

The background image shows a residential street with a row of houses on the left and a field with a fence on the right. A large blue triangular overlay covers the bottom half of the image. The sky is cloudy.

Lee Witts BEng (Hons)

**Sandleford Park, Newbury
Proof of Evidence: APP/16
(Flood Risk, Foul & Water Supply)**

LPA Ref: 20/01238/OUTMAJ

PINS Ref: APP/W0340/W/20/3265460

Bloor Homes Ltd & Sandleford Farm Partnership

Document Control Sheet

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| Document Title | Proof of Evidence (Flood Risk, Foul & Water Supply) |
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| Project Name | Sandleford Park, Newbury |
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1 Organisation and Expert Witness

Brookbanks

- 1.1** I work for Brookbanks. Brookbanks is a leading development consultancy in the planning promotion of residential led projects. Across the UK, we are currently providing advice to land promoters and developers on many strategic residential and commercial development sites ranging from 100 – 12,500 residential dwellings and / or in excess of 100 ha of business and commercial property. In the last five years, we have helped secure consents on nearly 55,000 homes.
- 1.2** Now with 24 years of operation, the company specialises in the pre and post planning delivery of major development initiatives and is currently working on some of the largest projects being executed across the UK. Our team has significant and probably unparalleled experience in successfully providing multi-disciplinary services to deliver strategic land through the planning process and into production.

Lee Witts

- 1.3** I am a degree qualified Civil Engineer (BEng Hons) and act as the Business and Development Director for Brookbanks. I am the witness for Flood Risk, Water Supply and Foul Drainage infrastructure.
- 1.4** I have 22 years experience in engineering consultancy and have specialised in the delivery of strategic development planning applications. I have also acted as expert witness on numerous occasions.
- 1.5** My key technical project achievements include the lead technical management of:
- 1) *Broadnook Garden Suburb, Leicestershire. 1,950 units, local centre and 10ha employment zone.*
 - 2) *Brightwell Lakes, Ipswich. 2,000 units, all-through school and local centre.*
 - 3) *Great Wilsey Park, Haverhill. 2,500 units, primary school, and local centre.*
- 1.6** I through Brookbanks have been involved in the Appeal Site since 2014, providing drainage advice to support the emerging proposals.

Statement of Truth

- 1.7** My evidence, set out herein, is true and has been prepared and is given in accordance with the guidance of my professional training and I confirm that the opinions expressed are my true and professional opinions.

2 Introduction

- 2.1** This Proof of Evidence responds to the comments in the reasons for refusal provided by the Head of Development and Planning officer Gary Lugg on the 13th October 2020, acting on behalf of West Berkshire Council (WBC). The comments relate to the submission of the Flood Risk Assessment (FRA) (10309 FRA04 Rv2) and Drainage Strategy (10309-DR-02 A) produced by me on behalf of Brookbanks, in support of the application Land at Sandlesford Park, Newbury. The FRA and Drainage Strategy Plan is located in document APP/17.
- 2.2** Sandlesford Park is a Strategic Site Allocation in Policy CS3 of West Berkshire Core Strategy (2006-2026) identified for a sustainable and high-quality mixed-use development for up to 2,000 dwellings with associated infrastructure.
- 2.3** The planning application sought outline permission for the following development:
- 'Outline planning permission for up to 1,000 new homes; an extra care facility as part of the C3 provision; a new 2 form entry primary school (D1); a local centre to comprise flexible commercial floorspace (A1-A5 up to 2,150 sq m, B1a up to 200 sq m) and D1 use (up to 500m); the formation of new means of access onto Monks Lane; new open space including the laying out of a new country park; drainage infrastructure; walking and cycling infrastructure and other associated infrastructure works.'*
- 2.4** I have set out this Proof in the following order to demonstrate in a robust and comprehensive manner that the drainage proposals are both compliant and sound:
- 1) *Discussion on previous Planning Application 18-00764/OUTMAJ.*
 - 2) *Compliance with the Core Strategy Policy CS16*
 - 3) *Compliance with the Sandlesford Park SPD*
 - 4) *Compliance with the Sustainable Drainage SPD*
 - 5) *Discussion on the compliant Storm Water strategy deployed for the Appeal Site.*
 - 6) *Point-by-point reply to the objections raised in Planning Application 20/01238/OUTMAJ and comments made by the LLFA on 2nd March 2021.*
 - 7) *Point-by-point reply to the Rule of 6 Party Objections*

