LEAD LOCAL FLOOD AUTHORITY, HERTFORDSHIRE COUNTY COUNCIL PROOF OF EVIDENCE IN SUPPORT OF HERTSMERE BOROUGH COUNCIL

EVIDENCE OF KATHERINE WATERS (MSC, BSC, C.WEM, MCIWEM), ON BEHALF OF HERTFORDSHIRE COUNTY COUNCIL

DEALING WITH MATTERS RELATING TO FLOOD RISK & SUSTAINABLE DRAINAGE

LAND EAST OF LITTLE BUSHEY LANE AND NORTH OF THE SQUIRRELS LITTLE BUSHEY LANE BUSHEY HERTFORDSHIRE

APPEAL BY REDROW HOMES LIMITED

PINS REFERENCE: APP/N1920/W/23/3314268
PLANNING REF:22-1071-OUT

APRIL 04, 2023

TABLE OF CONTENTS

FIGURES

1 INTRODUCTION

1.1 QUALIFICATIONS AND EXPERIENCE

1.1.1 My name is Katherine Waters, I am a Technical Director within the Sustainable Water Management team at WSP, one of the world's leading engineering professional services consultancies. I oversee and lead the team that delivers WSPs Lead Local Flood Authority (LLFA) support services which includes supporting Hertfordshire County Council Flood Risk Management team in delivering the LLFA function and assessing statutory planning consultations.

1.1.2 I hold a Masters degree in Flood Risk Management from Newcastle university and hold a hold a Bachelor of Science degree (with Honours) in geography with sports studies from the university of Liverpool. I am a Chartered member of the Chartered Institute of Water and Environmental Management (CIWEM).

1.1.3 I have nearly 20 years of professional experience working in the sustainable water management industry and have been with WSP since September 2022. Prior to this I worked at Woking Borough Council (from December 2013 to September 2022) leading the Flood Risk Management Team with the responsibility of assessing and responding to Planning consultations, Development of Flood Alleviation schemes for both fluvial and pluvial flooding, Flood Investigations, flood emergency response, ordinary watercourse consenting, SuDS Designs, SuDS retrofitting and surface water modelling using industry standard software. Whilst at Woking, I was also a founding member of the Association of SuDS Authorities (ASA) which was created to help ensure a consistent approach to sustainable water flood risk and drainage across the country helping to enable sustainable development. I was the Chair of this National Organisation from January 2022 and was a member of the Sustainable Drainage Approval Body (SAB) advisory group for DEFRA and have also presented to numerous bodies on surface water flood risk and SuDS including to the All-Party Parliamentary Group.

1.1.4 Prior to joining Woking Borough Council in 2013 I worked for an Engineering consultancy for 7 years and undertook the development of SuDS Drainage Strategies, Suds Designs, Hydraulic Modelling of watercourse, Flood Risk Assessments, strategic Flood Risk Assessment, Local flood Risk management Strategies and ordinary water course consenting for a variety of developments. I started my career in the Environment Agency in 2004 and was responsible for assessing planning applications, Flood Defence Consents and analysing the flood risk from all sources of flooding that future developments may be affected by in accordance with National and Local policy.

1.1.5 The purpose of my evidence to this Inquiry is to assist the Planning Inspector to consider the Appeal following the recent amendments to this planning application which were made on 16th March 2023, based on the evidence and relevant planning considerations at this time in relation to Flood Risk and Drainage matters that arise at the site.

1.1.6 I confirm that my evidence to this Inquiry has been prepared and is given in accordance with the guidance of my Professional Institutions and I confirm that the opinions expressed are my true and professional opinions

2 SITE CONTEXT

2.1 SITE DESCRIPTION

2.1.1 The site is located between Little Bushey Lane and the M1 in Hertsmere Borough in the county of Hertfordshire. A site location plan is included as Figure 2.1.

2.1.2 The site covers an area of approximately 18.2ha and is undeveloped comprising of an open expanse of agricultural land between Little Bushey Lane to the west and the M1 motorway to the north-east and is defined as a Greenfield Site.

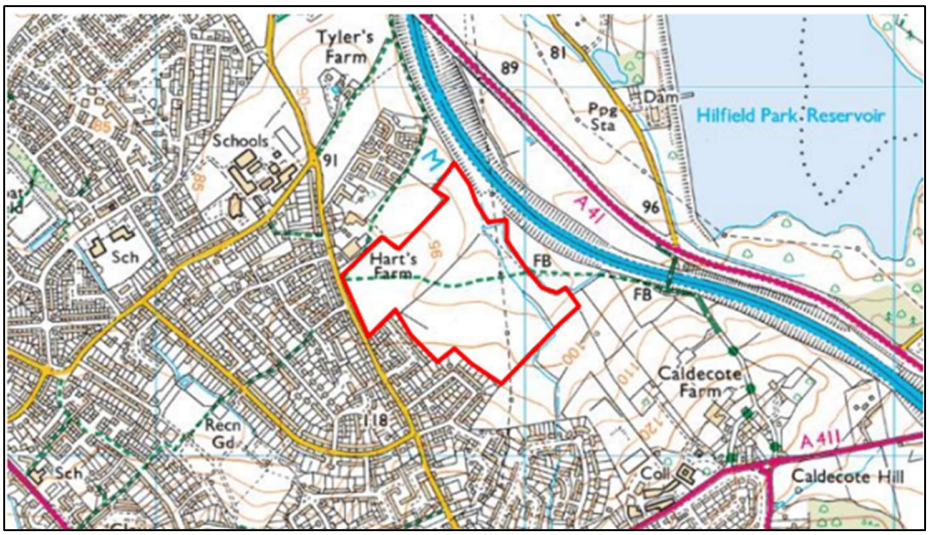

Figure.2-1: Site Location Plan

2.1.3 There is a main river that flows through the north-eastern part of the site, known as the Bushey Heath Drain and is classified as a Main River by the EA. There are also several ordinary watercourses flowing through the site, the largest of these flows south-west to northeast within the centre of the site where it joins the main river, another smaller watercourse flowing in the same direction and also joins the main river is located the rear of Wayside Avenue, adjacent to the south-west boundary of the site.

