

rappor



Land at Rectory Farm (North), Yatton

Persimmon Severn Valley

Rebuttal Proof of Evidence to the EA Position
Statement on Flood Risk

October 2024





Contents

1	Introduction	1
2	Ground Raising and Finished Floor Levels.....	3
3	Flood Risk Modelling and Modelling Tolerances.....	5
4	Access and Egress.....	7
5	Other Matters – Flood Defences.....	8
6	Conclusion	12



1 Introduction

- 1.1 I have prepared this Rebuttal document in response to flood risk matters raised in within a Position Statement (Ref: EA Position Statement, undated, Inquiry Document 22) prepared on behalf of the Environment Agency (EA) in connection with the ongoing Appeal (ref. APP/D0121/W/24/3343144) at Land at Rectory Farm (North), Yatton.
- 1.2 This document was presented on the third day of the Inquiry (26th September 2024). However, and despite not being referenced within the document, it is understood that this document was in fact prepared by the EA on 5th July and submitted to both the Planning Inspectorate and North Somerset Council. No copy was made available via the planning portal or to the Appellant until Day 3 of the inquiry and therefore I could not have addressed the specific points raised in the position statement at the time of preparing my evidence or subsequent rebuttal.
- 1.3 This rebuttal should 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). Additionally, consideration should also be given to my Rebuttal Evidence (dated September 2024) which provides points also relevant to those raised within the EA’s Position Statement.
- 1.4 This Position Statement document has been prepared by the EA but no details as to the author, or the date it was prepared have been included and therefore it is unknown as to the position, experience, or involvement of the author in the scheme to date of the author. It is also unclear to what extent if at all there has been any behind the scenes co-ordination or other exchanges between the Environment Agency and the Council. The Appellant’s freedom of information requests of the Council in this respect have not been answered with documents issued in the requisite timescales and remains outstanding (not on the basis that the documentation requested does not exist, but on the basis that the Council declines to provide it).
- 1.5 On review of the provided Position Statement, there are four main themes raised and each of these are being rebutted in turn, see below.
 - a) Ground Raising and Finished Floor Levels
 - b) Flood Risk Modelling
 - c) Modelling Tolerances
 - d) Access / Egress and Safe Refuge
- 1.6 Prior to the specific rebuttals, it should be noted that, and except for matters concerning access and egress (under existing flood risk), the EA’s Position Statement does not align fully with the putative reasons for refusal within the previously provided Statement of Case (SoC). 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.
- 1.7 It should also be noted that the EA’s Position Statement makes no reference to Local Policy, which again was provided as a reason for refusal within the SoC.



- 1.8 The lack of any reference to paragraphs 170 and 173 of NPPF is consistent with Mr Bunn's evidence as this also contained limited references despite this being one of the paragraphs quoted within the SoC and the putative reasons for refusal.
- 1.9 On review, the EA Position Statement does not make a single reference to these sections of the NPPF and only refers to the NPPF in relation to paragraphs 165 and 167 and only within the Policy Framework Section of the document.
- 1.10 Whilst references to additional paragraphs and sections of the NPPF are included, it should be noted that the Position Statement also refers to Para Paragraph: 004 Reference ID: 7-004-20220825 of the PPG. In summary, this paragraph details that flood risk is a consideration for a plan or development proposal and the approach should follow the following: Avoid, Control, Mitigate, Manage Residual Risk.
- 1.11 Whilst no further reference is made to Para 004 Reference ID: 7-004-20220825 of the PPG within the Position Statement, it should be noted that the above process has been applied to the development site with evidence for this being provided in all submitted appellants documents (FRA, Technical Notes, and Proof of Evidence / Rebuttals).
- 1.12 In advance of providing a response to the EA's Position Statement and points raised it needs to be highlighted that the main aim of the Environment Agency (as taken from their website) is to *protect and improve the environment (through) helping people and wildlife adapt to climate change and reduce its impacts, including flooding, sea level risk and coastal erosion*. Given the nature of the response from the EA (and North Somerset Council) in relation to the flood risk issues and uncertainties around adapting to climate change it would be questioned whether they are aligning their response to this site to their wider charter/key aims.



