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EX16 6PP

22<sup>nd</sup> September 2023

**RE: (23/01282/FULL) Erection of two-storey side extension to house lift shaft to provide disabled access to first floor –Flood Risk Assessment and Drainage Strategy**

Hello,

Following on from the invalid planning application response letter dated 14<sup>th</sup> August 2023 we have been appointed to address the issues noted on point 01 of the response repeated in *italics* below:

*01. As the application site is within the Cullompton Critical Drainage Area., you will need to demonstrate that the proposed development includes appropriate measures for the discharge of surface water, taking into account the impacts of climate change. On-site, such measures may include the use of soakaways/infiltration measures or where infiltration is not possible, a discharge system which can limit flow rates to the appropriate level. The appropriate standards are that all off-site surface water discharges from the development should mimic 'greenfield' performance up to a maximum 1 in 10 year discharge. On-site all surface water should be safely managed up to the '1 in 100 + climate change' conditions. Please provide a Flood Risk Assessment.*

This technical letter will address both the Flood Risk to the proposed development and commentary on the drainage strategy for the development given the Cullompton Critical Drainage Area context, but also relative to the scale of the proposed development.

The context of the development is for an 11m<sup>2</sup> extension to provide a disabled lift access in the property over an area of existing hardstanding. The proposed development does not include the creation of additional rooms or to enable great occupation of the existing care home.

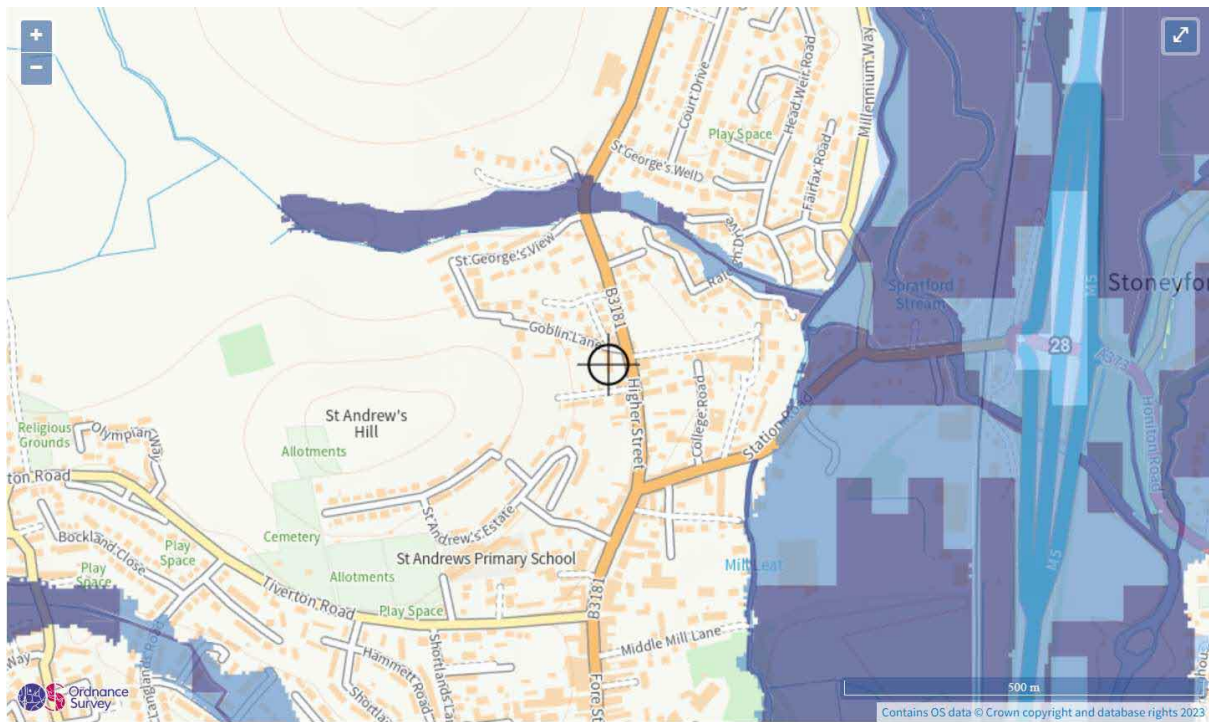
**Flood Risk**

The location of the development is at the junction of Goblin Lane and the B3181 Higher Street to the north of Cullompton. The site is located in an area wholly within Flood Zone 1 as shown on the figure below from the Gov.uk website:



Figure 1 –Flood Zone Mapping (Gov.uk)

This is similar in extents to the Flood Risk (from Rivers and Sea) mapping:

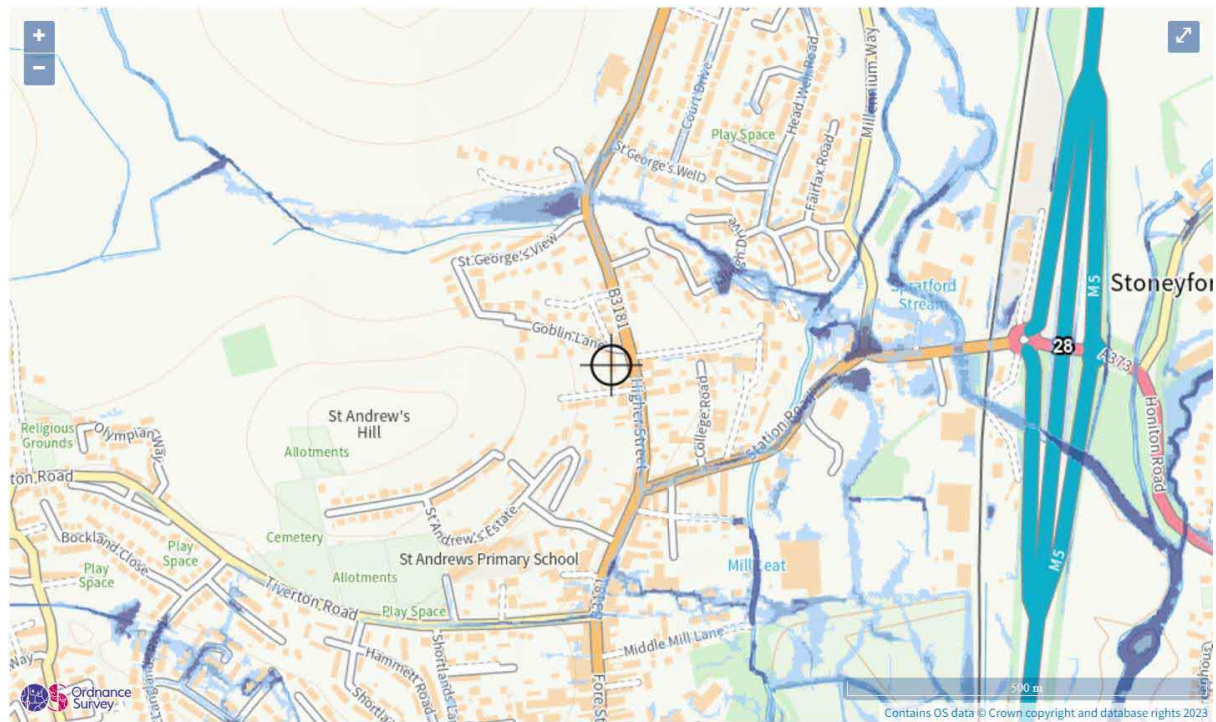


Extent of flooding from rivers or the sea

● High ● Medium ● Low ● Very low ⊕ Location you selected

Figure 2 –Flood Risk Mapping (Gov.uk)

The Gov.uk website also includes surface water flood risk mapping based on sheet rainfall over the area using LiDAR information, but excluding formalised drainage networks, some boundaries, culverts etc. The results are shown on the figure below:



Extent of flooding from surface water

● High ● Medium ● Low ○ Very low ⊕ Location you selected

**Figure 3 –Surface Water Flood Risk Mapping (Gov.uk)**

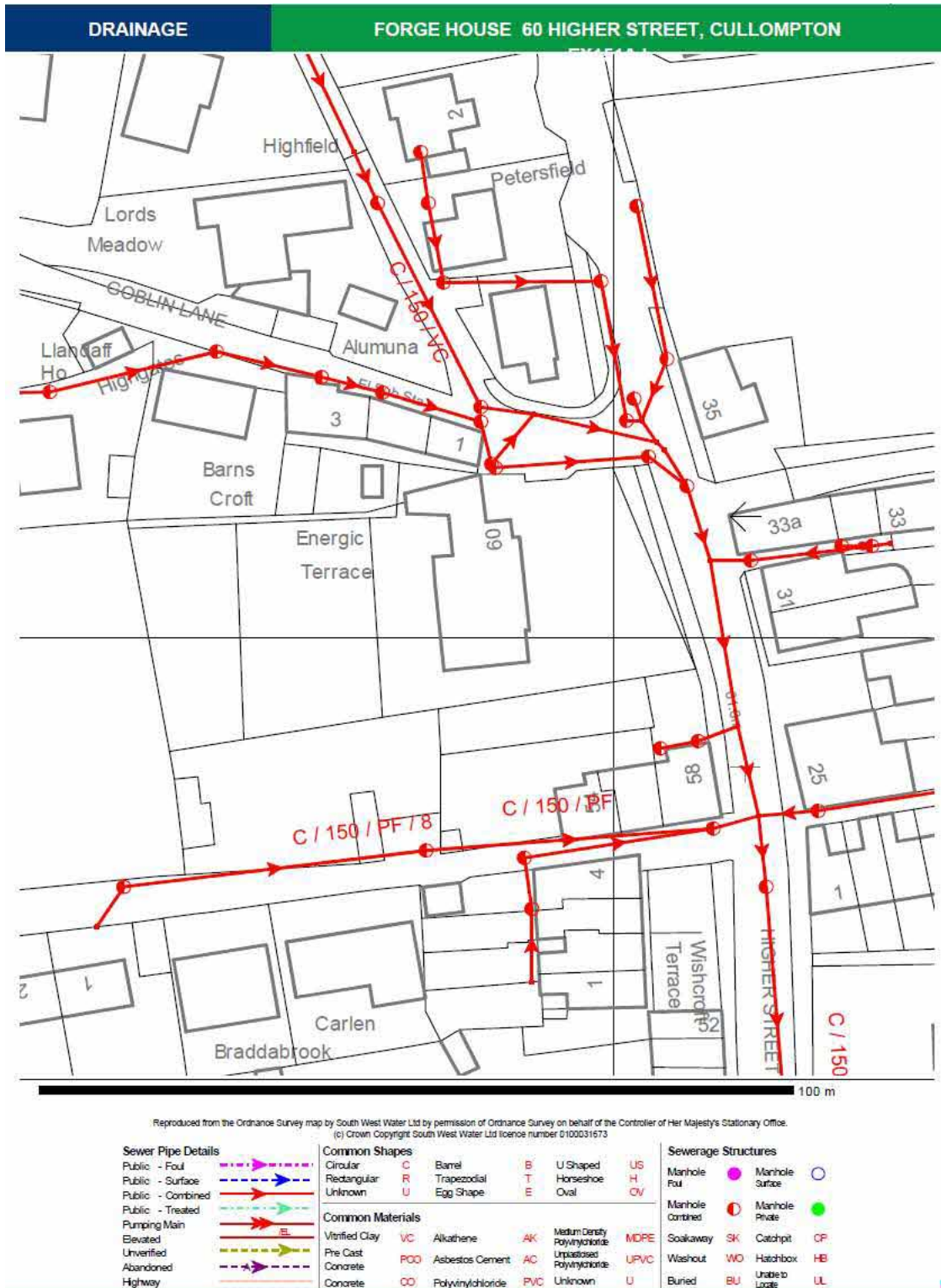
This shows a similar pattern to the flood zoning maps around the local watercourses, but also a small extent of flood risk along Higher Street (B3181) to the south of the site, but with no flood risk noted on the site.

St Andrew's Hill to the west is the local high spot but with no clear channels draining the feature there is not a significant catchment which would affect the proposed development. The flooding shown on Higher Street will also likely be drained into the formalised Highways drainage and this risk would not be present.

From the information above there are also no access and egress issues to the development.

Drainage information has been attained from South West Water and is shown on the figure below:





**Figure 4 –South West Water Asset Information**

This shows a network of 150mm diameter combined sewers flowing from north to south with branches feeding into the main line underneath the B3181 Higher Street. The existing site has a formalised drainage network which connects to the public combined sewer. The levels of the existing site are higher than the surrounding area, and therefore any flooding issues would be conveyed away from the proposed development.

The Gov.uk website does not note any flood risk issues from reservoirs in the local area and no other sources of flood risk have been identified to the development. Therefore, the type of development is suitable for the proposed location.

