

KNOWLE LAND, CRANLEIGH

FLOOD RISK AND DRAINAGE RULE 6 PARTY REBUTTAL PAUL JENKIN

GLEESON LAND

06 NOVEMBER 2023



Abley Letchford Partnership Limited  
3 Tealgate  
Charnham Park  
Hungerford  
RG17 0YT

T: 01488 684390  
E: [contact@alpce.co.uk](mailto:contact@alpce.co.uk)  
W: [www.alpce.co.uk](http://www.alpce.co.uk)

**Quality Management:**

<b>Prepared by:</b>	Paul Jenkin
<b>Authorised by:</b>	Paul Jenkin
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## 1.0 Introduction

- 1.1. I am Paul Jenkin and I provide Flood Risk and Drainage evidence on behalf of the Appellant.
- 1.2. My credentials are set out in my main proof of evidence.
- 1.3. I have read the evidence of Michael Piotrowski (MP) provided on behalf of the Knowle Lane Residents Group (KLRG). MP has undertaken a very thorough review of the FRA and produced a lengthy proof of evidence, much of which is highly technical in nature but not all of which is relevant in the context of an outline planning application in my view. To assist the Inspector, I have produced this rebuttal to clarify the points I feel relevant and address some of the perceived gaps that MP identifies.
- 1.4. MP's evidence is set out in 10 sections, and I will deal with each section in turn within this report as follows:
  - Section 2: Comments on Mr Piotrowski's evidence sections 1 and 2 (Preamble and Site Description)
  - Section 3: Rebuttal of Mr Piotrowski's evidence section 3 (Areas at Risk of Flooding)
  - Section 4: Rebuttal of Mr Piotrowski's evidence section 4 (Catchment Analysis)
  - Section 5: Rebuttal of Mr Piotrowski's evidence sections 5 and 6 (Discharge Routes)
  - Section 6: Rebuttal of Mr Piotrowski's evidence section 7 (Attenuation Basin Capacity)
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  - Section 9: Rebuttal of Mr Piotrowski's evidence section 10 (Summary of Opinion)
  - Section 10: Summary and Conclusions



## 2.0 Comments on Mr Piotrowski's Evidence Sections 1 and 2

- 2.1. Sections 1 and 2 are background and I take no issue with what is said here.
- 2.2. With reference to Table 1 in MP's proof I had not previously mentioned the document issued on 9<sup>th</sup> May 2023 in my proof as I did not think it relevant. This note was issued after the LLFA had withdrawn their objection and sought to clarify other matters that had been raised. This Technical Note essentially summarises the key points in the FRA.



## 3.0 Rebuttal of Mr Piotrowski's Evidence Section 3: Areas at Risk of Flooding

- 3.1. Section 3 of MP's proof is identifying areas at risk of flooding. MP's basic premise here is that because there are areas at risk of flooding nearby then there should be a presumption against further development.
- 3.2. In para 3.2 it should be noted that it is the basic nature of all watercourses that the flow within them is influenced by the wider drainage system which feeds them and as such there is nothing unique about the Appeal Site. MP's assertion is that because the Appeal Site lies in the catchment of a river that has a floodplain that some special requirement is engaged which warrants abnormal restrictions.
- 3.3. This is not the basis of flood policy as set out in the NPPF nor its associated guidance. Policy sets out how development should be directed to areas at low risk of flooding from all sources. Every single site which is at low risk of flooding generates runoff which flows into watercourses and every watercourse eventually has a floodplain associated with it.
- 3.4. What policy sets out is a framework for ensuring that any development (even those not at direct risk of flooding) provides appropriate mitigation to ensure that flood risk is not increased due to an increase in run off from the site.
- 3.5. This is the basis of para 167 (c) and 169 of the NPPF.
- 3.6. In para 3.3, MP is incorrect in his assertion that the cumulative effect of development should be considered in any FRA. It is obvious that if a development is judged not to increase run off and thus not increase risk then any cumulative assessment will also show no impact. MP is trying to promote a position that development in areas at low risk of flooding is contrary to policy as a matter of principle and this is clearly not the case.
- 3.7. At a basic level if the Inspector agrees with the Appellant and the LLFA that the proposed surface water drainage strategy meets the requirements specified by the LLFA then there is no increase in flood risk and no reason to object on these grounds.
- 3.8. In para 3.4, MP has suggested that the Appellant has failed to manage the existing flood flow route within the northern part of the Appeal Site. We have avoided any development in the areas of high and medium risk and these areas will continue to flood as it does now. During detailed design it may be necessary to alter or amend flow paths, but this would be done in a way that would not increase risk and would need to be approved by the LLFA.
- 3.9. In paras 3.5 to 3.12 and Appendix B, MP sets out a number of areas where flooding has occurred and where areas of existing watercourses may be poorly maintained contributing to that flood risk. As far as I can tell, there is no instance of flooding recorded on the Appeal Site. It does not appear that MP is contesting the view that the Appeal Site is a low or very low risk from all sources of flooding (save the area to the north already referenced above).