2 Ground Raising and Finished Floor Levels

- 2.1 The EA have provided details within Section 5 in relation to the ground raising and provided background as to the current position. Whilst this supports the evolutionary approach to ground levels detailed within my Evidence – which had been informed by dialogue with EA, there are some inaccuracies in the document that are worth highlighting.
- 2.2 Within Para 5.1. reference is made to the consultant's tidal flood risk modelling being for the 1 in 200 year plus climate change event (2118). This is incorrect and not as detailed within the submitted FRA or other supporting documents. The modelling is (as referenced in paragraph 6.2) based on the approved Woodspring Bay 2020 Model that has been provided by the EA to the Appellant. This was then updated to reflect the latest higher central climate change allowances and extended to cover the full design life of the proposed scheme (i.e. 100 years from the date of application). Therefore, the reference made to 2118 in the Position Statement is incorrect and should read as up to 2125.
- 2.3 Within Para 5.2 the use of the Higher Central value has been referenced. Contrary to Mr Bunn's position, no reference to the Upper End being required is made, which supports the approach to climate change being acceptable. This approach, which is in line with Government guidance titled 'Flood and Coastal Risk Projects, Schemes and Strategies: Climate Change Allowances' which confirms the design event is the higher central and the upper end is to 'test sensitivity'
- 2.4 Within para 5.4, the EA refer to a flood level of 6.28m AOD having been taken from the Woodspring Bay 2020 model. This is incorrect for the reason outlined in para 2.2. It was indeed an update of the Woodspring Bay model. This update also provides more detail around the site and includes key culverts identified within the Strawberry Line (something raised by residents at the opening of the Inquiry as a critical connection to manage flows within the areas to the east of the railway line) and would therefore be considered as a 'more complete' baseline than the Woodspring Bay model.
- 2.5 It should be noted, that within the Position Statement the EA repeatedly refer to the proposed ground level being 6.28m AOD. This is incorrect. The 6.28m AOD is the flood level (as outlined in section 3.1.2.9 of the original FRA (Ref: 23257-HYD-XX-XX-RP-FR-0002, Dated March 2023), but the proposals are for ground levels to be set at a minimum of 6.43m AOD with finished floor levels then being at 6.68m AOD. This ensures all finished floor levels are set a minimum of 600mm above the agreed 6.28m AOD flood level. This approach has been consistent since at least October 2023 so it is unclear why the EA's referencing is incorrect and is referring to an inaccurate approach. This is a significant error which materially infects the soundness of their conclusions.
- 2.6 Regarding modelling tolerance, it should be noted that along the significant distance from the existing flood defences and the site (some 4km) there are numerous features that have not been picked up within the modelling. This will include landform (minor changes given the resolution), buildings, hedges, dense areas of vegetation, existing ditches/ponds etc. Given the rural nature of the area across this 4km distance, the impact of this on the speed and rate of flows and whilst it is accepted that EA guidance is not to include these, it should be noted that this further adds to the conservative nature of the modelling and moves more towards an academic rather than realistic assessment – which again highlights tolerances needing to be assessed on a model by model and site by site basis.



- 2.7 Within para 5.7, the EA refer to a tolerance of +/- 10mm for modelling. However, and as outlined in their formal response of 10th July, this is not based on any policy, guidance, or scientific evidence and is purely a 'rule of thumb'. This point will be discussed further in Section 3 of this rebuttal.