2.1.4 The site is shown to be impacted by multiple sources of flooding as shown within Figures 2.2 and Figure 2.3 below. The site is shown to be impacted by Flood Zone 3 (land that has a greater than 1 in 100 (1%) annual probability of flood risk from rivers) and Flood Zone 2 (land assessed as having between a 1 in 100 and 1 in 1000 Annual probability of Flooding (1%-0.1%). However due to the size and classification of the ordinary watercourses these maps do not implicitly show the risk from them.

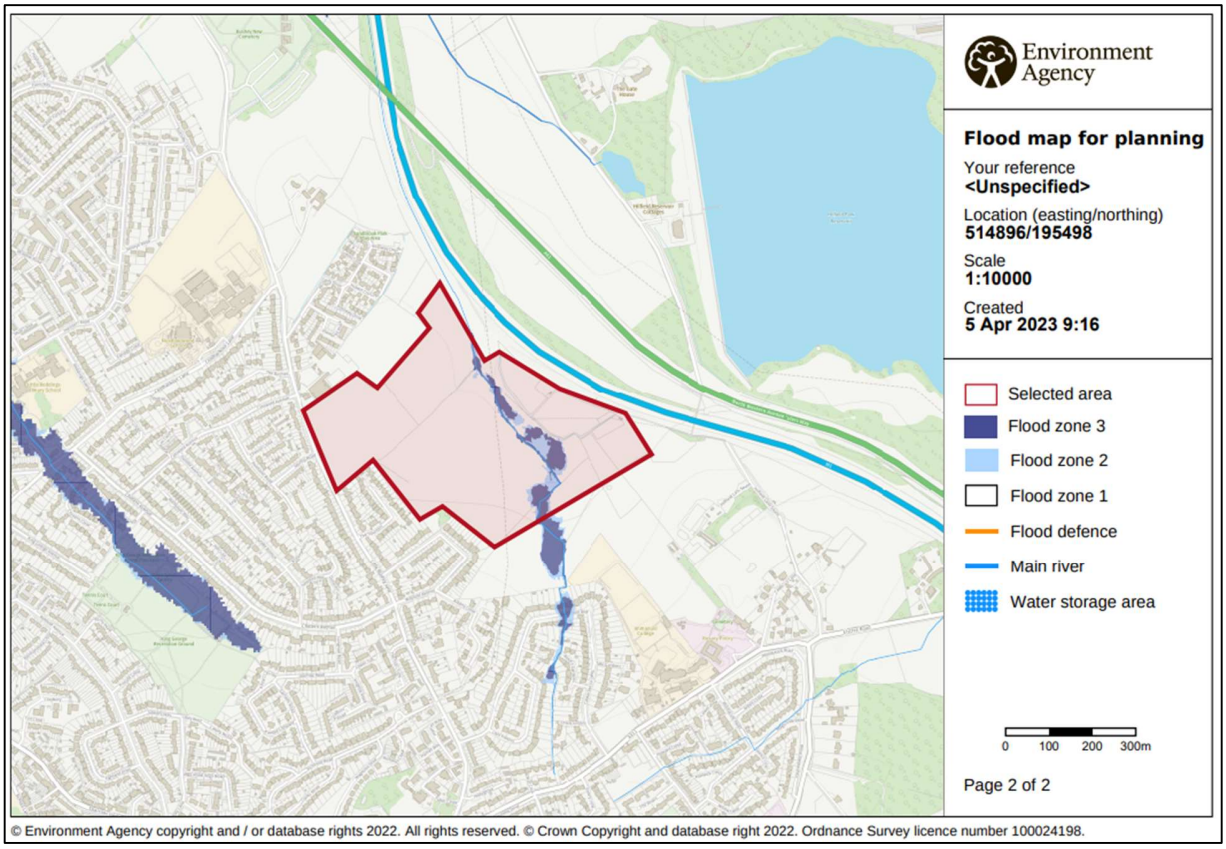

Figure 2-2: EA Flood Map for Planning

2.1.5 The Flood Risk from surface water map (Figure 2.3) indicates that there are multiple flow paths through the site from off site sources, The risk from these is classified as low which means it has a surface water flood risk of between a 1 in 100 and 1 in 1000 Annual Exceedance Probability of flooding in any given year (1% - 0.1%), medium which means it has a chance of flooding between a 1 in 30 and 1 in 100 (3.3% - 1%) Annual Exceedance Probability in any given year and high which means it has a great than a 1 in 30 (3.3%) Annual Exceedance Probability in any given year. These maps however do not pick up the flood risk from the existing watercourses that flow across the site although do give an indication of there location, they also do not take account of the impact of climate change.