3 Application 18-00764/OUTMJ

- 3.1** I wish to start this proof by referring to the previous Outline Planning Application (ref 18-00764/OUTMAJ) submitted for the Appeal Site.
- 3.2** Within that Application, I on behalf of Brookbanks had submitted a Flood Risk Assessment which amongst other things contained details on how the storm water from the development would be controlled, conveyed, and discharged.
- 3.3** The LPA had formally consulted with the West Berkshire Council Lead Local Flood Authority (LLFA) in respect to that application and my Flood Risk Assessment. Mr Charlie Cooper, Senior Engineer (Land Drainage) of the LLFA provided a written response to the LPA on 11th May 2018.
- 3.4** Within his response, Mr Cooper stated that the LLFA “consider the proposals to be acceptable in principle”. He continues to affirm that the LLFA “are pleased to note the indicative inclusion of bio-retention features within the development parcels”.
- 3.5** Mr Cooper’s response is clear and definitive that the drainage proposals are accepted by the LLFA, and proceeds to set out their required Planning Conditions.
- 3.6** At this point, I need to stress that the Flood Risk Assessment which was confirmed as acceptable in the 2018 application contained the exact same drainage design layout, calculations and conclusions which were re-submitted on the 28th May 2020 application.
- 3.7** I was surprised to see that the LLFA had elected to object to the latest application Flood Risk Assessment which was by all intents a duplicate of the previously accepted content. Furthermore, I stress that the reasons for refusal provided by the LLFA for this Appeal are ‘new’, meaning they have not ever previously provided comment on concern to the matters of which this proof is prepared since my initial engagement on the project in 2015.
- 3.8** Since 2015 there have been a couple of changes to national policy including the increase of climate changes allowances in Surface Water Drainage design and National Planning Policy Framework (NPPF).
- 3.9** For the 2015 application the climate change allowance was 30%, this has since increased to 40%. This increase has been included into the new calculations but has not impacted the overall SuDS design or strategy.
- 3.10** The NPPF was updated in February 2019, the key change in the update was:
- “avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure.”*
- 3.11** This was taken into consideration by increasing the climate change allowance within the SuDS design and incorporating the SuDS design within the wider green infrastructure plan.
- 3.12** A copy of Mr Cooper’s acceptance to the Flood Risk Assessment is provided as **Appendix A**.

4 Core Strategy Policy CS16

- 4.1 I am able to demonstrate that the drainage proposals are in full compliance with the West Berkshire CS16 (Flooding) Core Strategy Policy. The full policy description is as described below in italics with my evidence in blue.

Flooding

- 4.2 The sequential approach in accordance with the NPPF will be strictly applied across the District. Development within areas of flood risk from any source of flooding, including Critical Drainage Areas and areas with a history of groundwater or surface water flooding, will only be accepted if it is demonstrated that it is appropriate at that location, and that there are no suitable and available alternative sites at a lower flood risk.
- 4.3 All proposed development and SuDS have been designed to lie completely within FZ1. Therefore, a sequential test is not required for the development.
- 4.4 When development must be located in flood risk areas, it should be safe and not increase flood risk elsewhere, reducing the risk where possible and taking into account climate change.
- 4.5 No development is located within a fluvial flood risk area.
- 4.6 For areas of development that are located within pluvial flood risk areas, SuDS have been designed for each development catchment in order to store surface water runoff. All designed SuDS have been designed to hold surface water for a 1 in 100-year storm event + 40% climate change. Calculations from the SuDS design can be seen within Appendix B of the FRA.
- 4.7 Proposed development will require a Flood Risk Assessment for:
- 1) *Sites of 1 ha or more in Flood Zone 1.*
 - 2) *Sites in Flood Zone 2 or 3.*
 - 3) *Critical Drainage Areas.*
 - 4) *Areas with historic records of groundwater and/or surface water flooding.*
 - 5) *Areas near ponds or the Kennet and Avon Canal, that may overtop.*
 - 6) *Sites where access would be affected during a flood.*
 - 7) *Areas behind flood defences.*
 - 8) *Sites with known flooding from sewers.*
- 4.8 An FRA has been produced for this development as it is larger than 1ha with areas at risk of surface water flooding.
- 4.9 Development will only be permitted if it can be demonstrated that:
- 4.10 Through the sequential test and exception test (where required), it is demonstrated that the benefits of the development to the community outweigh the risk of flooding.
- 4.11 Not required for this application as the proposed development catchments lie entirely with FZ1.
- 4.12 It would not have an impact on the capacity of an area to store floodwater.
- 4.13 There is sufficient room within the site boundaries to store additional surface water created from the development as demonstrated on the drainage strategy plan (10309-DR-02 A).
- 4.14 It would not have a detrimental impact on the flow of fluvial flood water, surface water or obstruct the run-off of water due to high levels of groundwater.

- 4.15** Infiltration testing was completed by GEG in November September 2014 with the report being issued November 2014. During the testing which comprised of 17 trial pits, no groundwater was encountered. All the proposed SuDS have been designed to 1.5m which falls with the depths of the trial pits; therefore, the basins lie above the current groundwater levels and will not cause any detrimental impact on groundwater quality or flood risk.
- 4.16** Appropriate measures required to manage any flood risk can be implemented.
- 4.17** A drainage strategy plan (10309-DR-02 A) has been produced that outlines how surface water will be captured and conveyed within each development catchment and stored before being discharged at QBAR*. The QBAR rates provide a betterment to the existing uncontrolled runoff rates from the site.
- *QBAR is the peak rate of flow from a catchment for the mean annual flood (a return period of approximately 1:2.3 years).
- 4.18** Provision is made for the long-term maintenance and management of any flood protection and or mitigation measures.
- 4.19** A long-term maintenance plan is provided in Chapter 6, paragraph 6.78 of the FRA (10304 FRA04 Rv2).
- 4.20** Safe access and exit from the site can be provided for routine and emergency access under both frequent and extreme flood conditions.
- 4.21** No access for the development is located within areas at risk of flooding. A hydrology assessment (Chapter 7 of the FRA) was completed to assess the proposed valley crossing (in accordance with the SPD). This assessment concluded that peak storm flow conditions were modelled, with all falling comfortably below the possible threshold of what can pass through the culvert without overtopping/flooding.
- 4.22** On all development sites, surface water will be managed in a sustainable manner through the implementation of Sustainable Drainage Methods (SuDS) in accordance with best practice and the proposed national standards and to provide attenuation to greenfield run-off rates and volumes, for all new development and re-development and provide other benefits where possible such as water quality, biodiversity, and amenity.
- 4.23** For the purpose of the conceptual drainage strategy the SuDS have been used proposed across the site in the form of swales and detention basins. All basins have been designed to a 1.5m depth, 1.2m water level and 1 in 3 slopes, in accordance with Chapter 22: Detention Basins of the SuDS Manual C753 and swales designed in accordance with Chapter 17: Swales.
- 4.24** Full design details of the proposed SuDS will be provided at the reserved matters stage. Whilst the SuDS will be refined, they will still be maintaining the same function as outlines within the outline application.
- 4.25** The use of SuDS across the site provides 2-3 stages of treatment to surface water runoff, providing better water quality before it is discharged into the existing watercourse. By storing surface water on site, it creates a new environment that enhances the ecology value of the site. The full details will be subject to a robust design process at the Reserved Matters stage.

