

Comment for planning application 22/01772/PIP

Application Number	22/01772/PIP
Location	Land To Rear Of Bridge House Main Street Wendlebury OX25 2PW
Proposal	Residential development of 2-3 dwellings
Case Officer	Katherine Daniels

Organisation Name	Annette Burgard
Address	Bridge House,Main Street,Wendlebury,Bicester,OX25 2PW
Type of Comment	Objection
Type	neighbour

Comments	<p>Further Comments:</p> <ol style="list-style-type: none">1. There are no plans for the proposed buildings.2. 2-3 more houses means the potential for 6-9 more vehicles for which the access road is not suitable3. The access road is in poor condition and is not suitable for heavy vehicles4. There is a requirement for on street parking at the corner of the access road and the main street, therefore turning for large vehicles will be difficult and dangerous. There is no alternative parking for the residents of the lower side of amin street.5. This is not an infilling application. The building in place is a small stables and an open air menage. Further, where the developer perhaps believes in fill is sufficient as the buildings on Farriers Mead are further back from the original building line, this was only permitted because a garage with workshops and petrol station were on the site previously. The Farriers Mead houses have gardens, however beyond them the land is not designated paddock and therefore is not counted as part of the village. The proposed development will however be built beyond the building line.6. Attached (8124534) is the flood report form the same application made in 2015 and 2016 that were refused and withdrawn. This shows there to be high risk to the flooding of the main road and a possability of flood to the rear of the houses between the proposed development and the brooke: "It should be noted that Wendlebury Road fronting the development site is Flood Zone 3 and has a modelled Node 2 flood level of 62.91mAOD (this figure includes an allowance for climate change), however, it should be noted that the development site levels are in the order of 540mm above this value" - Infrastruct CS ltd June 2015. This same report lists the development and surrounding area as 'more vulnerable'.7.Strategic Flood Risk Assessment for Oxfordshire Preliminary Flood Risk Assessment (PFRA) notes that "There is generally limited scope for acceptable flood compensation schemes in the village. Located on low lying impervious ground, there may be limited land drainage and a presumption against the use of soak aways unless there is justification through robust design." - NO such design information is included in this application.8. The attached photograph shows the relatively small area available in which to build, suggesting that 2-3 new buildings will create higher density that would be appropriate. With a large amount of housing stock being developed around Bicester in close proximity to Wendlebury it cannot be said that these dwellings are required in lieu of a 'housing shortage' in the area, as there cannot be said to be one.9. Also attached (8658142) is planning decision to refuse construction on this site in 2016 due to the site being beyond the building line of the village. "The proposed dwellings constitutes sporadic development beyond the built up limits of Wendlebury and therefore conflicts with Policy ESD1 and Policy Villages 1 of the Cherwell Local Plan Part 1 (2015) and saved Policy H18 the Cherwell Local Plan 1996, and Government guidance contained within the National Planning Policy Framework which seek to direct housing growth in the most sustainable manner."
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10. Document 8658145 also notes the adverse effect the development would have on the grade 2 listed buildings that are located close to the site, in particular the Lion on the boarder of the site and the houses directly opposite as well as Bridge House which is a traditional stone building directly in front of the proposed buildings. "The proposed development, by virtue of its back land position and design and scale of the dwellings, would be poorly related to the traditional pattern of plots and would detrimentally impact on the character and appearance of the locality and rural setting of the village. It would also fail to reinforce local distinctiveness and would result in less than substantial harm to the setting of the Grade II listed The Lion public house. The modest public benefits arising from the development are not considered to outweigh this identified harm. The proposed development is therefore contrary to Policies ESD13 and ESD15 of the Cherwell Local Plan Part 1 (2015) and Saved Policies C28 and C30 of the Cherwell Local Plan 1996, and Government guidance contained within the National Planning Policy Framework which seek to secure high quality design."

11. A surveyor was in the village recently looking at listed houses and trees. No report from this survey is included in the application. The previous development's refusal noted the necessity to take this elements into account as noted in point 10. above and in the third paragraph of the refusal explanation: "sufficient evidence has been provided to demonstrate the proposals would not result in damage to the protected trees on site or the long term retention of these trees, with resulting harm to the character and appearance of the area. The proposed development is therefore contrary to Policies ESD10, ESD13 and ESD15 of the Cherwell Local Plan Part 1 (2015) and Government guidance contained within the National Planning Policy Framework."

Received Date

28/06/2022 08:45:09

Attachments

The following files have been uploaded:

- 8658142.pdf
- Land between rear of bridge house and menage..pdf
- 8124534.pdf



NOTICE OF DECISION
TOWN AND COUNTRY PLANNING ACT 1990
(AS AMENDED)

Name and Address of Agent/Applicant:

Mr S Castle
c/o Robert Pearse
4 Fulmar Court
Bicester
Oxon
OX26 4FG

Date Registered: 12th August 2016

Proposal: Erection of 2 No detached dwellings with garages - re-submission of 15/00252/F

Location: Land East Of Bridge House And 2 The Villas, Main Street, Wendlebury

Parish(es): Wendlebury

REFUSAL OF PERMISSION FOR DEVELOPMENT

The Cherwell District Council, as Local Planning Authority, hereby **REFUSES** to grant planning permission for the development described in the above-mentioned application, the accompanying plans and drawings and any clarifying or amending information. **THE REASONS FOR REFUSAL ARE SET OUT IN THE ATTACHED SCHEDULE.**

Cherwell District Council
Bodicote House
Bodicote
Banbury
Oxon
OX15 4AA



Date of Decision: 7th October 2016

**Head of Public Protection
& Development Management**

REASONS FOR REFUSAL

- 1 The proposed dwellings constitutes sporadic development beyond the built up limits of Wendlebury and therefore conflicts with Policy ESD1 and Policy Villages 1 of the Cherwell Local Plan Part 1 (2015) and saved Policy H18 the Cherwell Local Plan 1996, and Government guidance contained within the National Planning Policy Framework which seek to direct housing growth in the most sustainable manner.
- 2 The proposed development, by virtue of its back land position and design and scale of the dwellings, would be poorly related to the traditional pattern of plots and would detrimentally impact on the character and appearance of the locality and rural setting of the village. It would also fail to reinforce local distinctiveness and would result in less than substantial harm to the setting of the Grade II listed The Lion public house. The modest public benefits arising from the development are not considered to outweigh this identified harm. The proposed development is therefore contrary to Policies ESD13 and ESD15 of the Cherwell Local Plan Part 1 (2015) and Saved Policies C28 and C30 of the Cherwell Local Plan 1996, and Government guidance contained within the National Planning Policy Framework which seek to secure high quality design.
- 3 Insufficient evidence has been provided to demonstrate the proposals would not result in damage to the protected trees on site or the long term retention of these trees, with resulting harm to the character and appearance of the area. The proposed development is therefore contrary to Policies ESD10, ESD13 and ESD15 of the Cherwell Local Plan Part 1 (2015) and Government guidance contained within the National Planning Policy Framework.

PLANNING NOTES

For the avoidance of doubt, the plans and documents considered by the Local Planning Authority in reaching its decision on this application are: Application Form, Flood Risk Assessment (ref 15-1749.07.01), Access and Design Statement, drawing number 390-02, 390-17, 390-18, 390-19, 390-20, 390-21, 390-09, 390-11. 390-12, 390-13, 390-14, 390-15, 390-16 and 390-01.

STATEMENT OF ENGAGEMENT

In accordance with the Town and Country Planning (Development Management Procedure) (England) Order 2015 and paragraphs 186 and 187 of the National Planning Policy Framework (March 2012), the Council has informed the applicant/agent of their concerns with the application prior to determination, and unfortunately it has not been possible to resolve those concerns within the scope and timescales of this application. The application proposals do not amount to sustainable development and consent must accordingly be refused.