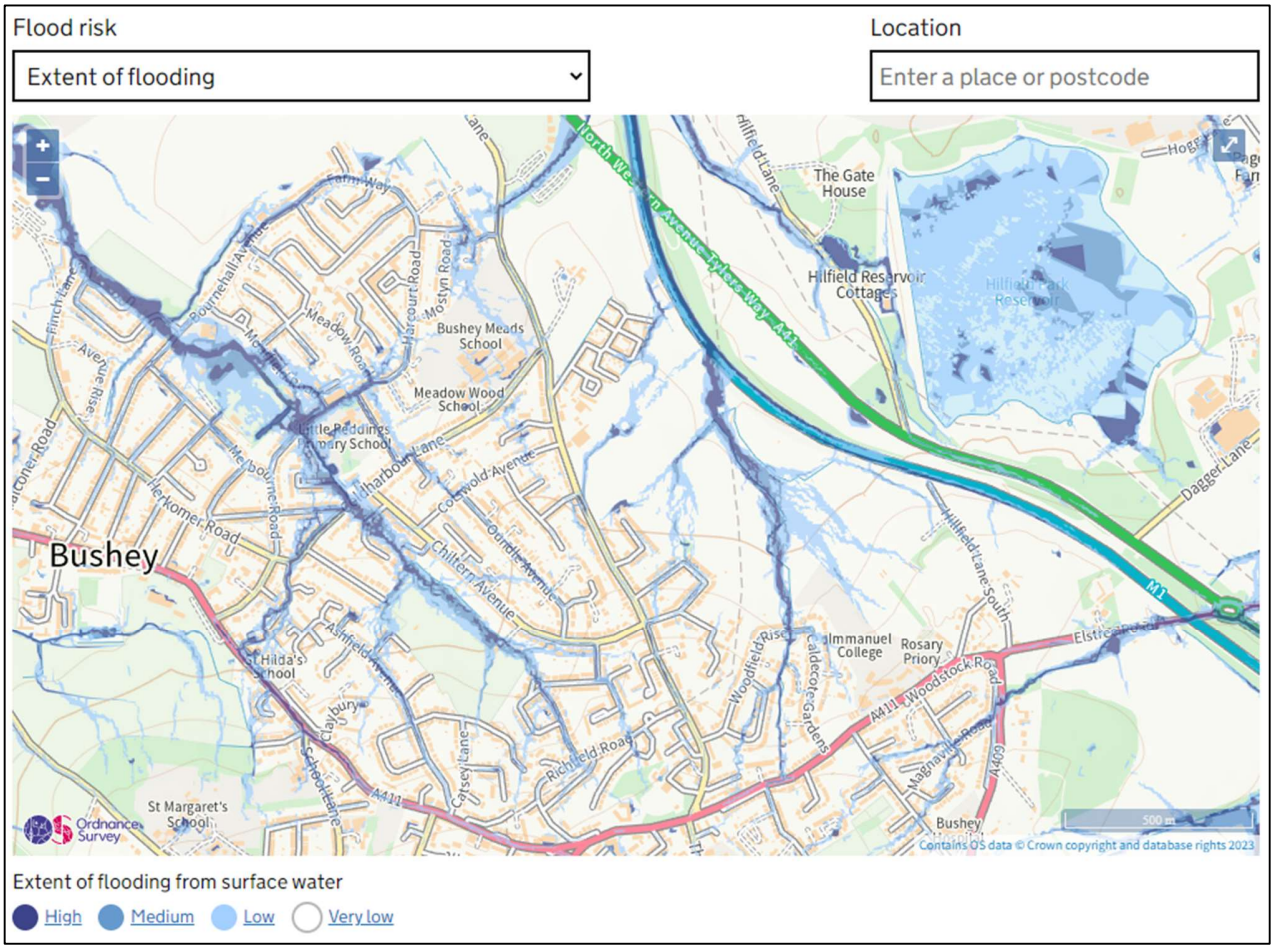

Figure 2-3: EA Long Term Flood Risk Map

2.2 PROPOSED DEVELOPMENT

2.2.1 *The development proposals for the site consist of an outline planning application for a mixed-use development comprising housing, a primary school, a local centre, and public open space. Total residential numbers are for up to 304 dwellings with the new parameter plans submitted in March 2023.*

2.2.2 *Description of development: "outline planning application with means of access from Little Bushey land for approval, all other matters (internal access, scale, layout, appearance and landscaping) reserved for subsequent approval for residential development and land reserved for primary school, community facilities and mobility hub (class e) along with car parking, drainage and earthworks to facilitate drainage, open space and all ancillary and enabling works."*

3 PLANNNG POLICY CONTEXT

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

3.1.1 When assessing the flood risk information submitted by proposed development applications against local sources of flood risk, its own impact on surface water flood risk and in relation to sustainable surface water drainage systems the LLFA uses NPPF its accompanying practice guide, local planning policies and the Non-Statutory Technical Standards for SuDS as a minimum.

3.1.2 Paragraph 159 of NPPF states that 'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

3.1.3 Paragraph 162 of NPPF states '*the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding*'.

3.1.4 It is my opinion that the information submitted to support this application has not demonstrated that this development is appropriate or necessary in this flood risk location. From a review of the submitted information no evidence has been submitted that the Sequential Test has been carried out in relation to all sources of flooding although this evidence would be for the Local Planning Authority to review and determine its acceptability.

3.1.5 Paragraph 167 of NPPF states 'when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

(a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
(b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment.
(c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate.
(d) any residual risk can be safely managed; and
(e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

NATIONAL PLANNING POLICY FRAMEWORK PRACTICE GUIDE

3.1.6 The NPPF practice guide was updated in August 2022 and provides guidance on the interpretation of the paragraph within the national planning policy framework.

3.1.7 Paragraph 024 of the practice guide states that 'the sequential test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding**, taking all sources of flood risk and climate change into account**. Where it is not possible to locate development in low-risk areas, the sequential test should go on to compare reasonably available sites:

Within medium risk areas; and then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.

Initially, the presence of existing flood risk management infrastructure should be ignored, as the long-term funding, maintenance and renewal of this infrastructure is uncertain. Climate change will also impact upon the level of protection infrastructure will offer throughout the lifetime of development. The sequential test should then consider the spatial variation of risk within medium and then high flood risk areas to identify the lowest risk sites in these areas, ignoring the presence of flood risk management infrastructure.

3.1.8 The practice guide is also clear in paragraph 28 that in determining the sequential test and alternative reasonable sites that a site to be reasonable does not have to be owned by the applicant and that an absence of a 5 year land supply is not suitable justification to allow developments in flood risk areas of other sites could deliver the same development however no information has been submitted that looks at alternative sites at a lower risk and therefore it can not be determined if the Sequential Test is passed or not.

3.1.9 Paragraph 28 states ‘reasonably available sites’ are those in a suitable location for the type of development with a reasonable prospect that the site is available to be developed at the point in time envisaged for the development. These could include a series of smaller sites and/or part of a larger site if these would be capable of accommodating the proposed development. Such lower-risk sites do not need to be owned by the applicant to be considered ‘reasonably available. The absence of a 5-year land supply is not a relevant consideration for the sequential test for individual applications’.

3.1.10 In my opinion it is clear from paragraph 167 of NPPF and paragraphs 24 and 28 of the NPPF Practice guide that flood mitigation should only be considered once the Sequential Test has been passed. However as this is for the Local Planning Authority to determine based on evidence submitted by the applicant this evidence concentrates on whether the supporting information submitted with the application and revised as part of this inquiry sufficiently shows that the proposed development is safe from flooding now and in the future and does not increase flood risk elsewhere from any source.

3.1.11 When reviewing a site-specific flood risk assessment that accompanies a planning application it is necessary to ensure that it is detailed enough for the type of application to demonstrate that flood risk is not increased to the site itself or to the surrounding area. Flood risk is defined as the probability of flooding multiplied by the consequences. Therefore, increasing the vulnerability of the site to flood risk through development increases the risk. The flood risk assessment therefore must demonstrate the risk from all sources of flooding to appropriately assess the risk to the site, provide suitable mitigation to ensure flood risk from any source is not increased.

