

Pearce's Yard, Bridge End, Harpford

Kevin Howe

Flood Risk Assessment



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Flood Risk Assessment

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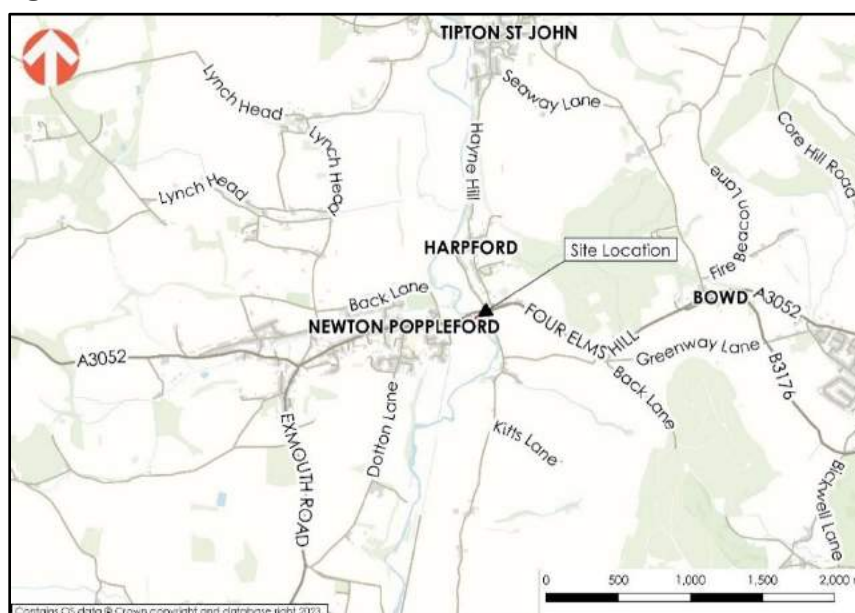
Appendices

- Appendix A** Topographic Survey
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- Appendix E** Preliminary Drainage Layout

1 Introduction

- 1.1 Awcock Ward Partnership (AWP) has been commissioned by Kevin Howe to prepare a Flood Risk Assessment (FRA) in support of an outline planning application for the conversion of an existing barn into a residential dwelling, on land known as "Pearce's Yard", located at Bridge End, Harpford (Newton Poppleford), East Devon.
- 1.2 The existing barn is located on 13,504m² (3.34 acres) of arable land with small areas of hardstanding serving as an agricultural yard, accessed via the A3052 to the north. Smaller outbuildings are located within the site, including a static caravan, which has a certificate of lawfulness for permanent residential use.
- 1.3 The aim of this development is to improve upon existing conditions by transferring the existing residential use away from the static caravan, towards the proposed barn conversion within the site, which benefits from a higher elevation and is distanced further from the adjacent River Otter, offering a reduced level of vulnerability.
- 1.4 Through the use of a legally binding undertaking, the lawful use of the caravan as a residence would be extinguished upon consent of the converted building.
- 1.5 The location of the site is shown on Figure 1.1 below.

Figure 1:1 - Site Location – Wide Area



National Planning Policy Framework

- 1.6 The National Planning Policy Framework (NPPF) and the Planning Practice Guidance were published by the Department for Communities and Local Government.
- 1.7 The NPPF states that *“a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding”*.
- 1.8 The aim of a site-specific flood risk assessment is to demonstrate that *“the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall”*.
- 1.9 Furthermore, the site-specific flood risk assessment must *“assess the flood risk to and from a development site ... The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users”*, as required by the Planning Practice Guidance.
- 1.10 Of particular significance to this development proposal is paragraph 168 of the NPPF, which confirms that residential schemes involving the conversion of existing buildings should not be subject to the Sequential Test.

Structure and limitations of this FRA

- 1.11 This site-specific FRA has been written in accordance with the guidance set by the NPPF and supplemented by the National Planning Practice Guidance, using the information that is currently available.
- 1.12 The report has been structured to describe the existing site parameters, the proposed development and to offer a surface water management plan (SWMP), indicating how surface water

runoff can be managed so that it does not increase flood risk within the downstream catchment.

Reference

1.13 This FRA has been prepared referencing the following documents:

- National Planning Policy Framework (online);
- Planning Practice Guidance – Flood Risk & Coastal Change (online);
- Environment Agency (EA) Flood Warning Information Service ‘Flood Risk from Rivers or the Sea’ and ‘Flood Risk from Surface Water’ (online);
- Magic.gov.uk Soilscape Dataset (online);
- Pre-application response from East Devon District Council ref: 22/0128/PREAPP;
- CIRIA Guide C753 The SuDS Manual (2015); and,
- South West Water Internet Mapping (SWWIM) (online)

Consultation

1.14 To scope out any site specific or catchment specific flood risk or drainage requirements, we have engaged with various parties.

1.15 We have liaised with Tom Walling and Ian Hooper from the Environment Agency (EA), who are the designated authority for the River Otter (Main River) catchment in association with this development.

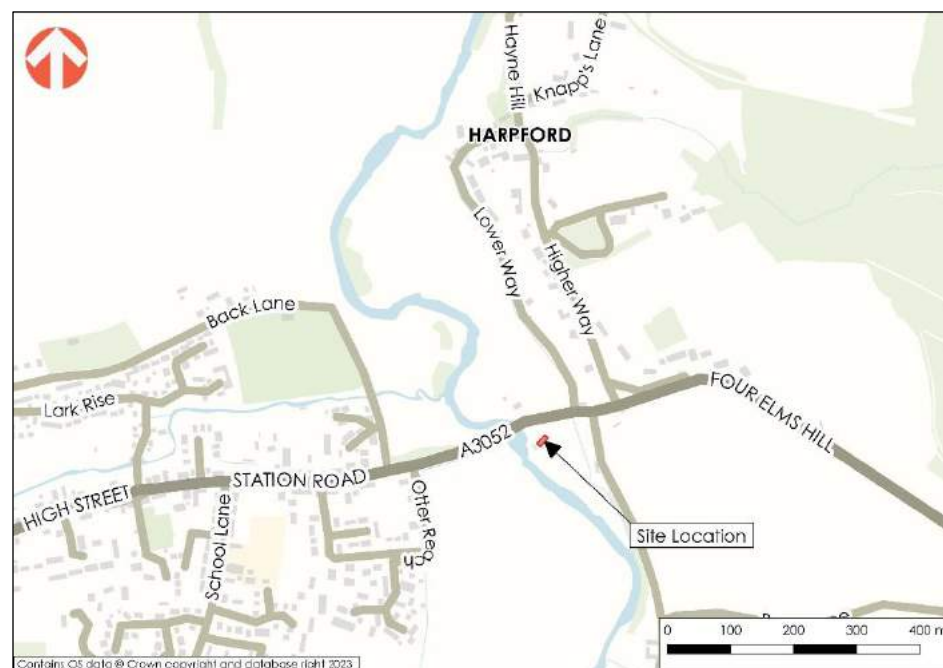
1.16 The output of the above consultation process has helped to inform this FRA and the inherent SWMP.

2 Existing Conditions

Context

- 2.1 The development site is located to the east of Newton Poppleford, on the east bank of the River Otter, south of the adjacent A3052 bridge crossing. It is bordered by the A3052 to the north, River Otter to the west and south, and further arable land to the east.
- 2.2 The site is located approximately 0.25km east of Newton Poppleford, at National Grid Reference SY 09142 89813.
- 2.3 The location of the site with respect to the local area is shown on Figure 2.1 below.

Figure 2.1 – Site Location – Local Area



Existing land uses

- 2.4 The existing land comprises a private agricultural yard area, with areas of hard standing, various outbuildings and the existing barn. The remainder of the site comprises greenfield arable land.
- 2.5 The site also comprises a static caravan with certificate of lawfulness for permanent residential use, positioned inside the western boundary, immediately beyond the banks of the adjacent River Otter.

- 2.6 The site is surrounded by the following land uses:
- To the north of the site lies the A3052 (Four Elms Hill) beyond which lies further arable land;
 - To the east lies an existing private road and hedgerow boundary to further arable land;
 - To the south and west lies the banks of the River Otter forming the land ownership boundary of the development.

Topographic survey

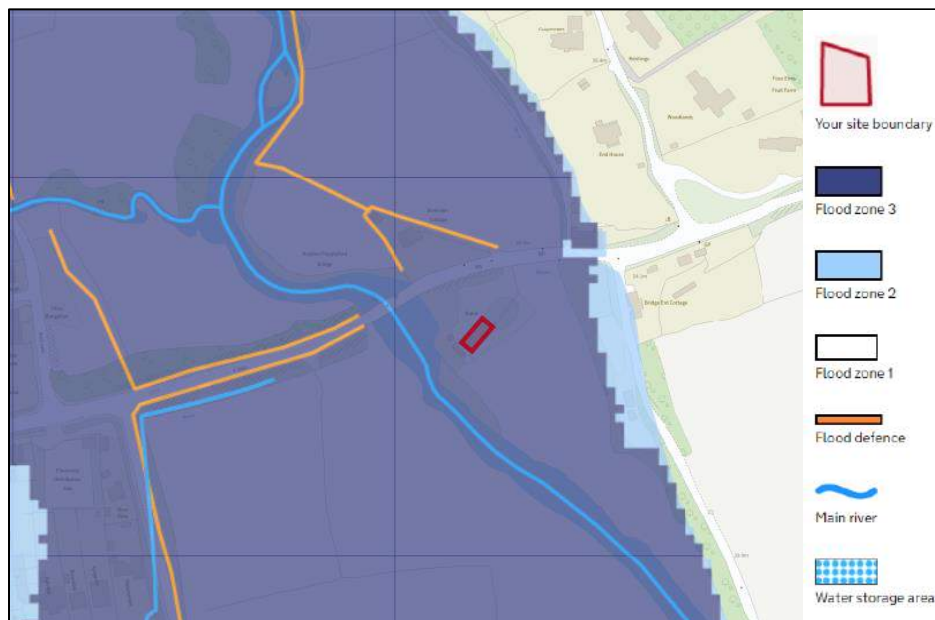
- 2.7 A topographic survey was undertaken by CSW Surveys in February 2022 and confirms the site in the location of the existing barn is plateaued at approximately 22.5m AOD with a berth of 8m from the western edge of existing barn, to the top of bank for the River Otter. Site levels fall away to the south.
- 2.8 A copy of the existing sites topographic survey can be found within Appendix A of this report.