- 3.10. In para 3.13, MP identifies two references. Whilst I do not disagree with MP's basic premise that development should aim to reduce flood risk where possible, para 161(c) of the NPPF is specifically referring to the preparation of plans (as set out in the previous para 160). In this context, plan makers have more scope to address these matters at a strategic level. Individual planning applications have less scope to provide such measures but can introduce reductions in run off through the SuDS scheme. Para 037 of the NPPG relates to the application of the Exception Test as articulated in para 164 (b) of the NPPF. As there is no need to apply the sequential or exception test to the Appeal Site, para 037 of the NPPG is not relevant.
- 3.11. As above, I agree with the general point and we have sought to reduce flood risk by limiting all runoff up to the 1 in 100 year plus 45% climate change flood event to the QBAR (1 in 2.3 year) greenfield rate. This will have the effect of reducing the peak flows in the receiving watercourses and thus reducing flood risk, as all storm events up to the 1 in 100-year storm event plus 45% climate change will be restricted to QBAR.
- 3.12. Taking MP's bullet points at para 3.13 in turn below:
- Peak flows are reduced not increased.
  - The balance of flows is not significant but is discussed later.
  - The inadequacy of capacity and the impact on flooding off site is not a matter for this development and as above we will reduce this risk.
  - Groundwater risk is dealt with later in the proof.
  - Site investigation is dealt with later in the proof.
  - Consideration of overland surface water flows from off site is not an issue as the area affected by this flow route is not proposed to be developed on.



## 4.0 Rebuttal of Mr Piotrowski's Evidence Section 4: Catchment Analysis

- 4.1. The proposed development was split into two distinct catchments based on the current topography and morphology of the ground. Some small areas of the Appeal Site fall to a different direction, but the levels of these small areas were rationalised based on engineering judgement and experience, as we consider that two distinct outfalls will be more practical and easier to maintain, than introducing several outfalls scattered around the site boundary or on the third-party lands. This allowed us to mimic the natural flow routes and maintain the existing hydrological catchments as much as possible. The catchments will also be reviewed and revised, if necessary, as part of the reserved matters application.
- 4.2. In para 4.1 MP confirms that best practice in the analysis of catchment areas includes:
- Where possible to mimic natural flow routes and maintain existing hydrological catchments
  - provide a sustainable drainage systems approach, using, where possible, an above ground, gravity drained and multifunctional approach
- 4.3. Para 4.2 states that the proposed strategy does not comply with this as it changes the existing hydrological catchments and increases the catchment area draining north and south resulting in an increase in flood risk. In fact, as evidenced by MP's figures 6 and 9, there is only one area which currently drains east, and which will drain north by virtue of the proposed strategy.
- 4.4. When designing a surface water drainage system a degree of engineering judgement is required to produce the most effective solution. It should also be noted that changing the catchment area draining to a system by a small amount does not necessarily increase the flood risk in that system. The proposed strategy will restrict discharge to QBAR rates and therefore constitute an improvement in events up to the 1 in 100 year + 45% CC.
- 4.5. Whilst the catchment areas do change slightly, it is my judgement that in overall terms the flood risk is not increased and the scheme conforms with the relevant guidance. This is common ground with the LLFA and they have not objected to this approach.
- 4.6. In para 4.3 and 4.4, MP states that the proposed drainage strategy does not allow for additional runoff from the larger catchment areas, which are the areas effectively upstream of the Appeal Site and that these should be accommodated within the proposed strategy. These are areas currently draining to the natural ditch system at greenfield rates. They will continue to drain at greenfield rates to the receiving systems and there is no need for the proposed strategy to accommodate or attenuate these flows. If any additional flow routes are identified then these can be accommodated within the detailed design phase.
- 4.7. Para 4.10 expands on paras 4.3 and 4.4. These details are not required at outline planning stage as they relate to plot scale information that is not available at the outline planning and will be detailed in any reserved matters application. I would also note that the additional areas suggested are outside of the proposed drainage system and so are not attenuated as part of this scheme.