3.1.12 Paragraph 49 of the NPPF practice guide also states’ *where development proposals would result in the* ***deflection or constriction of identified flood flow routes, a site-specific flood risk assessment will need to demonstrate that such routes will be safely managed within the site****. The impact of development on flood flow routes may also be an important consideration for sites which benefit from the presence of flood risk management infrastructure and where flow routes are likely to affect the site in the event of a failure or exceedance of such infrastructure. Any such measures to ensure development will not increase risk elsewhere would need to be secured in any planning permission granted. The provision of multifunctional sustainable drainage systems, natural flood management and green infrastructure can also make a valuable contribution to mitigating the cumulative impacts of development on flood risk*.

3.1.13 Where it is not possible to fully mitigate the impacts of development on flood risk elsewhere, now and in the future, the site-specific flood risk assessment will need to fully detail the extent and nature of the increase in risk and to assess its significance. This is likely to be a key consideration in whether planning permission is granted’.

3.1.14 The constriction of the flow routes through the site and the impact of the diversion of the watercourse has not been assessed comprehensively in relation to the upstream flood risk to the surrounding properties. Changing the current flow regime of these properties surface water drainage can cause their surface water systems to back up and cause additional flooding to the surrounding area which has not ben considered. The Thames Water surface water sewer which discharges to the proposed diverted ditch is currently free flowing, altering this ditch to allow the development footprint to be built without a suitable assessment can prevent this outfall from free-flowing causing water to back up and flood upstream.

LOCAL PLANNING POLICY

3.1.15 Hertsmere Borough Councils site allocations and development management policies plan (adopted 2016) contains the relevant local planning policies in terms of flood risk, watercourses and the environment. The policies relevant to this application are policy SADM13, SADM 14, SADM 15 and SADM 16

3.1.16 Policy SADM 13 – 'The Water Environment' states 'the *natural environment of watercourses and areas of water will be improved wherever possible through policy sadm16. Watercourses, including culverts, land adjacent to rivers, functional floodplains and flood storage areas should be restored to their natural state'*

3.1.17 Policy SADM 14 – 'Flood Risk' states '*the risk of flooding will be avoided and reduced by:*

(I) ***locating development within areas of lower flood risk through the application of the sequential test and then applying an exception test in line with the national planning policy framework (NPPF);*** *and*

(II) *(ii) ensuring that development proposals in flood risk areas actively manage and reduce flood risk by applying the sequential approach at site level.*

Where new development is proposed in a flood risk area, a site-specific flood risk assessment will be required. This must take into account the risk associated with ***all types of flooding'***.

The principals relevant to this Development that must be satisfied areas follows:

(i)it must not increase the risk of flooding elsewhere;

(ii)within sites at risk of flooding, the most vulnerable parts of the proposed development should be located in areas of lowest flood risk, unless there are overriding reasons to prefer different locations;

iv) development at risk from any form of flooding should be flood resilient and resistant, with safe access and escape routes: it should also be demonstrated that residual risks can be safely managed;

(v) development should incorporate appropriate flood resilient features and flood mitigation measures;

(vii) any necessary flood protection or mitigation measure should not have an undue impact on nature conservation, landscape character, recreation or other important matter;

(viii) there should be no net loss in flood storage on site;

(ix) flood flow routes should be preserved.

(x) where possible, flood storage should be maximised through the use of green infrastructure and sustainable drainage systems; and

(xi) the risk from all types of flooding should be reduced as a consequence of development, wherever possible.

3.1.18 Policy SADM 15 'Sustainable Drainage Systems' states 'The design of new development should include sustainable drainage measures. In particular, the council will require the introduction of sustainable drainage (suds) on all major developments (as defined in the Town and Country Planning (Development Management Procedure) (England) order 2015 and any subsequent order). The drainage scheme should provide the most sustainable option from the suds hierarchy. Measures should attenuate water runoff at source (e.g. Through attenuation ponds, filter strips, swales) and achieve multiple benefits (including management of flood risk and surface water pollution, amenity and biodiversity). The drainage scheme will: (i) achieve the green field runoff rate, or as close to it as practicable; (ii) provide a 1 in 100-year attenuation taking into account climate change; (iii) provide arrangements for future maintenance and management.

3.1.19 Policy SADM 16 – 'Watercourses' states 'Development on sites that contain a watercourse or are situated next to a watercourse will comply with the following principles:

- Development **will not culvert** a watercourse nor build over a culverted watercourse.
- **The natural environment of the watercourse and areas of water will be conserved or improved**
- **A minimum 9m wide undeveloped buffer zone will be provided from the top of the bank of any watercourse.**
- **Opportunities should be provided to support river restoration and enhancement within the catchment of the watercourse.**
- The opportunity to refurbish and/or renew existing assets (e.g., Bridges, culverts and river walls) should be provided to ensure their lifetime is commensurate with the lifetime of the development (an assessment of the condition of the assets will be required). (vi) a Water Framework Directive (WFD) assessment will be required for proposals involving works which would have a direct impact on a river (e.g., Re-alignment of a river or work to bridges).

3.1.20 This evidence is based on the review of the submitted information that accompanies the application and has subsequently been revised during the appeal process and which has assessed these details in accordance with the above local policies.

3.2 PROPOSED DEVELOPMENT AND FLOOD RISK

3.2.1 When discussing Surface Water Flood Risk to the site, it is important to note the two different types of surface water flooding a site can be impacted by.

3.2.2 The first of these is overland surface water flow paths which are caused when rainfall exceeds the capacity of the infiltration rate of the soil within the drainage catchment, the surrounding catchment is saturated, or the storm exceeds the design standard of the catchments drainage system. The flow paths are caused from precipitation falling of site within the entire drainage catchment.

3.2.3 The second type of surface water flooding refers to the own site surface water run-off (precipitation that falls directly onto the site itself), this risk can be increased to the site and surrounding area if this is not suitable attenuated and controlled on site when impermeable areas are increased, and the drainage characteristic of the development site are altered.

3.2.4 The FRA provides information in relation to both these types of flooding, but the information is not adequate to satisfactorily determine that the proposed outline development would not increase the flood risk from both types. In chapter 4.4 of the revised FRA, it also highlights records of incidents of flooding along Bushy Lane, however the extent, depth, and location are unclear.

