

**Chain Bridge Lodge
New Barn and Sewage Treatment Plant
Flood Risk Assessment**



Chain Bridge Lodge is a 2-bedroom cottage situated between the road and the River Exe southwest of Bampton.

Development site and location

The development site is to the south of Chain Bridge Lodge, as shown on the Location Plan (302/23:B-01). It is currently used as an extension to the garden area of the house together with vehicle parking.

Flood Zone

The site is in a Flood Zone 3. The zone covers all of the available land at Chain Bridge Lodge.

Development proposals

The proposal is for a new barn situated south of the lodge, together with a new sewage treatment plant, as shown on the attached Site Plan (Dwg No 302/23:B-02).

The siting for the new barn has been selected so as to be concealed from the Grade II listed house, behind the existing established planting to the south, whilst still being reasonably accessible.

It will provide storage accommodation for the owners. The house itself is relatively small and this will provide additional space, together with an improved water filtration system, without compromising the house.



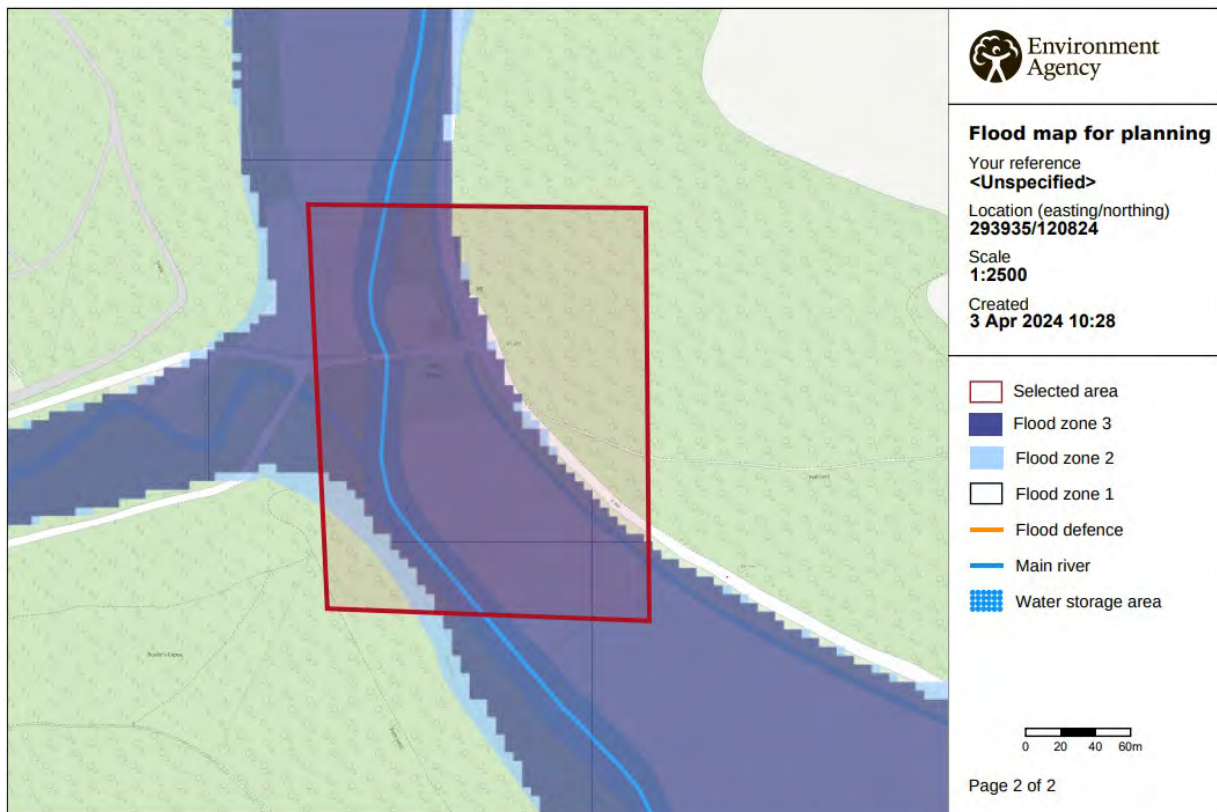
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The house currently has a substandard septic tank and soakaway, not suited to its location beside the river. It is proposed to install a new sewage treatment plant, which will outflow into the adjoining leat.

The sewage treatment plant will need electrical and drainage connections to the house. It is also proposed to include an electrical vehicle charging point in the new barn.

The development is a householder development, being a shed within the curtilage of the existing dwelling. The site area comprises the 12 x 6m barn (70 sq m), together with the sewage treatment plant and its outflow, as shown on the attached Site Plan (Dwg No 302/23:B-02). The lifetime of the development is anticipated to be at least 75 years.

This assessment is to show that the development will be safe for its users for the intended lifetime of the development, without increasing flood risk elsewhere, and be sufficiently flood resistant and resilient to the level and nature of the flood risk.



