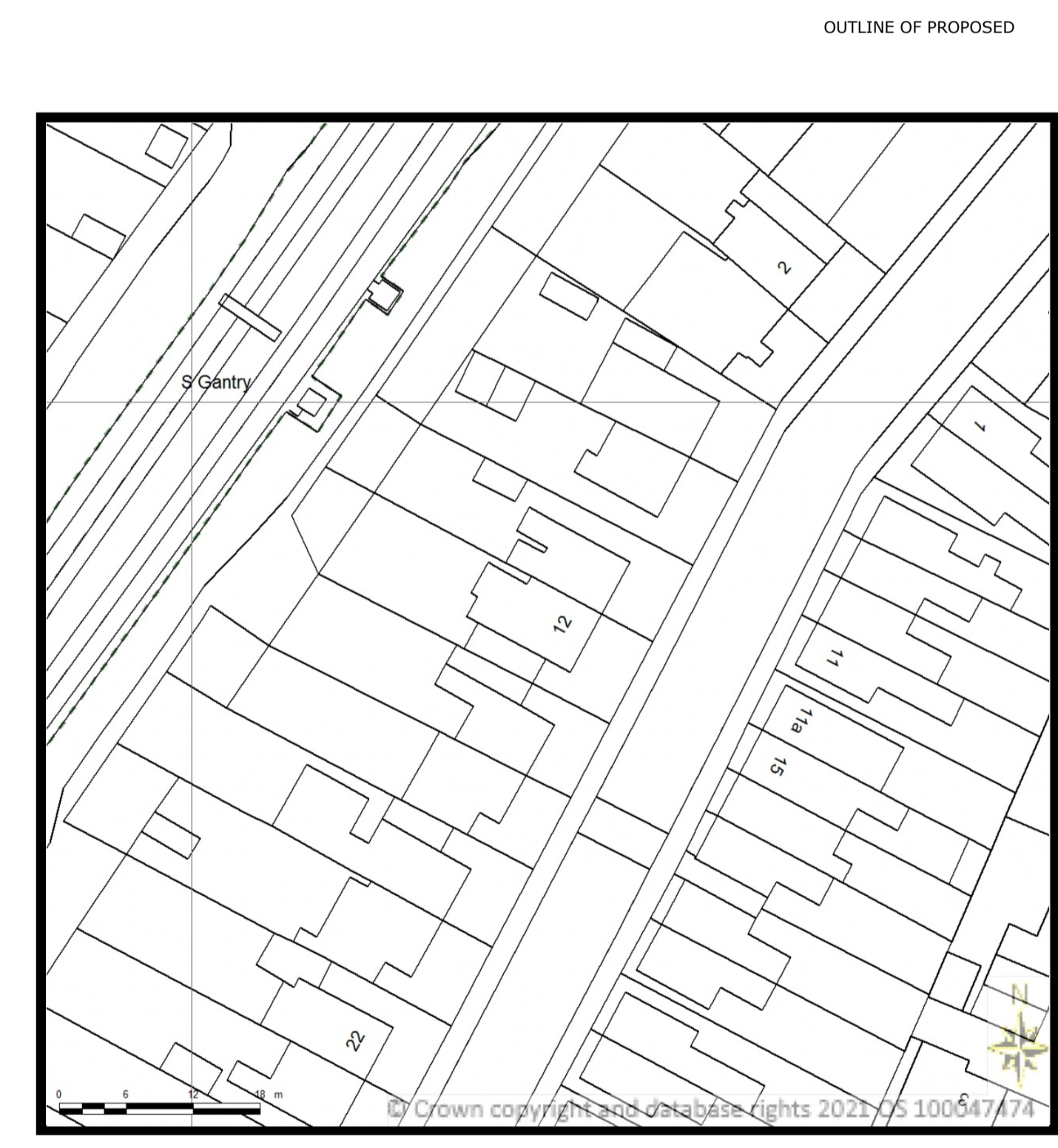
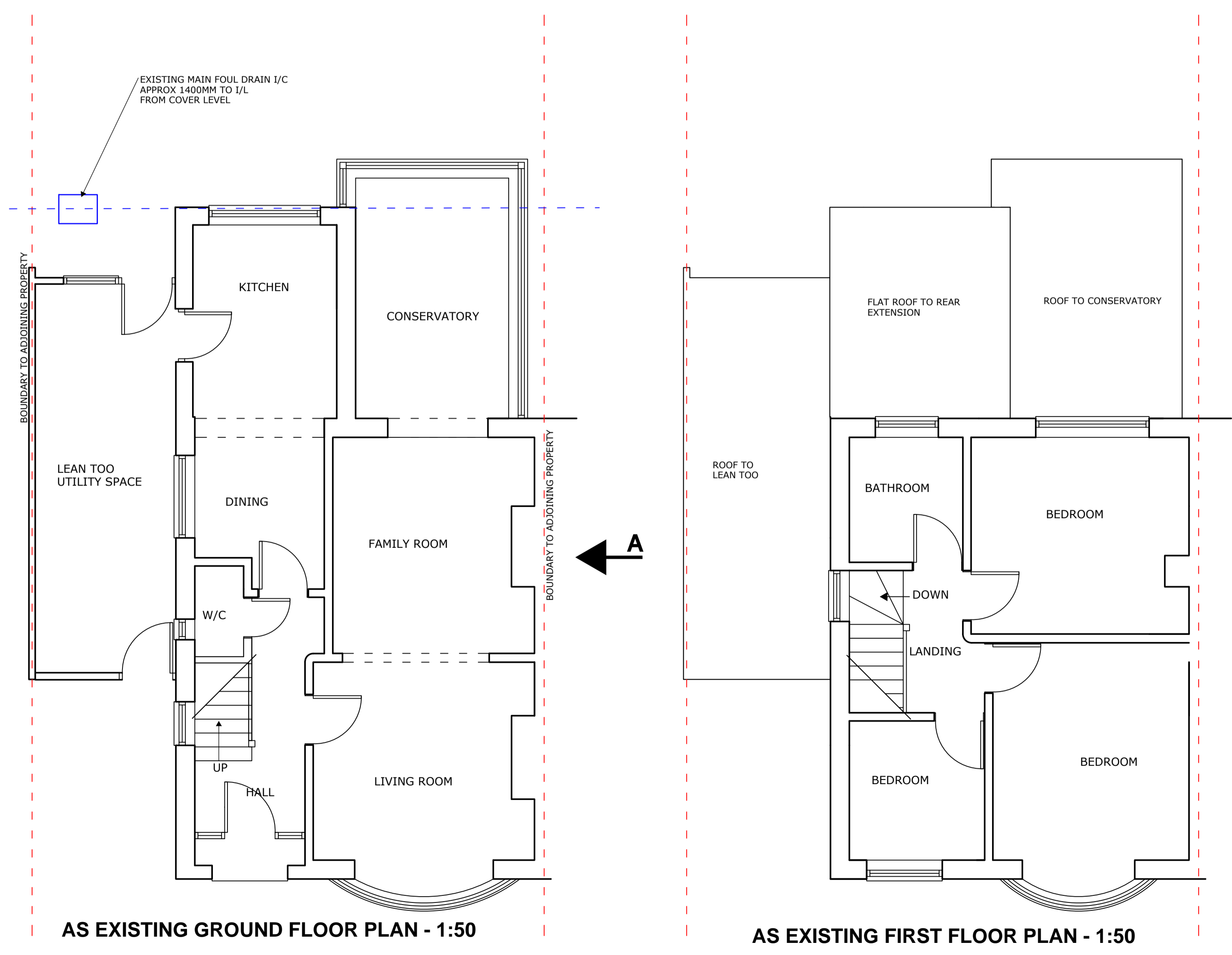
THIS BAR SHOULD SCALE 5M @ 1:100

- NOTES**
- 1) ALL DIMENSIONS TO BE CHECKED ONSITE PRIOR TO CONSTRUCTION. (INTERNAL DIMS MAY CHANGE DEPENDING ON EXTERNAL WALL CONSTRUCTION METHOD)
 - 2) A STRUCTURAL ENGINEER MUST BE CONSULTED FOR ALL STRUCTURAL WORKS
 - 3) WORKS TO BE CARRIED OUT BY COMPETENT, QUALIFIED CONTRACTORS
 - 4) ALL WORKS TO BE CARRIED OUT UNDER ALOCAL AUTHORITY BUILDING NOTICE ALL BUILD NOTES ARE GIVEN BASED ON STANDARD BUILDING REGULATIONS DETAILS AND MAY VARY. CONSTRUCTION METHODS MAY VARY ACCORDING TO BUILDERS PREFERENCE AND BUILDING CONTROL OFFICER REQUIREMENTS. THESE DRAWINGS ARE PRODUCED FOR PLANNING ONLY.



