Critical Design Statement

Client:

Mr. P. & Mrs J. Wearne.

Site:

2 9 Berrycoombe Vale, Bodmin. Cornwall. PL31 2PH.

Proposal:

Proposed alterations and additions to the front and rear of existing dwelling.

Agent:

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1.0 Introduction:

Architectural Concepts is representing the applicants (Mr & Mrs Wearne), who proposing to erect an extension to the front and rear of the existing house. As part of the planning process it has become apparent that the application site is in the Bodmin Critical Drainage Area. As such further consideration is required for the disposal of surface water from the development.

Paragraph 103 of the National Planning Framework (NPPF) 2012 states that a Flood Risk Assessment (FRA) is required where a development is located within a Critical Drainage Area. In order to address this issue, a solution to address these issues of FRA and associated Sustainable Drainage System (SuDs) needs to be developed.

An initial inspection of the Environmental Agency indicative flood map (see Appendix A) shows that the application site is located within Flood Zone 1 and therefore low risk from fluvial or tidal flooding. Subsequently, the primary aim of this report is to ensure that erection of the proposed extension does not increase flood risk elsewhere. This can be achieved by providing a suitable sustainable drainage solution that manages the additional surface water runoff that maybe created by this proposed extension to the existing house.

This report considers the FRA implications for the proposed extension, in line with the National Planning Policy Framework (NPPF), Planning Practice Guide (PPG) and Drainage Guidance for Cornwall (DGfC).

1.1 Site Description:

The site comprises of a mid terraced house with garden areas at the front and rear of the property.

At the front of the property is an open small garden area running adjacent to the road (Berrycoombe Vale). To the rear of the existing house is a larger garden area bordering onto vehicular parking area access from Tredanek Close.

The Environmental Agency indicative flood map (see Appendix A) shows that the application site is located within Flood Zone 1 (low probability). The Cornwall Strategic Flood Risk Assessment (SFRA) confirms that the application site falls within a Critical Drainage Area. Consequently, this means that the drainage for any new buildings requires more detailed consideration.

1.2 Proposal:

The client's proposal is to carry out alterations and additions to the front and rear of existing dwelling.

2.0 Flood Risks:

2.1 Critical Drainage Area :

Cornwall Council's Management Strategy have identified Bodmin as a priority community. The Critical Drainage Map indicates the area of Bodmin covered (see Appendix A) shows that the application site is located within this area.

2.2 Fluvial and Tidal Flooding:

The Environmental Agency indicative flood map (see Appendix A) shows that the application site is located within Flood Zone 1 (less than 1 in 1000 annual probability of river or sea flooding) and not at risk from either fluvial or tidal flooding.

2.3 Groundwater Flooding:

Groundwater flooding is linked to the ability of the ground to hold and presence of aquifers. It is considered that groundwater is not an issue on this site, furthermore the Cornwall Council Strategic Flood Risk Assessment (SFRA) highlights that the geology of Cornwall has only minor aquifers and generally does not experience much groundwater flooding. Therefore, the issue of groundwater flooding is not considered any further in this report.

2.4 Overland/Surface Water Flow:

The application site is situated within an existing residential area, with buildings and highways surrounding the site. It is anticipated that any overland flows generated upstream of the application site would be incepted by the existing road and drainage networks for the area any be conveyed away from the site. Therefore, the site is considered not at risk of surface water flooding.

The Environmental Agency map shows that the risk of flooding from surface water for the site. It indicates that the site is at low risk of flooding from surface water flooding.

3.0 Drainage Design:

3.1 Drainage Design - Infiltration System (Option 1):

As per the guidance outlined above, the preferable drainage solution for the site would be to drain all surface runoff from the development to ground soakaway designed to a minimum 30 year return period storm. In this case a 100-year return period has been used with a 40% climate change allowance, based on the experience of Cornwall Council requirements for other residential sites.

The Building Regulations Approved Documents - Part H, places several restrictions on the siting of soakaway which should be complied with. This includes that soakaways should not be sited within 5 metres of any building or road. They should also be sufficiently far from other soakaways and drainage fields so that the overall soakage capacity of the ground is not exceeded or the effectiveness of the systems are impaired.

To provide a detailed design for such an infiltration system, site investigation would be required to ascertain the percolation rate of the sub-soil. As the site investigation has not yet been undertaken, an infiltration rate of 0.15m/hr has been assumed to produce an outline design of the soakaway system.

The proposed extension has additional footprint of 19.8m2. The runoff would originate from the rooftop area of the extension.

Soakaway design calculations based on the assumed percolation rate described above give an indicative crate system soakaway capacity of 0.1m2. The soakaway design is based on the 'Wavin AquaCell Eco' modular infiltration units using the worst case design storm (100 year) with rainfall intensities increased by 40% to allow for the effects of climate change over the lifespan of the extension.