3.2.5 As shown in figure 2.2 above and as demonstrated within the revised flood risk assessment dated 3rd March 2023 most of the site is impacted by existing surface water flow paths. The FRA submitted and the evidence supplied does not challenge this information and demonstrates the site is indeed impacted by surface water flooding from these flow paths that are formed off site. This fact is not in question by either party.

3.2.6 The FRA submitted appears to argue that the watercourse located to the rear of wayside close should not be considered a watercourse. This was agreed by the LLFA officer at the time as not all the information was submitted to them. Figure 3.1 shows the plan submitted to the LLFA officer at the time which was contained within appendix E of the revised FRA. This plan also incorrect labels an EA main River as an Ordinary Watercourse.

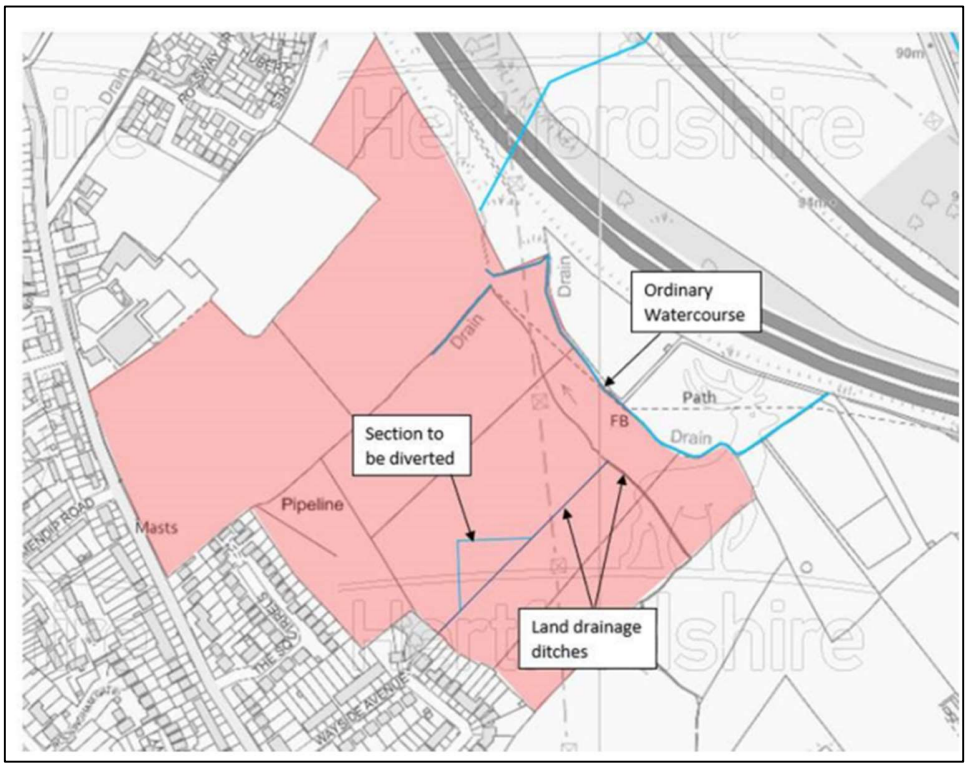

Figure 3-1: Ordinary Watercourse Query Plan

3.2.7 At the time of corresponding with the consultant it was unknown that the watercourse does indeed have a flow through it which has been highlighted within the FRA through the submission of the Thames Water asset plans (extract shown in Figure 3.2). Theses clearly show a Thames Water surface outfall discharging to the watercourse from the upstream urban residential area.