SITE LOCATION PLAN 1:1250

FOR PLANNING ONLY



BLOCK PLAN 1:500

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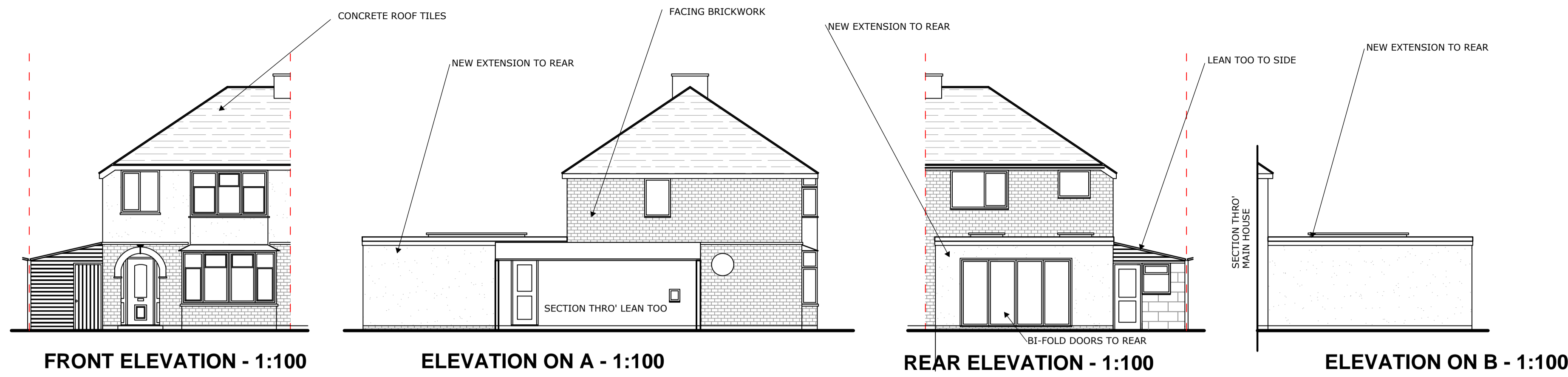
CLIENT/PROJECT:
MR M S MAMODOSALI & MISS T MAMODO
PROPOSED EXTENSION TO REAR OF PROPERTY
12 MARLBOROUGH ROAD, GLOUCESTER GL4 6GE

TITLE:
AS EXISTING PLANS AND ELEVATIONS INCLUDING SITE LOCATION AND BLOCK PLAN

SCALE:
1:1250, 1:500, 1:100 AND 1:50 @ A1

DATE:
MARCH 2021

M-12MR-G-001



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TRENCH FOUNDATION
Provide 750mm x 600mm trench fill foundations, concrete mix to conform to BS EN 206-1 and BS 8500-2. All foundations to be a minimum of 1000mm below ground level, exact depth to be agreed on site with Building Control Officer to suit site conditions. All constructed in accordance with 2004 Building Regulations A12 and BS 8004:1986 Code of Practice for Foundations. Ensure foundations are constructed below invert level of any adjacent drains. Base of foundations supporting internal walls to be min 600mm below ground level. Sulphate resistant cement to be used if required. Please note that should any adverse soil conditions or difference in soil type be found or any major tree roots in excavations, the Building Control Officer is to be contacted and the advice of a structural engineer should be sought.

WALLS BELOW GROUND
All new walls to have Class A blockwork below ground level or alternatively semi engineering brickwork in 1:4 masonry cement or equal approved specification. Cavities below ground level to be filled with lean mix concrete min 225mm below damp proof course. Or provide lean mix backfill at base of cavity wall (150mm below damp course) laid to weepholes.

PIPEWORK THROUGH WALLS
Where new pipework passes through external walls form rocker joints either side wall face of max length 600mm with flexible joints with short length of pipe bedded in wall. Alternatively provide 75mm deep pre-cast concrete plank lintels over drain to form opening in wall to give 50mm space all round pipe, mask opening both sides with rigid sheet material and compressible sealant to prevent entry of fill or vermin.

UNDERGROUND FOUL DRAINAGE
Underground drainage to consist of 100mm diameter UPVC proprietary pipe work to give a 1:40 fall. Surround pipes in 100mm pea shingle. Provide 600mm suitable cover (900mm under drives). Shallow pipes to be covered with 100mm reinforced concrete slab over compressible material. Provide rodding access at all changes of direction and junctions. All below ground drainage to comply with BS EN 1401-1: 2009.

SOLID FLOOR INSULATION OVER SLAB
To meet min U value required of 0.22 W/m²K
Solid ground floor to consist of 150mm consolidated wall-rammed hardcore. Blinded with 50mm sand blinding. Provide 100mm ST2 or Gen2 ground bearing slab concrete mix to conform to BS 8500-2 over a 1200 gauge polythene DPM. DPM to be lapped in with DPC in walls. Floor to be insulated over slab and DPM with min 75mm thick Celotex G44000. 25mm insulation to continue around floor perimeters to avoid thermal bridging. A VCL should be laid over the insulation boards and turned up 100mm at room perimeters behind the skirting, all joints to be lapped 150mm and sealed. Finish with 65mm sand/cement finishing screed with light mesh reinforcement.
Where drain runs pass under new floor, provide A142 mesh 1.0m wide and min 50mm concrete cover over length of drain.
Where existing suspended timber floor air bricks are covered by new extension, ensure cross-ventilation is maintained by connecting to 100mm dia UPVC pipes with 100mm concrete cover laid under the extension. Pipes to terminate at new 65mm x 215mm air bricks with cavity tray over.

FULL FILL CAVITY WALL
To achieve minimum U Value of 0.28W/m²K
20mm two coat sand/cement render to comply to BS EN 13914 with waterproof additive on 100mm block, K value 1.13. (Armstrong dense, Masterblock Monocrete 100s) with fully filled cavity of 100mm Ditherm32 cavity insulation. Inner leaf to be 100mm block, K value 1.13, e.g. Lafarge Stancrate. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1:6 cement mortar.

CAVITIES
Provide cavity trays over openings. All cavities to be closed at eaves and around openings using Thermabate or similar non combustible insulated cavity closers. Provide vertical DPCs around openings and abutments. All cavity trays must have 150mm upstands and suitable cavity weep holes (min 2) at max 900mm centres.

- NOTES**
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THESE DRAWINGS ARE PRODUCED FOR PLANNING ONLY.

RAINWATER DRAINAGE
New rainwater goods to be new 110mm UPVC half round gutters taken and connected into 68mm dia UPVC downpipes. Rainwater taken to existing mains drains where possible, if no suitable drains then to a new soakaway, situated a min distance of 5.0m away from any building, via 110mm dia UPVC pipes surrounded in 150mm granular fill. Soakaway to be min of 1 cubic metre capacity (or to depth to Local Authorities approval) with suitable granular fill and with geotextile surround to prevent migration of fines. If necessary carry out a porosity test to determine design and depth of soakaway.

LEAD WORK AND FLASHINGS
All lead flashings, any valleys or soakers to be Code 5 lead and laid according to Lead Development Association. Flashings to be provided to all jamps and below window openings with welded upstands. Joints to be lapped min 150mm and lead to be dressed 200mm under tiles, etc. All work to be undertaken in accordance with the Lead Development Association recommendations.

ABOVE GROUND DRAINAGE
All new above ground drainage and plumbing to comply with BS EN 12056-2:2000 for sanitary pipework. All drainage to be in accordance with Part H of the Building Regulations. Wastes to have 75mm deep anti vac bottle traps and rodding eyes to be provided at changes of direction.