3 Flood Risk Modelling and Modelling Tolerances

- 3.1 Within the Position Statement, the EA have separated Flood Modelling and Modelling Tolerances into different sections. However, given how interlinked these are, this rebuttal has dealt with them as one.
- 3.2 A consistent error within the Position Statement is references made to incorrect modelling studies. Within para 6.2 the EA again refer to the assessment being undertaken using the Woodspring Bay 2020 model. This is incorrect and the assessment has been undertaken on the Woodspring Bay model but with updates for appropriate higher central climate change allowances and ensuring these cover the development design life (i.e. up until 2125 and not 2118).
- 3.3 The EA refer to the fact that the modelling undertaken to support the FRA includes additional culverts under the Strawberry Line. This is correct but para 6.5 is a misrepresentation and this is something that was discussed with the EA at the meeting held on 1st May 2024. The key point here is that the additional culverts under the Strawberry Line are included within both scenarios (baseline and proposed) but the culverts under the other embankment to the east were only included in the post development scenario as were not considered as being critical to the level of risk to/from the site, and this has been confirmed by the impacts being within a separate 'flood cell' and not in hydraulic connectivity to the scheme. As such, it would be expected that these would provide more connectivity to the area to the east when compared to a situation with no culverts (i.e. the EA's model). Therefore, and again as explained at length during the meeting, a comparison in this area is not considered representative as the hydraulic conditions differ. This has not been referenced within the Position Statement and is critical. The key areas (and flood cell) around the site have been assessed in detail and comparison are possible here and this is where the 17mm difference is observed.
- 3.4 The EA refer to a tolerance of +/- 10mm for the modelling throughout their document and this has been their position throughout all discussion/responses to date. However, and to support my position in my proof, Para 7.2 of the Position Statement (and Figure 2) demonstrates that uncertainty (i.e. tolerance) is not only model specific but also return period specific. This para makes reference to a '10cm' (100mm) uncertainty in the model for a 1 in 20-year event and a '>50cm' (500mm) for 'larger events'. The EA do not define what is meant by 'larger events' but from reviewing figure 2 it implies return period of, and more than, the 1 in 100-year event.
- 3.5 The above 'uncertainties' within the model appear to have not formed part of the thought process in respect of a model tolerance for the purposes of its use and application by the EA despite these uncertainties being considered by the third-party consultant who built the model on the EA's behalf.
- 3.6 Further to the above, and during the consultation process, the Appellant contacted the consultant who constructed the Woodspring Bay model to discuss tolerances. Below is an extract from their response (and is included within the appendix to this note):

As discussed previously we usually aim for +/- 150mm for the model calibration if there is gauged data to compare against. In this location there was no gauge data available at the boundary and further inland to calibrate against so we could not put a number on the uncertainty in the model. The model was run for two calibration events but there was no data to compare against, so confidence in the model was said to be low.



If you would like to commission us to do some further testing, we could run additional sensitivity tests or pass the model through the residual uncertainty scoring approach, but this just gives a residual uncertainty allowance between 300-900mm

- 3.7 This uncertainty, i.e. 150mm, is considered as being technically accurate and has been confirmed by the model building consultants, in being based on a detailed assessment of the Woodspring Bay model, and not merely a 'rule-of-thumb' as the EA are adopting. Given the difference in flood level is 17mm, this is well within all of the uncertainty bands provided by the consultant who built the model and fully understands the limitations. On this basis, and again noting the 17mm difference does not result in any new areas of flooding (something the EA also refer to in their Position Statement para 6.6) this should confirm the approach is within tolerance and as such, through modelling presents a de minimis consequence with respect to flooding.
- 3.8 The above provides further evidence as to why the EA's insistence on a +/-10mm tolerance is not appropriate for the model when considering the specific limitations. As can be seen from the above from the model builders, the tolerance, at very best, should be 150mm and therefore the 17mm is well within this tolerance; and should be considered acceptable – again accepting no new flooding. The insistence of the EA on an arbitrary and unfounded 10mm tolerance is considered wholly inappropriate and against technical advice on this model.
- 3.9 Whilst the EA attempt to justify the 10mm tolerance (Para 7.4) this simply reconfirms that in there being no scientific/modelling input into this, it is purely a 'rule-of-thumb' approach. And whilst the EA also refer to the values having origins from values and parameters within Flood Modeller Pro, the Woodspring Bay model has no elements within it from this software. Therefore, this is not relevant, which again diminishes the robustness of using this tolerance value.