5 Sandleford Park Supplementary Planning Document

- 5.1 I am able to demonstrate that the drainage proposals are in full compliance with the West Berkshire Supplementary Planning Document (SPD). The full SPD description is as described below in italics with my evidence in blue.

Section H: Hydrology and Drainage

- 5.2 **H1. Surface water drainage methods shall ensure that volumes and peak flow rates of surface water leaving Sandleford Park are no greater than the existing greenfield run-off rates.**
- 5.3 The site is currently greenfield, and the proposed new development will increase the impermeable area. In order to comply with Core Strategy policy CS16 and meet the Environment Agency's (EA) requirements, surface water discharge from the site should not be increased, and every opportunity should be taken to reduce the run-off rate below the existing.
- 5.4 Surface water will be captured within each development catchment and stored before being discharged at QBAR. The QBAR rates provide a betterment to the existing uncontrolled runoff rates from the site. By discharging to a QBAR rate, the onsite basins are providing a betterment of 69% (as shown in Chapter 6 of the FRA) to the existing uncontrolled runoff rates for the site. This therefore reduces the rate storm water enters the watercourses and reduces the risk of flooding further downstream.
- 5.5 **H2. Surface water drainage shall be managed with a variety of Sustainable Drainage Systems (SuDS).**
- 5.6 Surface water drainage should utilise a range of Sustainable Drainage Systems (SuDS) which could include source and site control measures such as car park drainage, green roofs, swales, wetlands, attenuation ponds and detention basins (both dry areas and with ponds).
- 5.7 The drainage system for the site must have regard to the topography of the site; the land uses both developed and public open space and the existing springs and woodland areas.
- 5.8 The design of the drains and roads should ensure that the existing springs continue to function in particular any road crossing of the wet valley should not impact on the local hydrology.
- 5.9 SuD need to be designed in conjunction with, and be reflected in, the Strategic Landscape and Green Infrastructure Plan and the Detailed Landscape and Green Infrastructure Design and Management Plans.
- 5.10 Developers will be expected to make contributions to the construction and maintenance of SuDs and other agreed measures in accordance with advice from both the Environment Agency and the Lead Local Flood Authority (LLFA) / SuDS Approval Board (SAB). Regards will also need to be given to the Flood and Water Management Act 2010 with regards to SuDs maintenance.
- 5.11 SuDS have been used across the proposed development in the form of swales and detention basins.
- 5.12 The proposed development has been split into three catchments, where each catchment will capture surface water to be conveyed into its associated detention basin located in close proximity to the onsite watercourse. The basins have been designed in the lowest areas of the site in order for surface water to be conveyed from each catchment via gravity.
- 5.13 No development is proposed near or over the existing spring on site. The proposed road Valley crossing, south of High Wood, in the south of the site was assessed in Chapter 7 of the FRA: Hydrology Assessment. The assessment concluded that peak storm flow conditions were modelled, with all falling comfortably below the possible threshold of what can pass through the culvert without overtopping/flooding. Therefore, there is no impact on the local hydrology.

- 5.14 A SuDS long term maintenance schedule has been provided within Chapter 6, Table 6-10 of the FRA.
- 5.15 **H3. SuDS systems should be used where possible to promote biodiversity across the site in accordance with the Strategic Ecological Enhancement Plan and detailed ecological studies.**
- 5.16 SuDS techniques can be used to provide wildlife and ecological benefits as well as aesthetic benefits to the site. Properly designed SuDS schemes can create habitats and increase biodiversity. Swales, ponds, and filter strips can be colonised by a variety of wetland plant, fish, animals, and invertebrates. They also provide a place for people to enjoy nature and relax. Ponds and wetlands are probably the most important SuDS technique in terms of providing amenity and wildlife habitat. There are also a number of other opportunities to enhance the biodiversity of the site including the inclusion of native planting within SuDS.
- 5.17 SuDS have been used across the proposed development in the form of swales and detention basins. The location and type of SuDS used were determined by how they will integrate within the wider green infrastructure plan.
- 5.18 The proposed SuDS on site will improve the water quality by providing 2-3 stages of treatment before it enters the existing watercourses but will also prove additional habitat for wildlife.
- 5.19 **H4. The use of externally sourced water should be minimised within the site encouraging the recycling of rain and grey water.**
- 5.20 There are a number of technologies and products which enable end users to use less water and allow the development to meet the Code for Sustainable Homes standards, such as small reservoirs for car-washing. The design of buildings within the development should seek to provide grey water recycling as a key part of the approach to meeting sustainability requirements for the site.
- 5.21 Bloor Homes have not proposed grey water/ water recycling but aims to limit the use of water in accordance with current building regulations.