- 4.8. Para 4.12 states that one of the sub-catchments in catchment A drains south. However, review of MP's own figures 6, 7 and 9 confirms that one sub-catchment in catchment A currently drains eastwards. In the proposed strategy the development area in this sub-catchment will drain northwards as part of the proposed drainage system. The levels across the development area and drainage system will be designed to allow for a gravity drainage solution with the pipe network taking the runoff to the north.
- 4.9. The proposed drainage strategy is based around the two catchments with a single point of discharge to the north from catchment A and a single point of discharge to the south from catchment B. Paras 4.13 to 4.16 of MP's proof present a case that the proposed strategy is flawed because the natural drainage regime is for the overland flows to be distributed along the receiving ditches rather than a single point. MP asserts that by concentrating flows from each catchment to a single point of discharge this will increase the risk of flooding and erosion to the receiving system. Whilst it is correct that the drainage strategy adopts a single outfall, this is normal for a site of this size and it is a more effective design than having a multiplicity of smaller ponds. In practice, whilst the catchment area draining to the single point is larger than under existing conditions the design flows are all reduced to QBAR and so the actual peak flows in large events will be lower. This produces less overall flood risk and less potential for erosion.
- 4.10. MP has completed an assessment of catchment areas for catchment B in para 4.14. He confirms that the existing catchment to the discharge point is 1.8ha and the proposed strategy will drain the full 3.95ha to this point. Whilst the catchment area has increased, the limited discharge rate means that the actual flow is significantly reduced for the 1 in 30 years, 1 in 100-year events and above.
- 4.11. In paras 4.17 to 4.19, MP suggests that each sub-catchment should drain in accordance with the current natural flow paths and then confirms that this is reliant on third party land and may not be achievable. As presented above, the proposed strategy does not result in an increase in flood risk and erosion in the receiving ditches, so this strategy is not necessary. Furthermore, MP's proposition does not represent the optimal strategy. It is accepted within the industry that there is a practical minimum size for an outfall pipe (based on hydraulics and to avoid blockage risks) and, therefore, a practical minimum discharge rate per outfall; this is generally accepted to be 2 l/s. For catchment A, the proposed discharge rate is 8.4 l/s. If each of the 5 sub catchments defined by MP discharged to the ditch system by a separate outfall then this would be a cumulative discharge rate of 10 l/s, significantly higher than the proposed strategy.
- 4.12. MP asserts in paras 4.20 to 4.24 that the increase in catchment area for catchment A leads to an increase in flood risk. As set out in sections 4.7 and 4.8 above, this assertion is flawed. The catchment area has increased but the discharge rate into the receiving system is significantly lower as the discharges from the development are restricted to QBAR.
- 4.13. Returning to the fundamental points in MP's para 4.1, the proposed strategy has been designed to mimic natural flow routes and maintain existing hydrological catchments where possible and comprise a sustainable drainage systems approach, using an above ground, gravity drained and multifunctional approach.
- 4.14. Overall, it is my view that the proposed strategy meets the relevant requirements and does not increase flood risk and this is common ground with the LLFA. In practice the proposals will actually reduce the risk of surface water flooding slightly by limiting runoff to QBAR.



- 4.15. I would also make the point that if it is decided that the drainage catchments should be altered or that alternative overland flow routes are required during the more detailed discussions with the LLFA then these can all be accommodated within the detailed design.



