

Project Title: Land to the North of Arborfield Road

Project No/ Document Reference: HD008/TN004 RevB

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PLANNING APPLICATION WBC 242484 / RESPONSE TO ENVIRONMENT AGENCY COMMENTS

1. Introduction

- 1.1. This technical note provides a response to the Environment Agency (EA) comments made in the letter ref WA/2025/132198/01-L01 dated 7th May 2025 on Wokingham Borough Council (WBC) planning application no 242484, for the *'Full Application For The Erection Of 191 Dwellings, Open Space, Landscaping, Supporting Infrastructure And Associated Works. Land To The North Of Arborfield Road, West Of Shinfield Eastern Relief Road'*.

2. EA Response

- 2.1. The EA reviewed the FRA submitted as part of the application, Land North of Arborfield Road, Shinfield Flood Risk Assessment and Drainage Strategy" (Ref HD008-R001B dated 13 March 2025) and produced by Abley Letchford Partnership Limited'.
- 2.2. The FRA refers to flood modelling of the River Loddon completed by WBC for their 2021 Strategic Flood Risk Assessment (SFRA), and the EA response to the application noted that the submitted FRA failed to demonstrate that the flood modelling used in the FRA is appropriate.
- 2.3. The EA states that *'when using existing hydrology studies you should:*
- *check if the previous study is suitable – for example, is it detailed enough for an FRA, does it consider all required sources of flood risk*
 - *use the latest versions of hydrological methods and software to calculate estimates*
 - *review and update input data and parameters – for example, include additional gauge data, modify rainfall-runoff parameters, check the latest climate change allowances, use the latest National River Flow Archive data*
 - *update catchment descriptors from the Flood Estimation Handbook Web Service'.*
- 2.4. The WBC flood modelling was completed in 2021 but was based on a previous model. It does include the current climate change allowances, but the baseline hydrological analysis uses older data. Furthermore, the river channel cross sections are from survey completed sometime previous.
- 2.5. The model was undertaken for WBC and a complete model history, confirming the date and source of all geometry and hydrology data is not available. As such, it is not possible for a comprehensive check on the suitability of all aspects of the model for the purposes of a site specific FRA.

