



TECHNICAL NOTE	
Job No.	22-0400
Project Name	Land South of The Forty, Cricklade
Technical Note Title	Surface Water Flood Risk and Hydraulic Modelling
Client	Hannick Homes
Date	15/05/26
Revision	-
Status	FINAL
Document Authorisation	
Prepared By	Richard Smith
Checked By	Seren Redmond
Approved By	Richard Smith

1. Purpose of this Note

This note summarises the hydraulic modelling submitted in support of this application and clarifies the basis on which proposed finished floor levels (FFLs) have been established. It is intended to assist in understanding the modelling approach and conclusions.

2. Flood Risk Context

The Environment Agency's (EA) national surface water flood mapping identifies the majority of the site as falling within a high-risk zone for pluvial (surface water) flooding, with modelled depths of up to 0.3 m. Pluvial flooding arises when rainfall intensity or duration exceeds the capacity of the ground or drainage network to absorb or convey water, resulting in overland flow.

Given that surface water is the primary source of flood risk at this location, the applicant commissioned Rappor Consultants Ltd to undertake site-specific hydraulic modelling. This provides a more detailed and accurate assessment of flood risk than the EA's strategic-level mapping and enables the impacts of the proposed development and associated mitigation to be properly quantified.

3. Summary of the Modelling Approach

A two-dimensional (2D) direct rainfall hydraulic model was developed and three scenarios were assessed:

- Baseline - existing site conditions prior to development, providing a higher-resolution assessment of current flood risk than the EA's mapping.
- Post-development (pre-mitigation) - the proposed development in place without flood risk management measures, to establish the unmitigated impact.
- Mitigation - the proposed development with flood risk management measures included, demonstrating that on-site risk is acceptable and that off-site impacts are kept within acceptable limits.

The design event, in accordance with national planning policy (NPPF) and associated guidance (PPG), is the 1-in-100-year storm with a 40% climate change allowance applied. Storm durations of 1 hour, 3 hours, and 6 hours were tested; the 6-hour event was identified as critical and used for all subsequent modelling.



4. Modelling Results

The baseline modelling broadly corroborates the EA's surface water flood mapping, though at a higher resolution. Modelled depths across the site reach up to 0.45m in the design event, with the existing ditch network capable of holding water to depths of approximately 0.9m. An area of low-lying land approximately 300m south of the site is modelled to reach depths of around 0.85m.

The introduction of the proposed buildings and associated raised platform redistributes surface water flow across the site. In the absence of mitigation, depths in the northern portion of the site increase to approximately 0.6 m, and there is a modest increase in modelled flood depths in the area to the south. This confirms the need for mitigation measures to manage both on-site and off-site impacts.

The mitigation strategy comprises the addition of new ditches along the western and southern site boundaries, together with a localised depression of approximately 0.35 m in the south-western corner of the site. These measures provide attenuation and redirect surface water away from the development. With mitigation measures in place:

- Flood depths in the northern portion of the site are reduced to approximately 0.35m.
- Off-site increases in flood depth are limited to a maximum of 0.017m, which is within accepted modelling tolerance and has been confirmed as acceptable by the LLFA.
- A betterment in surface water flood risk is demonstrated for a number of existing residential properties to the north-east of the site.

5. Development Platform Level and Finished Floor Levels

It should be noted that the development platform within the hydraulic model was set at a flat elevation of 82.5m Above Ordnance Datum (AOD). This level was not derived from a site-specific ground-raising calculation, it was adopted as a modelling parameter sufficient to raise the platform above modelled flood depths, thereby allowing the model to simulate accurately how surface water is displaced and routed around the proposed development. The 82.5m AOD figure is therefore an arbitrary modelling assumption rather than a prescribed engineering level for the finished development.