Section L: Landscape and Heritage

- 5.22 **L2. To assist in delivering the details within the Strategic Landscape and Green Infrastructure Plan each character area and phase of the site will have a detailed Landscape and Green Infrastructure Design and Management Plan.**
- 5.23 The detailed Landscape and Green Infrastructure Plan will provide details on SuDS, non vehicular access, green links and recreation and open space provision.
- 5.24 The indicative size and location of the proposed SuDS network is illustrated on the Strategic Landscape and Green Infrastructure Plans.
- 5.25 The detailed design of the proposed SuDS, to be delivered at Reserved Matters stage, will follow the same principles that have been illustrated on the Strategic Plan.
- 5.26 **L4. Where possible, all important existing trees and hedgerows will be retained and integrated into the development. All areas of woodland including ancient woodland will be retained and protected.**
- 5.27 a) Setbacks from woodland - a 15m buffer zone will be provided from all woodland on the site. This will be measured from the centre of the trunk of the trees on the edge of the woodland.
- 5.28 g) Root protection areas - drainage runs, soakaways and the installation of other services can cause disruption to Root Protection Areas (RPAs) and result in important trees being damaged. All such runs must therefore be kept out of RPAs except where the Council has provided prior written approval.

- 5.29 a) Surface water runoff from the development parcels have not been designed to flow through or runoff into the ancient woodlands
- 5.30 Only surface water from i) open green space and ii) the ancient woodland will flow through the woodlands. As the site is currently greenfield, surface water currently flows through the woodlands. By introducing swales and detentions basins across the site, surface water flowing through the woodlands is reduced. Therefore, no new surface water flow will impact the woodlands.
- 5.31 g) All proposed swales and detentions basins have been placed outside of identified Root Protection Areas.
- 5.32 **L6. The site will have a series of green links and spaces through the development areas to avoid large areas of built form, promoting cycle and pedestrian access through the site.**
- 5.33 C) Materials and design:
- 5.34 The green links will be different in character from the footpaths alongside roads and will utilise natural materials where possible. The links will include SuDS elements such as swales and ponds.
- 5.35 Detention basins have been placed in the low-lying green spaces, adjacent to the existing watercourse on site. Swales have been used within the green links throughout the site in order to utilise the natural flow of surface water across the development site. The SuDS are not designed to retain permanent water and therefore, provide additional open space when they are dry.

6 Sustainable Drainage Systems Planning Document

- 6.1 I am able to demonstrate that the drainage proposals are in full compliance with the Sustainable Drainage System Supplementary Planning Document.

The Outline Sustainable Drainage Strategy should include:

- 6.2 Site Location Plan
- 6.3 Drainage Strategy Plan 10309-DR-02 A was provided in Appendix A of the Flood Risk Assessment.
- 6.4 Details of how the Proposed Surface Water Scheme has been Determined, following the Drainage Hierarchy.
- 6.5 Surface Water will be discharged into the existing watercourses through the site. Chapter 6 paragraphs 6.5 to 6.7 of the Flood Risk Assessment outlines the drainage hierarchy and therefore, determined the most viable option.
- 6.6 Proposed Discharge Location
- 6.7 The outfall locations from the SuDS are identified on the Drainage Strategy Plan (10309-DR-02 A).
- 6.8 Broad Calculations of Runoff Rates and Storage – Existing and Post-Development
- 6.9 Baseline discharge rate calculations are provided within Table 6-3 of the Flood Risk Assessment. These rates were then used to calculate the proposed discharge rates for the development. Those calculations are provided within Appendix B of the Flood Risk Assessment.
- 6.10 Details of Site Investigations
- 6.11 A topographical survey was undertaken in 2015. The survey has then been used to design the SuDS system across the site, as well as provided on the Site Level Plan (10309-SK-03) located in Appendix B of document APP/17.
- 6.12 Infiltration testing was completed by GEG in September with the report completed in November 2014, the full report is located within Appendix C of the Flood Risk Assessment.
- 6.13 Assessment of Flood Risk within the Development and Off-Site Impacts
- 6.14 The current flood risk of the development site is identified and analysed within Chapter 5 of the Flood Risk Assessment. SuDS designed for the site are discharging surface water at a QBAR rate. The QBAR rate for the site provides a 69% betterment to existing runoff rates from the site, reducing the flood risk downstream. The Water Resources Chapter of the Environmental Statement outlines the off-site impacts of flood risk from the proposed development.
- 6.15 Conceptual Design/Layout of Surface Water Drainage Across the Site, Including Outline Sizing
- 6.16 An illustrative drainage strategy (10309-DR-02 A) has been provided with Appendix A of the Flood Risk Assessment. This plan includes the size and locations for each of the SuDS designed within the site.
- 6.17 Details of how the Drainage System will Operate, Taking Account of Climate Change and Urban Creep
- 6.18 An illustrative drainage strategy (10309-DR-02 A) has been provided with Appendix A of the Flood Risk Assessment, along with drainage calculations within Appendix B. All SuDS have been designed to a 1 In 100 year + 40% climate change storm event. Each development parcel has currently been designed to have a 55% impermeable area. Once a housing layout has been finalised, the appropriate urban creep allowance can be added at the detailed design stage.
- 6.19 Provision for the Safe Management of Exceedance Flows within the Site
- 6.20 All basins have been designed away from built development and close to the existing water course. Should

the basins overflow, surface water shall flow downhill and directly into the watercourse. The exceedance routes will not pass over major roads within the development.

