

rappor



Land at Rectory Farm (North), Yatton

Persimmon Severn Valley

Rebuttal Proof of Evidence - Flood Risk

September 2024





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1 Introduction

- 1.1 I have prepared this Rebuttal Proof in response to flood risk matters raised in evidence prepared on behalf of North Somerset Council in connection with the ongoing Appeal (ref. APP/D0121/W/24/3343144) at Land at Rectory Farm (North), Yatton.
- 1.2 This document has been provided further to, and to be read in context with, my Proof of Evidence – Flood Risk (dated August 2024) and the accompanying appendix which comprises of an updated drainage strategy document prepared by Hydrock (23257-HYD-XX-XX-RP-DS-5002-P07 Drainage Strategy Report (with Appendices), Dated September 2024).
- 1.3 This document has been prepared to respond to the Proof of Evidence document provided by Mr Simon Bunn (Flood Risk Manager of North Somerset Council in its function as the Lead Local Flood Authority (LLFA)).
- 1.4 On review of the provided Proof of Evidence, there are four main themes raised and each of these are being rebutted, see below.
 - a) Existing Flood Risk
 - b) How Site Would Flood
 - c) Shoreline Management Plan (SMP)
 - d) Climate Change, funding and future uncertainty
- 1.5 Prior to the specific rebuttals, it should be noted that, and except for matters concerning access and egress (under existing flood risk), the Council's proofs do not align fully with the putative reasons for refusal within the previously provided Statement of Case. As detailed within the Statement of Case (Paragraphs 6.1, 6.2, and 6.3) the focus being in relation to comments raised with respect to the site not being in accordance with Local and National Policy and specifically paras 170 and 173 of the NPPF. With respect to the perceived non-compliance with NPPF, these were in relation to increase in flood risk elsewhere and lack of safe access and egress.
- 1.6 On review, Mr Bunn's Proof does not make a single reference to these sections of the policy document and only refers to NPPF in relation to sustainable development and a total of only three references to this document and not related to the compliance with paragraphs 170 or 173 as outlined in the statement of case.
- 1.7 As outlined, and whilst it is felt that the Mr Bunn's Proof contains new points for consideration that have not been raised throughout the consultation process, a response, where possible, to the key themes has been provided to aid in the justification and repeated view that the development can be brought forward to meet policy requirements.



2 Existing Flood Risk

2.1 A key theme and significant part of Mr Bunn’s Proof of Evidence is in relation to the existing flood risk to the site. This section within the proof has been separated into multiple subsections and these are outlined below (paragraph numbers from proof not included as these are incorrect in the proof.).

- a) North Somerset Topography
- b) Flood Map for Planning
- c) Flood Defences in Planning History
- d) **How the Site is Protected**
- e) Defence Condition
- f) **Site elevation and Tidal Flood Models**
- g) **Safe Access to the Site**
- h) **Climate Change in Modelling**
- i) **Recent Events**

2.2 The sections of the existing Flood Risk Section where a rebuttal is provided in this document are shown in bold above. Those not covered are not deemed to require any response as are typical factual (i.e. the topography)

How the Site is Protected

2.3 Within Section 2.3 of Mr Bunn’s Proof reference is map to the protection to ‘*the site*’ being provided in three locations: Sand Bay, Woodspring Bay and Weston-Super-Mare.

2.4 This section is contrary to the discussions held with both the EA and NSC throughout the consultation and indeed the information that was provided through a freedom for information request by the EA (April 2023). Through this process it was confirmed (at the second time of asking, and by Mr Bunn) that the hydraulic model relevant to the site was the Woodspring Bay model. No reference at that point, or through the consultation process, was made for the need to assess potential impacts from either Sand Bay or Weston-Super-Mare. The information provided within the Proof, therefore, acts as useful background but doesn’t really provide anything that is site specific and therefore is ~~considered~~ irrelevant background and again not linked to the reason for refusal in the Statement of Case.