Size of wastes pipes and max length of branch connections (if max length is exceeded then anti vacuum traps to be used)
Wash basin - 1.7m for 32mm pipe 4m for 40mm pipe
Bath/shower - 3m for 40mm pipe 4m for 50mm pipe
W/c - 6m for 100mm pipe for single WC
All branch pipes to connect to 110mm soil and vent pipe terminating min 900mm above any openings within 3m.
Or to 110mm upvc soil pipe with accessible internal air admittance valve complying with BS EN 12390, placed at a height so that the outlet is above the trap of the highest fitting.
Waste pipes not to connect on to SVP within 200mm of the WC connection.
Supply hot and cold water to all fittings as appropriate.

BACKGROUND AND PURGE VENTILATION
Background ventilation - Controllable background ventilation via trickle vents to BS EN 13141-3 within the window frame to be provided to new habitable rooms at a rate of min 5000mm²; and to kitchens, bathrooms, WCs and utility rooms at a rate of 2500mm²
Purge ventilation - New Windows/roofs/ights to have openable area in excess of 1/20th of their floor area, if the window opens more than 30° or 1/10th of their floor area if the window opens less than 30°
Internal doors should be provided with a 10mm gap below the door to aid air circulation.
Ventilation provision in accordance with the Domestic Ventilation Compliance Guide.

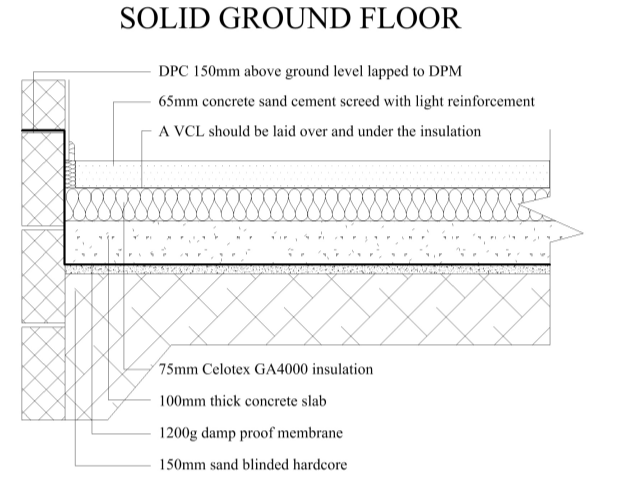
EXTRACT TO BATHROOM
Bathroom to have mechanical vent ducted to external air to provide min 15 litres / sec extraction. Vent to be connected to light switch and to have 15 minute over run if no window in room. Internal doors should be provided with a 10mm gap below the door to aid air circulation. Ventilation provision in accordance with the Domestic Ventilation Compliance Guide. Intermittent extract fans to BS EN 13141-4. All fixed mechanical ventilation systems, where they can be tested and adjusted, shall be commissioned and a commissioning notice given to the Building Control Body.

EXTRACT TO KITCHEN
Kitchen to have mechanical ventilation with an extract rating of 60l/sec or 30l/sec if adjacent to hob to external air, sealed to prevent entry of moisture. Internal doors should be provided with a 10mm gap below the door to aid air circulation. Ventilation provision in accordance with the Domestic Ventilation Compliance Guide. Intermittent extract fans to BS EN 13141-4. Cooker hoods to BS EN 13141-3. All fixed mechanical ventilation systems, where they can be tested and adjusted, shall be commissioned and a commissioning notice given to the Building Control Body.

ELECTRICAL
All electrical work required to meet the requirements of Part P (electrical safety) must be designed, installed, inspected and tested by a competent person registered under a competent person self certification scheme such as BRE certification Ltd, BSU, NICEIC Certification Services or Zurich Ltd. An appropriate BS7671 Electrical Installation Certificate is to be issued for the work by a person competent to do so. A copy of a certificate will be given to Building Control on completion.

INTERNAL LIGHTING
Install low energy light fittings that only take lamps having a luminous efficiency greater than 45 lumens per circuit watt and a total output greater than 400 lamp lumens. Not less than three energy efficient light fittings per foot of all the light fittings in the main dwelling spaces to comply with Part L of the current Building Regulations and the Domestic Building Services Compliance Guide.

HEATING
Extend all heating and hot water services from existing and provide new TRVs to radiators. Heating system to be designed, installed, tested and fully certified by a GAS SAFE registered specialist. All work to be in accordance with the Local Water Authorities bye laws, the Gas Safety (Installation and Use) Regulations 1998 and IEE Regulations.



WALL TIES
All walls constructed using stainless steel vertical twist retaining wall ties built in at 750mm c/s horizontally, 450mm vertically and 225mm c/s at reveals and corners in staggered rows. Wall ties to be suitable for cavity width and in accordance with BS 5628-6.1: 1996 and BS EN 845-1: 2003

LINTELS
- For uniformly distributed loads and standard 2 storey domestic loadings only
Lintel widths are to be equal to wall thickness. All lintels over 750mm sized internal door openings to be 65mm deep pre-stressed concrete plank lintels. 150mm deep lintels are to be used for 900mm sized internal door openings. Lintels to have a minimum bearing of 150mm on each end. Any existing lintels carrying additional loads are to be exposed for inspection at commencement of work on site. All pre-stressed concrete lintels to be designed and manufactured in accordance with BS 8110, with a concrete strength of 50 or 40 N/mm² and incorporating steel strands to BS 5896 to support loadings assessed to BS 5977 Part 1. For other structural openings provide proprietary insulated steel lintels suitable for spans and loadings in compliance with Approved Document A and lintel manufacturers standard tables. Stop ends, DPC trays and weep holes to be provided above all externally located lintels.

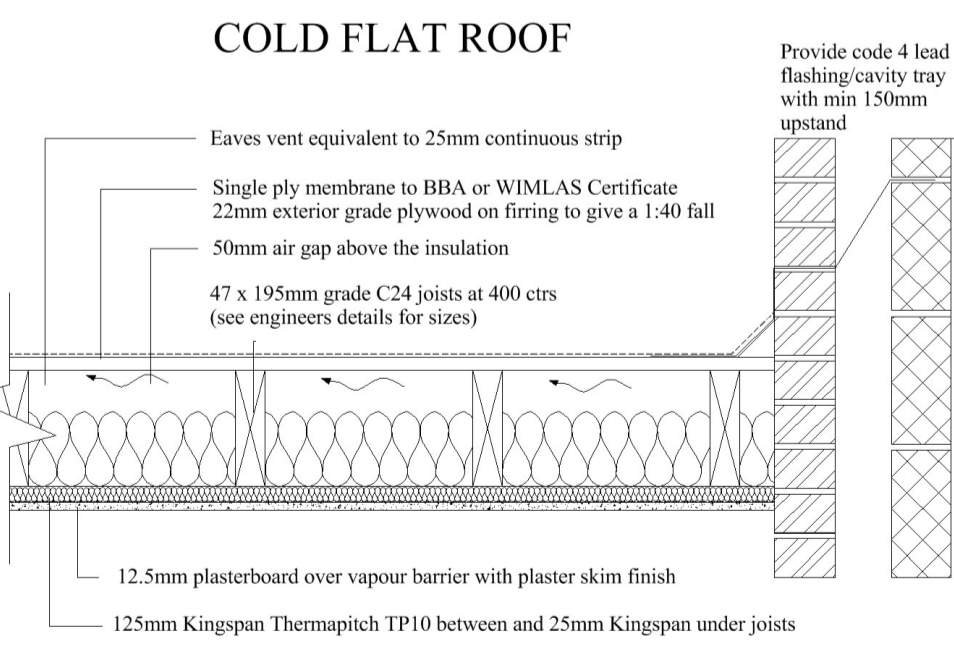
NEW AND REPLACEMENT WINDOWS
New and replacement windows to be double glazed with 16mm argon gap and soft coat low-E glass. Window Energy Rating to be Band C or better and to achieve U-value of 1.6 W/m²K. The door and window openings should be limited to 25% of the extension floor area plus the area of any existing openings covered by the extension.

NEW AND REPLACEMENT DOORS
New and replacement doors to achieve a U-Value of 1.80W/m²K. Glazed areas to be double glazed with 16mm argon gap and soft low-E glass. Glass to be toughened or laminated safety glass to BS 6206, BS EN 14179 or BS EN ISO 12543-1:2011 and Part K (Part N in Wales) of the current Building Regulations.