- 6.21** Justification of Chosen Components in the Management Train
- 6.22** A combination of swales and detention basins have been used within this development in order to provide natural, on surface storage of surface water. By allowing surface water to flow through the swales before entering the basin you are providing an additional stage of treatment.
- 6.23** Indication of how the Design will Incorporate Multi-Function Green Spaces and Provide Multiple Benefits
- 6.24** The SuDS have not been designed to be permanently filled, therefore, the basins can be used as open green space when dry.
- 6.25** Outline Maintenance Plan
- 6.26** A framework maintenance schedule has been provided as Table 6-10 within the Flood Risk Assessment.
- 6.27** Correspondence with Relevant Stakeholders
- 6.28** No additional correspondence was required.
- 6.29** Consideration of how Drainage and Flood Risk will be Managed During Construction
- 6.30** The management of flood risk of the site during construction will be identified within the Construction Environmental Management Plan.

7 Surface Water Drainage Design

- 7.1** Sandlesford Park is a Strategic Site Allocation in Policy CS3 of West Berkshire Core Strategy (2006-2026) identified for a sustainable and high-quality mixed-use development for up to 2,000 dwellings with associated infrastructure.
- 7.2** An appropriate and designed surface water drainage system is part of the infrastructure associated with the Sandlesford Park site allocation.

Surface Water Drainage Strategy

- 7.3** The drainage strategy for the site uses SuDS, being a combination of swales and detention basins across the development, in order to control surface water, run off into the existing watercourse.
- 7.4** The use of SuDS within the site complies with Policy CS16.
- 7.5** In accordance with The SuDS Manual C753 and national government guidance the SuDS across the site have been designed in order to store storm water for the 1 in 100 year + 40% climate change storm events. The inclusion of SuDS throughout the site removes the risk of surface water flooding throughout the new development catchments.
- 7.6** To complement the overarching site topography, the proposed development has been split into three catchments, labelled as A, B and C within the FRA and on the drainage strategy plan (10309-DR-02 A). Surface water generated from the development footprint within these catchments will be collected and conveyed via a surface water pipe network under the adopted roads and/or the swales.
- 7.7** Due to the topography of the site, all uncontrolled surface water runoff currently flows through the ancient woodland before reaching the onsite unnamed watercourses.
- 7.8** By capturing and conveying surface water via the new sewer network and/or swales from the development footprint, the existing volume of storm water runoff that flows uncontrolled through the ancient woodland will be reduced.
- 7.9** All undeveloped Greenfield areas and open space upstream of the ancient woodland, as defined by the topography, will continue to flow naturally through the site. This will allow for the ancient woodland to receive sufficient levels of storm water conveyance which is essential for its long-term preservation.
- 7.10** Surface water currently flows freely and directly into the existing watercourse at a rate of 16.38 l/s/ha, as outlined in Table 6-3 in Chapter 6 of the FRA.
- 7.11** Surface water that is stored within the basins has been designed to discharge at QBAR (in accordance with the SuDS Manual and national and local government guidance) into the existing unnamed watercourses that flows through the centre of the site. This watercourse connects into the River Enborne which bounds the southern edge of the site.
- 7.12** By discharging to a QBAR rate of 5.14 l/s/ha, the onsite basins are providing a betterment of 69% (as shown in Chapter 6 of the FRA) to the existing uncontrolled runoff rates for the site. This, therefore, reduces the rate storm water enters the watercourses and reduces the risk of flooding further downstream.
- 7.13** The 69% betterment relates to the speed at which surface water is discharged back into the existing watercourse, not the reduction of volume being taken out of the system. However, the volume will not all be discharged at the same time. The half drain down time for the basin is 29 hrs for the 1 in 100 year +40% climate change storm event.
- 7.14** The basins have been located in the lowest lying areas within the development, in order for surface water to drain naturally via gravity.

- 7.15** The northern basin for DPN1 is also in a location where the treated surface water can be discharged directly out through the ancient woodland.
- 7.16** The detention basins have been placed adjacent to, but outside of, the 8m existing watercourse buffer zone as defined by the LLFA in Refusal 13. This placement strategy ensures that all SuDS connect into the existing features at convenient locations.
- 7.17** The site currently does not have a system in place that improves the quality of surface water before discharging into the watercourse. The use of SuDS across the site will provide 2-3 stages of treatment to surface water before it is discharged into the local drainage network.

Flood Risk Assessment

- 7.18** As required by the National Planning Policy Framework (NPPF) and West Berkshire's core strategy policy CS16 an FRA for the site has been completed (10309 FRA04 Rv2).
- 7.19** Chapter 5 (Flood Risk) of the FRA utilises EA mapping and West Berkshire's strategic flood risk assessment (SFRA) to identify the sources of and risks created by fluvial, pluvial, reservoir, groundwater, and sewer flooding across the site.
- 7.20** The information provided from these sources has then influenced the location of the proposed SuDS across the site. No SuDS have been placed in areas of identified flood risk.
- 7.21** Chapter 6 (Storm Drainage) of the FRA describes the uses of SuDS and identifies the appropriate SuDS for this site. Table 6-3 shows the existing baseline discharge rates from the development with Table 6-4 showing the existing 1- and 100-year runoff rates, alongside the QBAR rate. calculations for each of the catchments.
- 7.22** Appendix C of the FRA includes GEG's infiltration testing report which concludes that infiltration across the site is unviable and therefore, following the drainage hierarchy, the basins discharge into the existing watercourse network.
- 7.23** The infiltration testing report also includes borehole logs, which identifies the complete absence of groundwater in all trial pits.
- 7.24** In addition, a long-term maintenance schedule within Chapter 6, Table 6-10 of the FRA, has been provided. This aimed to provide additional assurance to the LLFA that even at this outline application stage, thought and process had been given to the long-term management of the proposed drainage features.