2.5 However, it should be noted that within the section outlining the defences within Woodspring Bay (and that relevant to the site) it is confirmed that whilst the defences were overtopped (in 1981) flood waters did not reach the site. Additionally, this section confirms that there is a standard of protection of up to 1 in 200 year – which is contrary to Section 2.1, para 6 of Mr Bunn’s proof in which it is outlined that the site:

“is at risk from coastal flooding even though it benefits from the presence of flood defences”.

2.6 What the above extract doesn’t state is that this ‘risk’ would only be residual for the present-day given the confirmed standard of protection (in the proof but also throughout the process) and that this standard of protection (based on modelling) would only be exceeded when making an allowance for climate change and circa 60years into the future and in the year 2080.



- 2.7 Mr Bunn continues to refer to the current defences and the *uncertainty* around whether these will be upgraded for the potential impacts of climate change and this point will be discussed later in this document (Section 3).

Site elevation and tidal flood models

- 2.8 In para 2.6.3, Mr Bunn raises the proposed mitigation for the site and refers to a series of different proposed ground and finished floor levels. It should be noted that the proposed ground levels, and mitigation measures for finished floor levels and resilience measures were discussed at length, and agreed with the EA. It was these discussions, and additional modelling using the Woodspring Bay model, that resulted in the reduction in ground level from the initial submission and the proposed reduction was a suggestion made by the EA to balance the possible risks /deliverability of the scheme.
- 2.9 During the discussions with the EA, in which model outputs files were reviewed, contact was made with North Somerset Council to ensure they had an opportunity to provide comments and input to the evolving flood risk issues. Unfortunately, at this point (September 2023) the invitation to join any such discussions were declined by the Flood Risk Management team on the basis that NSC believed if EA were happy with the tidal flooding and proposed mitigation measures then NSC would be too, and it was on this basis that conversations were continued with the EA and the EA alone.
- 2.10 The conversations with the EA reached their conclusion on 10th July 2024 where it was agreed that, and for the avoidance of doubt, that the proposed ground levels would be set to a level 6.43m AOD with the finished floor levels being set at 6.68m AOD to provide an acceptable freeboard to ensure these were set above the undefended 1 in 200 year plus climate change event. Flood Resilience measures were then proposed up to and including the proposed 200year plus climate change event and again with freeboard.
- 2.11 The ground/floor levels confirmed above have been agreed with the EA on the understanding that 6.43m AOD was the lowest ground level that could be achieved whilst maintaining a gravity connection from the proposed surface water system **and** maintaining the principles that were agreed as part of the initial Lower Severn Internal Drainage Board comments and acceptance on the drainage strategy – i.e. discharge rates, discharge level at 4.85m AOD. Had a lower ground level been achievable from a drainage perspective the EA would have equally considered this on the basis that suitable flood resilience measures were installed to manage the identified and agreed residual risk associated with the defences.
- 2.12 On agreement of the ground level of 6.43m AOD, Hydrock (and included within the appendix to my proof) prepared a drainage strategy (which accompanied my Proof) to reflect the reduction in proposed ground levels (i.e. from 7.88m AOD to 6.43m AOD) to demonstrate that not only could all the previous IDB requirements be met (i.e. aligning with previously agreed principles) but that there were two deliverable options. Despite this being an Outline application, further evidence has been provided within the proof/updated sustainable drainage strategy of how the principles are achieved. Option A, and the preference, would be a gravity fed systems, but equally a pumped surface water option (along with other principles of hybrid drainage schemes) was also presented to provide comfort that the lowered ground level did not prevent a suitable drainage system being provided and in accordance with already agreed principles. Similarly, the drainage strategy document sets out that at the Reserved Matters stage, the drainage strategy could incorporate elements of both options.



- 2.13 Following the ongoing discussions with the EA ending on 10th July, the updated drainage strategy was progressed and submitted to NSC and IDB for their review/comment on 4th September. Sufficient supporting information is presented to provide suitable clarity ahead of any rebuttal proof or the Inquiry itself.