Existing Flood Risk

- 2.9 The Planning Practice Guidance requires planning applications for areas at risk of flooding, or sites of 1 hectare or more, to be accompanied by a site-specific flood risk assessment which assesses “flood risk”.
- 2.10 In accordance with Para. 002 of the Planning Practice Guidance, it is required that new developments consider flood risk as a ‘combination of the probability and the potential consequences of flooding from all sources’ including rivers and the sea, rainfall, rising groundwater, infrastructure and artificial sources.
- 2.11 Each potential source of flooding has been assessed as below;
- Fluvial sources (River flooding)
- 2.12 The EA’s ‘Flood Warning Information Service’ provides flood risk information and mapping throughout England.
- 2.13 An extract of the ‘Flood Map for Planning’ has been reproduced as Figure 2.2 and shows the proposed Barn conversion as being

entirely within 'Flood Zone 3', with a 1 in 100 or greater annual probability of river or sea flooding ($\geq 1\%$).

Figure 2.2 – Fluvial Flood Zone Mapping for Planning



- 2.14 The EA's Product 4 data has been obtained and provides fluvial flood and depth mapping for the 1 in 100 year (Q100) and 1 in 1000 year (Q1,000) undefended scenarios, however, excludes climate change allowances.
- 2.15 The modelled Q1,000 event provides a +67% increase in peak flow above the Q100 event, which offers a more conservative approach when compared to the +46% climate change allowance which should be applied to the Q100. It is therefore considered that the Q1,000 flood depth mapping is suitably robust and can be used as a proxy for the Q100 plus Climate Change scenario.
- 2.16 The modelled Q1,000 flood depth, provided in the Product 4 data, is therefore considered an appropriate for assessment within this report.
- 2.17 Figure 2.3 extracted from the EA's Product 4 report shows the undefended Q1,000 fluvial depth map. A higher resolution plan is also available for reference in Appendix B.

Figure 2.3 – Design Flood Level and Extents (Q1,000)

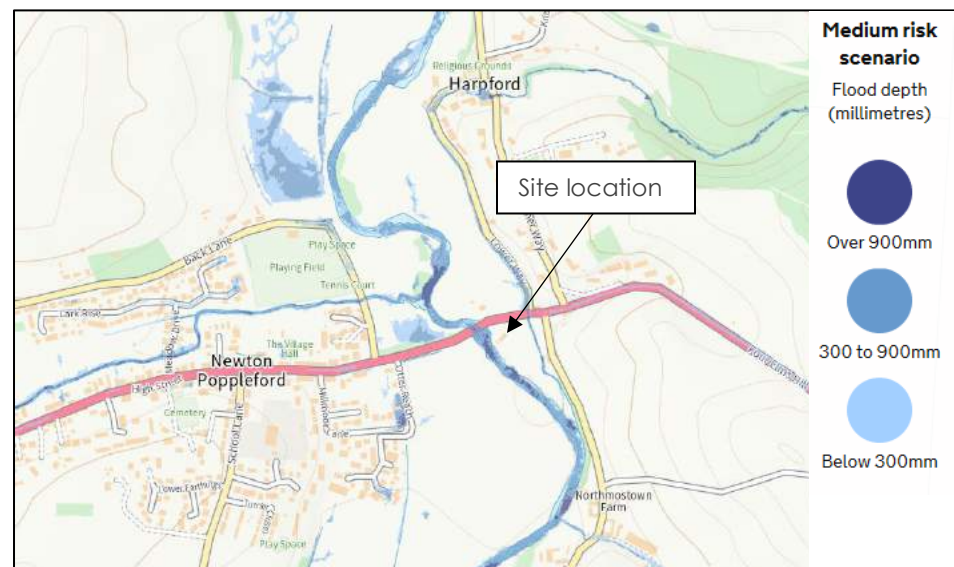


- 2.18 The Q1,000 fluvial flood depth map shows the site to be located in an area of anticipated flood depths, between 800 – 1,500mm. Flood depths are shown to increase to 1.5-2.5m and beyond 2.5m as you head west beyond the site, into the River Otter.
- 2.19 By overlaying the EA's flood depth mapping with the topographic survey, it can be seen that existing ground levels at the interface between the '0.8-1.5m' depth band and the '1.5-2.5m' depth band are approximately 22.0mAOD and therefore the anticipated fluvial flood level for the Q1,000 event is considered to be 23.5mAOD.
- 2.20 This level is considered a suitably robust assumption for the equivalent Q100 plus climate change flood level.

Pluvial sources (surface water flooding)

- 2.21 An extract of the EA's 'Flooding from Surface Water' map has been reproduced as Figure 2.4. The mapping is based on LIDAR data and indicates the typical conveyance routes of surface water runoff in up to the 1,000 year return period.

Figure 2.3 – Flood Risk from Surface Water



- 2.22 The mapping shows pluvial flooding limited to the River Otter and separate watercourse at the western and eastern edges of site respectively. There is no surface water flooding identified within the extents of the site, or impacting the existing barn.

Infrastructure (overwhelmed sewers or drainage systems)

- 2.23 There are no known on-site flood risks associated with infrastructure failure.

Artificial sources (Reservoirs, Canals & Lakes)

- 2.24 The site is not located downstream of any existing canals, lakes or artificial sources and lies outside the maximum extent of flooding from reservoir failure. The site is therefore not considered as being at risk of flooding from artificial sources.

Ground conditions

- 2.25 Desktop studies using the government's 'MagicMap' online service indicate the site is underlain by Soilscape Class 20, described as "loamy and clayey floodplain soils with naturally high groundwater".
- 2.26 Whilst no ground investigation has been undertaken, the above soil classification and proximity to the River Otter, with potential for elevated groundwater, precludes the use of soakaway drainage at this site.

Existing site drainage

- 2.27 The existing site does not comprise any positive drainage systems. Runoff from the agricultural yard and buildings flows overland, with some soaking into the underlying strata and the remainder following the natural topography of the site, falling south-west, towards the River Otter.

Existing drainage infrastructure

- 2.28 There are no existing adopted sewer networks within the application boundary. The nearest asset takes the form of an existing South West Water (SWW) combined sewer opposite the site access, on the north side of the A3052.
- 2.29 Copies of SWW's asset records can be found within Appendix C of this report.

3 Development Proposals

Introduction

- 3.1 The development proposals comprise the refurbishment and conversion of an existing agricultural barn into a residential dwelling, with all habitable space elevated and limited exclusively to the first floor only.
- 3.2 The proposed ground floor will be limited to flood compatible uses as a garage / car port area and will not comprise any habitable space.
- 3.3 The application proposals also include the removal of the adjacent lawful caravan residence, to be replaced by the converted barn.
- 3.4 A copy of the proposed layout block plan can be found within Appendix D of this report.

Vulnerability

- 3.5 In accordance with the Planning Practice Guidance, residential dwellings are considered to be "More Vulnerable".
- 3.6 However, the existing lawful caravan residence is classed as "Highly Vulnerable" and therefore the development will provide a

net decrease in vulnerability with the extinguishment of the caravan's lawful residence and will also deliver betterment over the existing scenario.

- 3.7 Table 3 of the Planning Practice Guidance demonstrates that the proposals are appropriate for this site, provided the Exception Test can be passed.

Sequential & Exception Tests

- 3.8 The aim of this development is to improve upon existing conditions by transferring the existing residential use away from the 'highly vulnerable' static caravan, towards the proposed 'more vulnerable' barn conversion within the site, which benefits from a higher elevation and is distanced further from the adjacent River Otter, improving access to the main river and reducing risks to occupants.
- 3.9 Given the full extents of the site and applicants land ownership are within Flood Zone 3, there are no competing sites with a lower flood risk classification that can offer improved resilience over the existing residential use at this site.
- 3.10 Paragraph 168 of the NPPF states that the sequential test should not be applied to change of use applications, but it is considered that the proposed conversion of the existing barn presents a sequential approach which offers a reduced vulnerability at this site.
- 3.11 The Exception Test must show that the site will be safe for its lifetime taking into account the vulnerability of its users and that it won't increase flood risk elsewhere.
- 3.12 The proposed change of use from existing barn to residential dwelling will not impact on the existing building footprint, and with the removal of the existing static caravan, the proposals stand to offer increased flood storage/conveyance volumes.
- 3.13 The ground floor of the barn will remain non-residential, with flood-compatible garage / car port space only and will be constructed from flood-resilient materials.

