Land at Rectory Farm (North), Yatton

Persimmon Severn Valley

Appeal Ref: APP/D0121/W/24/3343144

Response to Create Consulting Engineers Ltd Note, Point 1

January 2025

Contents

1 Introduction

1.1 This document has been prepared to provide a response to 'Point 1' of the document prepared by Mr Cage of Create Consulting Engineers Ltd (dated, 7th Jan 2025) that was provided on the first day of the resumption of the Inquiry for a proposed residential development at Rectory Farm (North), Yatton (appeal APP/D0121/W/24/3343144).

1.2 Whilst further points were raised within Mr Cage's document, the Inspector ruled that further written correspondence was only required/agreed to address 'Point 1' of the note that was prepared in relation to the Brookbanks FRA document (ID28).

1.3 For the avoidance of doubt Point 1 stated:

Figures 4.6 and 4.7 of the FRA show Hazard Mapping which has been based on the original Land Raising of 8.44m as outlined in the Hydrock FRA CDA11. If the ground level was dropped to 6.88m AOD then this would have a significant impact on the speed of inundation to the site, as the site would be lower as well as the overall depth of flooding that would be experienced across the site. These hazard maps are therefore wrong and do not show accurately the impact of the site both for the defended and undefended scenarios.

1.4 This Technical Note aims to provide confirmation as to the evolution of the approach to flood risk mitigation for the development; an explanation for what is shown in each of the documents produced; how the most recent approach (and that presented as the option for consideration) provides a safe access route; and confirms the comments within Mr Bunn's proof that a suitable access route is shown from the site via the connection to the south during the 1 in 200 year plus higher central defended flood events, i.e. the event agreed by the EA as the design event for this development.

2 Hazard Mapping

2.1 As was made clear during the Inquiry and within my evidence, but worth reiterating, the Brookbanks FRA (ID28) was not formally submitted as part of the planning process due to further conversations occurring with the Environment Agency and the proposals were never submitted as part of the planning application as it was eclipsed by the further work being undertaken supporting the development.

2.2 This document aims to provide clarification around the process undertaken and will provide a summary of what was included in the following document:

- CDA11 – Flood Risk Assessment & Hydraulic Modelling Report, dated March 2023 produced by Hydrock. This proposed ground levels of 8.44m AOD and was using the Undefended Scenario.

- ID28 – Flood Risk Assessment, dated September 2023 produced by Brookbanks. This document was not submitted but is based on the Undefended scenario with ground levels of 6.68m AOD

- ID28 (page 67) – Flood Risk Technical Note, dated January 2024 produced by Rappor – This sets out the latest position with respect to using the defended scenario and ground level of 6.43m AOD.

2.3 On review of the Hydrock document, and its supporting modelling, the below figure (Figure 22 from the Hydrock Report) has, as outlined in the Create note, been prepared using the 1 in 200 year plus higher central flood event for an undefended scenario for the development design life. The below figure has also included proposed ground levels being set at the first proposals at 8.44m AOD.