Safe Access to the Site

- 2.14 This is the only point raised within Mr Bunn's proof that is consistent with the reasons for refusal in the provided Statement of Case. However, and as within the Statement of Case, this section makes no reference to the section within the submitted Flood Risk Assessment (Ref:23257-HYD-XX-XX-RP-FR-0002, prepared by Hydrock Consultants Limited, March 2023) in which a detailed assessment of the mechanisms, and timings of risk are provided and how this would be used to inform development of a detail Flood Evacuation and Management Plan during the Reserved Matters Stage. This outlined that whilst maximum flood depths would exceed those generally acceptable in terms of access and egress, this should be shown as being at the very peak of the event (including climate change) and not giving a clear view of the lead in times. In areas where a breach/overtopping of flood defences occurs, guidance required that consideration should be given to not only the depth of flooding but also the rate of inundation and time from first flooding to inundation at the site/access route. As had been outlined in the FRA, and owing to the circa 4km distance between the coastal defences, it would take 14hours from the first 'overtopping' for these flows to reach the site. On this basis, the rate of inundation is slow and would allow significant warning times to allow evacuation/measures outlined in the plan to be implemented.
- 2.15 Mr Bunn's Proof has a focus on the 'headline' depths associated with the peak events and has, in my opinion, provided a simplistic view. Noting the >4km between the site and existing coastal defences, there would be a significant warning time from the first overtopping of the defences. In fact, and again as outlined within the submitted FRA, this warning time would be in the order of 14hours. This is considered more than suitable warning for evacuation of occupants to be undertaken from the first point at which defences are exceeded (and given also the likelihood of a pre-warning of such event occurring). It would be this 14hour response time that would allow for the flood evacuation plan and, as outlined above, give suitable warnings to implement any procedures that are to be agreed during the reserved matters stage, and this can be reasonably secured via planning condition given that Outline permission is sought. This has not been referenced within the proof from NSC.
- 2.16 The response times quoted within the submitted FRA are those for the 1 in 200 year plus climate change event in order to meet NPPF and PPG requirements but it would again be noted that this is on the basis on no upgrading works to the defences and therefore it is considered that, in reality, this would be a residual risk. Therefore, the outlined approach for addressing the concerns in relation to access and egress would be set out for the residual risk and securable via a planning condition.

Climate Change in Modelling

- 2.17 Within Section 8 of the proof, Mr Bunn confirms that the climate change allowances used within the Woodspring Bay model are incorrect and welcomed the fact that these had been updated as part of the Hydrock modelling works to inform the submitted FRA and mitigation strategy for the site.
- 2.18 However, Mr Bunn continues to state that consideration to the 'Upper End' Climate Change event has not been undertaken in either the Hydrock modelling nor the original Woodspring



Bay Model. In line with Mr Bunn's view, this would therefore cast doubt over the acceptability/appropriateness of the Woodspring Bay model which has been used to inform the Strategic Flood Risk Assessment and it is understood that it is this modelling that NSC are using to inform their emerging local plan. Given this, a question would be raised as to its acceptability for informing strategic decision making.

- 2.19 However, and noting Mr Bunn's comments and the question marks over the acceptability as a result, it was confirmed during the preparation of the planning documents (by NSC and EA) that the Woodspring Bay was the appropriate model to use with the caveat of the need to update the climate change allowances.
- 2.20 The updating of these climate change allowances was discussed with the EA and it was agreed (as is a standard national approach) that the Higher Central would be the most critical as it is this that is the 'design event' and allowance for climate change scenarios in excess of this (i.e. the Upper End) would only need to be given 'consideration' with respect to mitigation measures. This approach, and contrary to what Mr Bunn has outlined, is confirmed within Government's guidance titled 'Flood and Coastal Risk Projects, schemes and Strategies: Climate Change Allowances.
- 2.21 This document (available online) confirms the following under the heading 'which allowance to use for coastal flooding'.