Proposed Ground & Finished Floor Levels (FFL)

- 3.14 It is proposed that the surrounding ground profile will remain unchanged.
- 3.15 The anticipated fluvial flood level for the Q1,000 event is considered to be 23.5mAOD. This level is considered a suitably robust assumption for the equivalent Q100 plus climate change flood level.
- 3.16 The current proposals show the floor level of the habitable space to be 24.46mAOD, providing i.e. 960mm freeboard above the design flood event and therefore it is considered the habitable space can be designed to remain safe from flooding throughout its lifetime.
- 3.17 To mitigate potential risks to occupants during times of flooding, it is recommended that a Flood Warning Evacuation Plan (FWEP) is prepared and agreed with the LPA prior to occupation.

Flood Warning

- 3.18 The EA operates a flood forecasting and warning service in areas at risk of flooding, known as "Floodline".
- 3.19 The service operates 24 hours a day, 365 days a year and is a free warning service that provides flood warnings directly by telephone, mobile, email, SMS text message and fax.
- 3.20 Future occupants must sign up for Floodline by calling 0845 988 1188 or by visiting the website: <https://www.gov.uk/sign-up-for-flood-warnings>
- 3.21 Once registered, warnings are issued using a set of four easily recognisable codes. It is important to know the anticipated lead time before a flood arrives. While flood warning codes provide approximate time ranges for anticipated floods, direct communication with Floodline, the emergency services or local flood warden is recommended, and this should be promoted within the FWEP.
- 3.22 The FWEP will set out the proposed evacuation protocol, emergency contacts, details for Floodline, and will warn against entering floodwaters (unless engaging in a managed evacuation

by emergency services). It is anticipated that the evacuation route would direct future occupants east on the A3052, which rises above predicted flood levels.

- 3.23 It is recommended that the FWEP is conditioned and prepared and agreed with the LPA ahead of occupation.

Proposed drainage strategy

- 3.24 The proposal comprises the proposed change of use of the existing barn and the removal of the existing residential caravan. Overall this will offer a reduced drainage catchment, which reduces peak flows and provides betterment.
- 3.25 The surface water drainage strategy for the scheme will comprise a new gravel-filled trench to provide further betterment over existing conditions.
- 3.26 Runoff from the existing barn will be collected by new rainwater pipes and will direct flows into the gravel-filled trench. The trench will offer increased storage capacity at ground level, with opportunities for infiltration as far as practicable and a reduction in residual flow continuing overland towards the River Otter.
- 3.27 All on-site drainage would remain under private ownership and will be the responsibility of the respective owner, with any proposed SuDS features to be maintained in accordance with 'CIRIA C753 – The SuDS Manual, Chapter 32 – Operation and Maintenance'.
- 3.28 Drawing 1502-01-PDL-1001 identifies the surface water management plan for the scheme, with a copy included in Appendix E of this report.

4 Flood Resilience Measures

- 4.1 The site will become increasingly at risk of fluvial flooding as the impacts of climate change take effect, therefore the opportunity should be taken to protect the property in such a way as to reduce the residual flood risks, where practicable.
- 4.2 It is important to note that the habitable floor level is elevated to provide 0.96m freeboard above the design flood level, with consideration of future climate change allowances. As such any flooding experienced for the proposed design should not reach dwelling spaces.
- 4.3 The reconfiguration of the barn will involve installation of new electrical fittings, and therefore provides an opportunity to ensure electrical installations and incoming supplies are raised above the predicted flood level.
- 4.4 The ground floor should utilise flood resilient construction, including use of waterproof materials and solid flooring materials.
- 4.5 In addition to these flood resilience measures, future occupants must also sign-up to the EA's Floodline service and be prepared to implement the FWEP, which should be conditioned and prepared and approved ahead of occupation.
- 4.6 The existing property includes a substantial amount of adjoining land which is also within the floodplain. Should it be required, the applicant can consider any potential on-site mitigation which might serve to benefit the EA, such as reprofiling of land to provide greater flood volume capacity, as a further flood resilience measure.

5 Mitigation, Conclusions & Recommendations

Mitigation

- 5.1 The proposed development has been assessed in line with the NPPF, to allow the planning application to be progressed and to show that the development can be undertaken in an acceptable manner from a flood risk perspective.
- 5.2 While the development is located within 'Flood Zone 3', all habitable space is raised above the Q1000 flood level and equivalent Q100 +climate change level, and will not be susceptible to flooding from pluvial, groundwater, infrastructure or artificial sources. This offers a significant improvement over the existing 'highly vulnerable' caravan which has lawful use as a permanent residential property.
- 5.3 The change of use to provide residential accommodation inside the existing agricultural barn enables the removal of the existing residential caravan and provides increased flood storage capacity as a result, together with improved access to the River Otter.
- 5.4 All ground level development is proposed to be flood-compatible, non-dwelling space and will be allowed to flood during extreme events, with any risk of damage mitigated through the use of flood-resilient materials and design consideration.
- 5.5 A Flood Warning Evacuation Plan will be prepared to set out the evacuation protocol, emergency contacts, details for Floodline, and will warn against entering floodwaters. It is anticipated that the evacuation route would direct future occupants east on the A3052, which rises above predicted flood levels.
- 5.6 The proposed development will reduce the overall drainage catchment and will also comprise a new gravel-filled trench to intercept runoff from the converted barn.
- 5.7 The trench will offer increased storage capacity at ground level, with opportunities for infiltration as far as practicable and a reduction in residual flow which continues overland towards the River Otter.

- 5.8 The existing property includes a substantial amount of adjoining land which is also within the floodplain. Should it be required, the applicant can consider any potential on-site mitigation which might serve to benefit the EA, such as reprofiling of land to provide greater flood volume capacity, as a further flood resilience measure.

Conclusions

- 5.9 This Flood Risk Assessment has been assessed in line with the NPPF.
- 5.10 It is concluded that the development can be undertaken in a sustainable manner, reducing the vulnerability of the existing residual use and improving the standard of protection, flood resilience and access to the main river.
- 5.11 The drainage catchment will be reduced, and further measures will offer betterment compared to existing conditions, providing a reduced peak rate and volume of runoff, which provides improves flood risk within the downstream catchment.
- 5.12 A Flood Warning Evacuation Plan will be prepared and approved with the LPA prior to occupation.

Recommendations

- 5.13 As the development will be safe from flooding throughout its lifetime and will improve existing flood risk vulnerabilities and resilience, whilst also reducing flood risk to the downstream catchment, it is recommended that the EA and LPA confirm they have no objections to the proposed development.

AWP



Appendix A Topographic Survey



Appendix B EA Product 4 Data

Flood risk assessment data



Location of site: 309130 / 89805 (shown as easting and northing coordinates)

Document created on: 25 January 2022

This information was previously known as a product 4.

Customer reference number: ENQ22/DCIS/247724

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to produce your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- flood defences and attributes
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits help and advice

Information that's unavailable

This document **does not** contain:

- climate change

There is not any modelled climate change data for this location. You will need to consider the [latest flood risk assessment climate change allowances](#) and factor in the new allowances to demonstrate the development will be safe from flooding.

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: JFLOW

Scenario(s): undefended fluvial

Date: 2007

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your development is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

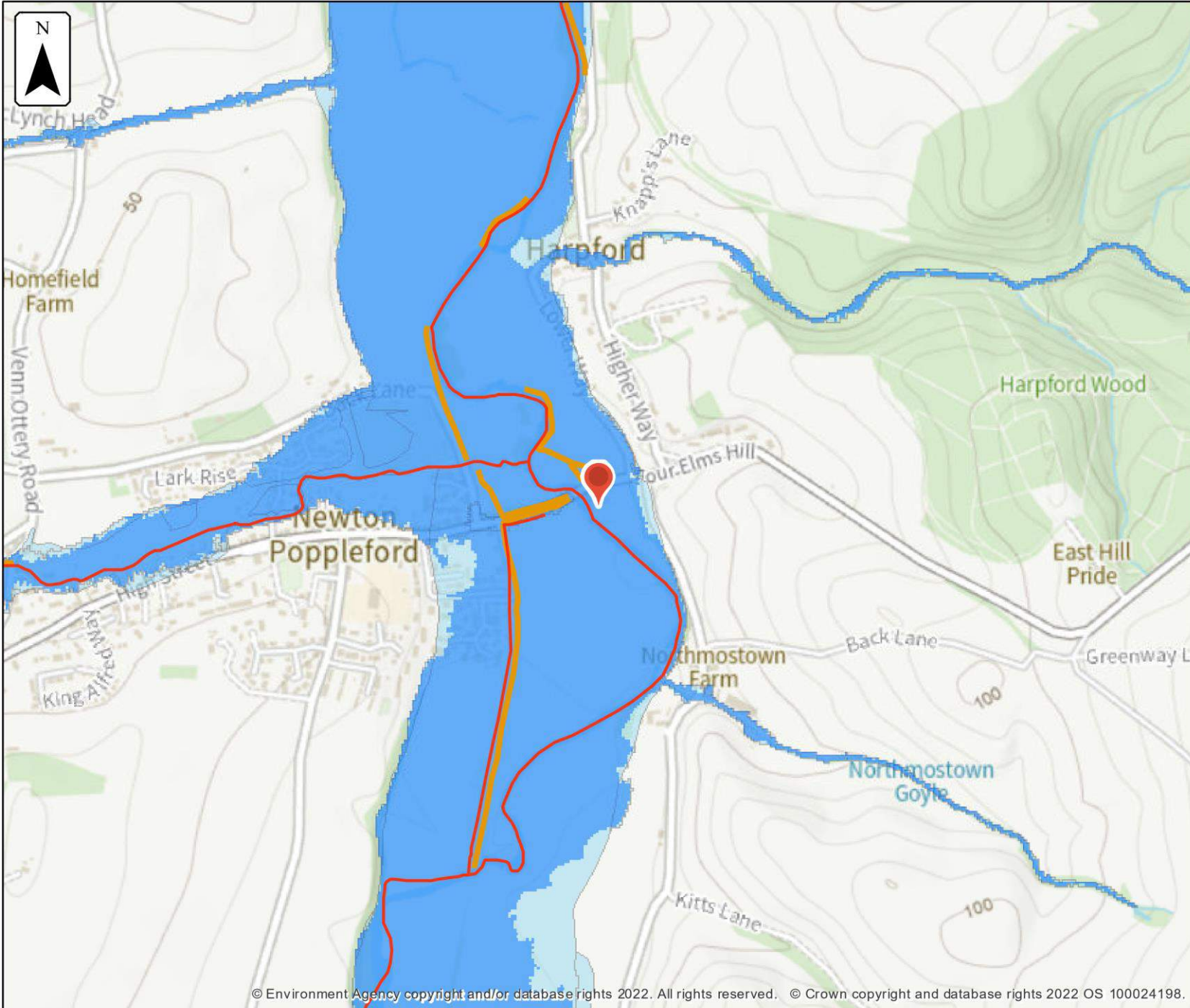
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

This data is updated on a quarterly basis as better data becomes available.