## 5.0 Rebuttal of Mr Piotrowski's Evidence Sections 5 and 6: Discharge Routes

- 5.1. Section 5 of MP's proof deals with the routes of discharge. Taking the evidence as a whole, I do not think that MP is stating that he has specific evidence that the drainage routes are not connected but that he would rather have seen more evidence that the routes are connected.
- 5.2. I have set out in Appendix 3 of my proof the photographic evidence, supported by the topographic survey data, of how the Appeal Site currently drains. It is self-evident that the Site is able to drain through these routes at the greenfield rates as there is no evidence that water is unable to leave the Site causing widespread flooding of the Site. In my view, it is therefore the case that the receiving watercourses have the potential to accept run off from the Appeal Site at the greenfield rate.
- 5.3. Rather than address each of MP's issues along the various watercourses in detail I will address the general point.
- 5.4. Firstly, the ownership of ditches and watercourses is not unclear. The person who owns the land adjacent to the watercourse is the riparian owner and has the responsibility for maintaining the ditch or watercourse.
- 5.5. Secondly, any blockage, obstruction or other issue causing flood risk off site will have a reduced impact because the SuDS scheme reduces the design flows to the QBAR greenfield flow. Whilst these issues should be dealt with, that is a matter for the riparian owner and the drainage authority to address.
- 5.6. Taking this issue as a whole, if the Inspector agrees with the Appellant and the LLFA that the runoff during a flood would either reduce or not increase and also that the existing site discharges to the existing drainage network at the greenfield runoff rate, then there is no reason in flooding policy terms to object to the proposals.
- 5.7. There are a couple of points in MP's evidence which do need to be clarified as below.
- 5.8. In para 6.3, MP is not correct in his general premise. The site discharge is set to the QBAR greenfield rate and so there is no increase in flow rate into the existing ditch system (indeed, as set out above, there is a reduction). We are essentially improving the status quo in terms of discharge rates because we propose to restrict all storm events up to 1 in 100 plus 45% climate change to QBAR (1 in 2.3-year storm event).
- 5.9. In para 6.4, I do not think MP understands the principles of land drainage law as they relate to this issue. As above, the landowner who owns the land adjacent to any watercourse is the riparian owner and has responsibilities for maintenance set out in legislation. For non-main rivers these matters fall under the purview of the local authorities.
- 5.10. It is clear, notwithstanding MP's observations, that the current system in its current state of maintenance can cope with the greenfield runoff (as he concedes in para. 6.3). There is no evidence that surface water currently backs up onto the Appeal Site such that surface water cannot leave the Site and there is no reason to expect that this will change or pose any risk to the efficacy of the proposed SuDS scheme.



- 5.11. In para 6.5, as above, the same enforcement regime applies to no main rivers and is enforceable under the Land Drainage Act 1991.
- 5.12. In paras 6.7 to 6.9, MP discusses the degree to which the impact on trees has been considered. The Tree Root Protection Zones have been considered and avoided. The outlet pipe route from the basin in the southern catchment passes through a Tree Root Protection Zone. At that location hand digging and air spades with compressed air is proposed to be used to avoid damage of the tree roots. This can be further examined during detailed design.
- 5.13. In paras 6.10 to 6.14, MP has raised some queries over land ownership. The ditch, which is the receiving system for the southern catchment lies partly within the Appellant's ownership and a connection can be made to this for the outfall. In paras. 6.15 and 6.16, this is recognised and is common ground with the LLFA. This would be entirely normal for any development.