4 Access and Egress

- 4.1 Section 8 of the Position Statement relates to Access and Egress and Safe Refuge. Whilst this is a point raised within the SoC for refusal it should be noted that apart from the position statement and the SoC no reference has been made to this element through all the discussions with the EA.
- 4.2 Having read through the Position Statement, the section titled Access and Egress doesn't actually provide any comments specific to access and egress and merely provides a summary of the risks to the site (i.e. overtopping of the existing defences when climate change is considered). Despite no evidence or commentary about access and egress requirements etc, the EA concluded that (and despite confirming they haven't provided comments previously) they agree with the concerns raised by the LLFA. However, how they have arrived at this conclusion is unclear and further evidence would be required to better understand the EA's position and nothing has been provided and this is something that would be requested in the event the EA provide a Rebuttal/response to this rebuttal.



5 Other Matters – Flood Defences

- 5.1 Whilst not explicitly raised within the EA’s response, the existing flood defences and ability for these to be upgraded also forms a key part in the EA’s position. As such, and for the benefit of the Inspector, a site walkover of the defences was undertaken (date 9th October 2024) to better understand the extent and form of the coastal defences and the potential for upgrading.
- 5.2 As part of this walkover, all publicly accessible sections of the flood defences were walked and photographs taken. For the majority of the sections observed, the defences comprise of a three tiered approach; a small wall followed by an area of footpath, another small sloping wall and then, at a distance set back and not publicly accessible, a large earth bund to form a third line of defence. From the site walkover, it was evident that these have shown how the defences have been enhanced and developed over time, see figure 2 below. Figure 1 shows the location for where the below photographs were taken.