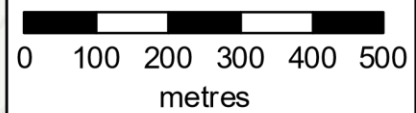
Flood map for planning

Location (easting/northing)
309130/89805

Scale
1:10,000

Created
25 Jan 2022

-  Selected location
-  Main river
-  Flood defence
-  Flood zone 3
-  Flood zone 2



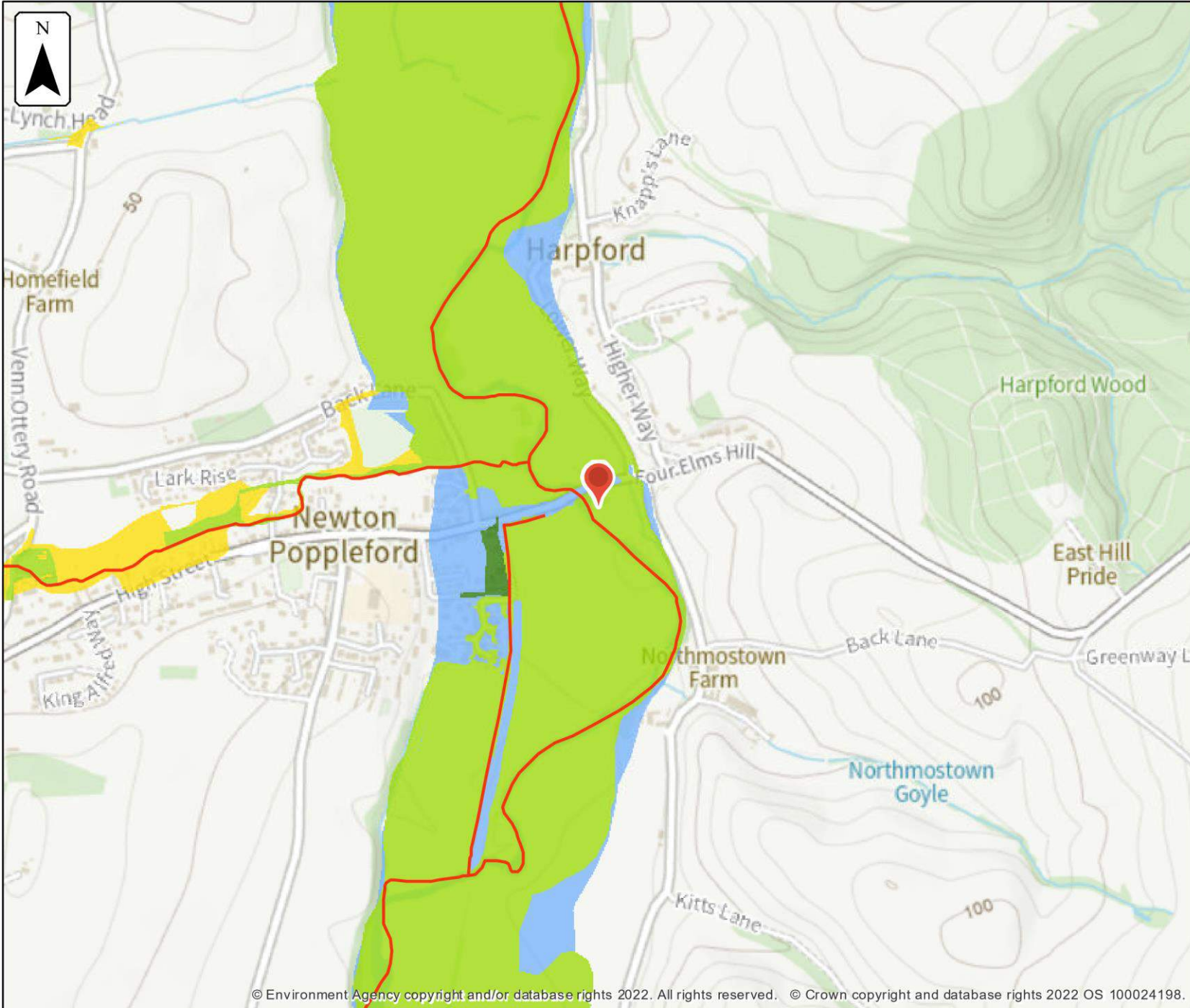
Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

[Download recorded flood outlines in GIS format](#)









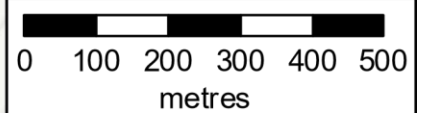
Historic flood map

Location (easting/northing)
309130/89805

Scale
1:10,000

Created
25 Jan 2022

-  Selected location
-  Main river
- Date of flood event
 -  October, 2008
 -  December, 1972
 -  July, 1972
 -  July, 1968



Historic flood event data

Historic outlines in the above may not be visible where they overlap. You can download the outlines separately via the link above.

Please see attached/photographs were available.

Start date	End date	Source of flood	Affects location
30 October 2008	30 October 2008	main river	Yes
2 December 1972	2 December 1972	main river	No
18 July 1972	18 July 1972	main river	No
10 July 1968	11 July 1968	main river	Yes

We also have records of this area flooding in: November 1954, January 1960, January 1965, February 1975, March 1983, December 1983, January 1986, February 1989, December 1989, December 1989, October 2000, December 2000, October 2002, November 2002, January 2003, July 2012 and November 2012

Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis.

The information here is based on the best available data.






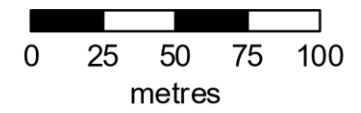
Flood defences

Location (easting/northing)
309130/89805

Scale
1:2,500

Created
25 Jan 2022

-  Selected location
-  Main river
-  Flood defence



Flood defences data

Label	Asset ID	Asset Type	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	42398	embankment		23.85	23.99	
2	42397	embankment		24.22	23.76	
3	4157	embankment		22.57	23.93	
4	4156	embankment		21.87	22.56	
5	42568	embankment		20.86	21.84	
6	4159	embankment		25.52	24.23	
7	42396	embankment		23.98	25.65	
8	4027	embankment		22.75	22.79	
9	4158	bridge abutment		25.64	25.54	
10	184315	wall				
11	42301	bridge abutment		25.34	25.63	
12	4026	wall		23.26	24.05	

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

depth maps showing the area at risk from flooding in different modelled scenarios

modelled node point map showing the points used to get the data to model the scenarios

node point tables providing details of the flood risk for different return periods

Modelled scenario maps

Maps for the following scenarios are included:

- Undefended modelled fluvial

Please see our up to date guidance on climate change allowance which is available on the GOV.uk website [here](#)