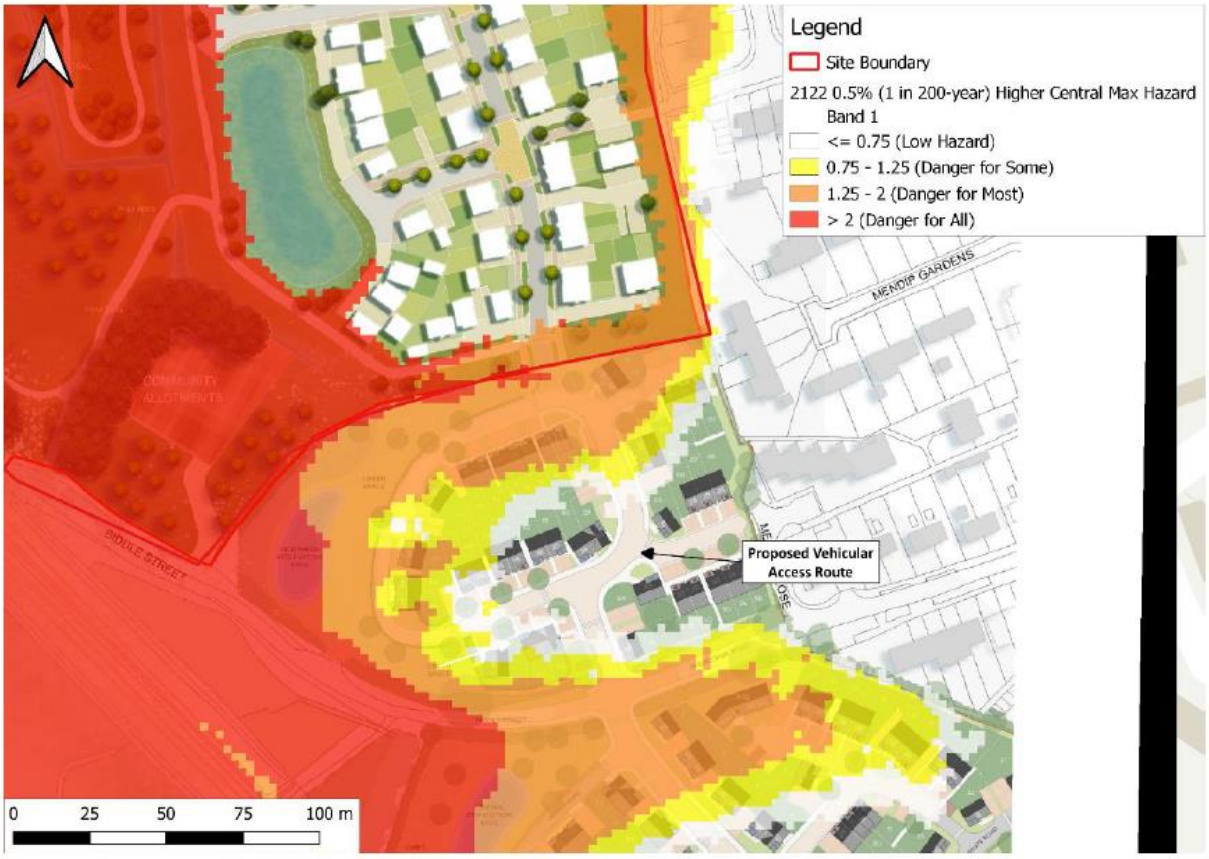

Figure 1 – Hazard Mapping from Hydrock FRA (CDA11) for 200yr plus climate change event, undefended with ground levels at 8.44m AOD.

2.4 The above plan (and model outputs) has shown that both proposed access routes to the development (image taken from Hydrock report and Shiners Elms not shown, modelling outputs unavailable) would be within areas of increased hazard. However, interpretation of these extracts must be set against the inundation timings – and these being worst case. As shown, this flooding occurs during the 3rd tidal cycle and affects the site between 14 and 15 hours from the first overtopping of the defences in this 3rd tidal cycle with flows travelling from the defences before overtopping the railway line to the north and then initially flowing south into the site. Flows then latterly meet and then overtop the Strawberry Line to the west before reaching the site and then the access through to the St Modwen site.

2.5 Mr Cage, in his note, refers to the outlined areas illustrating modelled hazards within the Brookbanks FRA (ID28): these areas being the same as those within the Hydrock report (CDA11) . Mr Cage queried these and how it would be expected for the outputs to look 'significantly different' in terms of extents and depths; owing to the much reduced ground level (6.68m AOD (a level which was subsequently agreed with the EA)) as opposed to 8.44m AOD as part of the evolving process and ongoing discussion with the EA at the time of the Brookbanks FRA (ID28) being prepared. To address this point, the modelling files have been sought from Brookbanks and reviewed. This process has confirmed that the ground level (in the Brookbanks model) was modelled as being at 6.68m AOD and therefore were different to those in the Hydrock modelling and outputs. However, the outputs shown on Brookbanks report figure 4.7 (and shown below) was based on the undefended scenario and not the now agreed defended design scenario (and so including the existing coastal defences).