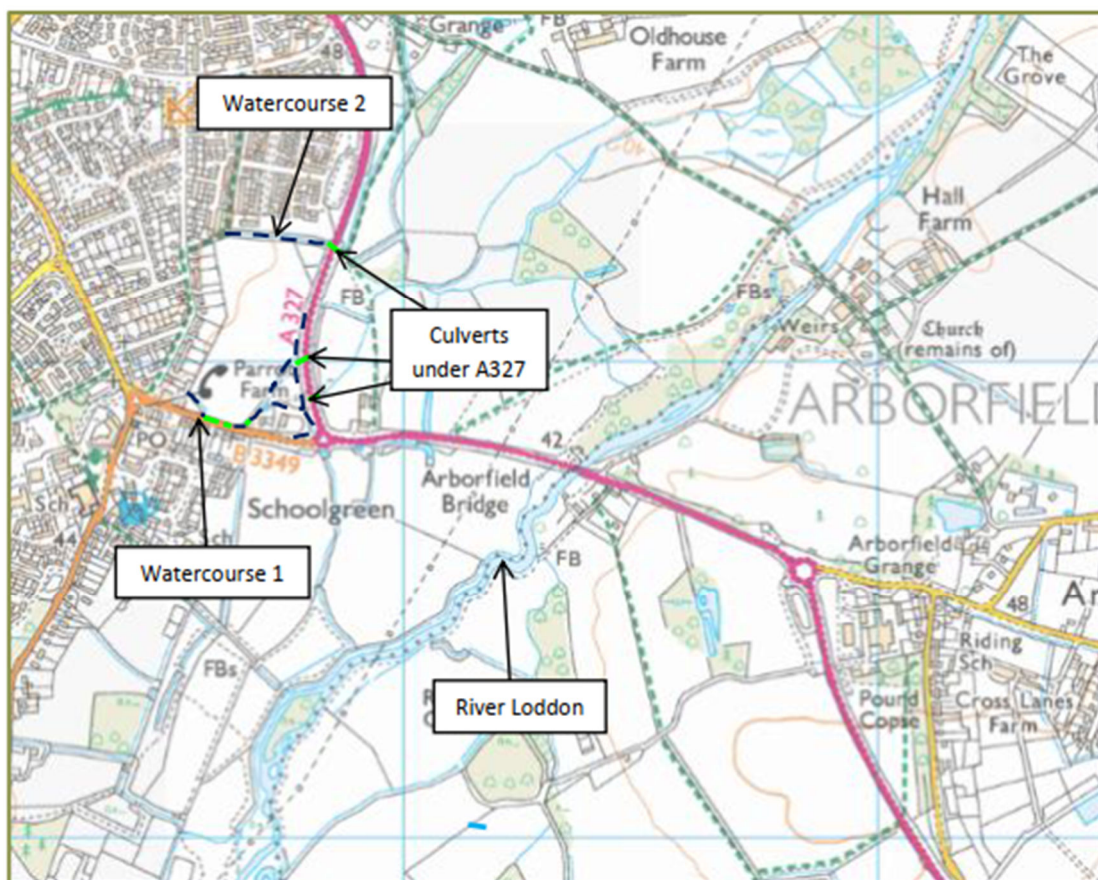


- 2.6. Furthermore, the model is an inundation model for the Loddon and considers the flooding resulting from overtopping of the Loddon channel and does not discretely model the tributaries of the Loddon to the west of the river and in close proximity to the site.

3. Updated Flood Modelling

- 3.1. To address the EA comments a new flood model has been produced using 1D2D ESTRY-TUFLOW software for the western tributaries adjacent to/ within the site and a 2km reach of the River Loddon. **Figure 1** shows the watercourses included in the modelling.

Figure 1 – Modelled watercourses (from Enzygo report SHF.1154.040.HY.R.004.A, Nov 2025)



- 3.2. This modelling uses channel survey data obtained in July 2025 and has been run in the current versions of the software.
- 3.3. Hydrological analysis has been undertaken for the new modelling and uses current catchment descriptor information as well as the current versions of FEH Statistical and ReFH2 software to complete the analysis.
- 3.4. The modelling study covers a suitable extent to inform the site-specific FRA and uses current methodologies and data.
- 3.5. The hydrological and hydraulic modelling is detailed in full in the attached reports:



- Hydraulic Modelling Report, Land North of Arborfield Road, Bellway Home Limited, ref SHF.1154.040.HY.R.004.A, Nov 2025
- Hydrological Assessment – River Loddon, Watercourses 1 and 2, Land North of Arborfield Road, Bellway Home Limited, ref SHF.1154.040.HY.R.003.A, Nov 2025

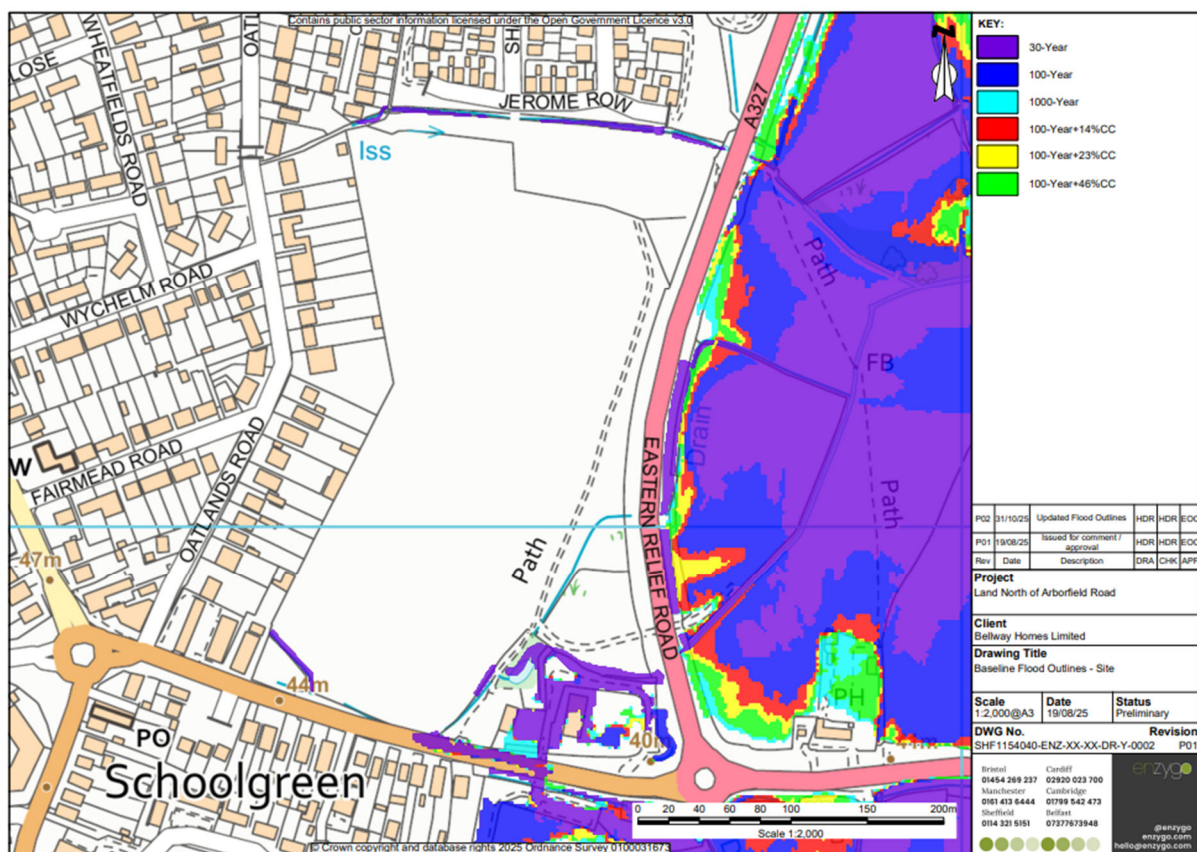
3.6. The key results and conclusions of the modelling, where relevant to the FRA, are summarised in the next section.