Undefended Modelled Fluvial Depth Map

Location (easting/northing)
309130 / 89805

Scale Created
1:3,000 26 Jan 2022

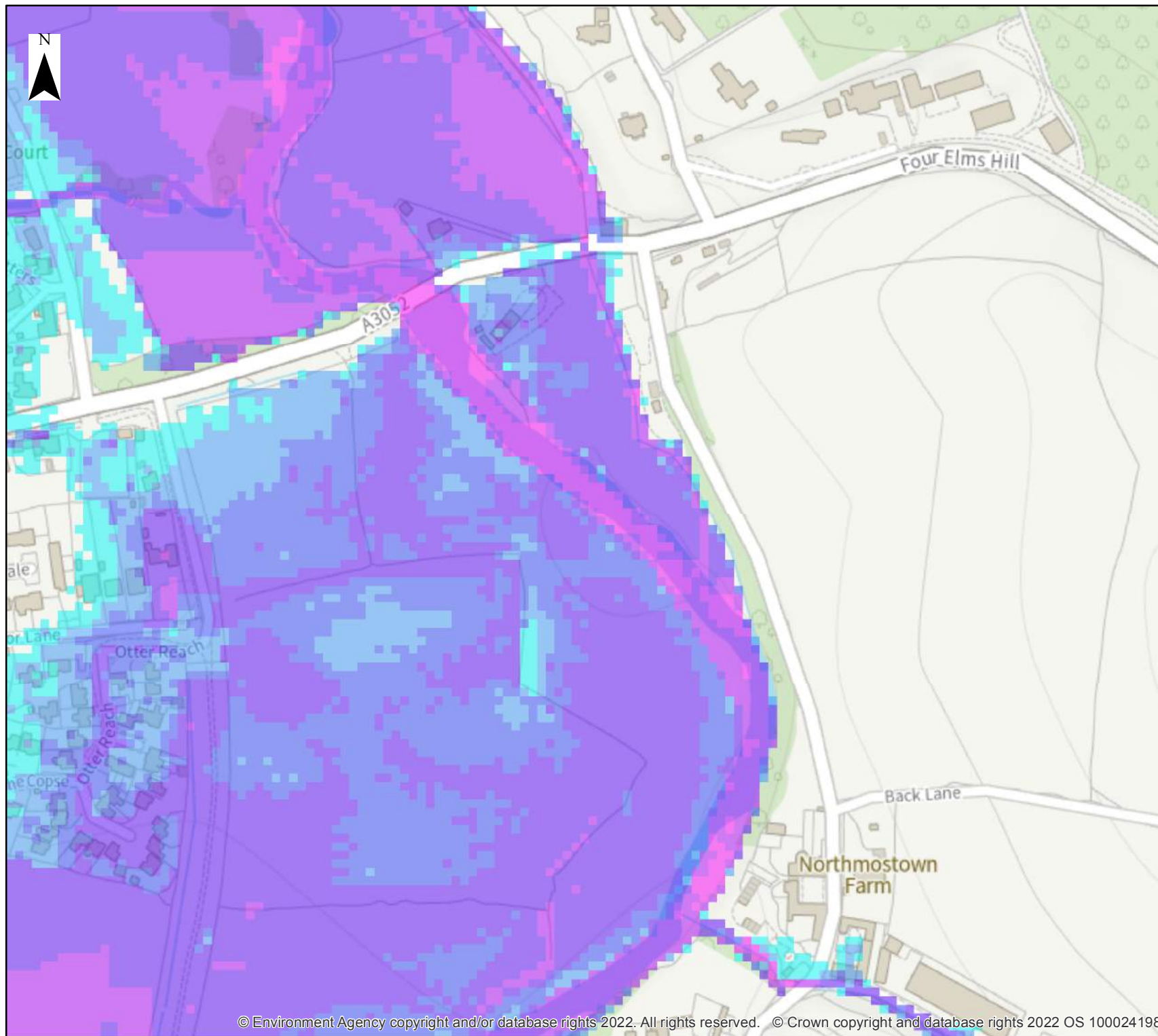
Model name
JFLOW

Legend

East Devon Undefended Q100
Depths

Meters

-  0 - 0.3
-  0.3 - 0.6
-  0.6 - 0.8
-  0.8 - 1.5
-  1.5 - 2.5
-  2.5 +



Undefended Modelled Fluvial Depth Map

Location (easting/northing)
309130 / 89805

Scale Created
1:3,000 26 Jan 2022

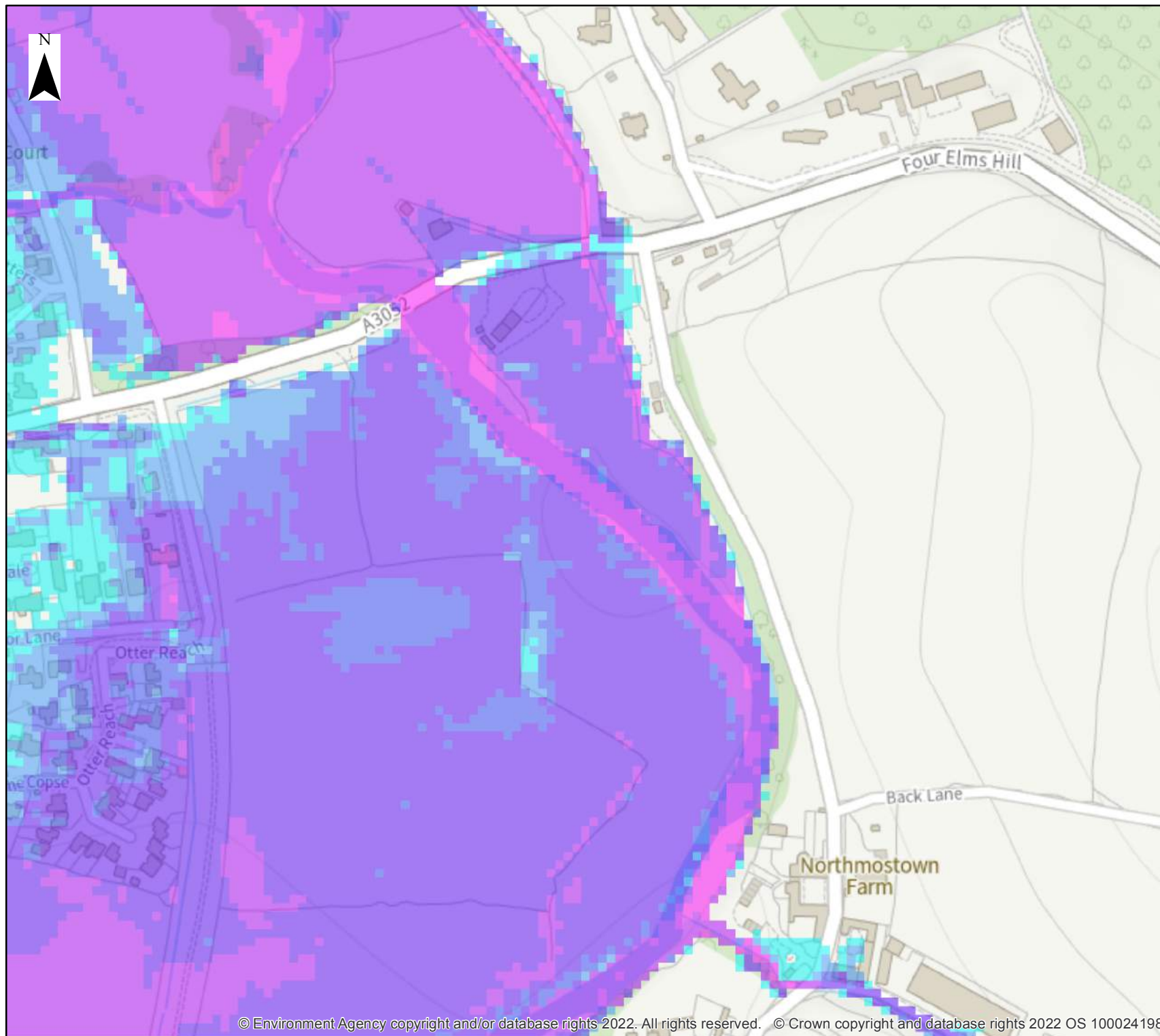
Model name
JFLOW

Legend

East Devon Undefended Q1000
Depths

Meters

-  0 - 0.3
-  0.3 - 0.6
-  0.6 - 0.8
-  0.8 - 1.5
-  1.5 - 2.5
-  2.5 +



Modelled Node Locations

Node Reference	Easting	Northing	Area (Km ²)	Modelled Flood Flows, in m ³ /s (undefended model run)							Source	Confidence
				QMED	10yr	25yr	50yr	100yr	250yr	1000yr		
3826	308872	90020	188.43	68.84	114.48	143.40	168.87	198.27	245.57	330.44	Dotton	High
3825	309030	89996	190.33	68.89	114.56	143.49	168.98	198.40	245.73	330.66	Dotton	High
3824	309028	89945	199.17	68.95	114.66	143.62	169.13	198.58	245.96	330.96	Dotton	High
3823	309083	89834	199.24	69.01	114.77	143.75	169.29	198.76	246.18	331.26	Dotton	High
3822	309225	89690	199.60	69.07	114.87	143.88	169.44	198.94	246.40	331.56	Dotton	High
3821	309275	89531	199.70	69.14	114.98	144.01	169.59	199.12	246.62	331.86	Dotton	High
4076	308963	89886	8.83	3.43	5.77	7.33	8.74	10.41	13.11	18.62	Goosemoore_Extended	Medium