To manage coastal flooding in your project, scheme or strategy you should use the:

- a) higher central (70th percentile from UKCP18 RCP 8.5) as your design allowance*
- b) upper end allowance (95th percentile from UKCP18 RCP 8.5) to test sensitivity to severe climate change and any required mitigation*
- c) H++ to test your option under more extreme climate change and exceedance events*

- 2.22 The above would confirm that the approach adopted within the FRA would remain as being acceptable on the basis that the higher central event is the design event. Whilst Mr Bunn correctly outlines that the modelling doesn't include outlines for the Upper End, this was based on the above guidance and discussions with the EA. In the absence of detailed modelling for the Upper End (on agreement) it was agreed (with the EA) that the included 600mm freeboard over and above the Higher Central would be sufficient to 'test sensitivity to severe climate change' for any required mitigation measures.
- 2.23 The above approach (i.e. design for the Higher Central and Provide an allowance for the Upper End) is a widely accepted approach nationally for both fluvial and tidal flooding and, again, this supports the approach being taken through making an allowance for the Upper End (which the confidence in the predictions is questioned) through provision of a 600mm freeboard.



3 Shoreline Management Plan and Climate Change, funding and future uncertainty

- 3.1 Within Mr Bunn's Proof, one of the key underlying themes is in relation to the impacts of climate change and the uncertainty related to the future upgrading of the defences to ensure the standard of protection remains for the 1 in 200 year event when making an allowance for climate change.
- 3.2 Within my proof it was outlined that whilst the site is defended against the 1 in 200 year tidal event, the impacts of the agreed higher central climate adjusted event would exceed the defences and result in the inundation of not only the site but around two thirds of North Somerset. On this basis, and as referenced within Mr Bunn's proof, the failure to upgrade these defences would result in circa 34,000 properties being at risk from tidal flooding.
- 3.3 Given the number of properties, and potential economic impact (discussed later) of any such event it was considered (in my proof) that measures would be undertaken to upgrade the defences to prevent any such occurrence. However, within Mr Bunn's proof he highlights that within the existing Shoreline Management Plan (SMP) no such plans for upgrading the coastal defences in Woodspring Bay area are proposed. This, to me, seems unfathomable given that there is a known problem, a known solution to the problem, and funding streams are available to support works to resolve, in good time, this problem.
- 3.4 It should however be noted that the SMP was prepared based on looking at the short to medium term which extends up to a maximum of a 50year period. During this period, and based on the approved Woodspring Bay model, the protection to the site by existing defences would remain during this timeframe and it would therefore not be expected for plans for any upgrading works during the focus of the SMP. It would be beyond this 50year timeframe when the works would be needed, by 2080. Therefore, and in my opinion, the use of the SMP is justification for uncertainty around upgrading works would not be entirely accurate and it would need to be considered within the 'long term' planning which is beyond the scope of the document being referenced and therefore it comes as no surprise that budget commitment hasn't yet been given. This doesn't mean the money is not there, just that it hasn't been programmed given how far away it is that it would be needed. The key here is that the issue, associated timeframes, and solution are well known, understood and agreed.
- 3.5 Mr Bunn also refers in his Proof to the uncertainty around funding availability through National Capital Funding through the Flood Defence Grant-in-Aid (FDGiA scheme). This funding is based on a cost benefit analysis approach along with also adding significantly weight to moving properties from what is referred to as risk bands. Whilst I have only had personal experience of FDGiA funding application for fluvial schemes, the moving of a risk band significantly helps the cost benefit analysis and this would be through reducing affected properties numbers from identified flood zones, i.e. moving them from Flood 2 to Flood Zone 1 or from climate adjusted events to defended scenarios.
- 3.6 The FDGiA scheme is designed to assess each scheme on its own merits and proportion national funding to those with the most preferable cost benefit analysis. On this basis I would disagree with the position of Mr Bunn in that it is 'uncertain' as suitable evidence (given the focus of the SMP) has not been provided through preparation of a FDGiA application to determine the likelihood.