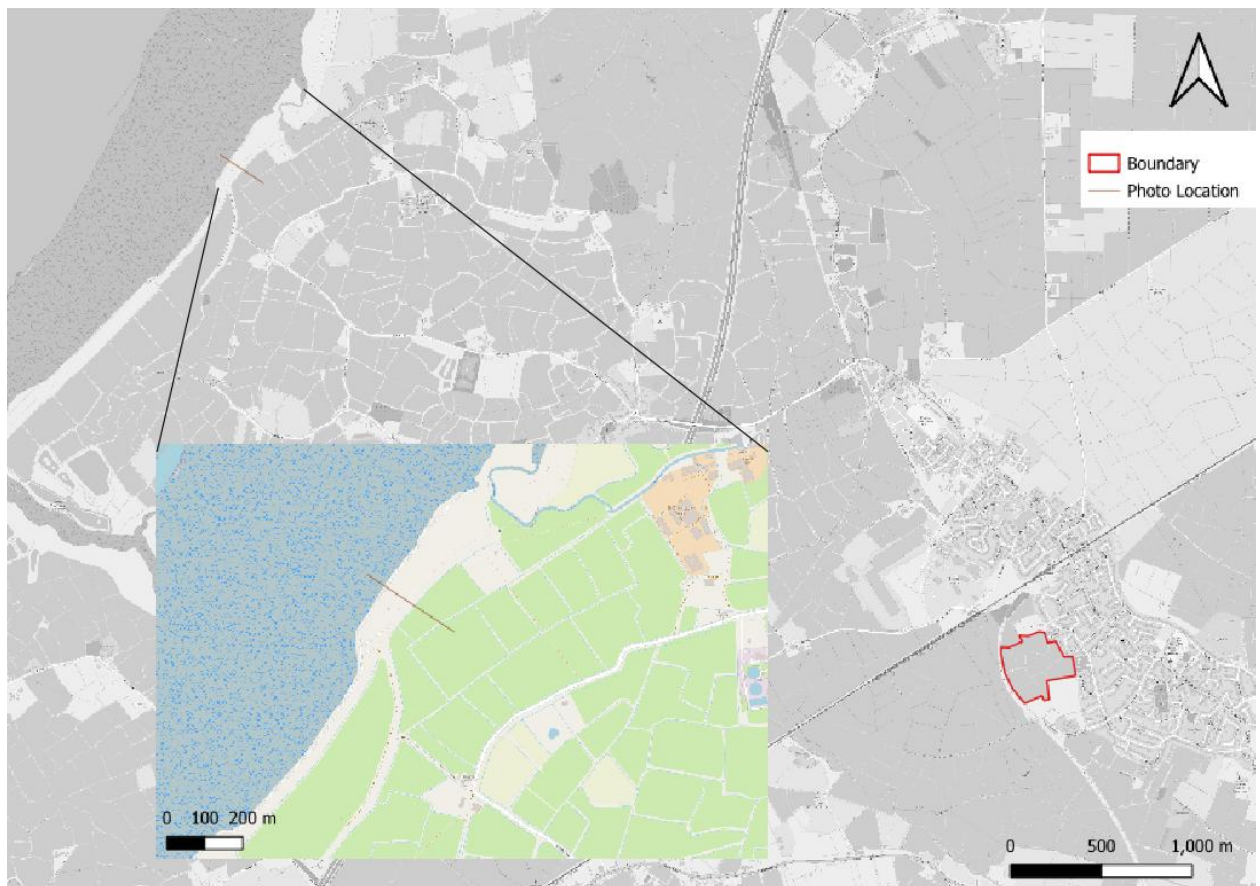


Figure 1 – Location of Site Photos

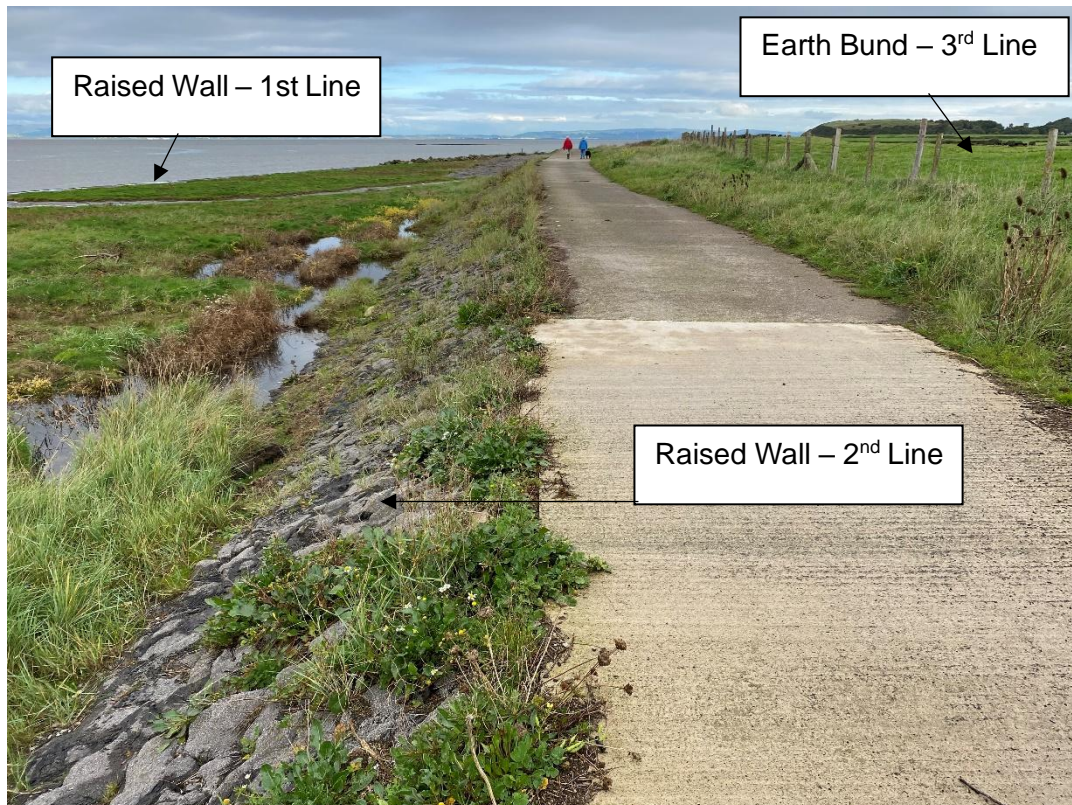


Figure 2 – Site Photos of 3 tiered flood defence. Taken during site walkover 9th October 2024.