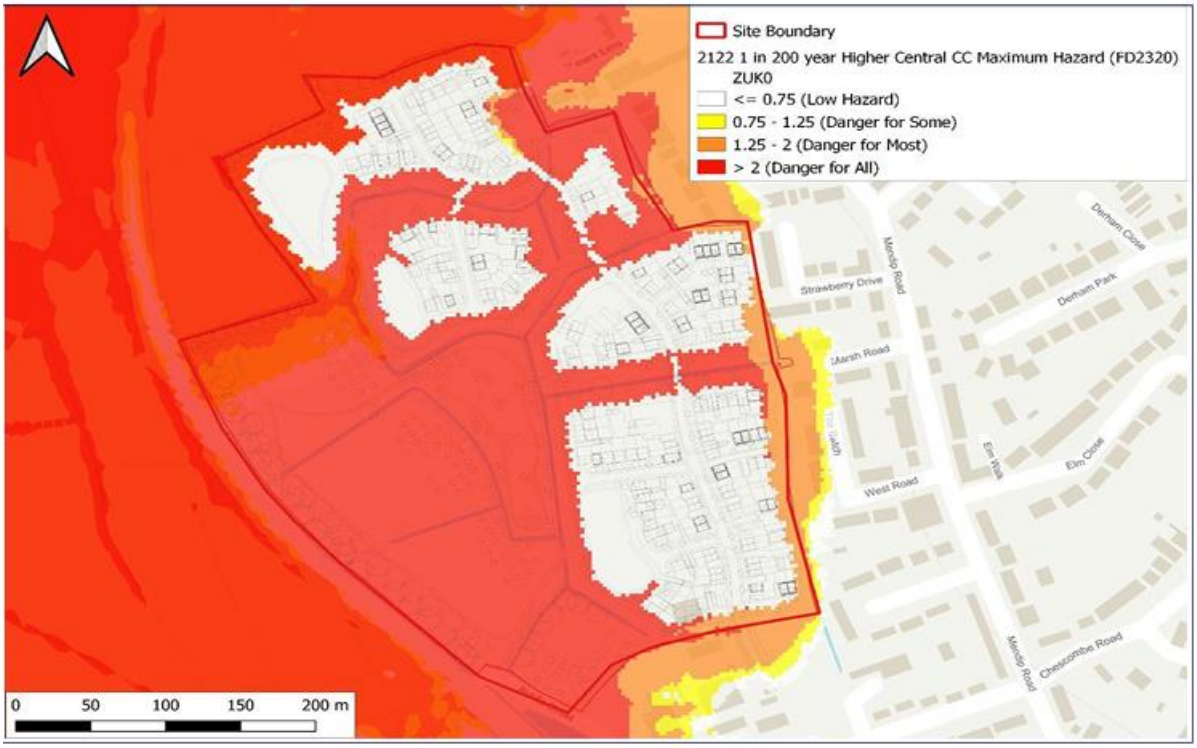

Figure 2 – Hazard Mapping from Brookbanks (ID28) for 200yr plus climate change event, undefended with ground levels at 6.68m AOD.

2.6 As such, and as would be expected, the hazard ratings and outputs from the option with ground levels at 6.68m AOD are very similar to those within the Hydrock report (CDA11), as the movement, timing and depths were much increased compared to the now agreed defended scenario.

2.7 To address the comments raised by Mr Cage in relation to the timing of flooding reaching the site/access points being different in the various options considered throughout the evolution of the mitigation, and given the above figure is taken from an undefended scenario (i.e. as with the Hydrock Flood Hazard Mapping outputs) this therefore has no impact on the inundation times and explains the similarities.

2.8 It should again be noted that the Brookbanks report was never submitted, there is no reliance placed on the outputs from this. The position of the appellant is that both the Hydrock and Brookbanks reports (ID28 & CDA 11) have been superseded by the proposal to set ground levels to a revised, lower height of 6.43m AOD and therefore the subsequent modelling that was undertaken for this event in the defended scenario (following a meeting with the EA on 14th September 2023) is the assessment/outputs that should be used against the reasons for refusal stated within the Statement of Case.

2.9 The modelling that assesses the defended scenario for the 1 in 200 year plus higher central climate change event with finished floor levels set at 6.43m AOD does provided markedly different flood extents and hazard ratings when compared to those at Figures 1 and 2 of this Note, as would be expected owing to the inclusion of the existing defences and the protection these provided when compared to all defences having been 'removed'. Figure 3 below shows the hazard ratings from the most recent, and current proposals, for site levels with the EA agreed design event.