Minimum FFLs for dwellings are established separately, using the flood modelling results as the evidential basis. In accordance with the NPPF and PPG, FFLs are to be set at a minimum of 300mm above the modelled design flood level. The outputs from the post development with mitigation modelling have been used to inform minimum FFLs across the site. For simplicity, the site has been split into groups, with the highest modelled flood level at the boundary of each group used to determine minimum FFLs within that group. A plan outlining these is included in **Appendix A**. This same output was used to inform the site sections which are included in **Appendix B**.

6. Conclusions

The hydraulic modelling demonstrates that, with the proposed mitigation measures in place, surface water flood risk on site is managed to an acceptable standard and that the development does not give rise to a material increase in off-site flood risk. The LLFA has reviewed and approved the modelling and its conclusions.

Minimum FFLs are set in accordance with the modelled design flood depths, with a minimum 300mm freeboard applied throughout, consistent with national planning policy requirements.



APPENDIX A – 220400-RAP-XX-XX-DR-3501 – MINIMUM FFLS



MAX MODELLED FLOOD LEVEL: 81.210
MINIMUM FFL: 81.510

MAX MODELLED FLOOD LEVEL: 81.310
MINIMUM FFL: 81.610

MAX MODELLED FLOOD LEVEL: 81.350
MINIMUM FFL: 81.650

MAX MODELLED FLOOD LEVEL: 81.320
MINIMUM FFL: 81.620

Rev	Date	Details	By	Chkd