5.3 The current flood defence configuration has included on available LiDAR Data which clearly shows the three tiers of defences and approximate levels associated with these. The below cross section, Figure 3, has been taken along the approximate location of the above photograph with numerical numbers in metres for the x-axis and metres above ordnance datum (mAOD) for the y axis.

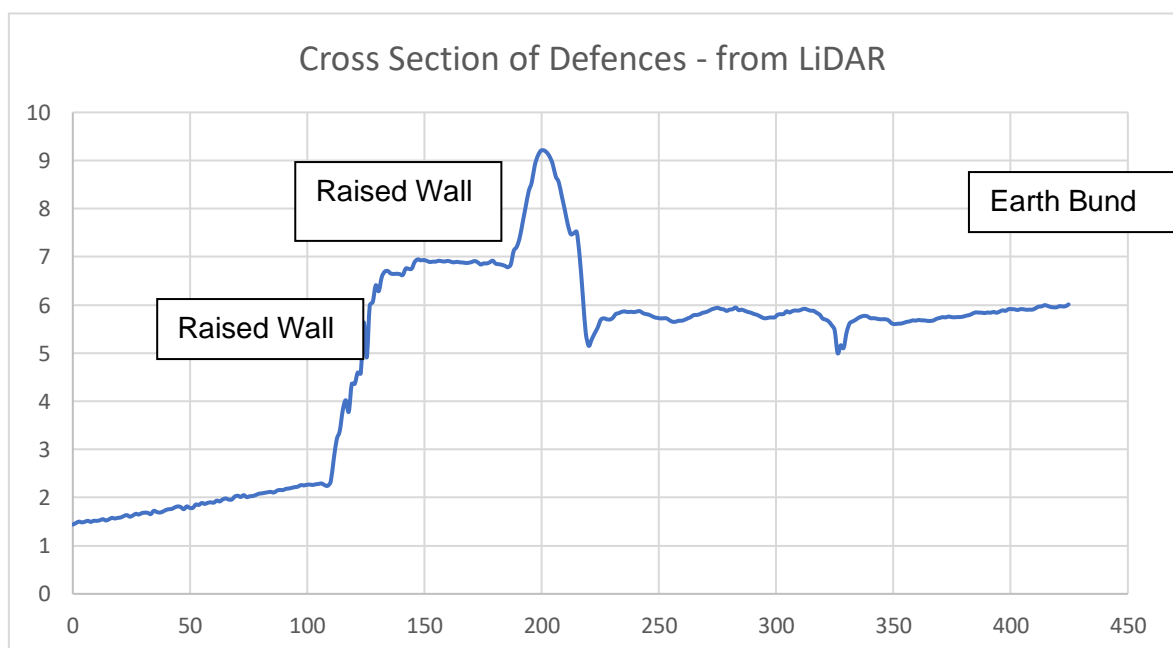


Figure 3 – Cross Section of Defences taken from LiDAR.



- 5.4 Given the inland most (and highest) protection offered is from an existing earth bund, see figure 4 below, it is considered that this would provide a more straight forward and simplistic (and cheaper) option for upgrading works than if these defences were, say, concrete walls and could be achieved through importing additional material to ensure that the crest height could meet that required to defend not only the application site but the 34,000 properties referred to in evidence against the climate adjusted events.



Figure 4 – Photograph looking north along existing earth bund. Taken on 9th October 2024 during site walkover.

- 5.5 The earth bunds (third and highest level of protection) were also observed as not being crossed by public footpaths and therefore the impact on existing uses would also be minimal. That said, and in order to give an indication to the limited impact that the raising would cause, figure 5 below provides a cross section of existing levels (blue) and includes the required raising of the earth bunds (red) to provide protection against the 1 in 200 year plus climate change flood level – and as can be seen this is a negligible impact on the cross section and wider area.