## 6.0 Rebuttal of Mr Piotrowski's Evidence Section 7: Attenuation Basin Capacity

- 6.1. Within this section MP goes into considerable detail surrounding his view on the various parameters within the design. I do not agree with his points and our design is based on applying the relevant standards and engineering judgement as required for an outline design. To assist the Inspector in dealing with the two opposing views each of the points raised would have the same impact. That would be to increase/decrease the size of the required pond.
- 6.2. On this site there is ample scope to alter the size of the ponds during detailed design and so no part of the technical dispute between myself and Mr Piotrowski would cause the site to be undeliverable. This is implicitly accepted by the LLFA in their approval and the common ground between us.
- 6.3. I now address MP's points in detail.
- 6.4. Addressing MP's point in para 7. 2. The Q1 discharge rate cannot be tested if we are using FEH data. This can be tested only with FSR data, which, although a recognised data source, is now out of date. Surrey County Council guidance states that either the greenfield Q1 or QBAR (1 in 2.3 year) rural rate can be used. We are using QBAR and FEH data in accordance with the guidance for a system not using a staged approach to discharge.
- 6.5. Taking MP's point in para 7.3, if we were using the staged approach for the discharge from the basins we would test the network for the Q1, Q30 and Q100 plus climate change, but we are not taking this approach and therefore the discharge from the development for all storm events up to 1 in 100 plus 45% climate change will be restricted to QBAR (1 in 2.3year storm event) in accordance with Surrey County Council's guidance.
- 6.6. Taking MP's point in para 7.3, he is technically correct but this is more of a philosophical point. We need to decide on a design flow rate. In doing so, it is recognised that this will be higher than a more frequent event. The rationale behind using QBAR is that more frequent events are unlikely to cause widespread flooding and so the impact of this choice is minimal. Notwithstanding this point, the discharge rate has been agreed with the LLFA as conforming to their guidance.
- 6.7. There is one further point to be considered. Whilst the scheme is designed to provide attenuation as the primary form of risk management, there are also other SuDS measures provided within the drainage system and these will tend to reduce risk during more frequent events.
- 6.8. Addressing the point MP makes in para 7.4, the technical note was produced purely for the purposes of explaining the drainage rationale to the parish council and was therefore simplified. The drainage design for the outline application utilises QBAR as a discharge rate as shown within the calculations provided within the FRA.
- 6.9. In para 7.5, I do not think this would be a normal part of design at this stage. If the LLFA requires the area of the basins to be taken into account, this can be done as part of the reserved matters application, but we would expect to increase the QBAR rates based on the new impermeable area.



- 6.10. In paras 7.5 to 7.10, MP is expressing his views on the correct values of impermeable area to be used. Our engineering judgement considers that a 65% allowance for impermeable areas (which includes urban creep) for outline applications based on the proposed layout is suitable. This is based on the view of experienced engineers who have designed 100s of similar schemes. It is also the agreed position of the LLFA who have reviewed many schemes and are familiar with all the relevant guidance. Regardless, the exact area will be specified as part of the reserved matters application and the rates will be restricted to QBAR accordingly.
- 6.11. Taking the points in paras 7.5 to 7.7, the 10% urban creep is subject to the reserved matters design. The area of the basins can be included in the sizing of the basins as part of the reserved matters application taking into account the new QBAR discharge rates. It is our view that it would be unusually onerous to consider the areas of the swales as impermeable considering that we are not doing this for the existing ditches.
- 6.12. Paras 7.8 to 7.10, the urban creep is subject to the reserved matters design, and it may be less than 10%. An impermeable area of 65% at this stage is more than adequate.
- 6.13. The earthworks proposed to provide the attenuation basins cannot increase the existing runoff rates because they will produce greenfield runoff (albeit with a slightly increased velocity) and we restrict the discharge rates to greenfield QBAR. If MP is suggesting that the increase in gradient of this area would alter the overall runoff rates significantly then he is incorrect.
- 6.14. In paras 7.13 to 7.17 of his proof, MP is picking up on some inconsistencies between different versions of the FRA. For the avoidance of doubt, both basins were designed to attenuate the 1 in 100 storm events plus 45% climate change as required by the relevant policies and guidance.
- 6.15. In paragraphs 7.18 to 7.24 of his proof, I think MP has identified an error in the drawings which I can clarify as follows. The base of the proposed southern basin is 54.5mAOD and the outfall is at 54.25mAOD. The 55.3mAOD is a typographical error. Therefore, an unobstructed outfall exists, and an outfall connection is feasible. The base level of the basin will also be re-evaluated as part of the reserved matters design.
- 6.16. Additionally, in para 7.24, I note that MP is not asserting that the ditch does not have sufficient capacity but is hypothesising what might happen if it didn't. This was considered during the initial design, and it is our view that sufficient capacity exists. However, this would also be reviewed as part of the detailed design.
- 6.17. I disagree with MP's position in paras 7.25 to 7.33 of his proof. Surrey County Council requires that any proposed attenuation features, such as the proposed basins, to be designed to provide attenuation for the 1 in 100-year storm event plus 45% climate change. No assessment of the co-incidence of events is required.
- 6.18. The half drain-time is applicable only for features that infiltrate to the ground and not for attenuation features. Hence, the half-drain time or the emptying time of an attenuation feature is not relevant in this case in accordance with Surrey County Council's policy. At the risk of repeating myself this is why the LLFA have approved the scheme and also why we have their agreement in the SoCG.