The case officer's report and recommendation in respect of this application provides a detailed assessment of the merits of the application when considered against current planning policy and guidance, including consideration of the issues raised by the comments received from consultees and members of the public. This report is available to view online at: <http://www.cherwell.gov.uk/viewplanningapp>.

NOTICE OF DECISION
TOWN AND COUNTRY PLANNING ACT 1990
(AS AMENDED)

NOTES TO THE APPLICANT

REFUSAL OF PERMISSION

The Local Planning Authority has refused consent for the reasons set out in the schedule forming part of this notice of refusal. A further explanation of the reasons for the decision can be found in the planning officer's report, which can be viewed in Public Access via the council's web site.

If you wish to examine any of the development plans which set out the Local Planning Authority's policies and proposals for the development and use of land in its area, these are available for inspection on our website, or at the District Council offices, Bodicote House, Bodicote, during normal office hours.

APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by the decision of the Local Planning Authority to refuse to grant planning permission or grant planning permission subject to conditions, you can appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990.

If you wish to appeal then;

- For **Householder** applications you must do so within **12 weeks** of the date of the decision
- For **Minor Commercial** applications you must do so within **12 weeks** of the date of the decision
- For **all other types** of planning applications you must do so within **6 Months** of the date of the decision

Unless;

- The decision on the application relates to the same or substantially the same land and the development is already the **subject of an enforcement notice** then you must appeal within **28 days** of the date of the Local Planning Authority's decision on the planning application.
- If an **enforcement notice is served** relating to the same or substantially the same land and development as in your application and if you want to appeal the decision, then you must do so within **28 days** of the service of the enforcement notice, or 6 months (12 weeks for householder and minor commercial) of the date of this decision whichever is the sooner

Forms can be obtained from the **Planning Inspectorate, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6PN. Tel 0303 444 5000. Or online at www.planningportal.gov.uk/pcs**. The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to him that permission or approval for the proposed development could not have been so granted otherwise than subject to the conditions imposed by the Local Planning Authority, having regard to the statutory requirements, to the provisions of the development order and to any directions given under the order.

In practice, the Secretary of State does not refuse to consider appeals solely because the Local Planning Authority based its decision on a direction given by him.

PURCHASE NOTICES

If either the Local Planning Authority or the First Secretary of State refuses planning permission or approval for the development of land, the owner may claim that he/she can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances the owner may serve a purchase notice on the District Council. This notice will require the Council to purchase his/her interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

COMPENSATION

In certain circumstances compensation may be claimed from the Local Planning Authority if permission is refused by the Secretary of State on appeal or on reference of the application to him.

These circumstances are set out in the Town and Country Planning Act 1990 as amended by the Planning and Compensation Act 1991.



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Flood Risk Assessment



Client

Mr S Castle & Mrs A Grant

Report Ref – 15-1749.07.01 Rev -

**Land adjacent to
The Villas
Wendlebury
Bicester,
Oxon
OX25 2QB**

Revision	Compiled by	Checked by	Approved by	Issue date
-	D. JEFFERY I.Eng FIHE	R.J.White BSC Hons	T. S. TROTMAN M.Eng (Hons) C.Eng CWEM MCIWEM FIHE	June 2015

This document has been prepared solely as a Flood Risk Assessment for the client Mr S Castle & Mrs A Grant. No responsibility or liability will be accepted for any use that is made of this document other than by the Client for the purpose it was written. The conclusions resulting from this study and contained within this report are not necessarily indicative of future conditions or operating practices at or adjacent to the site. No person other than the client may copy use or rely on the contents of this document without prior permission. Some of the information presented within this report is based on third party information which is believed to be correct; no liability will be accepted for any discrepancies in accuracy, mistakes or omissions in such information. The report also assesses the flood risk in relation to the requirements of the Environment Agency and as such assesses the site for a specific flood event and not all flood events.



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1.0 Summary & Recommendations

This FRA is to support the construction of two new dwellings on land adjacent to the Villas, Wendlebury and finds the following –

SOURCE OF FLOODING	RISK
<p>Fluvial Flooding</p>	<p>Low – The Environment Agency product 4 flood maps show that the development site is classified as Flood Zone 1 which is defined in NPPF as comprising land at low risk of flooding.</p>
<p>Fluvial Flooding Wendlebury Road</p>	<p>It should be noted that Wendlebury Road fronting the development site is Flood Zone 3 and has a modelled Node 2 flood level of 62.91mAOD (this figure includes an allowance for climate change), however, it should be noted that the development site levels are in the order of 540mm above thi value.</p>
<p>Overland Flow to the Site</p>	<p>Low – Analysis of the surface flooding maps does not indicate any flood water routing through the property from the land behind. To the north and south are residential properties that by their nature of their areas will not generate overland sheet flows.</p> <p>Analysis of the surface flooding maps does not show the site is encroached by flooding from the Wendlebury Road.</p>
<p>Rising Groundwater</p>	<p>Low – A ground investigation has not been undertaken for this site, however, review of geological maps for the area indicates clay strata which by its nature is not subject to fluctuations in ground water levels.</p>
<p>The Local Sewerage Network</p>	<p>Low – The sewerage network is owned and maintained by Thames Water. The risk of flooding by surcharging is considered low.</p>
<p>Reservoirs, Canals And Other Artificial Sources</p>	<p>Low – No artificial sources that present a risk to the site.</p>

**1) Nature Of Development**

Development two new dwellings on land adjacent to The Villas, Wendlebury, Oxon.

2) Proposed dwelling finished flood levels

The topography of the development site is such that the finished floor of Plot 1 will be in the order of 64.00mAOD and Plot 2 63.75mAOD which compares to the 1 in 100 year +CC flood level of 62.91mAOD. These proposed minimum floor levels therefore provide at least a minimum freeboard of 840mm .

3) Emergency risk flood escape

Wendlebury Road is subject to flooding and the flood level data indicates depths in the region of 320mm fronting the development site. The site itself is above the flood level and therefore safe. Consideration is therefore in relation to emergency access.

The topography of Wendlebury Road and the area in general is relatively flat and level, therefore flood water velocities can be expected to be low to still.

Reference to table 4 of FD2320/TR2 (FRA guidance for new development) 'Hazard to People Classification' assuming a velocity of 0.1m/s for a depth of 320mm indicates a flood hazard rating of 1.15. This rating equates to a hazard to people classification of 'Danger for some – including children the elderly and infirm' It is not expected that debris would be a factor in this risk assessment. Therefore it is the conclusion of this report that whilst flooding of Wendlebury Road does occur and therefore constitutes a risk to emergency escape, the depths of flow and low flow velocity can be classified under FD2320/TR2 (FRA guidance for new development) to be 'dangerous for some' but this level should not be problematic for emergency rescue and the general public.

4) Flood warning in relation to Wendlebury Road

As a precautionary measure it is recommended that the owners of the new dwellings sign up to the Environment Agencies Flood line service for either telephone, mobile, email SMS text message which gives warning of potential flooding events. Environment Agency operates a flood watch scheme called Floodline 0845 988 1188 (24 hour service) or Type talk 0845 602 6340.