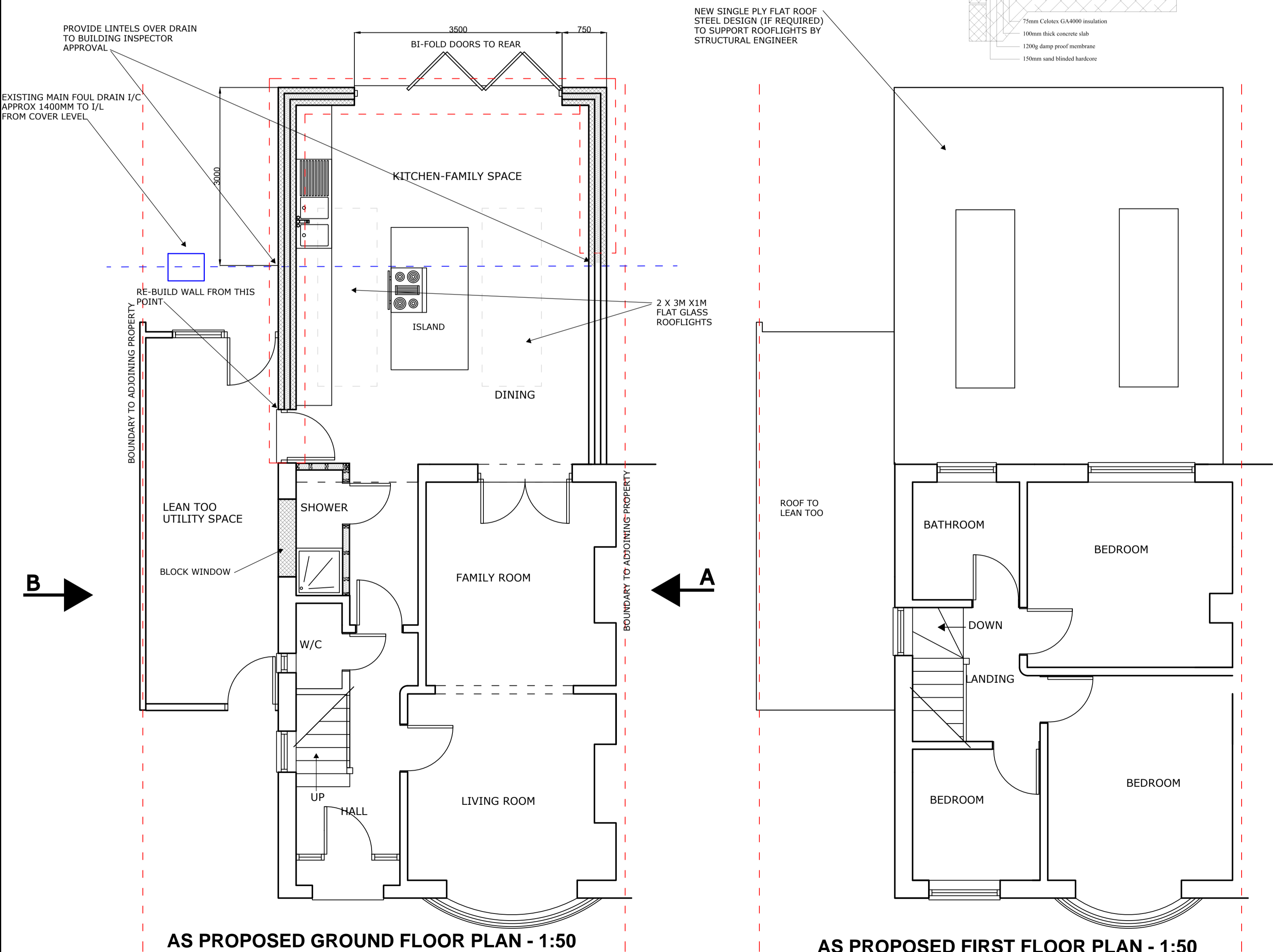
SAFETY GLAZING
All glazing in critical locations to be toughened or laminated safety glass to BS 6206, BS EN 14179 or BS EN ISO 12543-1:2011 and Part K (Part N in Wales) of the current Building Regulations, i.e. within 1500mm above floor level in doors and side panels within 300mm of door opening and within 800mm above floor level in windows.

ESCAPE WINDOWS
Provide emergency egress windows to any newly created first floor habitable rooms and ground floor inner rooms. Windows to have an unobstructed openable area of 450mm high x 450mm wide, minimum 0.33m sq. The bottom of the openable area should be not more than 1100mm above the floor. The window should enable the person to reach a place free from danger from fire.

VENTILATED FLAT ROOF
(imposed load max 1.0 kN/m² - dead load max 0.75 kN/m²)
To achieve U value of 0.18 W/m²K
Flat roof to be single ply membrane roofing with aa fire rating as specialist specification, with a current BBA or WIMLAS Certificate on 22mm exterior grade plywood, laid on firings to give a 1:40 fall on 47 x 195mm grade C24 joists at 400 c/s max span 4.51m (see engineer's details for sizes). Cross-ventilation to be provided on opposing sides by a proprietary eaves ventilation strip equivalent to 25mm continuous ventilation, with fly proof screen. Flat roof insulation is to be continuous with the wall insulation but stepped back to allow a continuous 50mm air gap above the insulation for ventilation. Insulation to be 125mm Kingspan Thermafloor between joists and 25mm Kingspan under joists. Ceilings to be 12.5mm plasterboard over vapour barrier with skim plaster finish.
Provide cavity tray where pitched roof meets existing wall. Provide restraint to flat roof by fixing using of 30 x 5 x 1000mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall. Workmanship to comply to BS 8000-4. THIS IS A GENERAL GUIDE BASED ON NORMAL LOADING CONDITIONS FOUND IN DOMESTIC CONSTRUCTION. IT IS YOUR RESPONSIBILITY TO ASSESS YOUR DESIGN TO ASCERTAIN WHETHER ENGINEER'S DETAILS/CALCULATIONS ARE REQUIRED. PLEASE REFER TO THE TRADA DOCUMENT - 'SPAN TABLES FOR SOLID TIMBER MEMBERS IN FLOORS, CEILINGS AND ROOFS FOR DWELLINGS' OR ASK YOUR BUILDING CONTROL OFFICER FOR ADVICE.



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FOR PLANNING ONLY

HOMEPLAN
DRAFTING SERVICES

ARCHITECTURE PLANNING DESIGN

CLIENT/PROJECT:
MR M S MAMODOSALI & MISS T MAMODO

PROPOSED EXTENSION TO REAR OF PROPERTY
12 MARLBOROUGH ROAD, GLOUCESTER GL4 6GE

TITLE:
AS PROPOSED PLANS AND ELEVATIONS

SCALE:
1:100 AND 1:50 @ A1

DATE:
MARCH 2021

M-12MR-G-002

Flood Risk and Coastal Change

Climate Change allowances for planning (SHWG area)

August 2021

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 March 2016 guidance.