3.2 Drainage Design - Attenuation System (Option 2):

If infiltration rates are found to be poor on site than surface water runoff from the development will need to be attenuated on site, and discharge to a suitable receptor at an appropriate rate in line with the requirement of DGfC.

Inspection of Ordnance Survey would suggest a discharge to the nearest watercourse would be unfeasible.

According to South West Water mapping, currently the surface water from this site and the adjoining discharges into the stormwater drainage system. Therefore, an attenuated discharge into the stormwater would appear to be the most appropriate approach, if percolation testing fails.

4.0 Exceedance Events:

4.1 Infiltration System (Option 1):

During any rainfall event in excess of the design storm described above, or should pipework or gullies become blocked, the system has potential to be surcharged. It is anticipated that the surcharging of the system would result in the exceedance flows flowing overland and would in a northerly direction away from site through the adjoining properties into the adjoining highway, where in would be conveyed away from site by the existing drainage system.

4.2 Attenuation System (Option 2):

During any rainfall event in excess of the design storm described above, or should pipework or gullies become blocked, the system has potential to be surcharged. Should this occur, flow would enter the overflow pipe incorporated into the system; as such no additional water would be seen.

5.0 Maintenance:

Management and maintenance responsibility for the surface water drainage system will fall to the site owner. Maintenance will include regular (at six monthly intervals recommended) inspection of the upstream silt trap serving systems with removal and disposal of any silts or debris (e.g. leaves) that has accumulated in an appropriate manner.

6.0 Conclusion:

The site falls within the Bodmin Critical Drainage are and special consideration has been given to surface water drainage of the site. The proposed drainage infrastructure has been designed in accordance with guidance outlined in the DGfC.

Two potential drainage options have been outlined to drain surface water from the development dependant on ground conditions.

The potential surface water drainage systems will control water runoff from the site and ensure it meets the drainage guidance for the area.

The drainage system will remain in the ownership and the property owner will be responsible for the maintenance of the system. Maintenance will comprise periodic inspection of chambers and removal of silt and debris as necessary.

Provided the recommendations outlined within this report are adopted in the development proposal then there is capacity to manage the surface water runoff from the development on site. With regard to the criteria in the NPPF, PPG and DGfC, the development is appropriate from a flood risk perspective.

Appendix A:

Flood risk summary for the area around:

29 BERRYCOOMBE VALE, BODMIN,

PL31 2PH

Surface water

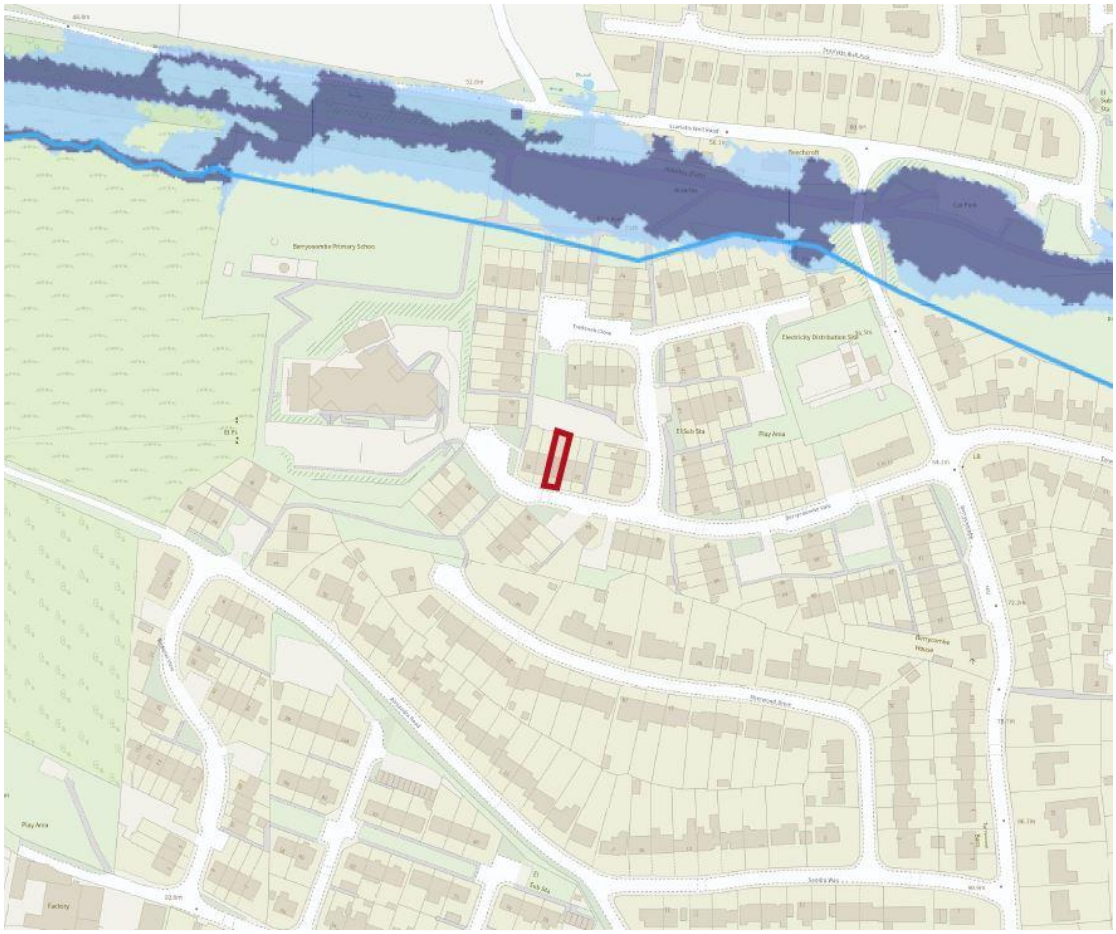
Low risk
What this information means

Surface water flooding, sometimes known as flash flooding:

- happens when heavy rain cannot drain away
- is difficult to predict as it depends on rainfall volume and location
- can happen up hills and away from rivers and other bodies of water
- is more widespread in areas with harder surfaces like concrete

Lead local flood authorities (LLFA) are responsible for managing the flood risk from surface water and may hold more detailed information.

Your LLFA is **Cornwall council**.



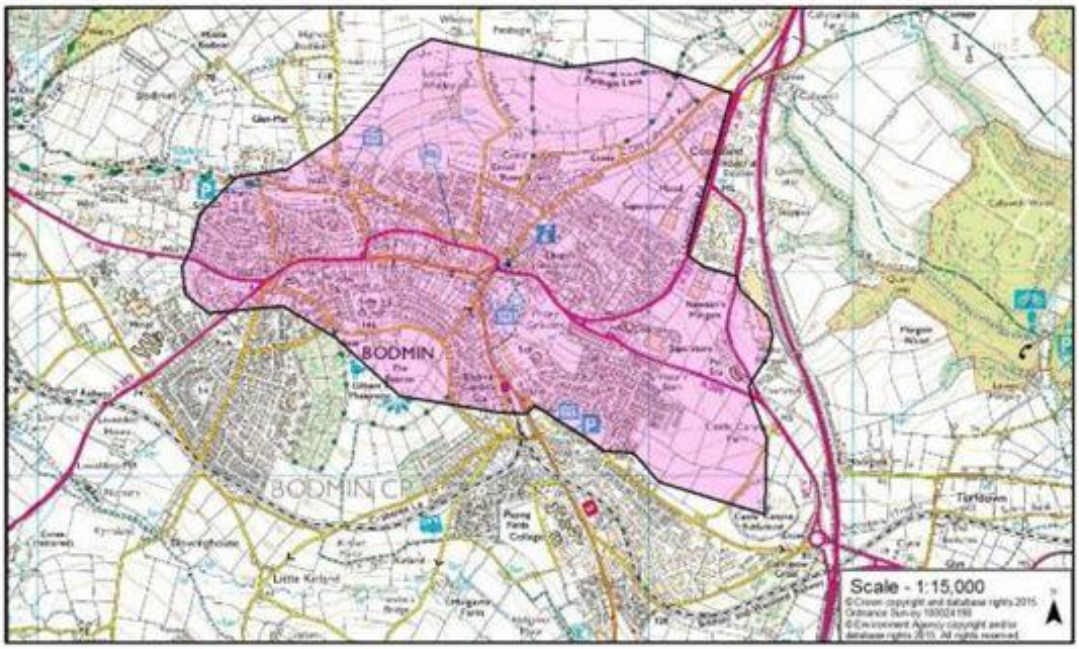
Rivers and the sea

Very low risk
What this information means

The Environment Agency is responsible for managing the flood risk from rivers and the sea.

Flood Risk Assessment

Cornwall Council's Local Flood Risk Management Strategy (Strategy) identifies Bodmin as a Priority Community. Bodmin has a Surface Water Management Plan (SWMP) that seeks to address the drainage issues that extend beyond individual sites. Proposals within the Critical Drainage Area (CDA), as identified below, must comply with minimum drainage standards.



Given the sites location within the Critical Drainage Area, provision has been made for a soakaway, where surface water will drain and takes account of the aim in reducing current rainfall runoff rates which will thereafter mimic greenfield performance up to a maximum 1 in 10 year discharge rate. In doing so, this will reduce in flooding downstream.