2.0 Level Of FRA Required

FRA LEVEL	Description of Report Content
Level 1 Screening study	<p>The level 1 FRA is intended to identify any flooding or surface water management issues related to the development site that may require further investigation, the study should be based on readily available existing information including:</p> <ul style="list-style-type: none">• SFRA• Environment Agency Flood Maps• Standing advice <p>The level of the FRA will determine the need for a Level 2 or 3 FRA</p>
Level 2 Screening study	<p>Where the level 1 FRA indicates that the site may lie in an area of risk of flooding or may increase flood risk elsewhere due to runoff, a Level 2 FRA should be carried out. This report will confirm sources of flooding which may affect the site and should include the following:</p> <ul style="list-style-type: none">• Appraisal of the flood risk posed to the site, the potential impact of the development on flood risk on and off the site.• An appraisal of the scope of possible measures to reduce the flood risk to acceptable levels. <p>This level may identify that sufficient quantitative information is already available to complete a FRA appropriate to the scale and nature of the development.</p>
Level 3 Detailed study	<p>Undertaken if the level 2 FRA concludes that further quantitative analysis is required in order to assess flood risk issues related to the development site.</p> <p>This level to include:</p> <ul style="list-style-type: none">• Quantitative appraisal of the flood risk to the development• Quantitative appraisal of the potential impact of development on the site under investigation on flood risk on and off the site.• Quantitative demonstration of the effectiveness of any proposed mitigation measures.



3.0 Introduction

3.1 Commission

Mr S Castle & Mrs A Grant has commissioned Infrastruct CS Ltd to prepare a Flood Risk Assessment (FRA) to support a planning application for the development of two new residential properties in land to the rear of The Villas Wendlebury, Oxon.

3.2 Guidance

This flood risk assessment has been compiled in accordance with the recommendations of the National Planning Policy Framework (NPPF).

3.3 Aims and Objectives

The purpose of this flood risk assessment is to assess the potential for flood risk caused as a result of, and to the proposed development. It will identify the flood risk zone, potential sources of flood risk, consider the proposed drainage and will be used to support the proposed planning application.

4.0 Site Details

4.1 Location

The development site is located on land to the rear (east) of The Villas Wendlebury Road, Oxfordshire. The site is accessed off the Wendlebury Road and is situated in the middle of the village. The A41 is located just to the north of the village and 4Km to the north east is Bicester the Oxford is 14km approx. to the south west.

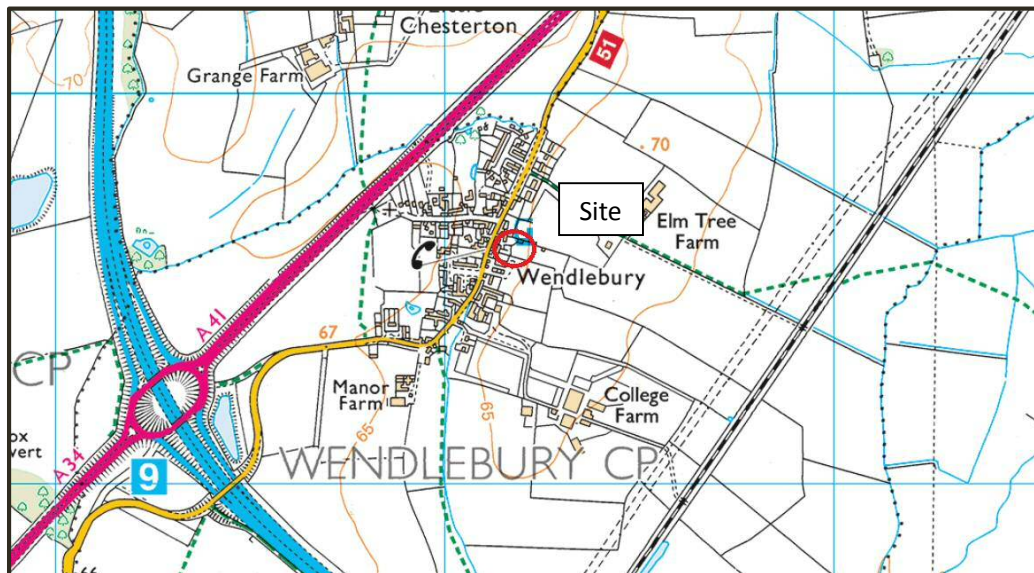


Fig 4.1 – Site Location Plan – reproduced under licence WL 1005534

4.2 Proposed development

The proposed development (Appendix A) consists of two new residential dwellings, gardens, access road and associated hard-standing, on land to the rear of The Villas.

4.3 Grid reference

The approximate ordnance survey national grid reference for the site is 456138E,219638N.

4.4 Topography and site description

A topographic survey drawing reference SRL/70/15 (Appendix B) undertaken in May 2015 by Shyres Rural, shows the development site to be predominantly laid to grass with an access track pacing centrally through the site. There is an overall fall from the back of the site front the Wendlebury Road of approximately 2.71m.

To the rear southern boundary is open grazing land, to the west residential properties and associated gardens and to east garden associated with the red Lion Public House..

4.5 Existing Surface Water Drainage description

There are no watercourses or surface water drainage features within the development site. It is assumed that runoff dissipates into the ground or discharges into Wendlebury Road.



4.6 Local rivers and water courses

On the northern side of the Wendlebury Road fronting the property is a watercourse known as Wendlebury Brook and classified as 'main river' by the environment Agency. The watercourse switches sides to the south approximately 30m down from The Villas. Modelled flood levels for the watercourse have been obtained from the Environment Agency (Appendix D)

4.7 Vulnerability classification

The vulnerability classification is 'more vulnerable'. See Section 5.10 for vulnerability descriptions.

5.0 Flood Risk Policy

5.1 Environment Agency Flood Map - Fluvial Flooding

The Environment Agency Flood Zone maps and product 4 flood level information (appendix C) show the site to be flood zone 1. The map shows there to be flooding of the Wendlebury Road fronting the site but this flooding does not extend into the development site.