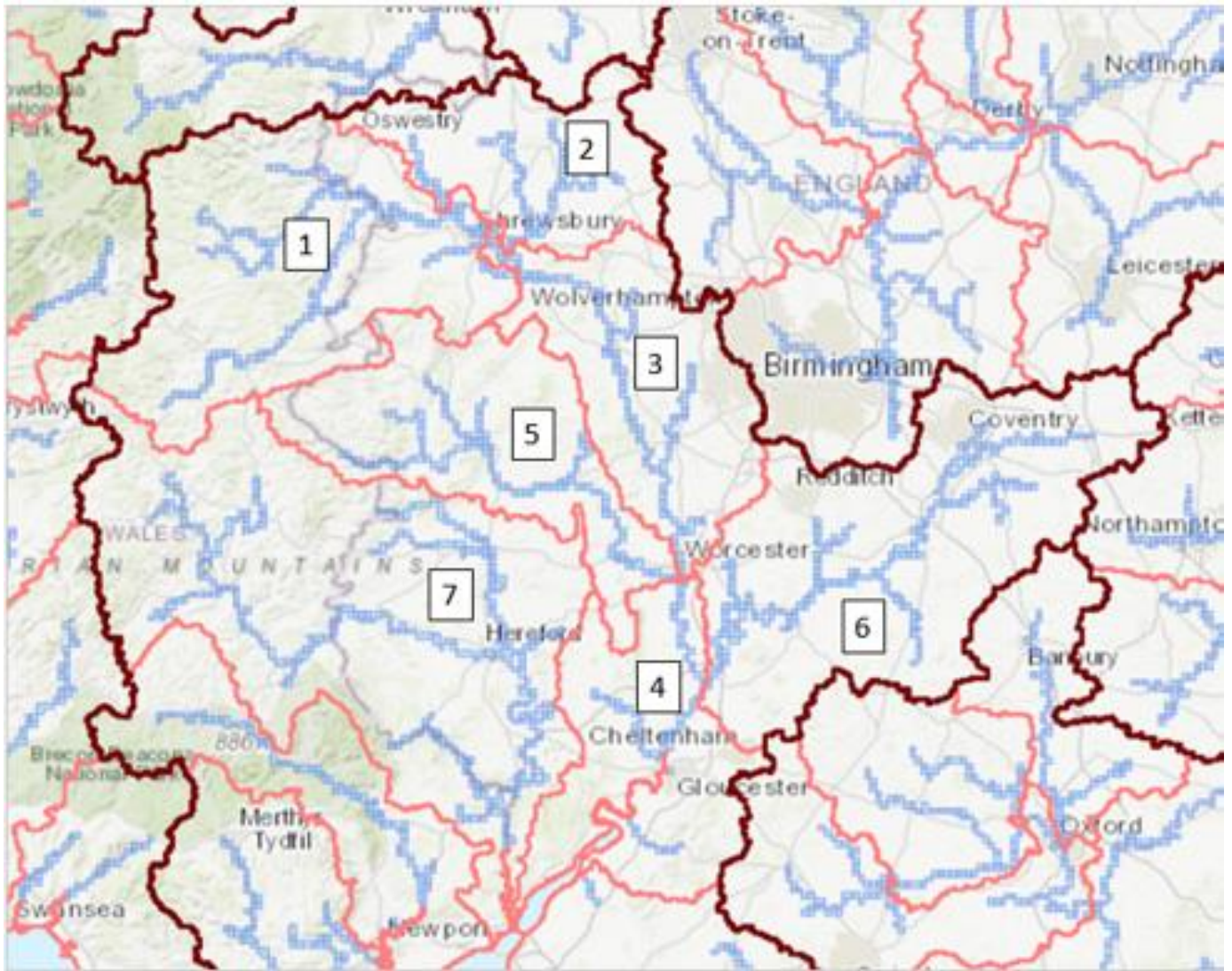
It should be used to help planners, developers and advisors implement the National Planning Policy Framework (NPPF)'s policies and practice guidance on flood risk. It will help inform Flood Risk Assessments (FRA's) for planning applications, local plans, neighbourhood plans and other projects.

Fluvial flooding – peak river flows

NPPG advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to a 'management catchment' and development type (vulnerability). To work out which management catchment allowances to use, you need to: access the climate change allowances for [peak river flow map](#)

In Shropshire, Herefordshire, Worcestershire and Gloucestershire area, we would refer you to the map extract on page 2 below. This outlines the '**peak river flows**' within the specific 'Management catchments' for the Severn River Basin District, and specifies the range of percentage allowances to reflect individual development's vulnerability and lifetime. The following allowances should be used:

| Development Vulnerability | Allowance (lifetime) |
|---|-------------------------|
| Essential Infrastructure | Higher Central - 2080's |
| Highly Vulnerable and More Vulnerable (residential) | Central - 2080's |
| Less Vulnerable and Water Compatible | Central - 2050's |



| | | | | | | | |
|---|---------------|---------------|---------------|---------------------------------|---------------|---------------|---------------|
| 1. Severn Uplands Peak River Flows | 2020's | 2050's | 2080's | 5. Teme Peak River Flows | 2020's | 2050's | 2080's |
| Higher Central | 17% | 24% | 43% | Higher Central | 21% | 33% | 60% |
| Central | 13% | 18% | 33% | Central | 16% | 24% | 45% |
| 2. Severn Middle Shrops Peak River Flows | 2020's | 2050's | 2080's | 6. Avon Peak River Flows | 2020's | 2050's | 2080's |
| Higher Central | 20% | 25% | 44% | Higher Central | 12% | 14% | 32% |
| Central | 15% | 18% | 33% | Central | 7% | 8% | 21% |
| 3. Severn Middle Worcs River Flows | 2020's | 2050's | 2080's | 7. Wye Peak River Flows | 2020's | 2050's | 2080's |
| Higher Central | 16% | 21% | 40% | Higher Central | 19% | 27% | 49% |
| Central | 12% | 15% | 30% | Central | 14% | 20% | 37% |
| 4. Severn Vale Peak River Flows | 2020's | 2050's | 2080's | | | | |
| Higher Central | 20% | 28% | 53% | | | | |
| Central | 14% | 19% | 37% | | | | |

Extract: Management Catchments within the Severn River Basin District – refer to interactive [peak river flow map](#) for more detail. The Environment Agency also provide these allowances in the [peak river flow climate change allowances by management catchment table](#) – you have to know your management catchment to get the information you need. (Allowances reflect the latest projections in UKCP18 and subsequent research that models how the latest rainfall projections are likely to affect peak river flows).

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
0845 988 1188

www.environment-agency.gov.uk

Sea Level rise allowances

Table 3 of the guidance (extract below) indicates that net sea level risk is as follows (updated from the 2013 version).

| Area of England | Allowance | 2000 to 2035 (mm) | 2036 to 2065 (mm) | 2066 to 2095 (mm) | 2096 to 2125 (mm) | Cumulative rise 2000 to 2125 (metres) |
|-----------------|----------------|-------------------|-------------------|-------------------|-------------------|---------------------------------------|
| South West | Higher central | 5.8 (203) | 8.8 (264) | 11.7 (351) | 13.1 (393) | 1.21 |
| South West | Upper end | 7 (245) | 11.4 (342) | 16 (480) | 18.4 (552) | 1.62 |

Note - For sites utilising the Severn tidal model the above allowances should be considered and applied. As of August 2020, specific updated flood level data is now available for the 2096 to 2125 epoch based upon the Environment Agency's Tidal Severn model within the West Midlands area and will be provided where relevant as part of our Request For Information service; contact Enquiries_Westmids@environment-agency.gov.uk

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 'higher central' climate change allowance (2080).
- For highly vulnerable or more vulnerable development e.g. housing, the FRA should use the 'central' climate change allowance (2080), as a minimum, to inform built in resilience.
- For water compatible or less vulnerable development e.g. commercial, the FRA should use the 'central' climate change allowance (2050), as a minimum, to inform built in resilience.

Assessing off-site impacts and calculating floodplain storage compensation

The appropriate allowance to assess off-site impacts and calculate floodplain storage compensation depends on land uses in affected areas. Use the central 2080 allowance for most cases (including where more vulnerable or highly vulnerable is affected) but apply the higher central allowance when the affected area contains essential infrastructure.

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 within your Management catchment area location.

Scenario 2 - Re-run an existing model and incorporate relevant climate change allowances as specified in the Management catchment area data.

• **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/ukxi/2015/595/pdfs/ukxi_20150595_en.pdf

Table of Nominal Allowances

| Watercourse | Central allowance (2050) Water compatible and Less Vulnerable. | Central allowance (2080) More Vulnerable |
|---|---|---|
| Upper Severn | 600mm | 850mm |
| River Wye | | |
| River Teme | | |
| | | |
| River Avon | 200mm | 400mm |
| | | |
| Lower Severn | 400mm | 600mm |
| | | |
| Tributaries and 'ordinary watercourses' | 200mm | 300mm |

Notes to above:-

(i) Watercourse definition:

The "Upper Severn"/"Lower Severn" boundary is taken as Bevere Weir, North of Worcester, (national grid reference SO8376859428). These do not directly relate to management catchments.

Use of the Avon nominal is only valid upstream of the M5 crossing and downstream of that point the Lower Severn nominals should be used.

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: WestMidsPlanning@environment-agency.gov.uk

West Midlands Area -

Shropshire, Herefordshire, Worcestershire and Gloucestershire Sustainable Places Team.