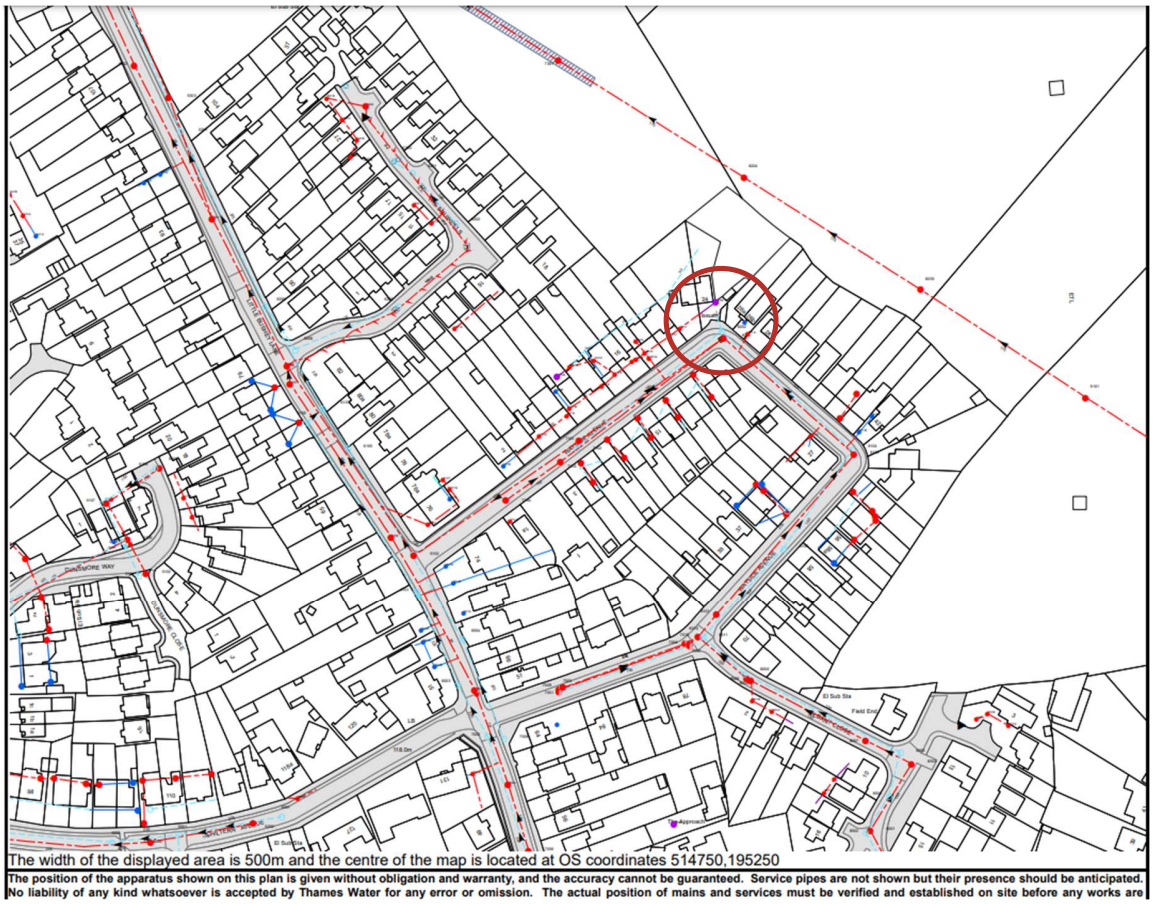

Figure 3-2: Thames Water Asset Map

3.2.8 Whether a watercourse is classified as a main river can be checked with the Environment Agency's main river map (Figure 3.3 below). If the section of watercourse you want to work on is not on their map, then it is automatically classified as an ordinary watercourse. The Environment Agency (EA) have detailed modelling for the majority of main rivers which identify there floodplains however small rivers and watercourse do not have detailed modelling and their floodplains are often underestimated or not assessed.

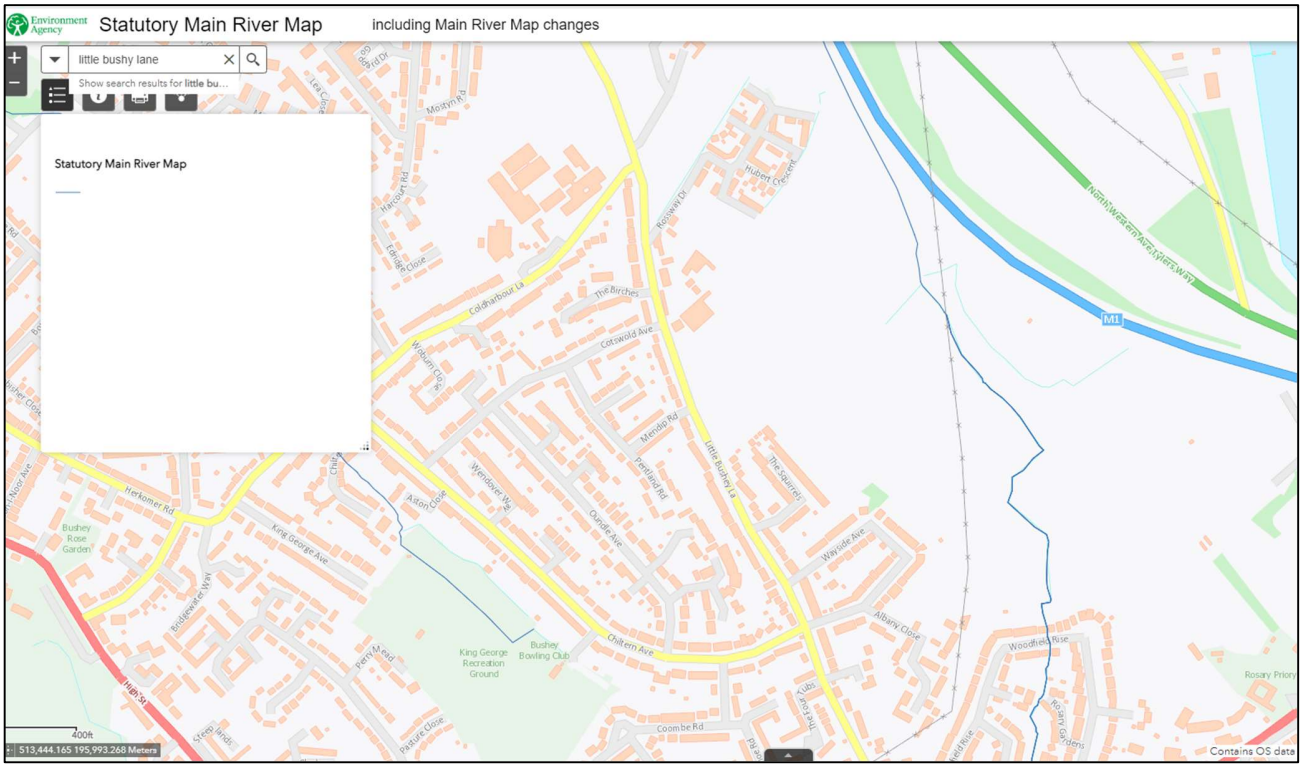

Figure 3-3: EA Main River Map

3.2.9 An ordinary watercourse is any river, stream, brook, ditch, drain, culvert, pipe and any other passage through which **water may flow** which is not designated as main river. It does not have to be recorded on a map to be an ordinary watercourse and commonly they are not.

3.2.10 The status of watercourse is only relevant as to whether you need consent under the Land Drainage Act 1991 and the Water Resources Act 1981 to alter the flow or work in, under or within 8m of that Watercourse. Material here is the empirical flood risk from the watercourses, which hasn't been assessed.

3.2.11 The submitted Flood Risk Assessment has not undertaken a suitable analysis of the existing watercourses nor demonstrated the watercourses existing flood plains or how the proposed development will impact on them. The proposed development is contrary to local policy SADM 16 as the proposal does not improve or conserve the watercourses and one of the water courses is to be restricted through the development with out a suitable buffer zone. The development has not looked at opportunities to support restoration of the watercourse but wishes to divert it and channelise it to allow development to be located either side of it. The proposed location of the diverted channel can also impact on the capability of the channel receiving upstream flows, due to the un-natural change of direction depicted in the masterplan.

Figure 3-4: Proposed Development Masterplan

3.2.12 The Revised FRA contains results from a high-level pluvial catchment model that was created by the consultant, the information reviewed was the outputs of the model contained within the submitted revised FRA and not the model files themselves. Therefore, I am unable to determine if the model created and its assumptions and input data are suitable. This evidence is based on a review of the plans provided and the description of the modelling process within the FRA.

3.2.13 As this model is a catchment pluvial model it fails to take account all of existing on-site watercourses and the existing main river that flows through the site. The model only represents overland flow routes from off the site but does not consider the drainage network that discharges through the site which would occur at the same time. Due to the catchment characteristics, it is also likely the Main River would also be bank full or in flood for the corresponding events. This would have an impact on the flood risk to the site and the extent being shown.