Data in this table comes from the Devon Hydrology Strategy 2012

Undefended Modelled Fluvial Flow Nodes

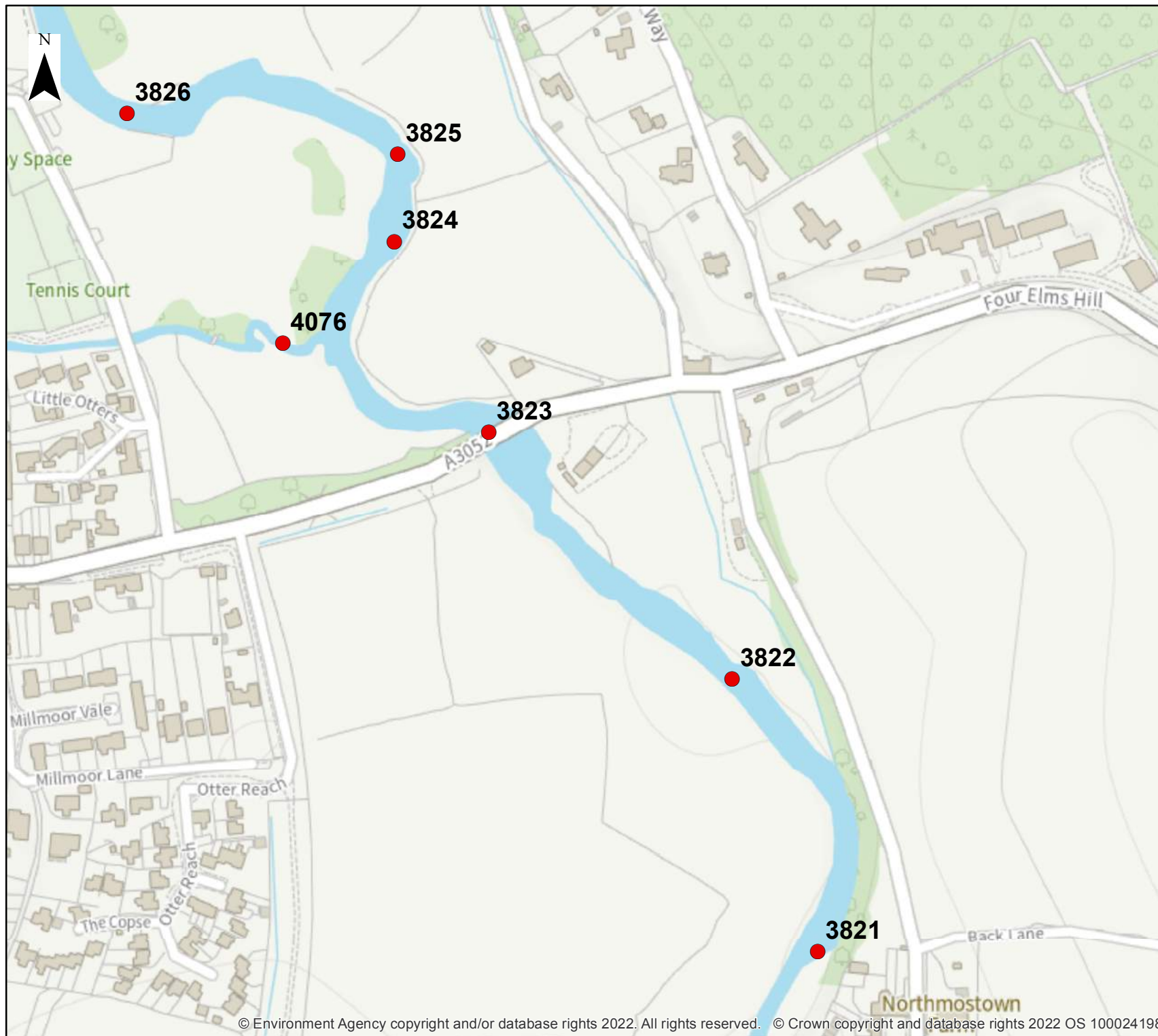
Location (easting/northing)
309130 / 89805

Scale Created
1:3,000 25 Jan 2022

Model name
**Devon Hydrology
Strategy 2012**

Legend

 Devon Hydrology Strategy Nodes



Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

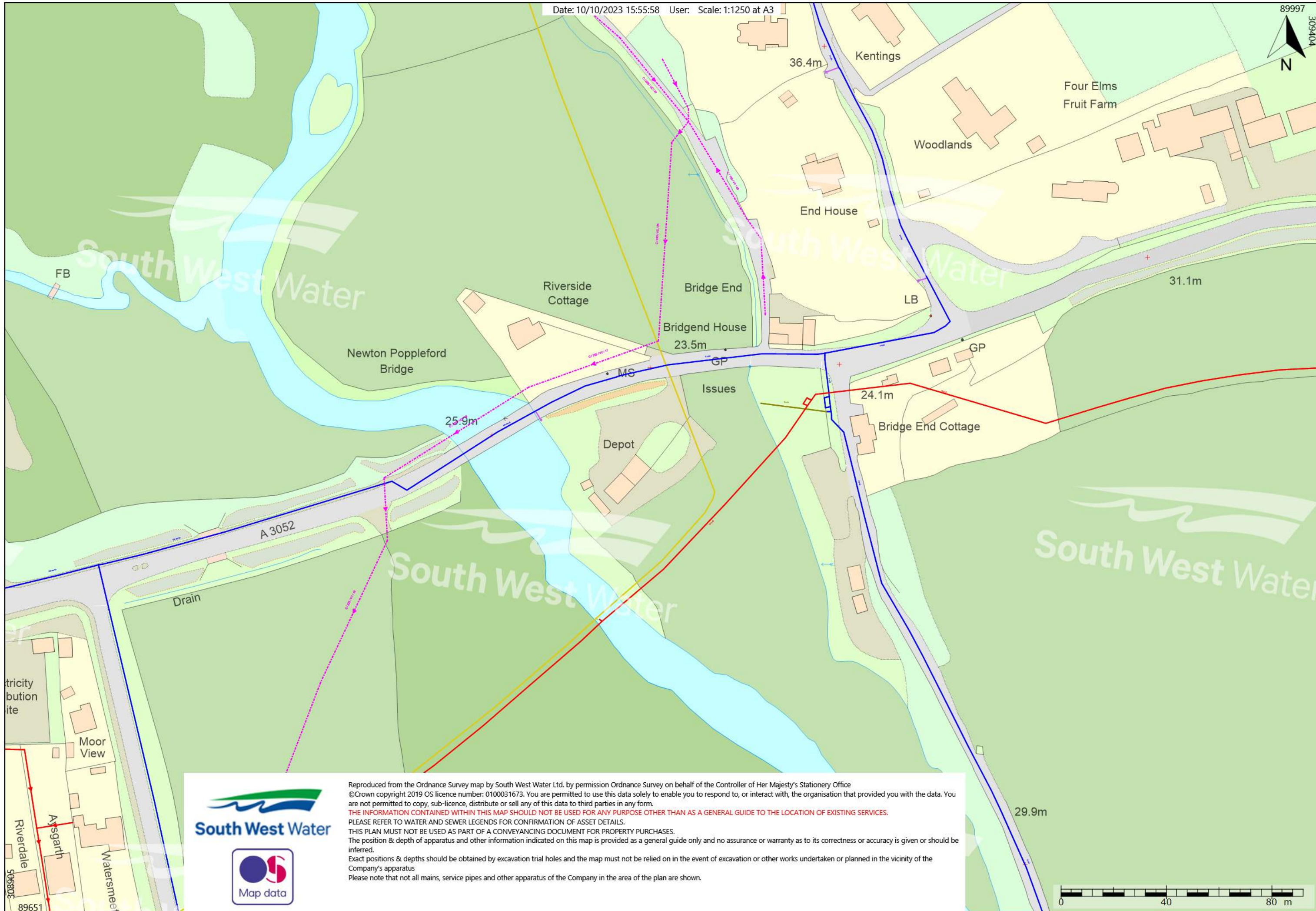
Help and advice

Contact the Devon Cornwall and the Isles of Scilly team at DCISEnquiries@environment-agency.gov.uk for:

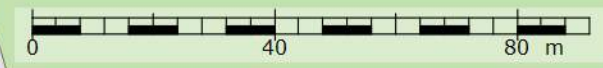
- more information about getting a [product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for



Appendix C SWWIM Records

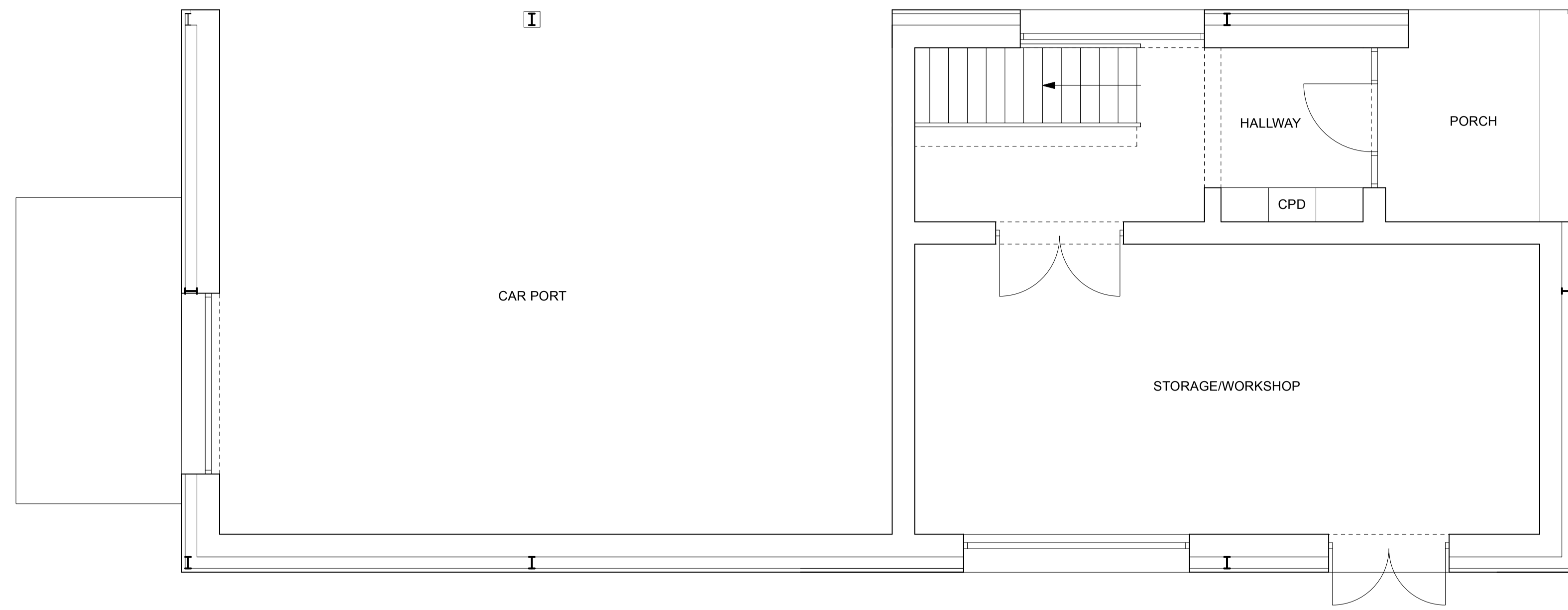
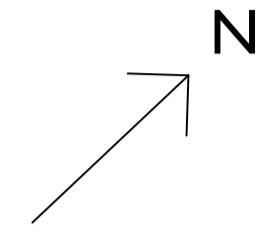