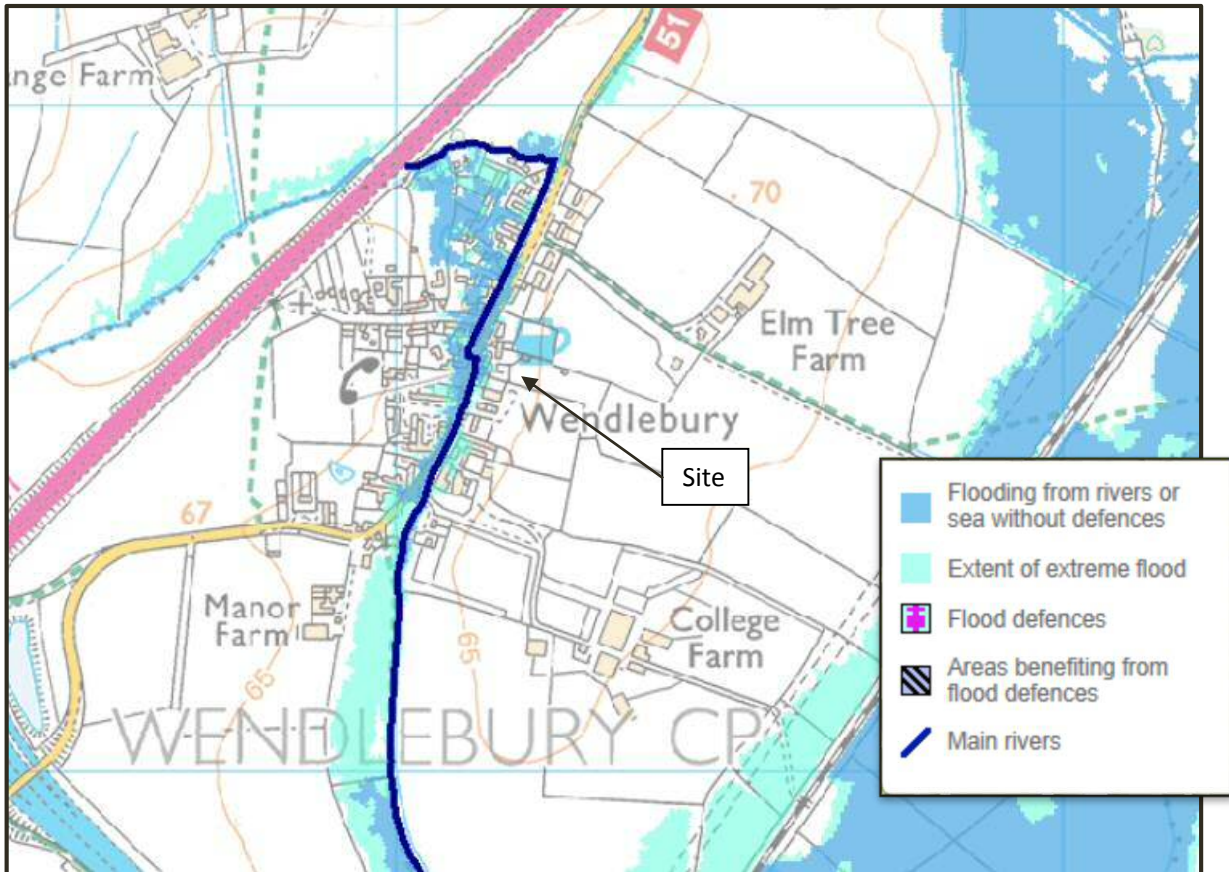


Fig 5.1 Environment Agency Flood Zone Map

5.2 Environment Agency Flood Map – Flood levels

The Environment Agency product 4 flood maps show that the development site is classified as Flood Zone 1 which is defined in NPPF as comprising land at low risk of flooding. Average existing levels for the development site are in the order of 63.300 – 65.250m AOD approx.

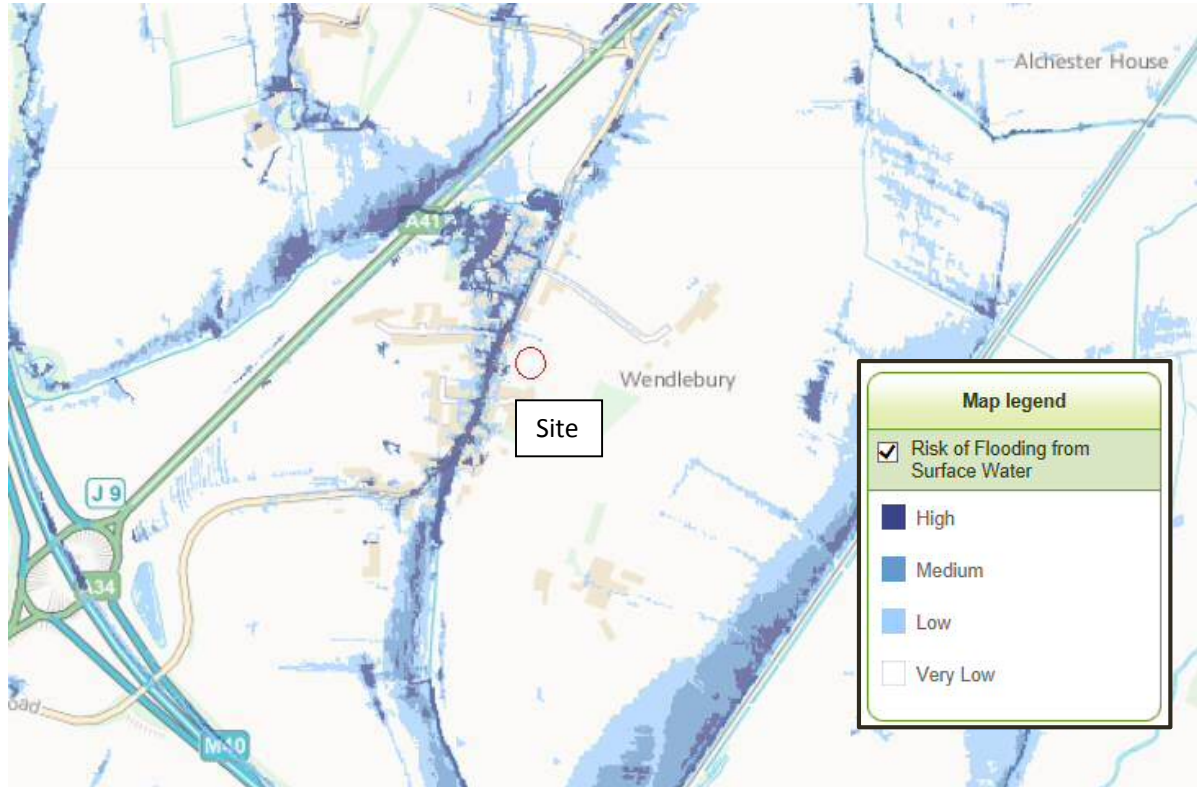
These compare with the Product 4 flood level information received from the Environment Agency (appendix D) that give modelled flood levels in the range of 62.78 – 63.06mAOD for Wendlebury Road.

Flood level Node 2 62.91mAOD at entrance to the site .

Therefore the development site levels are above the flood level in the vicinity.

5.3 Environment Agency Flood Map – Surface water flooding

The Environment Agency surface water flooding map reproduced below shows the development site not affected by surface flooding, however, flooding associated with Wendlebury Brook to the front of the development site does affect Wendlebury Road.



5.4 National Planning Policy Framework -NPPF

The National Planning Policy Framework Development and Flood Risk however the accompanying practice guide gives guidance for development with respect to flooding. A sequential approach is adopted in order to encourage development away from areas that may or are susceptible to flooding. In doing so it categorises flood zones in the context of their probability of flooding.

5.5 Flood zone definition

National Planning Policy Framework Definition of Flood Zones

Flood zone	Fluvial	Tidal	Probability of flooding
1	< 1 in 1000 year (<0.1 %)	<1 in 1000 year (<0.1 %)	Low probability
2	Between < 1 in 1000 year (<0.1 %) and 1 in 100 year 1%	Between <1 in 1000 year (<0.1 %) and 1 in 200 year 0.5%	Medium Probability
3a	> 1 in 100 year 1% (>1.0%)	> 1 in 200 year (>0.5%)	High probability
3b	Either > 1 in 20 (5%) or as agreed between the EA and the LPA	Either > 1 in 20 (5%) or as agreed between the EA and the LPA	Functional flood plain

5.6 Other Flooding Mechanisms

In addition to the potential for assessing flooding from fluvial and tidal sources NPPF also requires that consideration is given to other mechanisms for flooding -

- Flooding from land – intense rainfall, often in short duration, that is unable to soak into the ground or enter drainage systems, can run rapidly off land and result in local flooding.
- Flooding from groundwater – occurs when water levels in the ground rise above the surface elevations.
- Flooding from sewers – In urban areas, rainwater is frequently drained into surface water sewers or sewers containing both surface and waste water sewers known as combined sewers. Flooding can result causing surcharging when the sewer is overwhelmed by heavy rainfall
- Flooding from reservoirs, canals and other artificial sources – Non-natural or artificial sources of flooding can result from sources such as reservoirs, canals lakes etc., where water is held above natural ground levels.



5.7 National Planning Policy Framework: Flood zones definition (table 1 of NPPF)

(Note: These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defenses)

Zone 1 - Low Probability
Definition
This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
Appropriate uses
All uses of land are appropriate in this zone.
FRA requirements
For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. See Annex E for minimum requirements.
Policy aims
In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques
Zone 2 - Medium Probability
Definition
This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Appropriate uses
Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in (Table 2 NPPF) are appropriate in this zone. Subject to the Sequential Test being applied, the highly vulnerable uses in Table 2 are only appropriate in this zone if the Exception Test is passed.
FRA requirements
All development proposals in this zone should be accompanied by a FRA.
Policy aims
In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.
Zone 3a - High Probability
Definition
This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Appropriate uses
The water-compatible and less vulnerable uses of land in (Table.2 NPPF) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable uses and essential infrastructure permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in time of flood.
FRA requirements
All development proposals in this zone should be accompanied by a FRA.
Policy aims
In this zone, developers and local authorities should seek opportunities to: reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and relocate existing development to land with a lower probability of flooding.