3.2.14 The model does not consider the site-specific topographic data that is available within the FRA appendices instead it relies on lidar data that has an accuracy of +/- 150mm, it is not clear from the information submitted if this has been calibrated against the topographic survey to obtain a more accurate understanding of the levels across the site and the catchment.

3.2.15 To ensure the proposed development does not flood the FRA states in paragraph 4.5.5.4 that the developed area ground levels within the model have been raised by an arbitrary 1m within the model to prevent this from happening. The ground in this area isn't proposed to be raised by this amount and therefore this does not accurately represent the flood risk the development from the existing surface water flow routes.

3.2.16 In relation to the watercourse diversion included in the model the information submitted is not clear whether the discharge from the existing Thames Water surface water sewer has been assessed for the corresponding event and therefore if not, the flows are likely to exceed those that have been produced, it is also likely that the floodplain of those watercourses are being underestimated. This is likely to impact on the developable area and the housing densities proposed which have already been reduced due to the revised assessment that has been carried out.

3.2.17 From an initial review the model utilises a single rainfall profile that has been highlighted within the FEH software, however although this would provide an idea to the critical storm, multiple rainfall profiles would need to be tested within the model to determine the critical storm for the site-specific network and the combined probability of the main river being in flood at the same time as the surface water flow route occurring.

3.2.18 The mapping produced from the modelling is showing multiple oscillations outside of the site area, these oscillations are showing an increase and a decrease in flood depths in adjacent Mesh Cells, which means the mapping has been carried out incorrectly and the Mesh for post and predevelopments are not the same which equates to a processing error. These oscillations could also be showing an issue with the stability of the modelling, that could mean the flood extents are not being represented correctly (figure 3.5). Currently the development could be increasing flood depths upstream between 5mm and 500mm (orange band)

3.2.19 Without a clear understanding of the impact on flood risk upstream the information submitted could be highlighting an increase in flood risk to the existing upstream properties. Furthermore, as this evidence submitted within the FRA appears not to include the flows from the main river or the Thames Water surface water sewer this could be underestimating the impact on flood risk to those upstream properties. Therefore, a site-specific hydraulic model for the site needs to be submitted, as the current information is demonstrating the site is not in accordance with NPPF, its practice guide or local planning policy.

3.2.20 Currently there is a lack of "substantive evidence" to illustrate that surface water flooding would not impact the specified site nor would the development increase surface water flood risk upstream from the ordinary watercourses.

Figure 3-5:100yr depth difference mapping (Post-Pre)

3.2.21 The flood extent maps provided seems to demonstrate a slight increase in flood extent to the upstream properties as shown in figures 3.6 and 3.7. The current FRA fails to accurately assess the impact of the development on the upstream catchment and the high-level information provided appears to show the flood risk increasing to these properties due to the development. Consequently, the proposals are not accordance with NPPF, its practice guide nor Local planning policy.