## 7.0 Rebuttal of Mr Piotrowski's Evidence Section 8: Groundwater Flood Risk

- 7.1. In section 8 of his proof, MP raises the issue of groundwater flooding and in doing so correctly identifies that all sources of flooding should be included in any flood risk assessment.
- 7.2. Groundwater has been covered in the FRA and all relevant sources of data researched. Additionally, the Phase 1 report by BRD (CD7/6a) also investigates the groundwater regime and potential risks on a site-specific basis.
- 7.3. This application is Outline and it would always be expected that further intrusive investigations would be undertaken to refine the design during the reserved matters applications.
- 7.4. Fundamentally, MP is confusing two different concepts. One is groundwater flooding potential and the other is groundwater flooding risk.
- 7.5. Wherever there are permeable rocks or aquifers there would be potential for groundwater flooding.
- 7.6. Risk is the assessment of how likely it is that groundwater flooding might occur.
- 7.7. On the Appeal Site there is no evidence that groundwater flooding has occurred, there are no records of groundwater flooding in either the SFRA or any other report that I can find. There is no evidence that groundwater emerges on site or that any feature such as a spring line exists or has existed in the past.
- 7.8. All of the evidence in the SFRA and other datasets suggests that the risk of groundwater flooding is low. Fundamentally, the FRA has assessed all of this data and concluded that the risk of groundwater flooding is low and that is common ground with the LLFA.
- 7.9. The Phase 1 report (CD7/6a) suggests that if groundwater is present in the sandstone it is likely to flow to the east and this would be away from the development.
- 7.10. MP provides no evidence that groundwater flooding does occur on site and his objection on this matter is founded on recognising that there is uncertainty in any assessment.
- 7.11. If intrusive investigations highlight areas of the Appeal Site which are at higher risk of groundwater flooding, then these risks can be catered for within any evolution of the detailed design in the normal way.
- 7.12. Paras 8.2 to 8.5 are really an explanation of how groundwater could pose a risk to the Appeal Site but there is no evidence to say that it does.
- 7.13. The point MP makes in para 8.6 is correct and if this were the case the issue would be remedied by lining the pond which is the normal response to such a risk.



- 7.14. When any design is proposed some engineering judgement is required. In paras 8.7 to 8.10, MP is not exercising this judgement but picking parts of the guidance that suit his argument. Fundamentally, at the outline stage it is necessary to have reasonable certainty that a scheme which meets the objectives of policy and guidance can be delivered. In this case, and based on the prevalent ground conditions, the worst case is to assume that no infiltration is possible and so all of the attenuation will need to be provided in the form of ponds. The ponds need to be accommodated within the masterplan with some flexibility to increase or decrease their size as required following more detailed investigation and design.
- 7.15. In this way, the worst case is catered for. If MP is correct, and the soils are more permeable than currently indicated and there is no risk to the aquifer, then more of the drainage can be discharged to the ground and the ponds can be reduced in size.
- 7.16. In my view, none of the uncertainty identified by MP would in any way reduce the likelihood that an efficient drainage system which meets all relevant guidance could be delivered.
- 7.17. In para 8.11, MP is highlighting a completely irrelevant point as regards the Appeal Site. The key word in the Thames Water response is “catchment”. Their response is general and relates to their assets within the overall surface water catchment, this area being unspecified. There are no Thames Water surface water sewers on the Appeal Site and so the comment is not specifically relevant. As identified in MP Figure 13, the permeable sandstone affects a small proportion of the Site. If necessary, the relevant stretches of any sewers may need to be lined if further investigation proves this to be necessary.
- 7.18. In para 8.12, MP is seeking to prove the negative. Overall, the underlying geology is known and has been examined to the extent required for this outline application. As stated above, in the FRA, in my proof and in the SoCG there is no evidence that the Appeal Site is affected by groundwater flooding. There is also no evidence of this in MP’s proof. It is not within my gift to prove that groundwater flooding doesn’t occur, only that in my view it is unlikely based on the evidence.





## 8.0 Rebuttal of Mr Piotrowski's Evidence Section 9: Foul Drainage Strategy

- 8.1. The proposed pumping station is a standard design solution for every development that cannot connect via gravity to the existing public sewers. It does not comprise a significant risk because this pumping station will be designed to Thames Water adoptable standards and incorporate telemetry, 24-hour emergency storage and a secondary pump in case the first one stops operating.
- 8.2. All of these will be offered for adoption to Thames Water and they will be built in cooperation with Thames Water. This pumping station is also proposed to connect to a foul Thames Water public sewer. Groundwater can increase the cost of the construction and delay the construction of the pumping station but it shouldn't affect the operation of the pumping station or increase any risk.