Zone 3b - The Functional Floodplain
<p>Definition</p> <p>This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their SFRAs areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. But land which would flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.</p>
<p>Appropriate uses</p> <p>Only the water-compatible uses and the essential infrastructure listed in Table D.2 that has to be there should be permitted in this zone. It should be designed and constructed to:</p> <ul style="list-style-type: none"> – remain operational and safe for users in times of flood; – result in no net loss of floodplain storage; – not impede water flows; and – not increase flood risk elsewhere. <p>Essential infrastructure in this zone should pass the Exception Test.</p>
<p>FRA requirements</p> <p>All development proposals in this zone should be accompanied by a FRA.</p>
<p>Policy aims</p> <p>In this zone, developers and local authorities should seek opportunities to: reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and relocate existing development to land with a lower probability of flooding.</p>

5.8 NPPF - Flood Risk Compatibility Classification

Essential Infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly Vulnerable

- Police stations, Ambulance stations and Fire stations and Command Centre's and telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').

More Vulnerable

- Hospitals.
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, **subject to a specific warning and evacuation plan.**

Less Vulnerable

- Police, ambulance and fire stations which are **not** required to be operational during flooding.



- Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do **not** need to remain operational during times of flood.
- Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Water-compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel workings.
- Docks, marinas and wharves.
- Navigation facilities.
- MOD defense installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, **subject to a specific warning and evacuation plan.**

5.9 Flood Risk Vulnerability And Flood Zone Compatibility Table

Vulnerability classification flood zone	Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
1	√	√	√	√	√
2	√	√	Exception test required	√	√
3a	Exception test required	√	x	Exception test required	√
3b	Exception test required	√	x	x	x

√ Development is appropriate x development is not appropriate



5.10 Strategic Flood Risk Assessment

Reference has been made Strategic Flood Risk Assessment for Oxfordshire Preliminary Flood Risk Assessment (PFRA). The FRA does not show the site to be at risk. However it does note that for sites in Wendlebury:

“There is generally limited scope for acceptable flood compensation schemes in the village. Located on low lying impervious ground, there may be limited land drainage and a presumption against the use of soak aways unless there is justification through robust design.”

6.0 Flood Risk To The Development

6.1 Flooding From Fluvial Sources

The EA Product 4 data flood maps and modelled flood levels for the development site show the site is classified as Flood Zone 1 which is defined in NPPF as comprising land at low risk of flooding. Wendlebury Road fronting the site does flood and is classified as Flood Zone 3, however, this flooding does not extend into the site.

It is therefore the consideration of this FRA that the site is not at risk from fluvial flooding.

6.2 Flooding From Overland Flow To The Site

Analysis of the surface flooding maps does not indicate any flood water routing through the property from the land behind. To the north and south are residential properties that by their nature of their areas will not generate overland sheet flows.

Analysis of the surface flooding maps does not show the site is encroached by flooding from the Wendlebury Road

It is therefore the consideration of this FRA that the site has at low risk of flooding from overland flows.

6.3 Flooding From Rising Groundwater

A ground investigation has not been undertaken for this site, however, review of geological maps for the area indicates clay strata which by its nature is not subject to fluctuations in ground water levels.

It is therefore the consideration of this FRA that the site has a low risk of flooding from rising groundwater levels.

6.4 Flooding From The Local Sewerage Network

The sewerage network is owned and maintained by Thames Water. The risk of flooding by surcharging is considered low.

It is therefore the consideration of this FRA that the site has a low risk of flooding by surcharging of the local sewer network.

6.5 Flooding From Reservoirs, Canals and Other Artificial Sources

Review of location plans for the development site show there to be no signs of manmade water sources within the immediate vicinity that would present a potential source of flooding.

It is therefore the consideration of this FRA that the site has a low risk of flooding by reservoirs, canals or other artificial sources.



7.0 Flood Warning and Route of Escape

7.1 Finished Flood Levels

The developable area of the site has a minimum level of 63.44mAOD which is approximately 530mm above the 1 in 100 year +CC flood level of 62.91mAOD. Therefore the proposed development is at low risk from flooding.

7.2 Flood warning in relation to Wendlebury Road

As a precautionary measure it is recommended that the owner signs up to the Environment agencies Flood line service for either telephone, mobile, email SMS text message which gives warning of potential flooding events. Environment Agency operates a flood watch scheme called Floodline **0845 988 1188** (24 hour service) or Type talk 0845 602 6340.

7.3 Dry Access, Egress and Escape

The only official access to the site that does not require access to third party land is via Wendlebury road to the front of the site, which lies within flood zone 3.

The proposed flood escape route is directed to the east of proposed development towards the dry section of Wendlebury Road. Part of the escape route is subject to shallow flood levels (flood event considered 1 in 100 plus 20% climate change). The topography of Wendlebury Road and the area in general is relatively flat and level, therefore flood water velocities can be expected to be low to still.

The depths of flood water vary but are approximately 320mm at their deepest. Table 4 'Hazard To People' (Appendix E) classification rates a 320mm depth of flooding with 0.1m/s velocity to have a hazard rating of 1.24. This is classified as having an element of danger for children, the eldest and infirm. It is not considered a danger to general public and emergency services. The emergency services using the appropriate vehicles should be able to access the site should an emergency occur. With the Emergency planning noted in section 8.0 of this report and the proposed development being higher than the extreme flood it can be shown that the dwelling would provide a safe haven should such a flood occur.

8.0 Emergency Planning

8.1 Awareness

Wendlebury Road fronting the development is identified by the EA as subject to potential flooding for storms greater than the 1 in 100 plus climate change storm event.

There are several sources of information available on flooding events within the area; these being the Environment Agency in conjunction with the Met Office and local radio and television stations. Both will issue and broadcast warnings.



The Agency operates a flood watch scheme called Floodline. This service is free and can be accessed by calling Floodline on **0845 988 1188** or Typetalk on 0845 602 6340. Floodline can also be accessed by the internet by logging onto <http://www.environment-agency.gov.uk>.

In many places the Agency can warn interested parties by either telephone, mobile, email, SMS text message or fax of a potential flood up to six hours in advance.

8.2 Equipment

The preparation of a flood kit is essential for instances when evacuation is required. This kit will also be useful for general emergency situations and should be stored for general emergency situations and be easily accessible if flooding occurs. These items should include:

- A torch
- Blankets or a sleeping bag, warm clothing and waterproofs
- A first-aid kit, including a supply of any essential medication
- A list of useful telephone numbers
- A supply of bottled water
- A stock of non-perishable food items
- A portable radio and supply of batteries
- Children's essentials (milk, baby food, sterilised bottles and spoons, nappies, wipes, nappy bags, clothing, comforter, teddy.
- Food and accommodation (cages) for pets (If allowed within the hotel)
- Wellington boots or similar waterproof boots
- Check your insurance cover – ensure it covers flood damage
- Know how to turn off the gas, electricity and water mains supplies
- Think about what items you would want to move to safety during a flood

8.3 Flood Watch

On receipt of the Flood Watch warning from the Environment Agency, or from other sources, e.g. TV, Radio, local contacts.

Flooding is possible, and the situation could worsen.

Flood watch means – “Flooding of low lying land is expected. Be aware, Be prepared, Watch out.

When a flood watch warning is issued residents should:

- Be aware of water levels and whether the river is rising or falling
- Reconsider travel plans
- Listen and watch for weather and flood warnings on local radio and television stations
- Contact Floodline on **0845 988 1188**
- Check that the flood kit has been prepared
- Copy vital hard copy and electronic records and store them in a safe place. This includes financial and insurance records
- Keep a store of plastic bags (grocery bags are fine) to place around the legs of furniture when you receive a flood warning

At this stage residents should ensure that their neighbours are aware of the Flood Watch alert in case they are not subscribed or did not receive the alert.