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THE INFORMATION CONTAINED WITHIN THIS MAP SHOULD NOT BE USED FOR ANY PURPOSE OTHER THAN AS A GENERAL GUIDE TO THE LOCATION OF EXISTING SERVICES.
 PLEASE REFER TO WATER AND SEWER LEGENDS FOR CONFIRMATION OF ASSET DETAILS.
 THIS PLAN MUST NOT BE USED AS PART OF A CONVEYANCING DOCUMENT FOR PROPERTY PURCHASES.
 The position & depth of apparatus and other information indicated on this map is provided as a general guide only and no assurance or warranty as to its correctness or accuracy is given or should be inferred.
 Exact positions & depths should be obtained by excavation trial holes and the map must not be relied on in the event of excavation or other works undertaken or planned in the vicinity of the Company's apparatus
 Please note that not all mains, service pipes and other apparatus of the Company in the area of the plan are shown.





Appendix D Proposed Layout Plans



GROUND FLOOR PLAN



NOTES:
THE CONTENTS OF THIS DRAWINGS ARE FOR THE PURPOSES
OF OBTAINING PLANNING PERMISSION ONLY

INFORMATION:

REVISION	DATE	DESCRIPTION
----------	------	-------------

PROJECT:
**PEARCE'S YARD
BRIDGE END, HARPFORD
EX10 0NG**

DRAWING TITLE:
**PROPOSED
GROUND FLOOR PLAN**

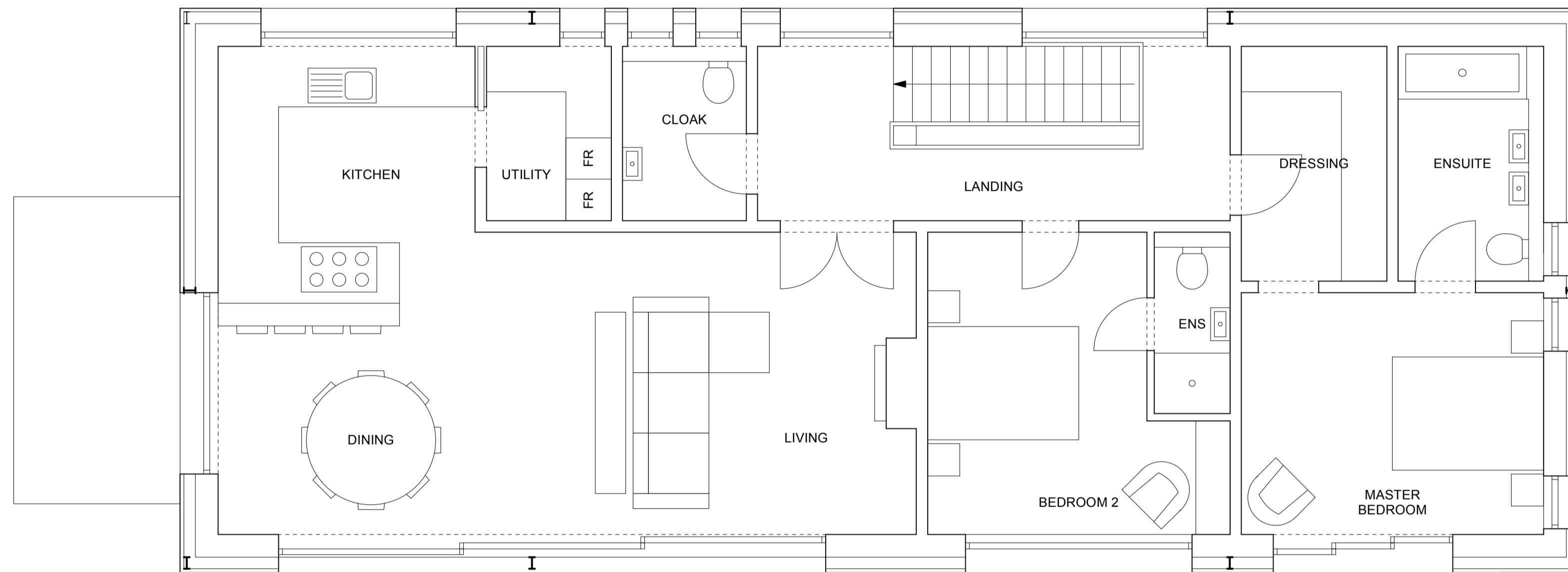
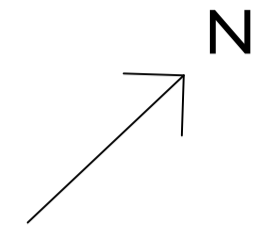
DATE:
09.09.22

SCALE:
**1:50 @ A1
1:100 @ A3**

DRAWING NO:
PHR SK-06

PAUL JEFFRIES ARCHITECTS

THE STUDIO, MARKET PLACE GALLERY, COLYTON EX24 6JS
Tel: 01297 553806 Email: enquires@pjeffries.com



FIRST FLOOR PLAN



NOTES:
THE CONTENTS OF THIS DRAWINGS ARE FOR THE PURPOSES
OF OBTAINING PLANNING PERMISSION ONLY

INFORMATION:

REVISION	DATE	DESCRIPTION
----------	------	-------------

PROJECT:
PEARCE'S YARD
BRIDGE END, HARPFORD
EX10 0NG

DRAWING TITLE:
PROPOSED
FIRST FLOOR PLAN

DATE: 09.09.22	SCALE: 1:50 @ A1 1:100 @ A3	DRAWING NO: PHR SK-07
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PAUL JEFFRIES ARCHITECTS

THE STUDIO, MARKET PLACE GALLERY, COLYTON EX24 6JS
Tel: 01297 553506 Email: enquires@pjjffries.com

NOTES:
THE CONTENTS OF THIS DRAWINGS ARE FOR THE PURPOSES
OF OBTAINING PLANNING PERMISSION ONLY

INFORMATION:

REVISION	DATE	DESCRIPTION
----------	------	-------------

PROJECT:
**PEARCE'S YARD
BRIDGE END, HARPFORD
EX10 0NG**

DRAWING TITLE:
**PROPOSED
ELEVATIONS**

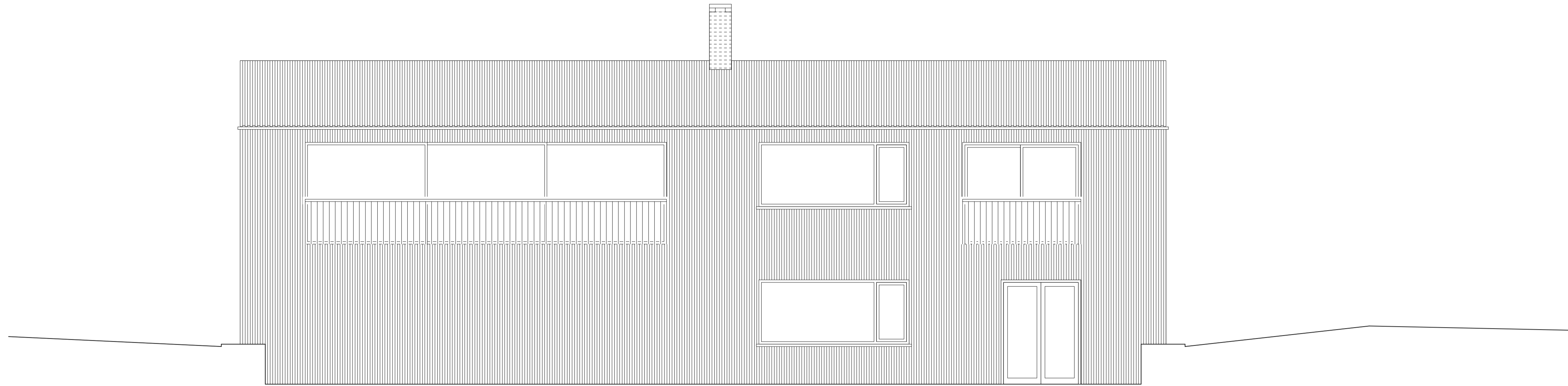
DATE:
17.08.22

SCALE:
**1:50 @ A1
1:100 @ A3**

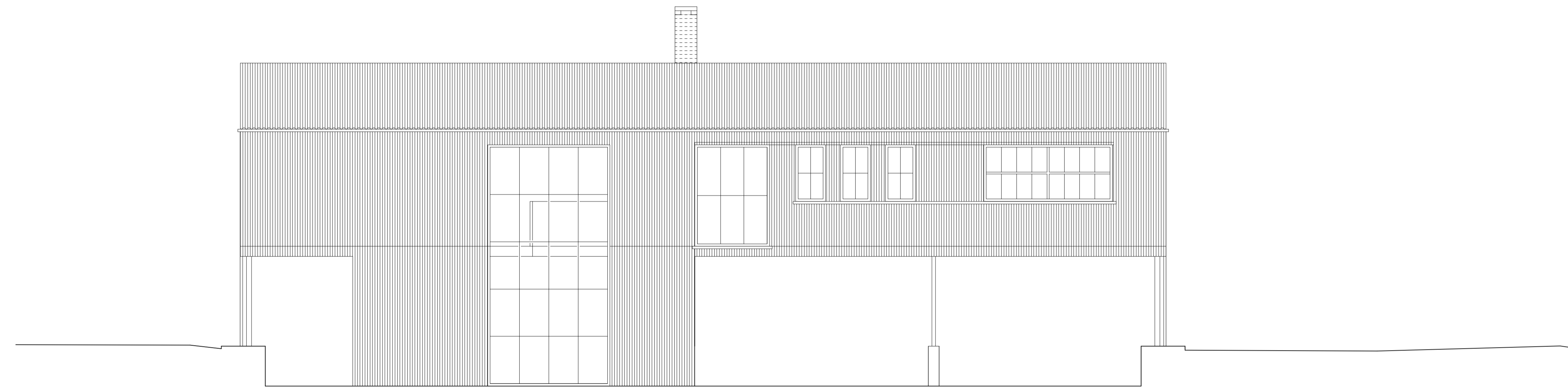
DRAWING NO:
PHR SK-08

PAUL JEFFRIES ARCHITECTS

THE STUDIO, MARKET PLACE GALLERY, COLYTON EX24 6JS
Tel: 01297 953506 Email: enquires@pjeffries.com



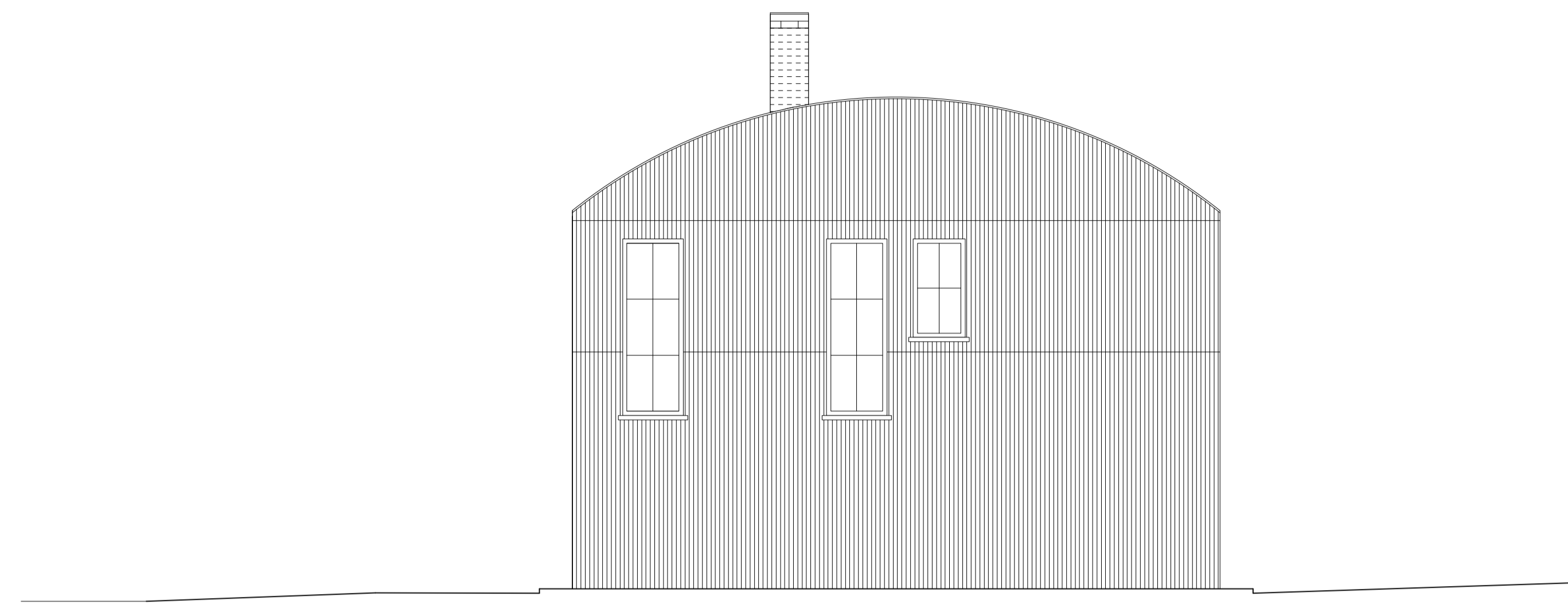
SOUTH EAST ELEVATION



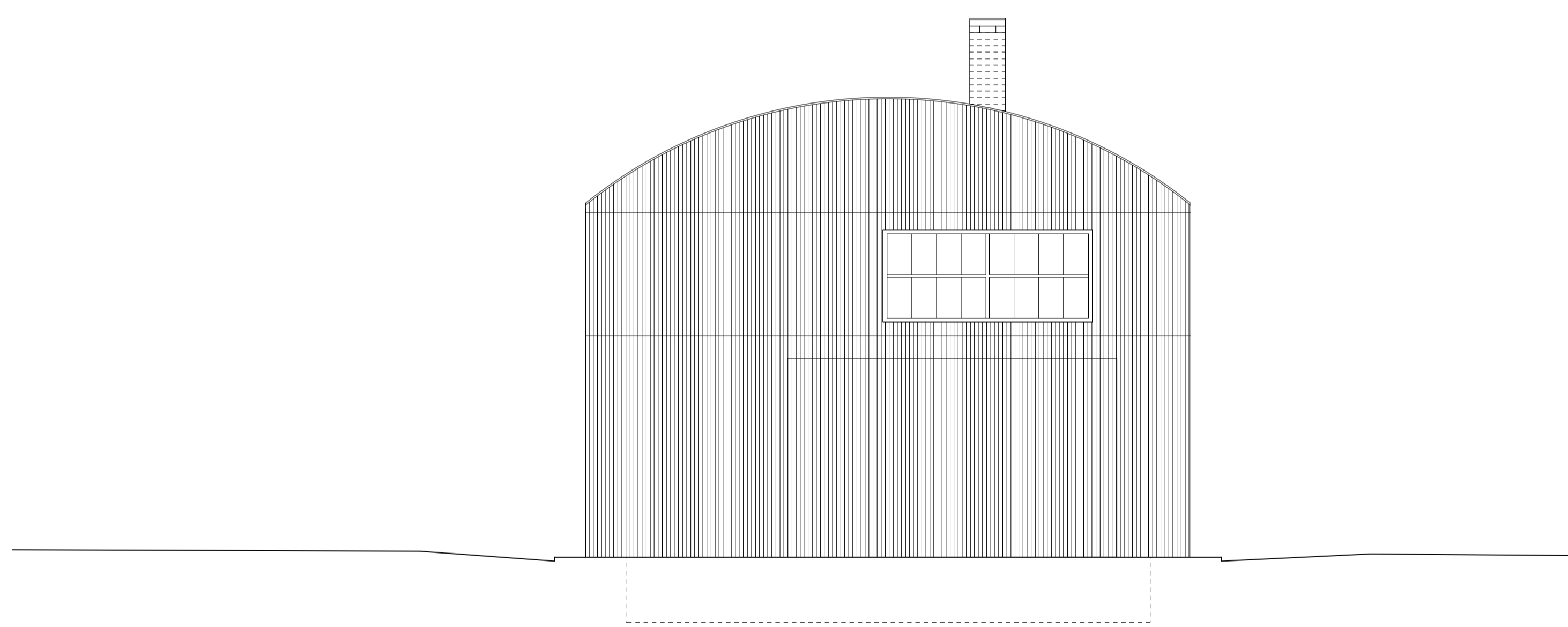
NORTH WEST ELEVATION



NOTES:
THE CONTENTS OF THIS DRAWINGS ARE FOR THE PURPOSES
OF OBTAINING PLANNING PERMISSION ONLY



SOUTH WEST ELEVATION



NORTH EAST ELEVATION



INFORMATION:

REVISION	DATE	DESCRIPTION
----------	------	-------------

PROJECT:
**PEARCE'S YARD
BRIDGE END, HARPFORD
EX10 0NG**

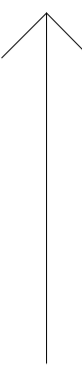
DRAWING TITLE:
**PROPOSED
ELEVATIONS**

DATE: 09.09.22	SCALE: 1:50 @ A1 1:100 @ A3	DRAWING NO.: PHR SK-09
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PAUL JEFFRIES ARCHITECTS

THE STUDIO, MARKET PLACE GALLERY, COLYTON EX24 6JS
Tel: 01297 553506 Email: enquires@pjeffries.com

N



NOTES:
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 OF OBTAINING PLANNING PERMISSION ONLY

INFORMATION:

REVISION	DATE	DESCRIPTION

PROJECT:
PEARCE'S YARD
 BRIDGE END, HARPFORD
 EX10 0NG

DRAWING TITLE:
PROPOSED
 BLOCK PLAN

DATE:
09.09.22

SCALE:
 1:500 @ A1
 1:1000 @ A3

DRAWING NO:
PHR SK-10

PAUL JEFFRIES ARCHITECTS

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 Tel: 01297 553506 Email: enquires@pjjffries.com



Appendix E Preliminary Drainage Layout