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
0845 988 1188

www.environment-agency.gov.uk

Reference: GCFRC21/263
Flood Risk Assessment to support
planning application
12 Marlborough Road
Gloucester
GL4 6GE

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1.0 Scope of Report:

- 1.1 The following report is being written in support of the development proposal at 12 Marlborough Road. In line with local and national planning policy, it is necessary that a Flood Risk Assessment (FRA) be undertaken to evaluate the flood risk associated with the proposed development. This FRA has been carried out in line with the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG).

2.0 Site Location:

- 2.1 The site address is: 12 Marlborough Road, Gloucester, GL4 6GE and the location is NGR: SO 84333 17180. The red-lined boundary for the site can be found in the submitted plans ref: M-12MR-G-001.
- 2.2 At this location and due to the type of planning application, the Local Planning Authority (LPA) is Gloucester City Council. With this in mind, the following report pays consideration to the relevant policies included emerging Gloucester City Plan.

3.0 Description of Proposal:

- 3.1 The proposed development would result in a single-storey rear extension to an existing residential dwelling.

4.0 Flood Risk Setting:

- 4.1 As shown in Appendix 1, the proposed development site location is partially in Flood Zone 2 (Medium Risk) according to the Environment Agency (EA) Flood Maps for Planning and as defined by Table 1 in the Flood and Coastal Change section of the Planning Practice Guidance (PPG).
- 4.2 As the proposal is for an extension to an existing residential dwelling and there is no change of use associated with the development, there is no increase in the flood risk vulnerability associated with the proposal.

5.0 Sequential and Exception Tests:

- 5.1 National Planning policy dictates that a LPA takes a sequential approach to development planning and control in order to steer new development to the areas with the lowest risk of flooding. In the case of this development, there is not a viable option in an area at a lower risk of flooding than the one proposed which would meet the needs of this proposal. Gloucester City Council should take into account the lack of

alternatives offered to the applicant when considering the Sequential Test.

- 5.2 Due to the nature of the proposed development, it is not required to pass the Exception Test in line with Table 3 of the Flood and Coastal Change Section of the PPG.
- 5.3 Although the development is not required to pass the Exception Test, the development still accords with the principles of the Exception Test by being safe for the duration of its lifetime and does not cause any increased flood risk to third parties.

6.0 Site-Specific Flood Risk:

6.1 Fluvial:

- 6.1.1 The site is partially in Flood Zone 2 (medium risk) according to the Environment Agency's (EA's) Flood Maps for Planning. According to the flood level data provided by the EA (included in the submitted documents), the main source of flood risk for this site is the Sud Brook. In the case of this proposal, it appears that the footprint of the proposed development would be entirely in Flood Zone 1

6.2 Pluvial:

- 6.2.1 According to the Environment Agency's Flood Warning Information Service the site is at Very Low Risk of flooding from surface water.

6.3 Coastal:

- 6.3.1 According to the Environment Agency's Flood Warning Information Service the site is at Very Low Risk from flooding due to the sea.

6.4 Reservoirs:

- 6.4.1 According to the Environment Agency's 'Risk of Flooding from Reservoirs Maximum Flood Speed', the site is at low risk of flooding from reservoirs.

7.0 Climate Change and Design Flood Level (DFL)

- 7.1 The consideration of flood risk associated on this site should take into account the current guidance for the anticipated effect of climate change on flood levels in this area. For this development, a proportionate approach would be to use the nominal allowances given by the "Flood Risk and Coastal Change: Climate Change allowances for planning (SHWG area)" (August 2021) document.
- 7.2 This site is located within the Severn River Basin District. The Levels given in the Product 4 Data (see supporting documents) obtained from the EA shows the annual exceedance probabilities for the 20% - 0.1% storm events. For this assessment we will consider the 1% or 1 in 100 storm event and include the tributaries central allowance nominal increase for climate change, which is 300mm. This is in accordance

with the guidance given by the Environment Agency's 'Climate Change allowances for planning (SHWG area)'.

- 7.3 The nearest node on the Node Point Map (see supporting documents) supplied by the EA shows that Node Point ref: SB01931 is the closest point to the site. This is the point for which this assessment uses to consider the flood levels given in the Product 4 Data.
- 7.4 For this assessment and using the above methodology:

$$\text{DFL} = (21.45\text{m AOD} + 0.3\text{m}) = \underline{21.75\text{m AOD}}$$

- 7.5 Below is a table showing the depth of flooding on-site using the EA's LIDAR data (all data gathered using the EA composite 2m spatial resolution LIDAR data). Figures 1 and 2 show where these points are on the site and these points plotted on the EA LIDAR map layer to extract the ground level data, respectively.
- 7.6 The LIDAR analysis shows the depth of flooding at each point plotted in Figures 1 and 2 in a design flood event.

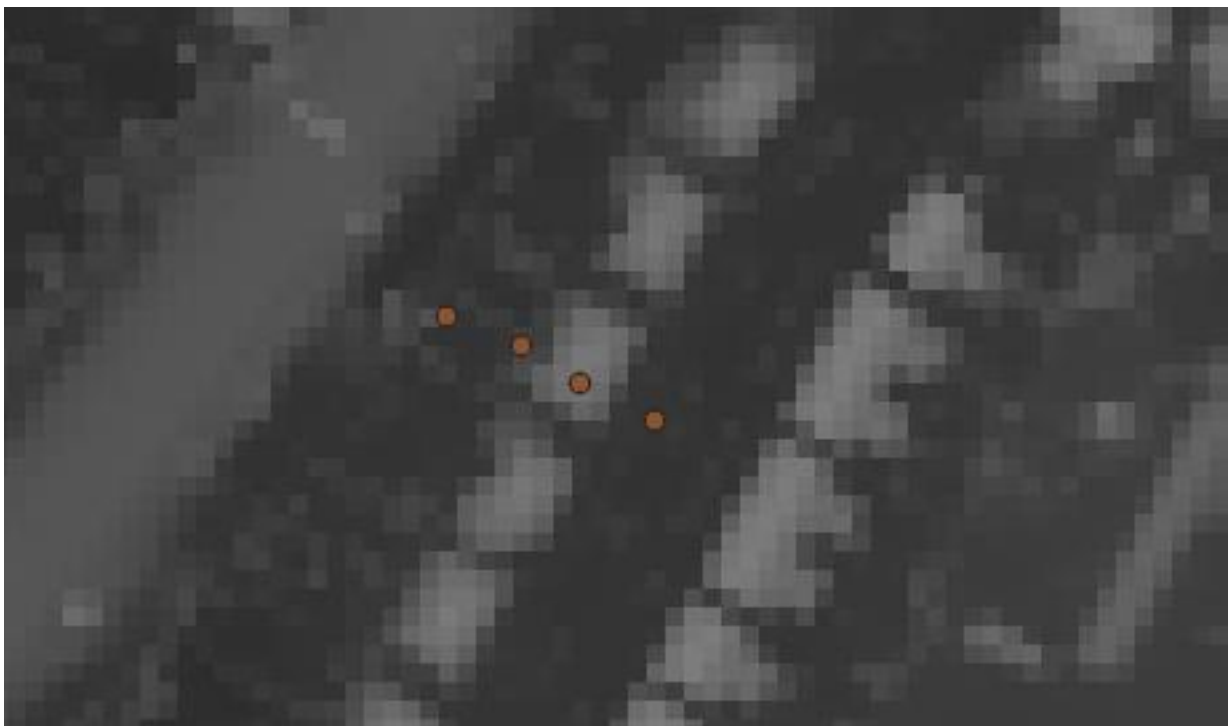
Table 1:

| Description | Grid Reference | X | Y | Ground Level | Flood Depth |
|-------------|----------------|--------|--------|--------------|-------------|
| Point A | SO 84341 17176 | 384341 | 217176 | 22.81m AOD | 0m |
| Point B | SO 84333 17180 | 384333 | 217180 | 29.41m AOD | 0m |
| Point C | SO 84327 17184 | 384327 | 217184 | 24.978m AOD | 0m |
| Point D | SO 84319 17187 | 384319 | 217187 | 23.47m AOD | 0m |

Figure 1:



Figure 2:



8.0 Flood Risk Mitigation and Resilience:

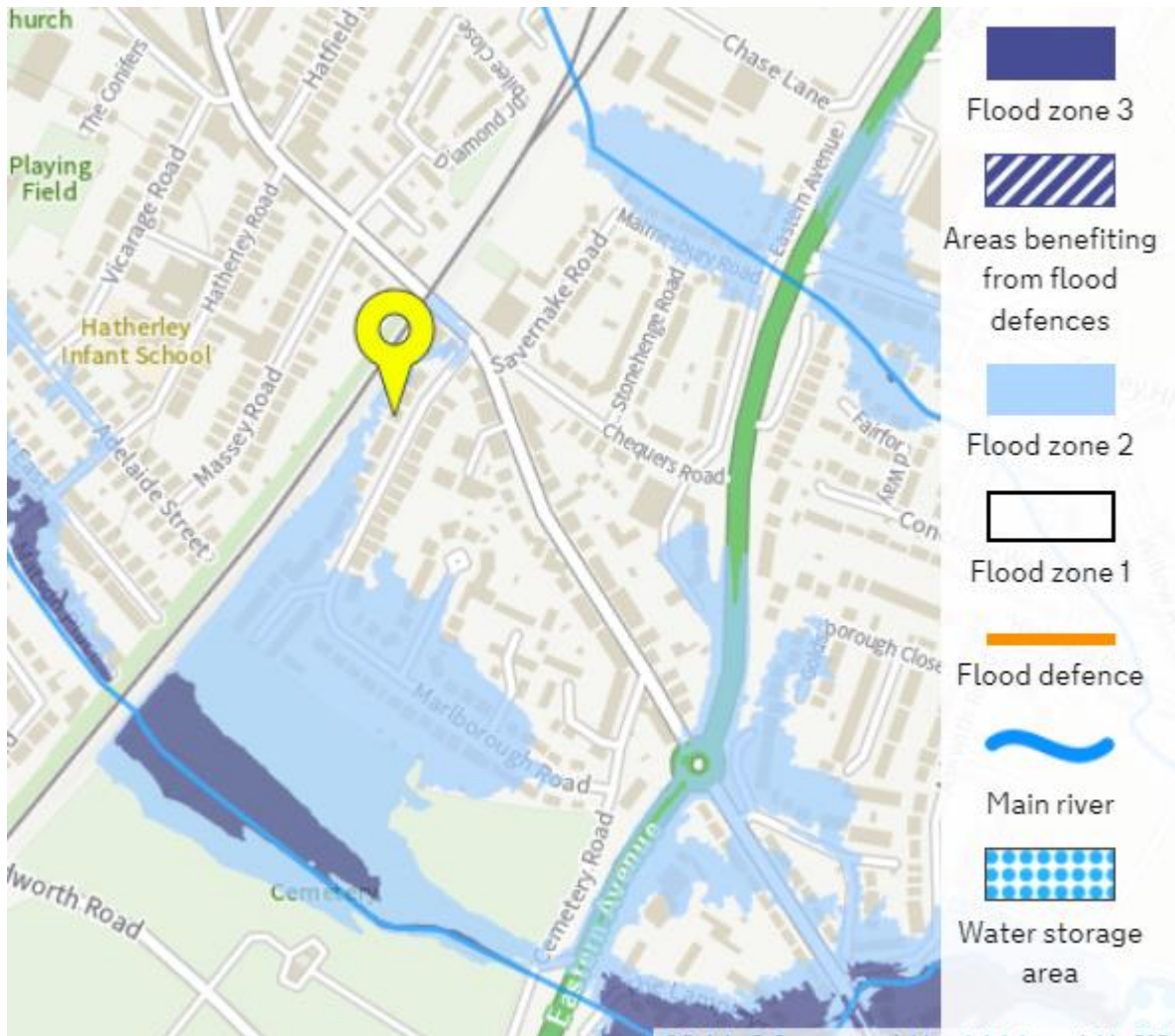
- 8.1 The finished floor levels of the proposed development will be set no lower than those of the existing dwelling.
- 8.2 There are no specific resilience measures necessary for this development.

9.0 Summary

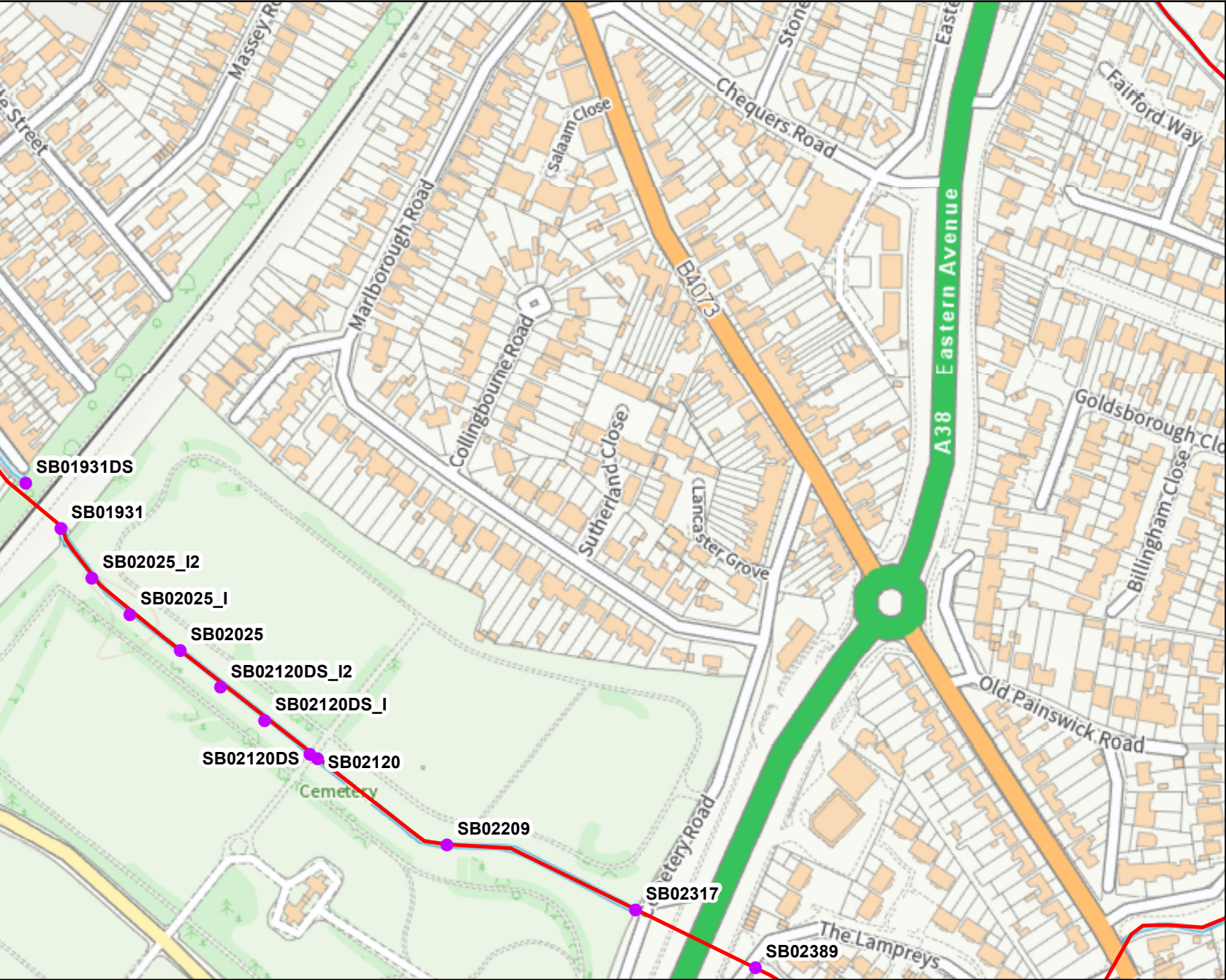
- 9.1 According to Environment Agency data, in a design flood event with the appropriate allowance for climate change, the site would remain dry
- 9.2 There are no sources of flooding, other than fluvial, that need to be considered for this proposal.