8.6 Severe Flood Warning

A flood evacuation should be implemented as a matter of urgency when a Severe Flood Warning is issued. Severe Flood Warning means severe flooding is now expected. There is extreme danger to life and property and people are advised to act immediately, i.e. evacuate.

The Agency aim to provide at least 2 hours warning between the Flood Warning alert being issued and the commencement of flooding. The Agency recommends that residents should evacuate when a Flood Warning or Severe Flood Warning status is issued.

If flood levels continue to rise, residents are advised to evacuate before safe access is lost. At this level driving through flood water may become hazardous and residents must evacuate beforehand.

Residents should monitor the flood progression and evacuate, on foot, as soon as possible.

8.7 All Clear

All clear means that flood watches or warning are no longer in force in this area.

- Keep listening to weather reports
- Only return to evacuated buildings if you are told it is safe
- Beware sharp objects and pollution in flood water.

Residents should contact the local authority to check that it is safe to return to their property. Residents should be aware that if floodwaters have entered the property it will need to be cleaned, disinfected and repaired and fully dried out prior to reoccupation. Check that the building is safe before entering, and if there are any doubts professional opinion should be sought. If there is any doubt that appliances may be water damaged they must be checked before switching the power or gas back on. Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs.



9.0 Recommendations and Conclusion

In line with the recommendations of the National Planning Policy Framework, the development site lies within land classified as Flood Zone 1, which is considered appropriate for the type of development proposed.

1) Proposed dwelling finished flood levels

The developable area of the site has a minimum level of 63.44mAOD which is approximately 530mm above the 1 in 100 year +CC flood level of 62.91mAOD. Therefore the proposed development is at low risk from flooding.

2) Flood warning in relation to Wendlebury Road

As a precautionary measure it is recommended that the owners of the new dwellings sign up to the Environment Agencies Flood line service for either telephone, mobile, email SMS text message which gives warning of potential flooding events. Environment Agency operates a flood watch scheme called Floodline 0845 988 1188 (24 hour service) or Type talk 0845 602 6340.

3) Evacuation/Escape route

The recommended escape route is to the east of the development along Wendlebury Road. Whilst this does involve negotiating shallow flood water depths they are classified as an element of danger for children, the eldest and infirm. It is not considered a danger to general public and emergency services and therefore this report considers that safe evacuation/escape is achievable particularly if the recommendations of item 2) are complied with.



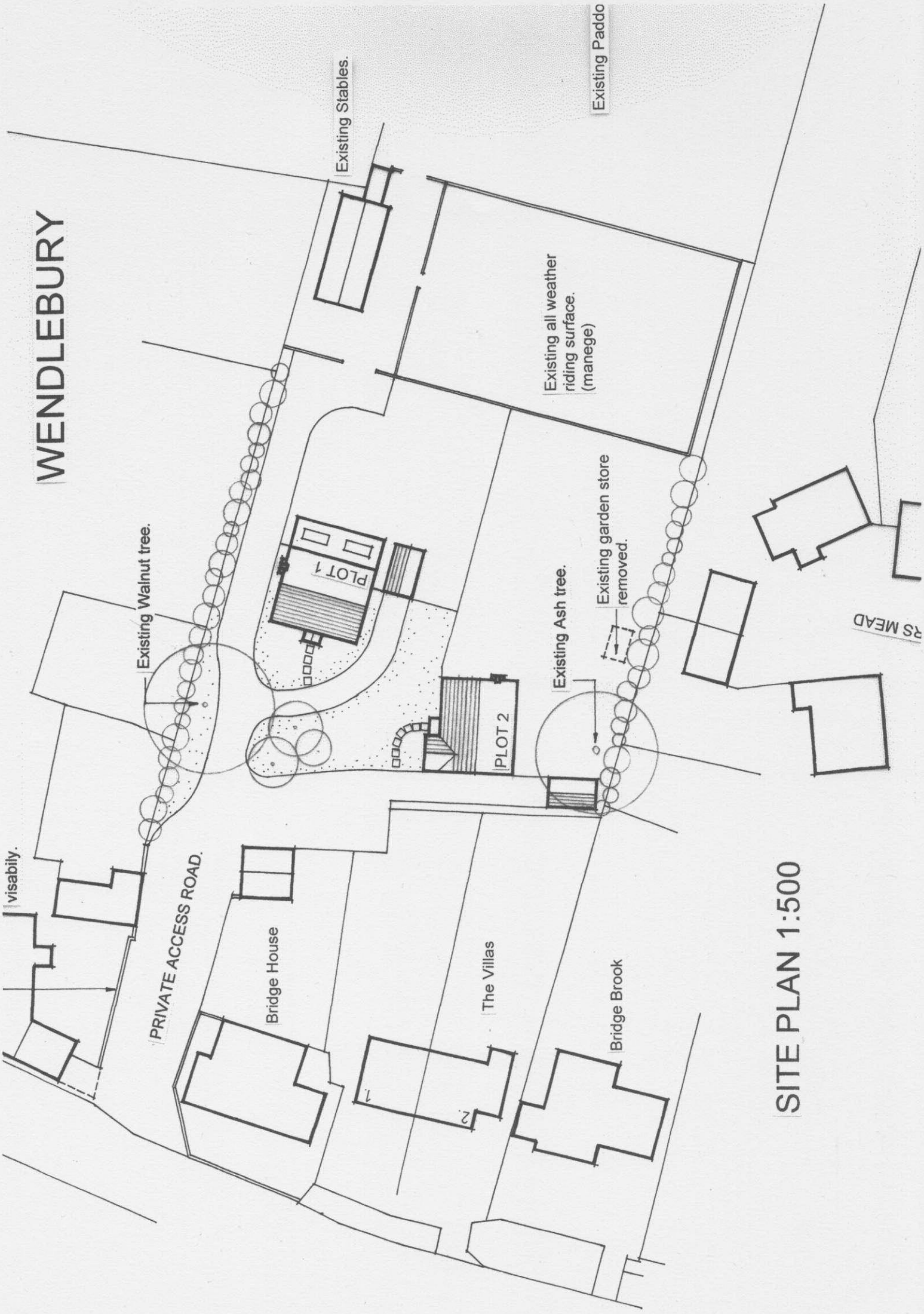
References & Bibliography

- National Planning Policy Framework (this replaces Planning Policy Statement 25: Development and Flood Risk Practice Guide).
- Code For Sustainable Homes - Department of Communities and Local Government. Revised February 2012.
- Environment Agency indicative flood maps <http://maps.environment-agency.gov.uk>
- Environment Agency indicative ground water source protection zone maps <http://maps.environment-agency.gov.uk>
- Environment Agency indicative Aquifer designation maps <http://maps.environment-agency.gov.uk>
- CIRIA 2007, The Sustainable drainage Systems (SUDS) Manual C697
- Sewers for adoption 6th Edition and interim guidance prior to the introduction of sewers for adoption 7th edition WRC
- Strategic Flood Risk Assessment for Oxfordshire Preliminary Flood Risk Assessment (PFRA).