- 3.7 In simple terms, the more properties that benefit, the greater likelihood of a funding application being successful. According to the estimated number of homes that would benefit as highlighted in Mr Bunn's Proof, it must be that funding will be successful and upgrading of defences will happen. It should be noted that within South Gloucestershire there has recently been upgrading works to the coastal defences. These are for the section of coast between the M4 and M48. These works were for the upgrading of the existing flood defences to increase protection. From readily available documents this process began in 2015 with works being completed around 2022/3. This process was for the optioneering, design and build elements. Therefore, the fact the exact works aren't known yet is of no real concern given the lead in time until the impacts of climate change compared to the potential timeframes for undertaking the design and build elements for the upgrading works
- 3.8 The application is made up of several criteria and many of these are those quoted in Mr Bunn's proof in relation to economic loss and social cost. These relate to the predicted cost of repair and the potential impact on mental health losses for adults who have experience property flooding. These values are consistent nationally (to ensure a consistent assessment criteria) are £33,600 for economic losses and £4,136 per adult.
- 3.9 Within Mr Bunn's proof a calculation has been undertaken to demonstrate the value of the loss because of the proposed development if no upgrading works are undertaken to the defences. This provided a value for mental health losses. However, what hasn't been included within his proof is an assessment as to the economic and mental health losses through not upgrading the defences and the (as quoted in Table 5 of Mr Bunn's Proof) 34,000 properties in North Somerset that would be at risk should climate change not be catered for in the coastal defences' upgrading.
- 3.10 The assessment would be critical to understand the potential losses and therefore the potential positive outcome of a FDGiA application. Having used the same values as those in Mr Bunn's proof, and those as national standard values (£33,600 for economic losses and £4,136 for mental health impacts) for consistency and applying this to the quoted 34,000 properties, this would result in economic losses of greater than £1billion in respect to economic losses and more than £140million when considering the mental health losses.
- 3.11 It should however be noted that the cost of repair quotes by Mr Bunn in para 7.2.2 is £18,050,000 for the proposed application. On calculation, this equates to an economic loss of £95,000 per property (based on the 190 units proposed). This value is significantly greater than the £33,600 quoted within the proof and standard FDGiA values. If this per property value were to be used (and on the basis that flood depths would be between 1m-1.5m) then this would equate a repair cost of more than £3.2billion for the area at risk from the non-upgrading of the defences. This value appears to exclude mental health impact costs.
- 3.12 Additionally, should the defences be upgraded to ensure protection is maintain for the higher central (or upper end) scenarios (i.e. provide protection against the 1 in 200 year plus climate change tidal event) then this is also considered (again based on information provided by Mr Bunn) to result in all of the 34,000 properties moving to a lower risk band category as they would be considered as 'defended' throughout their design life. This would obvious then apply to the development site and the standard of protection would be provided for its design life.
- 3.13 Given the significant economic impact and the number of properties that would be moved to a lower category because of any upgrading works, it is considered that the cost benefit analysis would be favourable to secure significant funding for the upgrading works.



Therefore, and based on the number of properties affected it is my opinion that this would significantly increase the chances of success.

- 3.14 Whilst the above concludes that there would be significant justification to support a FDGiA, it should be noted that the approach outlined is not purely on the basis that the defences and any upgraded will remove the need for site specific mitigation/resilience and full commitment is given to providing these measures at a site based level for any potential residual risk – as is outlined in the initial FRA and to the acceptance of the EA.



4 Other Points

- 4.1 I note at para 1.1 and 8.2, Mr Bunn introduces and concludes that the development at the site is inherently unsustainable. This is a matter which is addressed fully in the Proof of Kathryn Ventham, which highlights the existing allocation for a primary school across part of the site. As per the NPPF Appendix 3, primary schools and dwelling houses are within the same flood risk vulnerability classification, “more vulnerable”. It is relevant here to note that the whole site is affected by the same level of flood risk. It is therefore clear from this that the Council do not consider the site to be “inherently unsustainable” for development from a flood risk perspective. Instead, the Council must consider that at least part of the site is appropriate, from a flood risk perspective, for “more vulnerable” development.

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