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CLIENT: HANNICK HOMES

PROJECT: LAND SOUTH OF THE FORTY CRICKLADE

TITLE: MINIMUM FINISHED FLOOR LEVELS

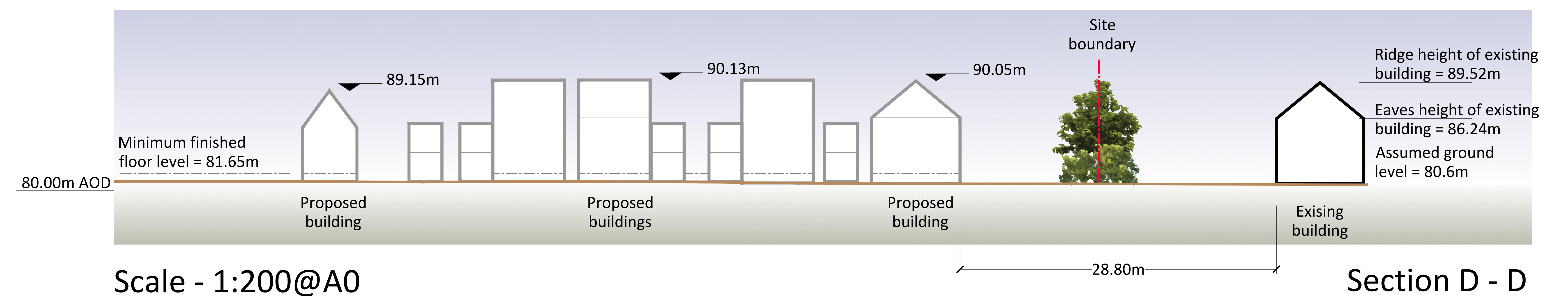
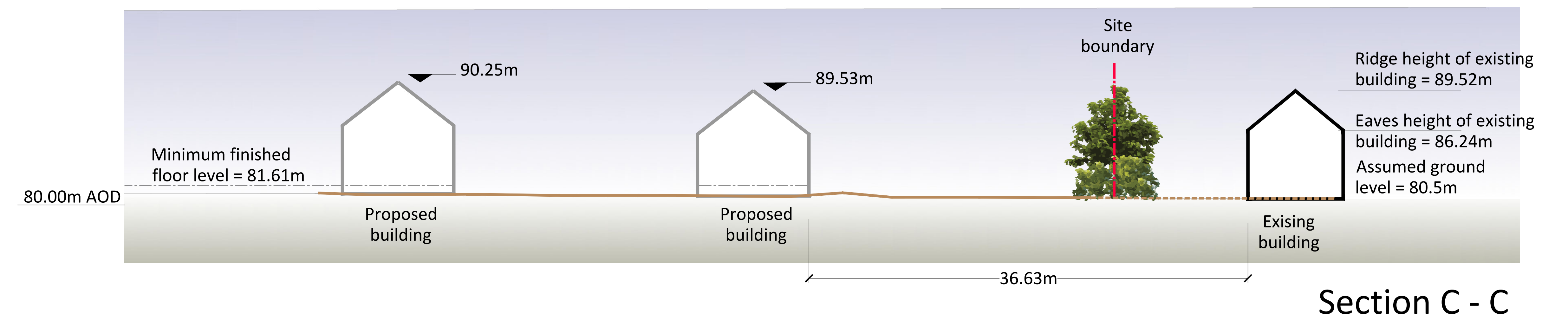
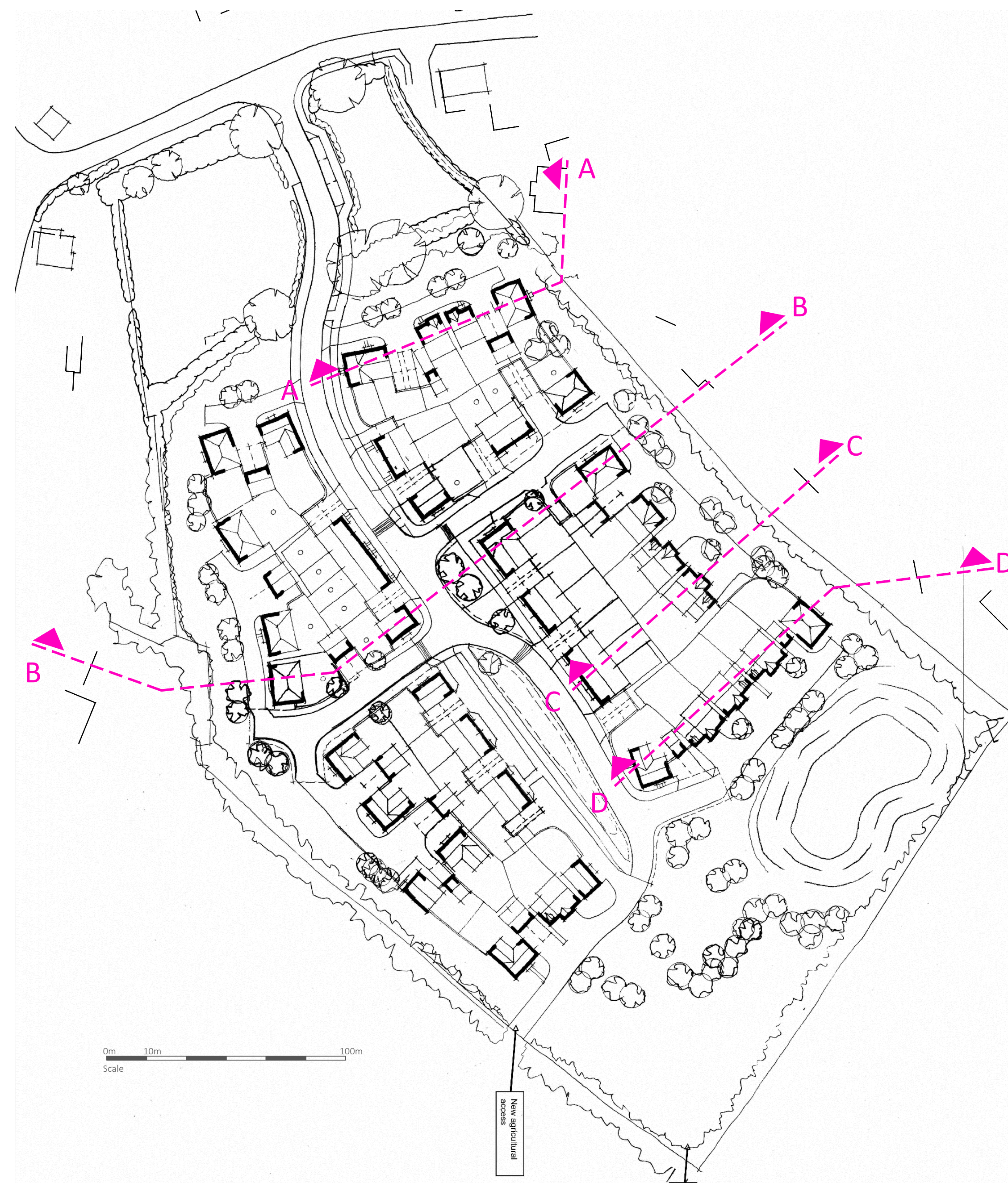
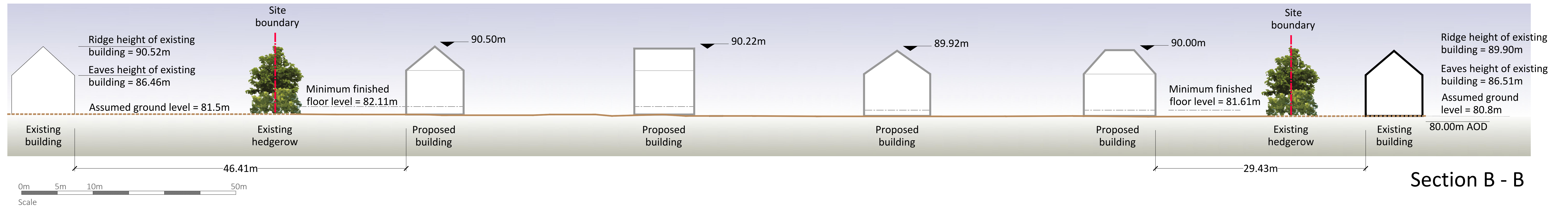
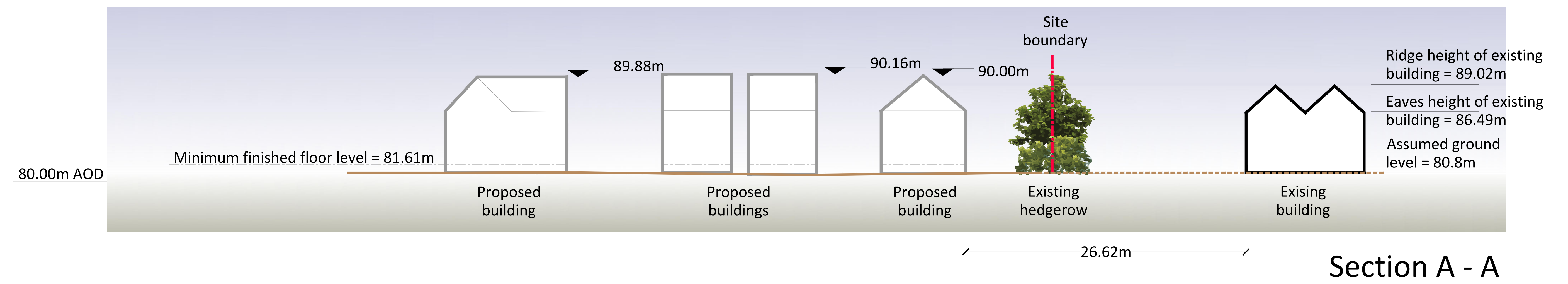
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STATUS: PLANNING

DRAWING NO: 220400-RAP-XX-XX-DR-C-3501	REVISION: P0
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APPENDIX B – PROPOSED SITE SECTIONS



Scale - 1:200@A0

Title: Cross sections through The Site and adjacent properties

Number: HH001-04

Scale: 1to200 @ A0

Date: 13 April 2026



Proposed Development at Cricklade