8 Decision Notice: 20/01238/OUTMAJ

- 8.1 I am providing Proof of Evidence against Refusal Reason 13 within the Decision Notice of Planning Application 20/01238/OUTMAJ.
- 8.2 WBC's commentary is noted in italics with my response noted in blue.

Refusal 13 – Surface Water

- 8.3 The proposal does not provide sufficient information in respect of: -
 - 1) the impact of the proposed conveyance channels on ground water levels; and
 - 2) the impact of surface water runoff on ancient woodland.
- 8.4 In the absence of that information there is potential for adverse impact on ground water and the woodlands.
 - 1) Infiltration testing was completed by GEG in September 2014. The depths of the 18 trial pits from these works ranged from 1.2m below ground level (bgl) and 3.7m bgl. and groundwater was not encountered in any of the trial pits. None of the proposed SuDS have been designed to a depth greater than 1.5m, therefore, avoiding any adverse environmental impact with the groundwater.
 - 2) The drainage strategy is located within APP/17 Appendix A as drawing 10309-DR-03 A.

Surface Water runoff from the development parcels have been designed to prevent surface water flowing directly through the ancient woodland. Instead, surface water will flow through SuDS features, where it will be treated before being discharged either back through the woodlands or into the existing watercourse.

The Ancient woodlands across the site are not characterised as being wet woodlands, meaning that the flora and fauna found within them do not completely rely on surface water. By reducing the amount of runoff directly flowing through the woodland will not impact the quality of the flora and fauna.

Treated water from the northern detention basin for DPN1 also has the opportunity to discharge surface water back through Slocketts Copse.
- 8.5 The trees within the ancient woodlands receive water through their roots directly from the groundwater, not from the surface water flows from the upstream catchments.
- 8.6 As there are open green spaces within the development parcels, such as gardens, rainwater will still infiltrate replenishing the groundwater that feeds the ordinary watercourse that flows through Crooks Copse.
- 8.7 As infiltration is not proposed as a means of discharging surface water from the development site, there is no risk of groundwater contamination.
- 8.8 Furthermore, the proposed drainage strategy proposes detention basins within the country park (A, B and C) with approximately the same surface area in square metres as volume in cubic metres, resulting in basins approximately 1 metre in depth with near vertical sides. This would be unacceptable as basin side slopes should be constructed ideally with a 1 in 4 gradient in accordance with SuDS Manual C753. The use of conditions to address this concern would not be reasonable given the limited area around the basins and high potential to detrimentally impact on existing streams (which require an 8-metre buffer zone on both sides), proposed footpaths and ancient woodland.
- 8.9 Illustrated on the Drainage Strategy Plan (10309-DR-02 A) are blue description boxes outlining the design of each detention basin.
- 8.10 All basins have been designed to a 1.5m depth, 1.2m water level and 1 in 3 slopes, in accordance with Chapter 22: Detention Basins of the SuDS Manual C753. Page 475 of the manual states:

- 8.11** “The maximum depth of water in the basin should not normally exceed 2m in the most extreme design event. And Slopes should be no steeper than 1 in 3 wherever mowing is required. ”
- 8.12** On the blue boxes, the total storage volume is the maximum volume area required not the total volume of the designed basin. The total basin area is the ground level area required. All calculations, including depths of basins and volumes required are located within Appendix B of the FRA. All basins and swales will be designed with an 8m buffer from any existing streams.
- 8.13** In addition, the Drainage Strategy Plan submitted (ES Vol. 3 Appendix K1, drawing number 10309-DR-02) is incomplete, omitting a significant element of green infrastructure comprising the River Enborne, appears to show surface water flowing almost in line with the contours in several places, rather than angled to them as would be expected. Furthermore, surface water flow appears to be directed through the ancient woodlands of Dirty Ground Copse and Slockett's Copse which is unacceptable due to potential ecological damage that would cause. With regard to the status of those woodlands as irreplaceable habitats, the development proposal has failed to determine through modelling that new surface water flow will not detrimentally affect the ancient woodland.
- 8.14** The Drainage Strategy Plan (10309-DR-02) was updated to include the greenspace in the south of the Site. The Plan is 10309-DR-02 A. The flow direction arrows on Plan 10309-DR-02 A illustrate the existing flow path, not the proposed surface water flow direction. This is also explained within the key on drawing 10309-DR-02 A).
- 8.15** Surface water runoff from the development parcels have not been designed to flow through or runoff into the ancient woodlands. Surface water is to be collected within surface water pipes under the road network, which will flow into the designed SuDS. The corresponding SuDS detention basin to each development parcel is illustrated on the drainage strategy (10309-DR-02 A). All potential direct surface water will be captured before reaching Dirty Ground Copse or Slockett's Copse.
- 8.16** Only surface water from open green space and the ancient woodland will flow through Dirty Ground Copse and Slockett's Copse. As the site is currently greenfield, surface water currently flows through the woodlands, by introducing swales and detention basins across the site, surface water flowing through the woodlands is reduced. Therefore, no new surface water flow will impact the woodlands.
- 8.17** A more refined surface water drainage strategy plan (10309-DR-03 A) has been produced and located in Appendix B (Document APP/17).
- 8.18** Once at the detailed design stage the most appropriate drainage strategy will be developed. An alternative strategy has been provided within technical note 10309 TN10 Rv2. The technical note is located in APP/17 Appendix E.
- 8.19** The lack of sufficient information prevents a full consideration of the impact of the proposed development on ground water levels and ancient woodlands and the necessary mitigation required. Furthermore, the provision of acceptable and adequate detention basins is unlikely to be achievable whilst respecting the existing watercourses, proposed pedestrian infrastructure and ancient woodlands. As such the proposal is unacceptable and contrary to Policies CS3, CS14, CS16, CS17 and CS18 of the West Berkshire Core Strategy Development Plan Document (Core Strategy, adopted July 2012); the Vision, Strategic Objectives and Development Principle H1 of the Sandleford Park SPD (adopted March 2015); and the West Berkshire Sustainable Drainage Systems SPD (adopted 2018).
- 8.20** Infiltration testing was completed by GEG in September 2014 with the report issued in November 2014. The depths of the 17 trial pits from these works ranged from 1.2m bgl and 3.7m bgl. And groundwater was not encountered in any of the trial pits. None of the proposed SuDS have been designed to a depth greater than 1.5m, therefore, avoiding any environmental impact with the groundwater.
- 8.21** Surface water from the development parcels will not flow through the ancient woodlands. Swales and detention basins will be constructed with an 8m buffer from existing streams and the edges of Dirty Ground Copse and Slockett's Copse.