Appendix A – Proposed development

WENDLEBURY



SITE PLAN 1:500



Appendix B – Site Topographic Survey



219650N

219650N

219600N

219600N

456100E

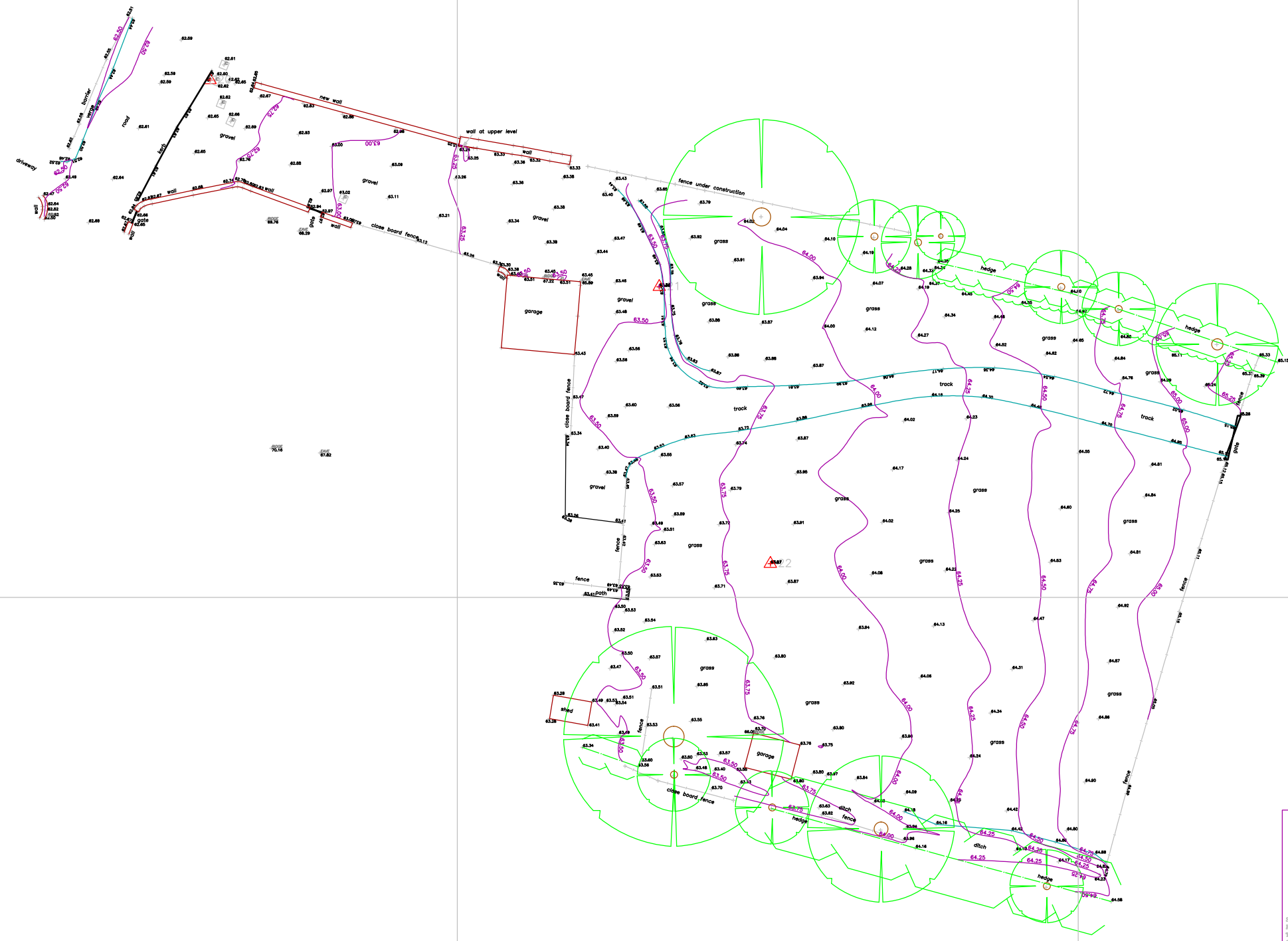
456150E

456200E

456100E

456150E

456200E



SURVEY STATIONS			
Name	Easting	Northing	Height
1	456102.000	219601.416	62.279
2	456103.000	219601.450	62.300
3	456103.250	219602.006	63.000
4	456105.254	219602.715	63.875

Shyres Rural Ltd. 
 CHARTERED SURVEYORS
 MAPPING CONSULTANTS

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 Foxhaven, J.A. Greys Grove, Little Staughton, Bedford MK44 2BT
 TEL: 01225 370050 Mobile 07800540105
 e-mail: shyresrural@talktalk.net

JOB TITLE:
 LEVEL SURVEY REAR OF VILLA COTTAGES WENDLEBURY
 survey to OS grid and datum using gps

CLIENT:
 DATA SHOWN ON THIS PLAN PREPARED TO CLIENT SPECIFICATIONS

ORDNANCE SURVEY DIGITAL COPYRIGHT LICENCE No:100049497

DATE: 18/06/16	DRAWING NUMBER:	REVISION:
SCALE: 1:200	SRL.70.15	

MAPS BY: IAT
 survey data correct at date of survey only.
 symbols representing tree spread and trunk dimensions are indicative only
 all service details must be considered approximate and its full location must be
 verified by details obtained from the relevant provider and/or authority
 digital copies of this plan can only be considered accurate if
 supplied directly by Shyres Rural Ltd.
 do not scale from plots



Appendix C – Environment Agency Product 4 flood data

Product 4 (Detailed Flood Risk) for The Villas, Wendlebury, Oxfordshire

Our Ref: OX_1126_01

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

- i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
- ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);
Model extents showing *defended* scenarios;
FRA site boundary (where a suitable GIS layer is supplied);
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)
Flood Map areas benefiting from defences (where available/relevant);
Flood Map flood storage areas (where available/relevant);
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;
Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied separately)
- iii) Historic flood events outlines unique identifiers and attributes; and
- iv) Local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please read the enclosed guidance which sets out our requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at

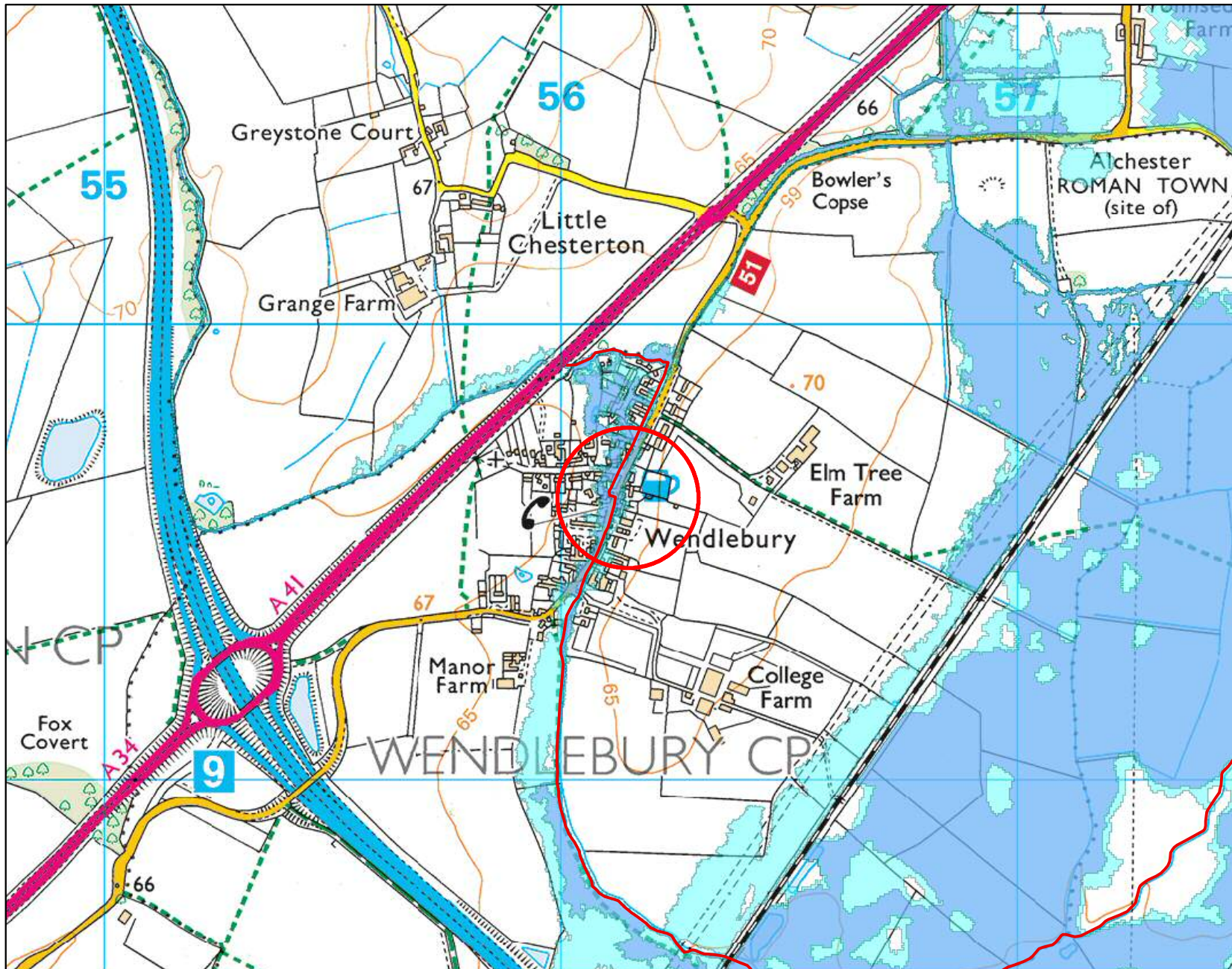
<http://www.environment-agency.gov.uk/research/planning/82584.aspx>