Appendices

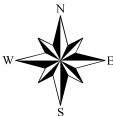
Appendix 1: Flood Maps for Planning



Sud Brook Model Node Location Map including GL4 6GE - created 04/11/2021 [239551]



Scale 1: 3000



Legend

- Sud Brook Model Node Point
- Main River



Created by Partnerships and Strategic Overview Team, West Midlands

Product 4 (Detailed Flood Risk Data) for 12 Marlborough Road, Gloucester, GL4 6GE

Reference number: 239551

Date of issue: 04 November 2021

Model Information

The following information and attached maps contain a summary of the modelled information relevant to the area of interest. The information provided is based on the best available data as of the date of issue.

| Model Name | Release Date |
|------------|--------------|
| Sud Brook | 2009 |

Flood Map for Planning (Rivers and Sea)

The Flood Map for Planning (Rivers and Sea) indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring in any year for fluvial (river) flooding (Flood Zone 3). It also shows the extent of the Extreme Flood Outlines (Flood Zone 2) which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. The Flood Zones refer to the land at risk of flooding and **do not** refer to individual properties. It is possible for properties to be built at a level above the floodplain but still fall within the risk area.

This Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water, sewers, road drainage, etc.

To find out which flood zone a location is in please use: <https://flood-map-for-planning.service.gov.uk/>

Definition of flood zones

- **Zone 1** - The area is within the lowest probability of flooding from rivers and the sea, where the chance of flooding in any one year is less than 0.1% (i.e. a 1000 to 1 chance).

Email: [REDACTED]

Website: www.gov.uk/government/organisations/environment-agency

- **Zone 2** - The area which falls between the extent of a flood with an annual probability of 0.1% (i.e. a 1000 to 1 chance) fluvial and tidal, or greatest recorded historic flood, whichever is greater, and the extent of a flood with an annual probability of 1% (i.e. a 100 to 1 chance) fluvial / 0.5% (i.e. a 200 to 1 chance) tidal. (Land shown in light blue on the Flood Map).
- **Zone 3** - The chance of flooding in any one year is greater than or equal to 1% (i.e. a 100 to 1 chance) for river flooding and greater than or equal to 0.5% (i.e. a 200 to 1 chance) for coastal and tidal flooding.

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the [Strategic Flood Risk Assessment](#) when considering location and potential future flood risks to developments and land uses.

Areas Benefitting From Defences

Where possible we show the areas that benefit from the flood defences, in the event of flooding:

- from rivers with a 1% (1 in 100) chance in any given year, or;
- from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there, these areas would flood. Please note that we do not show all areas that benefit from flood defences.

The associated Dataset is available here: <https://data.gov.uk/dataset/flood-map-for-planning-rivers-and-sea-areas-benefiting-from-defences>

Node Data/ Modelled Levels

The attached map will show a selection of 1D model node points near to your site. The fluvial levels for these node points are shown below.

Fluvial Flood Levels (m AOD)

The modelled levels are given in m AOD (N), m AOD indicates metres Above Ordnance Datum (Newlyn).

The information is taken from the model referenced above and does not include the updated climate change figures.

| Node Label | Easting | Northing | Annual Exceedance Probability - Maximum Water Levels (m AOD) (defended) | | | | | | | |
|--------------|---------|----------|---|------------------|-----------------|-----------------|--------------------|------------------|--|---------------------|
| | | | 20% (1 in 5) | 10% (1 in 10) | 5% (1 in 20) | 2% (1 in 50) | 1.33% (1 in 75) | 1% (1 in 100) | 1% (1 in 100) inc. 20% increase in inflows | 0.1% (1 in 1000) |
| SB02389 | 384501 | 216705 | 21.39 | 21.59 | 21.79 | 22.07 | 22.20 | 22.29 | 22.61 | 23.38 |
| SB02317 | 384436 | 216736 | 20.93 | 21.10 | 21.30 | 21.61 | 21.78 | 21.90 | 22.10 | 22.91 |
| SB02209 | 384334 | 216772 | 20.41 | 20.62 | 20.92 | 21.37 | 21.61 | 21.77 | 21.96 | 22.92 |
| SB02120 | 384264 | 216819 | 19.98 | 20.23 | 20.62 | 21.15 | 21.41 | 21.58 | 21.89 | 22.92 |
| SB02120DS | 384260 | 216821 | 19.85 | 20.08 | 20.47 | 21.01 | 21.28 | 21.47 | 21.86 | 22.92 |
| SB02120DS_I | 384235 | 216839 | 19.73 | 19.98 | 20.42 | 20.98 | 21.26 | 21.46 | 21.86 | 22.92 |
| SB02120DS_I2 | 384211 | 216857 | 19.66 | 19.93 | 20.40 | 20.96 | 21.26 | 21.46 | 21.85 | 22.92 |
| SB02025 | 384189 | 216877 | 19.62 | 19.90 | 20.38 | 20.96 | 21.26 | 21.46 | 21.85 | 22.92 |
| SB2025_I | 384162 | 216897 | 19.56 | 19.85 | 20.35 | 20.96 | 21.25 | 21.46 | 21.85 | 22.92 |
| SB2025_I2 | 384141 | 216917 | 19.49 | 19.78 | 20.29 | 20.95 | 21.25 | 21.46 | 21.85 | 22.93 |
| SB01931 | 384124 | 216944 | 19.35 | 19.63 | 20.17 | 20.93 | 21.24 | 21.45 | 21.85 | 22.94 |
| SB01931DS | 384105 | 216968 | 18.98 | 19.07 | 19.23 | 19.43 | 19.50 | 19.55 | 19.66 | 19.82 |

Modelled Flood Extents

Available modelled flood outlines produced as part of the detailed modelling have been provided to you in GIS format, these show modelled flood extents. Climate change will increase flood risk due to overtopping of defences.

<https://ea.sharefile.com/d-s626b7d4bfcf4ccf9>

Climate Change

The '[Flood Risk Assessments: Climate Change Allowances](#)' are published on gov.uk. This is in replacement of previous climate change allowances for planning applications. The data provided in this product does not include the new allowances. You will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding. The climate change factors are now more complex and a single uplift percentage across England cannot be justified.

The Environment Agency will incorporate the new allowances into future modelling studies. For now it remains the applicant's responsibility to demonstrate through their proposal and flood risk assessments that new developments will be safe in flood risk terms for its lifetime.

Recorded Flood Outlines

Following examination of our records of historical flooding we have no record of flooding in the area. The absence of coverage for an area does not mean that the area has never flooded, only that we do not currently have records of flooding in this area. It is also possible that the pattern of flooding in this area has changed and that this area would now flood or not flood under different circumstances.

Please note; the records of flooding from between October 2019 and March 2020 and beyond are still being reviewed, the outcomes of which have not yet been published or reflected within this request for information.

You may also wish to contact your Local Authority or Internal Drainage Board, to see if they have other relevant local flood information.

Flood Defences

Flood defences do not completely remove the chance of flooding. They can be overtopped by water levels which exceed the capacity of the defences.

If flood defences are located in your area, you can access this data here:

<https://data.gov.uk/dataset/spatial-flood-defences-including-standardised-attributes>

Planning developments

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments. You can also request pre application advice:

<https://www.gov.uk/planning-applications-assessing-flood-risk>

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Supporting Information

Surface Water

Managing the risk of flooding from surface water is the responsibility of Lead Local Flood Authorities. The 'risk of flooding from surface water' map has been produced by the Environment Agency on behalf of government, using information and input from Lead Local Flood Authorities.

You may wish to contact your Local Authority who may be able to provide further detailed information on surface water.

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Agency's website:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk>

Flood Risk from Reservoirs

The Flood Risk from Reservoirs map can be found on the Long Term Flood Risk Information website:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?map=Reservoirs>

Flood Alert & Flood Warning Area

We issue flood alert/warnings to specific areas when flooding is expected. If you receive a flood warning you should take immediate action.

You can check whether you are in a Flood Alert/Warning Area and register online using the links below:

<https://www.gov.uk/check-flood-risk>

<https://www.gov.uk/sign-up-for-flood-warnings>

If you would prefer to register by telephone, or if you need help during the registration process, please call Floodline on 0345 988 1188.

The associated dataset for flood warning areas is available here:

<https://data.gov.uk/dataset/flood-warning-areas3>

The associated dataset for flood alert areas is available here: <https://data.gov.uk/dataset/flood-alert-areas2>

Flood Risk Activity Permits

We now consider applications for works, which may be Flood Risk Activities, under Environmental Permitting Regulations. This replaces the process of applying for a Flood Defence Consent. You may need an environmental Permit for flood risk activities if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

Please go to this website to find out more about how to apply:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

Please be aware that Bespoke and Standard Rules permits can take up to 2 months to determine and will incur a charge.

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>