9 Rule 6 Parties

- 9.1 The following section outlines the public consultation comments that directly relate to flood risk and drainage.

Surface Water Flooding and Drainage

- 9.2 The following comments have been made in regard to surface water.
- 9.3 The proposed development site is located within the Environment Agency's risk of flooding from surface water and risk of flooding from rivers areas.
- 9.4 There is a low risk of surface water flooding illustrated along the ordinary watercourses that flow through the centre of the site. All risk of surface water flooding illustrated is low once the SuDS network has been constructed. This is due to all surface water from the site will be collected, conveyed, and stored within detention basins, avoiding any localised surface water flooding.
- 9.5 There is a thin strip of Flood Zone 3, located adjacent to the River Enbourne, approximately 500m south of any proposed development. There is no risk of fluvial flooding on the proposed development.
- 9.6 Also, to Add the water pipes for waste and rainwater, already when we have heavy downpours the water system cannot handle the volume of water at the moment the roundabout at the Newtown road near the swan inn, and the A339 water pouring through the manhole cover on the roundabout. due to the share volume of rainwater, the pipe work is not big enough to handle the amount of water, and has it is getting colder hazards of ice and black ice.
- 9.7 No surface water from the development site will leave the red line boundary or be discharged into the existing surface water sewers. All surface water from the development will be captured, conveyed, and stored within SuDS across the site before being discharged into the ordinary watercourses within the site.
- 9.8 Flooding from the river Enborne that the building work could have an effect on the local area.
- 9.9 A Construction Environmental Management Plan (CEMP) will be prepared and agreed with the council before any construction works begin. The CEMP will set out the methods by which construction will be managed to avoid, minimise, and mitigate adverse effects on the water environment.
- 9.10 The combined EMMP Principles (ES Vol 3 Appendix F19) state in 3.1.1 that the SUDS for Sandleford Park West will be located within Brick Kiln Copse Local Wildlife Site (LWS). Further clarification is needed to explain how the location of new SUDS features within the woodland will not impact on the existing biodiversity value of the habitat.
- 9.11 This comment relates to the Sandleford Park West application.
- 9.12 We also have concerns that the proposed SuDS are inadequate to avoid run off to the River Enborne given they have not taken into account the run off from Sandleford Park West and the potential harm they pose to the ancient woodlands given their close proximity.
- 9.13 The Sandleford Park West application has produced an independent surface water drainage strategy.
- 9.14 There is a ridge along the boundary between the two developments which forces surface water to drain into the respective application sites. Due to this no surface water from the Sandleford West development drains into the Sandleford Park development. Therefore, there is no risk to the proposed SuDS from additional surface water, avoiding the risk of the SuDS overtopping.
- 9.15 The failure to produce one comprehensive plan for the whole site means that the drainage strategy has been put forward without consideration of the development of Sandleford Park West which would have a direct impact on Detention Basin A, and we are concerned about the proximity of the Basins in the north valley,

their proximity to the ancient woodlands with potential degradation of said woodlands and their impact on a tributary to the River Enborne.

- 9.16 As mentioned in the previous point the Sandlesford West development has an independent strategy, where no drainage from that site will drain into this application site. There is no risk to Detention Basin A from additional runoff.
- 9.17 The proposed Detention Basins are located outside the Ancient Woodlands 15m buffer zone and root protection zones. The Ancient Woodland's 15m buffer zone plan is located within Appendix A (Ancient Woodland Assessment) of APP/14. The 8.5m root protection zone plan is located within Appendix 2 of APP/11.
- 9.18 Conveyance swales have been located within the 15m buffer zone; however, they have been designed in accordance with Government guidelines and Woodland's Trust Planners' *'Manual for Ancient Woodland and Veteran Trees'*. The conveyance swales have been designed outside of the RPA's and will not impact the hydrology of the ancient woodland. This will be achieved by lining the swales to remove any risk from infiltration or groundwater intrusion into the swales. Once constructed the conveyance channels will be natural features within the open space.
- 9.19 Once built all SuDS will become natural features within the environment.
- 9.20 The Detention Basins across the site provides treatment to surface water runoff, providing better water quality before it is discharged into the existing watercourse. The Basins are also proposed outside of the watercourse buffer zone, avoiding any erosion or pollution risk to the watercourse.