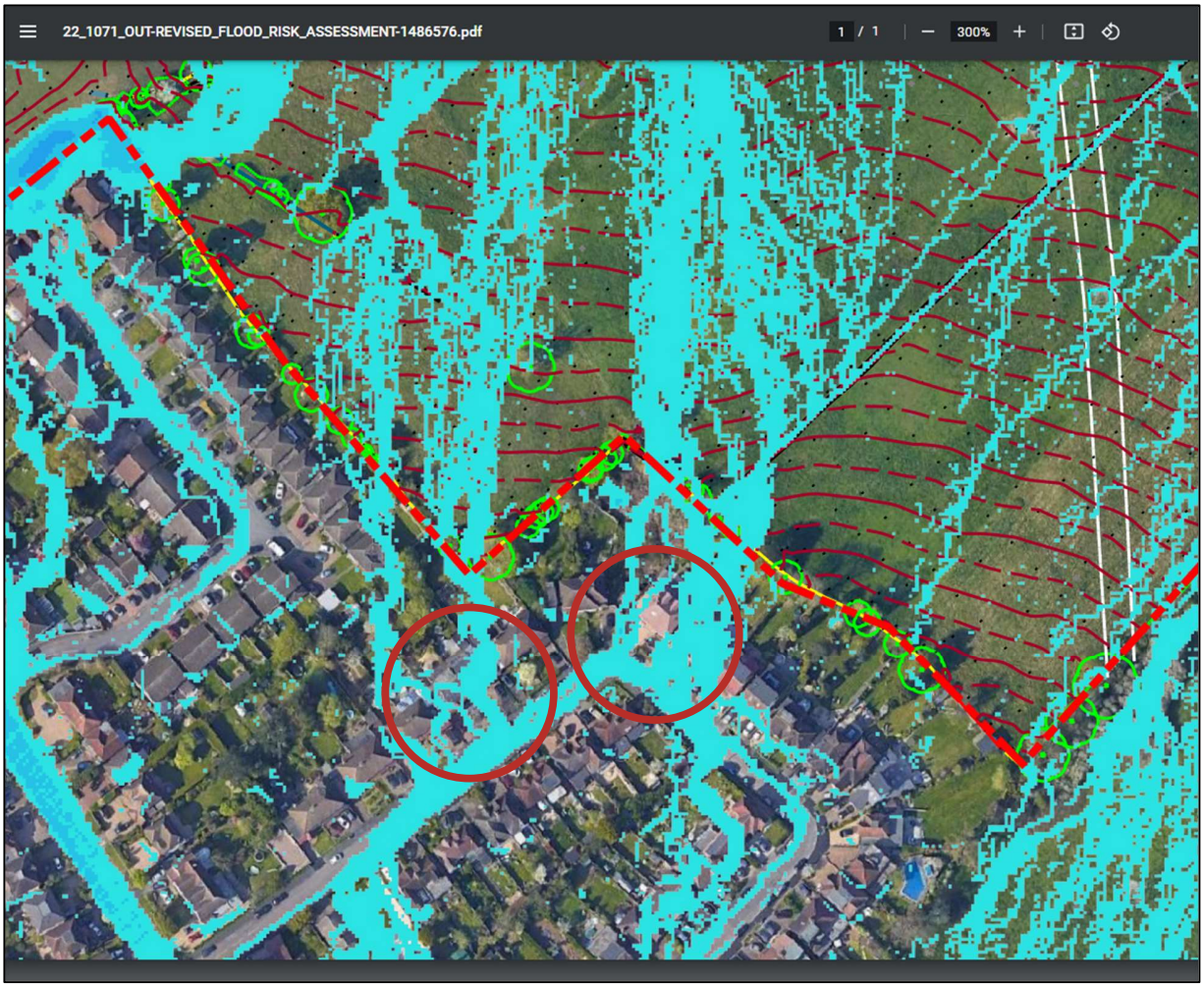

Figure 3-6: example of 1 in 100 predevelopment Flood Extent contained within FRA

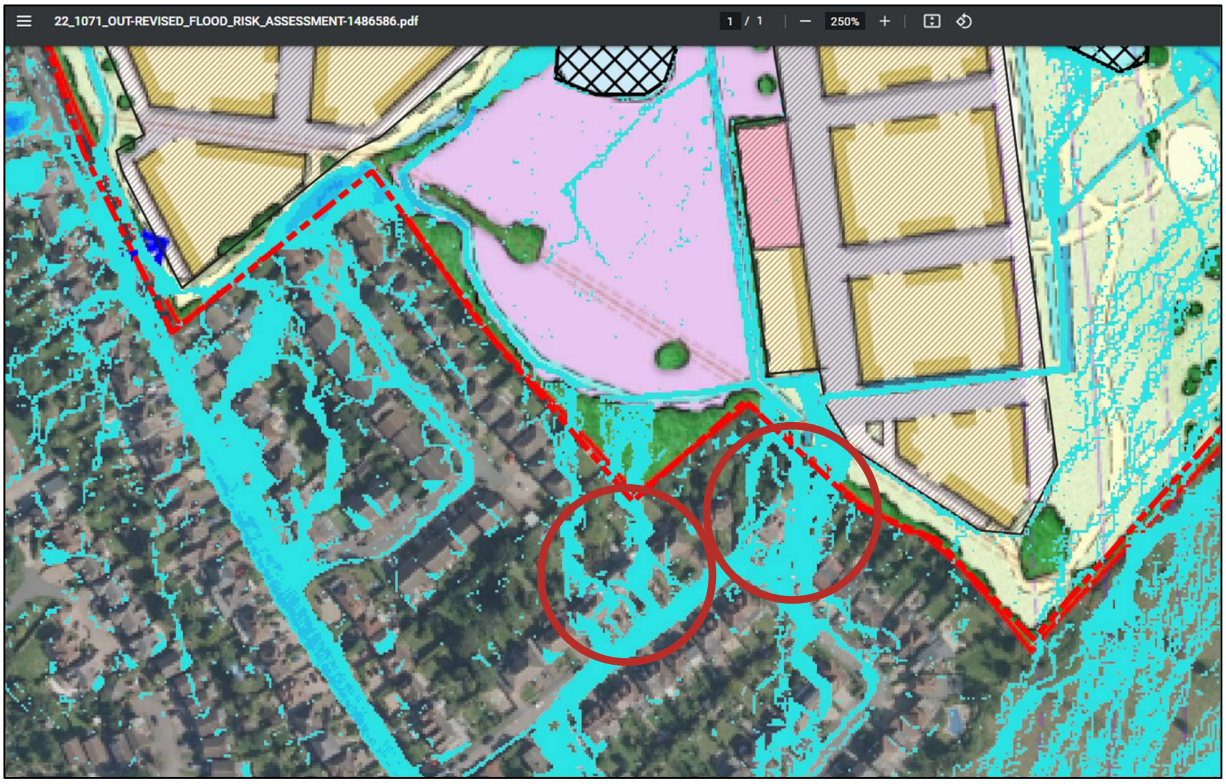

Figure 3-7: Example of 1 in 100 post development flood extent contained within FRA

.

4 SITE SURFACE WATER DRAINAGE AND SUDS

4.1.1 Following a review of the submitted suds drainage strategy it is acknowledged that the development is proposing to utilise SuDS features throughout the site and to limit discharge rates to the existing predevelopment Qbar rate.

4.1.2 It should be noted that prior to site control features such as the proposed attenuation ponds, source control features will be required throughout the development such as permeable paving, small swales, raingardens etc. following the SuDS hierarchy. This however can be subject to a detailed planning condition

4.1.3 However, what is not clear is the methodology used for the rainfall characteristics and whether they have used FEH 13 or the supersede FEH 1999 which underestimates flow from the site and therefore the volume of attenuation required. This needs clarification.

4.1.4 The model parameters are also only allowing 84% of the drainage catchment of the site within the model (this is represented by the 0.84 Cv Value within the calculations) where in reality this would be 100% in a winter critical storm and should be 1. The current attenuation is therefore undersized to allow for the appropriate volume of water the proposed development would generate. This can affect the developable area when considering the other site constraints.

4.1.5 It is unclear as to whether the SuDS attenuation features proposed would also be impacted by the off-site surface water flow path. If they are then the volume of water storage available for the onsite attenuation would be reduced. It needs to be clarified how these systems interact and where the additional storage will be located.

4.1.6 Furthermore, as the proposal is discharging to a Watercourse that is likely to be bank full for the corresponding critical storm due to the catchment characteristics, the model details need to allow for a surcharged outfall which means the drainage network will not be able to discharge at the designed rate and additional storage may be required on site.

4.1.7 Therefore, currently we are unable to assess if the proposed areas allowed for site attenuation are sufficient within the parameter plan and the proposed development density.

5 CONCLUSION

5.1.1 Sequential Test has not been undertaken for the site in relation to all sources of flooding. The submitted information that the LLFA has reviewed is not in accordance with planning policy, the site is shown to have surface water flow paths flowing through it, the application needs to demonstrate that there is no other alternative

5.1.2 The revised FRA modelling is not sufficient to assess the risk of surface water flow paths, ordinary watercourses and existing surface water sewers to the site and surrounding area. It underestimates the current flood risk to the site and surrounding area.

5.1.3 Current modelling shows an increased flood risk to upstream properties which is contrary to NPPF its accompanying practice guide and local planning policies

5.1.4 The site-specific surface water drainage strategy although proposes not to increase surface water discharge from the site and maintain Qbar discharge rates, it is unclear whether they are using the correct rainfall profiles and therefore could be underestimating the volumes of attenuation required.

5.1.5 It is therefore my opinion that the submitted information fails to meet the requirements of NPPF paragraph 159, 162 and 167, it does not meet the requirements of the NPPF practice guide and is contrary to local planning policies SADM 13, SADM 14, SADM 15 and SADM 16.