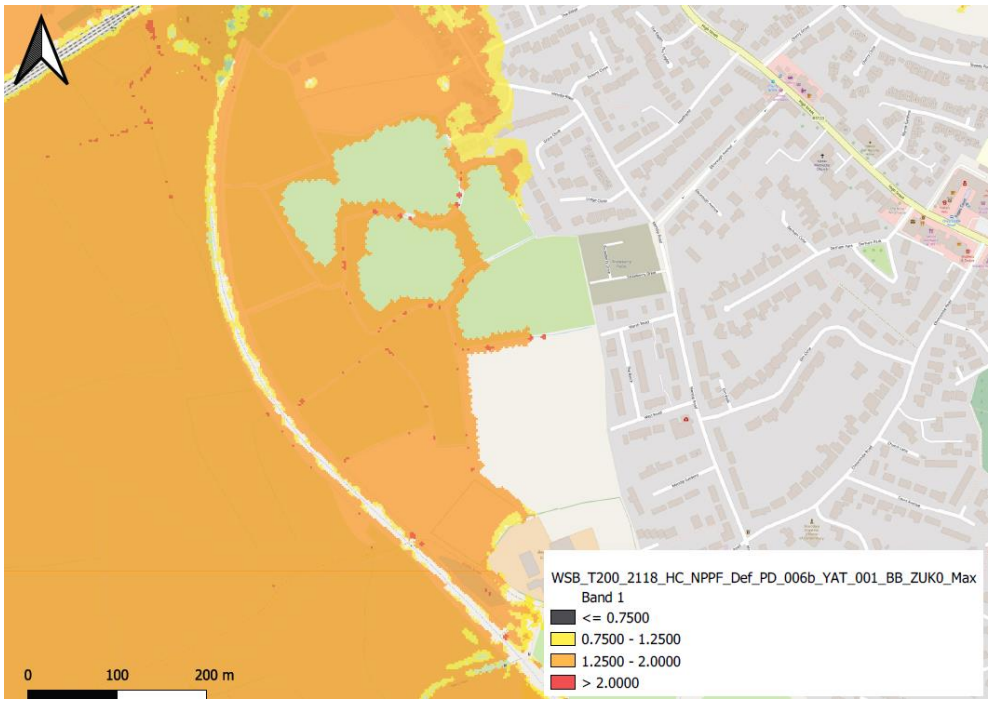

Figure 3 – Hazard Mapping for 200yr plus climate change event, defended with ground levels at 6.43m AOD.

2.10 Whilst the outputs shown in Figure 3 above are significantly different from those within both the Hydrock and Brookbanks FRA documents and pose a lesser risk/hazard to the site and surrounding area, Shiners Elms remains as being categorised as being at Danger for Some/ Danger for Most at the peak of the event. However, the proposed southern access through the St Modwen land to the south, and as identified within Mr Bunn's Proof, is shown as being within Flood Zone 1 and 'Low Hazard' and therefore providing suitable safe access and egress from the development.

2.11 As part of this review, the inundation times have been compared between the undefended and defended events to address the comments provided. Whilst an academic exercise owing to a safe access route being available with the proposed ground raising with the agreed design event/scenario, this has shown that it remains as being the 3rd tidal cycle that leads to the first flooding reaching the site and, as before, this event first impacts the site between 14 and 15 hours from the first overtopping of the defences from the critical tidal cycle. The critical mechanism is the 3rd cycle of the tidal curve but also the height of key topographical features such as the railways embankments – which contains water until such point as over topping occurs.

2.12 Whilst safe access and egress via the southern access route is achievable, the recommendation for a Flood Evacuation Management Plan would remain. This would purely be to provide residents with the procedures to be undertaken in the event of flooding on Shiners Elms and to ensure all occupants are aware that during such events alternative access routes should be taken.

3 Conclusion

3.1 This Technical Note has provided confirmation as to the evolution of the approach to flood risk mitigation for the development through including the following:

- an explanation for what is shown in each of the documents produced.
- how the most recent approach (and that presented as the option for consideration) provides a safe access route; and,
- confirms the comments within Mr Bunn's proof that a suitable access route is shown from the site via the connection to the south during the 1 in 200 year plus higher central defended flood events, i.e. the event agreed by the EA as the design event for this development.

3.2 Whilst confirmation was sought, the above outlines that both the Hydrock FRA and the Brookbank report were based on differing levels within the undefended scenario, and it was only following discussions with the EA during September 2023 that the defended scenario was progressed. It was the defended modelling for this scenario, with ground levels lowered at 6.43m AOD, that resulted in the reduction in flood extent and depth from the superseded documents and the now proposed position with safe access presented.

3.3 In relation to timings, a review of the model outputs has been undertaken. This review shows that whilst a difference in timings is evident this is not significant, contrary to the points raised by Mr Cage. The model output shows that the difference is less than 1 hour and therefore has a negligible impact.

Rappor Consultants Ltd

www.rappor.co.uk

Cheltenham
Bristol
London
Bedford
Exeter
Cirencester