4. Model Results

4.1. The baseline modelling included runs for the 1 in 30 year, 1 in 100 year, 1 in 1,000 year events as well as the 1 in 100 year with climate change scenarios for the 2080s epoch central (+14%), higher (+23%) and upper scenarios (+46%). The key design event is the 1 in 100 year with 14% climate change uplift on peak flows.

4.2. The model results are shown in **Figure 2**.

Figure 2 – Baseline Modelled Results (from Enzygo report SHF.1154.040.HY.R.004.A, Nov 2025)



4.3. The purple extent is the 1 in 30 year and the red extent is the 1 in 100 year +14% climate change uplift. It is clear from the modelling that there is flow within the existing ditches on site but there is no significant overtopping from these ditches in the 1 in 30 year event and events up to and including the design flood event.



- 4.4. It also shows that the floodplain from the River Loddon east of the site reaches the eastern side of the Eastern Relief Road in the most extreme events modelled, but does not extend back into the site.
- 4.5. The modelling indicates that there is some flow onto Arborfield Road from the Loddon floodplain south of the site. This tends to pond within the lowest areas of the carriageway with some potential flow into the area between the eastern Relief Road and Arborfield Road. The majority of this area is outside the site boundary with the exception of a small area in the corner where landscaping is proposed.
- 4.6. **Figure 3** shows the detailed modelling with the proposed scheme layout. It confirms that all built development and key infrastructure lies outside of the modelled flood extents in all key events.
- 4.7. It is noted that there will be minor works to watercourse 1 (the southern watercourse within the site) at the proposed access and the footpath towards the south-eastern corner of the site. The works to the watercourse will include culverting for crossings but these are not in areas where there is overtopping from the watercourse and will be designed to ensure that there is adequate capacity to convey the modelled flows with appropriate freeboard.



Figure 3 – Detailed model results and proposed scheme layout





5. Conclusion

- 5.1. A detailed modelling study of the River Loddon and its tributaries at the site has been completed in line with current methodologies, standards and using current data. This is in line with the EA requirements set out in their response of 7th May 2025.
- 5.2. This detailed modelling study and a review of the proposed site layout confirms that
- The site has a low potential for fluvial flooding from the Loddon and its tributaries;
 - The site is within Flood Zone 1, with the exception of the existing ditches that convey flow and a small area in the south-eastern corner of the site;
 - The proposed development is located in areas outside the extent of flooding for the 1 in 1,000 year and outside the 1 in 100 year with 14% climate change events (flood zone 2 and the design event);
 - Landscaping is proposed in the south-eastern corner with no impact on flooding;
 - The proposed development will have no impact on the existing floodplain.
- 5.3. The detailed modelling study therefore supports the findings of the FRA.