Groundwater

- 9.21 The following comments have been made in regard to groundwater.
- 9.22 The infiltration study conducted by Geo Env; Group included digging 18 trial pits. From the test data it can be seen that 12 of the 18 trial pits showed little or no water permeability. The report concludes that the soils on the proposed site were of low permeability. The site is therefore unsuitable for soak away drainage. One of the recommendations from the flood risk assessment proposes using permeable paving which is clearly contradictory to the infiltration study findings.
- 9.23 No soakaway drainage has been proposed for the development. Permeable paving is not purely an infiltration system. Permeable paving can include nonporous blocks that are spaced to allow water to flow through the gaps and stored in underground tanks before discharging into the sewer network. Therefore, permeable paving can be presented as an option for surface water drainage across the site.
- 9.24 Direct impacts of development on ancient woodland or ancient and veteran trees include polluting the ground around them and changing the water table or drainage of woodland or individual trees.
- 9.25 No surface water runoff from the development will flow into the ancient woodland.
- 9.26 The site is not proposing to discharge surface water into the ground, therefore, not impacting groundwater levels. As the site will employ swales and detention basins, they provide 2-3 stages of surface water treatment, decreasing the pollutant load within stormwater run-off.
- 9.27 Wallingford's Greenfield Runoff Estimation Tool identifies that 0.47% of surface water runoff the development site. This suggests that approximately 8ha of area will no longer infiltrate into the ground. However, the 0.47% is calculated from the entire catchment area for the Enborne and does not take into consideration site specific infiltration rates and localised topography changes. It is likely that an area less than 8ha will no longer be infiltrating into the ground.
- 9.28 Mr West has completed a watershed analysis of each of the ancient woodlands. From that Mr West has determined the approximate volume of runoff that will longer infiltrate into the groundwater compared to current rates.

9.29 A full analysis of this is located with Appendix A (Ancient Woodland Assessment) of APP/14.

Foul Water Drainage and Water Supply

- 9.30 The following comments have been made in regard to foul drainage.
- 9.31 Sewage - Thames Water had said it wouldn't provide service to more than 50 houses at the last Council refusal of build. How is this overcome when many houses on Monks Lane have cesspits?
- 9.32 It has already been established from past applications that water usage and sewerage is a massive problem. The recent report the Council has provided regarding water and sewerage access, not to mention a shortage of water within West Berkshire is serious.
- 9.33 Thames Water recently said that they only have capacity for a further 50 homes. I remain unconvinced that the requirements for a further 1500 homes can be easily solved and will not affect services to existing homes. Wash Common already suffers from low water pressure.
- 9.34 The Thames Water sewer impact study indicates that the existing foul network does not have the available capacity to accommodate waste from this proposed development. The hydraulic model used to assess wet weather scenarios predicts network surcharge and flooding to occur. This will be exacerbated with the addition of 440 dwellings from the proposed Sandleford Park West development (not included in this appeal).
- 9.35 Thames Water has identified that there is current capacity for up to 50 dwellings in their existing network. Thames Water has not stated that they would not provide service to any more dwellings. It is their statutory obligation to provide a supply to the new development whilst maintaining existing customer supply.
- 9.36 Under the Water Industry Act 1991, 2003 et al introduced by the UK Public General Acts, Thames Water has a statutory obligation to provide capital investment in strategic treatment infrastructure and provide any reinforcement works to meet development growth. It is Thames Water's statutory obligation to ensure that the condition of the existing sewer network is not impacted and that the additional capacity required will be brought forward when required.
- 9.37 With the above in mind, liaison with Thames Water will continue into the Reserved Matters Application to ensure that all existing and future customers will be supplied to national standards.
- 9.38 The Sandleford Park West development will have its own wastewater obligation, separate to this application.
- 9.39 As with potable water Thames Water have a statutory right to ensure that all sewerage is treated efficiently for future development as well as existing residents in the area.

Proposed SuDS

- 9.40 The developer should consider provision of ponds or other wetland areas to attract wildlife and form an attractive element of site landscaping.
- 9.41 The SuDS are currently designed as dry features. At the detailed design stage should the need for additional wetland areas arise, permanently wet areas can be designed into the detention ponds.

Conclusion

- 9.42 There is a low risk of surface water flooding illustrated across the site, a designed SuDS network will collect, convey, and store surface water in detention basins, removing the risk of surface water flooding.
- 9.43 No surface water from the development site will leave the red line boundary and a CEMP will be put in place

before any construction works to mitigate against any adverse effects that construction pollution will have on the local environment.

- 9.44** No soakaway drainage has been proposed for the development therefore, the proposed SuDS will not impact groundwater levels or water quality.
- 9.45** Under the Water Industry Act 1991, 2003 et al, Thames Water has a statutory obligation to provide capital investment in strategic treatment infrastructure and provide any reinforcement works to meet development growth.

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