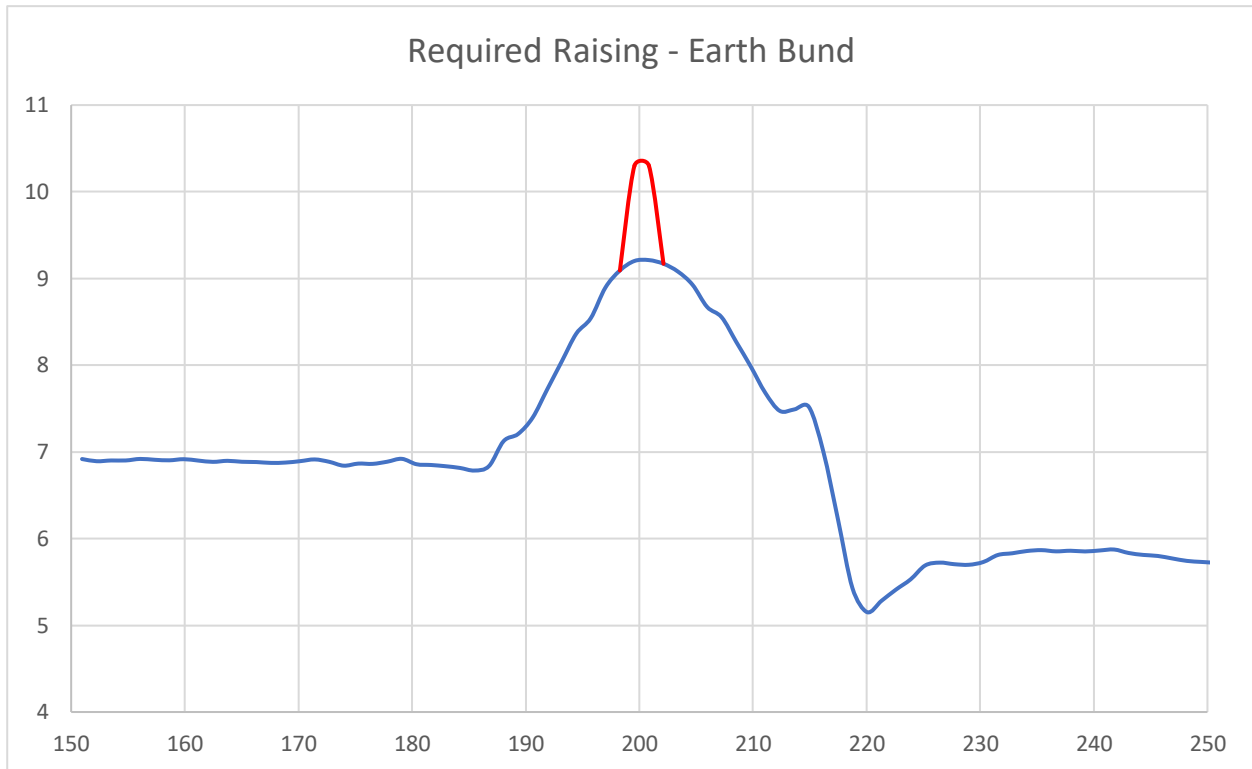


Figure 5 – Cross Section through Defences – including required bund raising (indicative only).

- 5.6 The above demonstrates not only that a known solution is available but also that owing to the existing configuration, most works could avoid ‘hard engineering’ and therefore help minimise the costs – which would significantly aid in the cost benefit analysis as part of any funding application to Central Government or as part of a Flood Defence Grant in Aid (FDGiA).
- 5.7 As outlined in para 1.12, the main aim of the Environment Agency (as taken from their website) is to *protect and improve the environment (through) helping people and wildlife adapt to climate change and reduce its impacts, including flooding, sea level risk and coastal erosion*. As part of this, inspection and maintenance of designated defences (such as these serving Woodspring Bay) would be their obligations to undertaken in order to maintain and acceptable level of defence.



6 Conclusion

- 6.1 On review of the EA's Position Statement, and when taking into consideration other evidence provided (both from myself and that provided by Mr Bunn) this does not alter my analysis or and anything of substance to Mr Bunn's evidence and no alterations / any of significance above and beyond that provided is required.

rappor



Rappor Consultants Ltd

www.rappor.co.uk

Cheltenham
Bristol
London
Bedford
Exeter
Cirencester