### Drainage

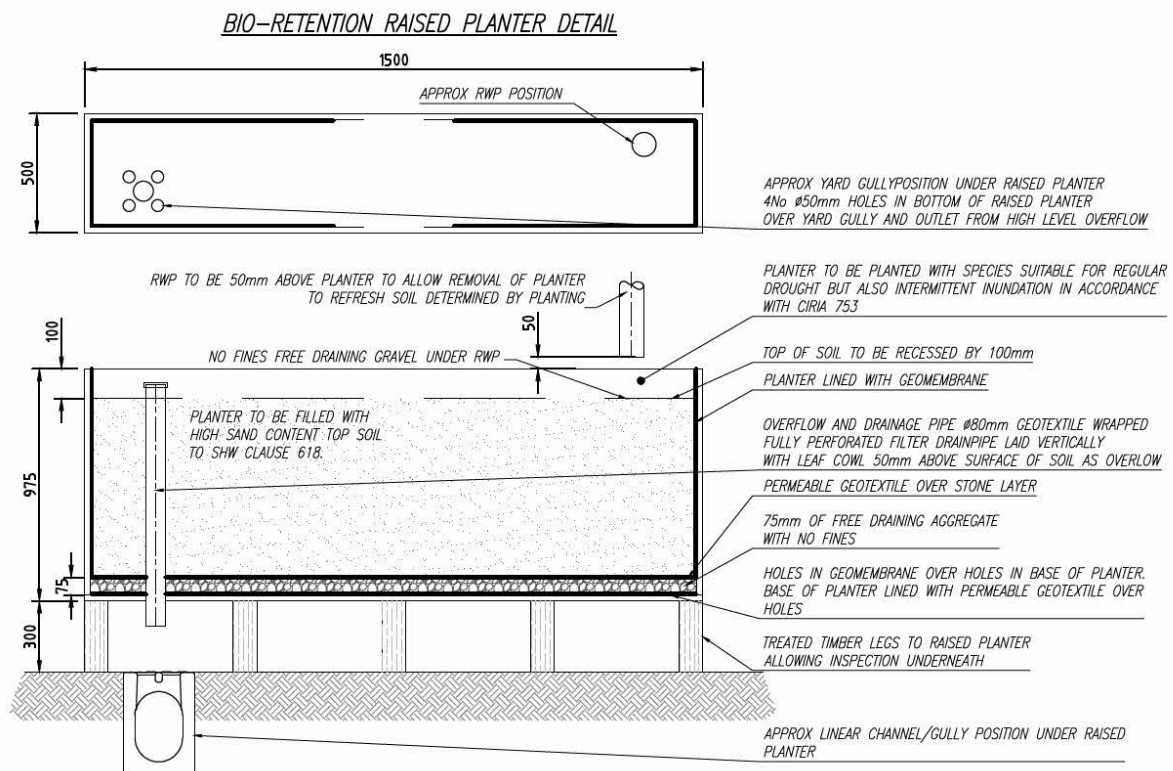
The proposed development is over an area of existing hardstanding and is 100% impermeable. For completeness the Greenfield runoff unit rates have been determined using the loH124 method for a 1.0ha area:

Return Period	Discharge Rate (l/s)
Qbar	6.45
1 in 1	5.03
1 in 30	12.58
1 in 100	15.68

**Table 1 –Greenfield Runoff Unit Rates**

As the area is 100% impermeable on the existing site the Rational Method has been used to determine the 1 in 2 year existing runoff rate using a peak rainfall rate of 50mm/hr. This gives a rate of 0.15l/s.

The above discharge rates are very small and below the minimum maintainable rates and would require flow controls with very small opening which would be a very high risk of blockage and then causing flooding. Therefore, as part of the proposed works soft SuDs solutions have been reviewed which would provide holistic benefits. As formalised flow controls cannot be include which would restrict the rates to the levels required it is proposed to include raised bio-retention planters on the new RWPs as shown on the typical detail below:



**Figure 5 –Typical Bio-retention Raised Planter Detail**

The size of the planters will be based on the space available to not prohibit free movement around the area for staff and residents. The feature includes permeable media with planting which acts as a form of filter drain for small regular rainfall events, with the planting providing amenity to the residents and staff, and the vegetation forming a habitat for insects and small birds to aid in bio-diversity and habitat creation. The planter also includes an overflow pipe for larger events which is only activated once the capacity of the media is exceeded where water will weir over into the overflow pipe and into the below ground drainage. There will still be a small reduction in the flow rate and volume, but this prevents flood risk issues from exceedance.

Whilst these features are small they are proportional to the small scale of the development and provide holistic benefits.

### Conclusions

Based on the above the flood risk to the development is low from all sources, and the development does not include the intensification of use of the property.

The proposed development is over an existing area of hard landscaping and as such there is no increase in impermeable area as part of the development.

The area of the proposed development is very small and as such the existing runoff rate is also very small and below the suitable limits of flow controls without having flood risk issues due to blockages. As such soft SuDs features have been reviewed and a bio-retention raised planter has been used as it provides wider holistic benefits, and can be fitted to the new RWPs which are to be connected to the existing drainage network. This will attenuate small flows naturally through the media with some volume taken out via evapotranspiration and absorption of the media.

Flood risk is controlled by the inclusion of an overflow pipe which will only be activated during larger rainfall events once the capacity of the planter has been exceeded.

The vegetation in the planter will provide amenity benefits to the staff and residents, with the planting providing a habitat for insects and small birds.

Regards,



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