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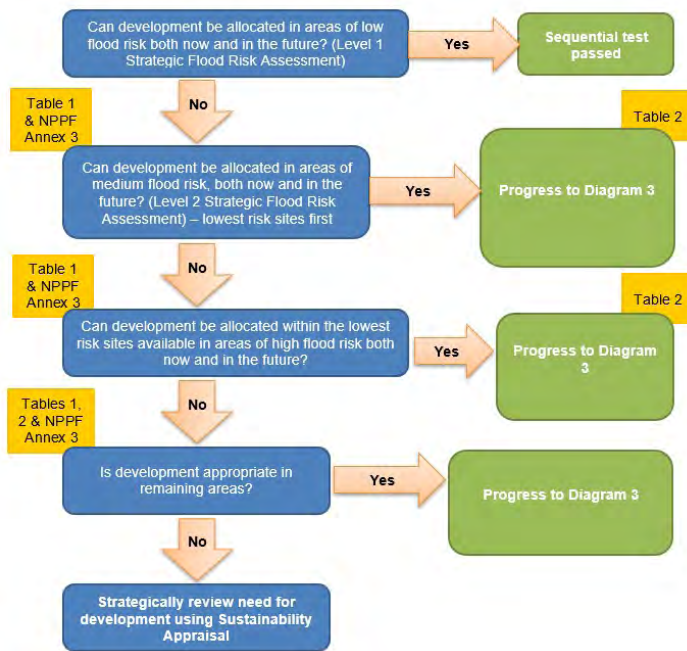
Product 4

An Environment Agency Product 4 has been applied for and will be added to the application.

It will include:

Detailed Flood Risk Assessment Map, including flood zones, defences and storage areas, areas benefiting from defences, statutory main river designations, historic flood event outlines and more detailed information from EA computer river models (including model extent, information on one or more specific points, flood levels, flood flows).

Sequential Test



The barn and sewage treatment plant site locations are restricted by the ownership area, as shown by the blue line boundary on the Location Plan (302/23:B-01). The entire area falls with Flood Zone 3.

The Exception Test

Table 2: Flood risk vulnerability and flood zone ‘incompatibility’

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Key:

✓ Exception test is not required

X Development should not be permitted

The development is classed as Less Vulnerable and so the Exception test is not required. Notwithstanding this, the two elements of the exception test can be applied:

- 1) development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk;
- 2) and 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.

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Sustainability Benefits - The addition of the barn will ensure the Grade II listed house is not compromised by having to find suitable storage space that would affect the historic fabric (see Heritage Statement). The existing substandard septic tank and soakaway are not suited to its location beside the river and need to be replaced by a new sewage treatment plant, without the requirement for a soakaway into the ground.

Lifetime safety of the development

Flood resilience measures accept that water will enter the barn, but its design and construction using resilient building materials will minimise damage and allow faster cleaning, drying, repairing and re-occupancy of the building after a flood. The construction will be a steel portal frame with a dwarf masonry wall, with timber cladding 600mm above ground level.

The building will only occasionally be used by the occupiers of Chain Bridge Lodge. It is intended for additional storage as well as the location for the improved water treatment plant and also an electric vehicle charging point. The storage will be flood resilient items such as the house flood gates (out of the winter flooding season), garden furniture etc.

The building will be located away from the main flow of flood water, downstream of the house which already presents a barrier to the direction of flood water in this area, and so is not expected to increase flood risk elsewhere.

Electrical equipment, wiring and sockets will be at least 600mm above the estimated flood level. Water will be able to drain away after flooding by way of the large doors.

The sewage treatment plant will be a Harlequin Continuous Aeration Plant, of polyethylene construction which passes watertightness testing (See attached data sheet). "Wet" ground installation guidelines are to be followed, with concrete backfill around the tank and non-return valves.

Site Specific Flood Risk

There is a river level monitoring station downstream at Stoodleigh and also ones upstream at Exebridge and Pixton.

The usual range of the River Exe at Stoodleigh is between 0.93m and 2.60m. It has been between these levels for 90% of the time since monitoring began.

The typical recent level of the River Exe at Stoodleigh over the past 12 months has been between 0.88m and 3.32m. It has been between these levels for at least 150 days in the past year.

The highest level ever recorded at the River Exe at Stoodleigh is 3.86m, reached on Sunday 19th December 1965 at 1:00am.

The Stoodleigh Stage Datum is 74.92m AOD.

The usual range of the River Exe at Exebridge is between 0.17m and 1.90m. It has been between these levels for 90% of the time since monitoring began.

The typical recent level of the River Exe at Exebridge over the past 12 months has been between 0.16m and 1.26m. It has been between these levels for at least 150 days in the past year.

The highest level ever recorded at the River Exe at Exebridge is 3.47m, reached on Saturday 22nd December 2012 at 9:45pm.

The Exebridge Stage Datum is Stage Datum is 111.745m AOD.



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The usual range of the River Exe at Pixton is between 0.12m and 1.40m. It has been between these levels for 90% of the time since monitoring began.

The typical recent level of the River Exe at Pixton over the past 12 months has been between 0.12m and 0.96m. It has been between these levels for at least 151 days in the past year.

The highest level ever recorded at the River Exe at Pixton is 2.24m, reached on Sunday 23rd December 2012 at 12:15am

The Pixton Stage Datum 116.74m AOD.

Surface Water Management

The runoff from the barn roof will be directed to the leat that runs along the northern boundary of the site. There will be no increase in hard-paved areas.

Levels

The floor level of the barn will be 250mm higher than the surrounding ground level. The ground level of the site is 97.2m AOD.

There is an OS spot height on the adjacent road of 99m. The road is mostly shown to be in Flood Zone 1 and there is easy and direct escape access to the road from the site.