## 9.0 Rebuttal of Mr Piotrowski's Evidence Section 10: Summary of Opinion

- 9.1. I have summarised my points in this rebuttal by addressing Mr Piotrowski's summary of his opinion as below.
- 9.2. Point 1 - I have demonstrated that notwithstanding MP's concerns the FRA has addressed all the relevant risks and that the flood risk within the ditches and onwards to other receptors would either not be increased or would be reduced. MP has produced no evidence that this is not the case. This matter is common ground with the LLFA.
- 9.3. Point 2 – Where it has been demonstrated that the Appeal Site does not increase flows leaving the site above the greenfield rates there can be no increase in flood risk to any off-site receptors. MP's implication that all other developments and contributions to flood risk must be assessed in some form of cumulative flood risk assessment is unfounded and would serve no purpose as this appeal is centred on the impacts to/from this site as required by policy.
- 9.4. Point 3 – I have demonstrated that this point is entirely false. There are changes to the existing drainage regime, as there must be with any development. However, the proposal manages flood risk in accordance with policy and guidance and would reduce flood risk by limiting flows to the QBAR greenfield rate. I would also suggest that "considered probable" is not the same as providing robust evidence to support this point.
- 9.5. Point 4 – I have demonstrated that these changes do not increase flood risk.
- 9.6. Point 5 - MP is making a vague assertion that some external flows may interfere with the design of the system and may cause an impact but has not provided any evidence to substantiate this. The LLFA are content that this does not create an issue in principle and that any such matters can be dealt with during detailed design.
- 9.7. Point 6 – the issue of urban creep has been considered and the consideration of coincident events is not required as a matter of policy.
- 9.8. Point 7 – the issue of groundwater flooding and the impacts to/from the development has been assessed to the degree that is necessary for an outline application in an area at low risk from groundwater flooding. Further intrusive investigations would be undertaken at the detailed design stage and their conclusions factored into any final design layout.
- 9.9. Point 8 – MP either does not understand the principles of foul water drainage or has misunderstood how network improvements are delivered. There is no unusual risk associated with foul drainage on the Appeal Site.
- 9.10. MP goes on to introduce a number of policy references which he feels are helpful to his conclusion and for completeness I address these below.



- 9.11. It is common ground that the Appeal Site is at low risk from all sources of flooding and no evidence has been provided to contradict this view. The presence of the sandstone is known and would be investigated in more detail, but the current site-specific ground investigation does not suggest this poses a high risk of groundwater flooding. The proposals thus accord with paragraph 159 of the NPPF.
- 9.12. Paragraph 160 of the NPPF refers to strategic polices and by inference those making them. At that strategic level it is sensible to consider the cumulative impact of policies, but this does not impose a requirement to undertake a cumulative impact assessment in respect of individual planning applications. This reference is thus not relevant.
- 9.13. Likewise, paragraph 161 of the NPPF is referable to paragraph 160 of the Framework and is likewise not applicable to individual planning applications. This reference is thus not relevant.
- 9.14. In his final bullet I think MP means to say part c of paragraph 169 of the Framework “have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development...” The overall maintenance of the drainage system is to be secured by means of a management agreement and secured via a proposed planning condition. I have demonstrated how it must be the case that the existing site can discharge at the existing rate and since this rate is not to be increased the drainage can be achieved based on current maintenance levels off site. Those riparian owners have a duty to maintain their watercourses and it seems reasonable to assume that they would continue to meet these obligations.



## 10.0 Summary and Conclusions

- 10.1. My overall summary would be that MP has highlighted many technical points he disagrees with. None of these would affect the overall ability to deliver a scheme for surface water drainage which meets the relevant requirements. MP has also highlighted areas of uncertainty where the final answer is not yet known at this outline stage, and I consider this to be entirely normal and part of the process through which schemes develop between outline and detailed design.
- 10.2. Overall MP has produced no new evidence which would suggest that the Appeal Site is at a higher risk of flooding than agreed or that the drainage scheme is not deliverable.