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at

<http://www.environment-agency.gov.uk/research/planning/33580.aspx>

Flood Map centred on The Villas, Wendlebury, Oxfordshire

Created on 24/06/2015 REF: OX_1126_01



Kilometres

0 0.1 0.2 0.4

Legend

- Main River
- Flood defences
- Areas benefiting from flood defences
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)
- Flood Map - flood storage areas

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Defence information

Defence Location:

Description: This location is not currently protected by any formal defences and we do not currently have any flood alleviation works planned for the area. However we continue to maintain certain watercourses and the schedule of these can be found on our internet pages.

Model information

OX_1126_01

Model: Wendlebury Brook 2014

Description: The information provided is from the Wendlebury Brook Flood Mapping Study completed in April 2014. The study was carried out using 2D modelling software (ISIS-Tuflow).

Model design runs:

1 in 5 / 20% AEP; 1 in 10 / 10% AEP; 1 in 20 / 5% AEP; 1 in 30 / 3.3% AEP; 1 in 50 / 2% AEP; 1 in 75 / 1.33% AEP; 1 in 100 / 1% AEP, 1 in 100+20% / 1% AEP with climate change and 1 in 1000 / 0.1% AEP.

Mapped outputs:

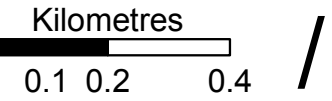
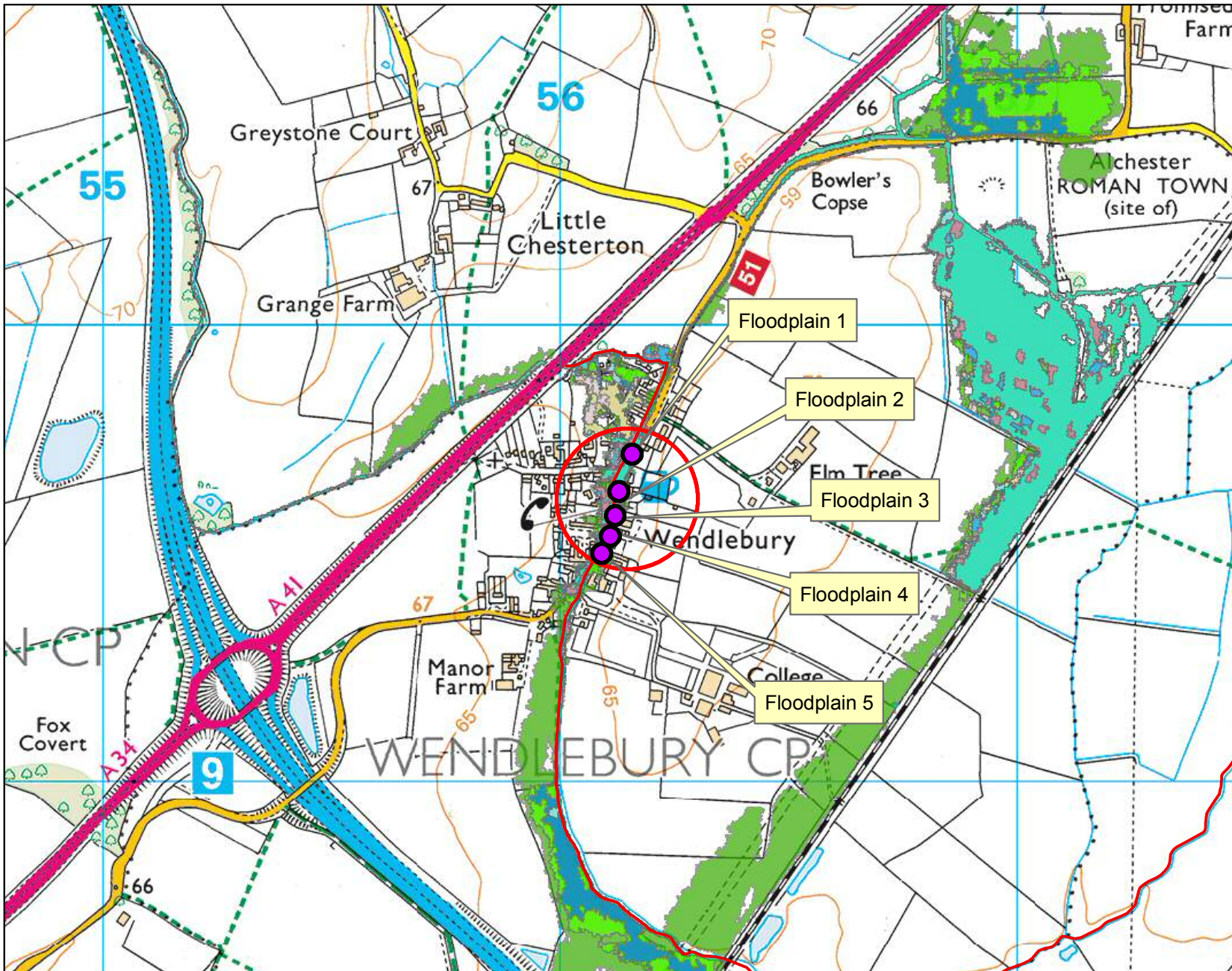
1 in 5 / 20% AEP; 1 in 10 / 10% AEP; 1 in 20 / 5% AEP; 1 in 30 / 3.3% AEP; 1 in 50 / 2% AEP; 1 in 75 / 1.33% AEP; 1 in 100 / 1% AEP, 1 in 100+20% / 1% AEP with climate change and 1 in 1000 / 0.1% AEP.

Model accuracy:

Levels \pm 250mm

Detailed FRA centred on The Villas, Wendlebury, Oxfordshire

Created on 24/06/2015 REF: OX_1126_01



Legend

- Main River
- 20% AEP Flood Outline
- 10% AEP Flood Outline
- 5% AEP Flood Outline
- 3.3% AEP Flood Outline
- 2% AEP Flood Outline
- 1.3% AEP Flood Outline
- 1% AEP Flood Outline
- 1%+CC AEP Flood Outline
- 0.1% AEP Flood Outline

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occurring in any given year

1%CC = 1% Climate Change extent
This is the 1% AEP event with an allowance for climate change (+20% on river flows)

Modelled floodplain flood levels

OX_1126_01

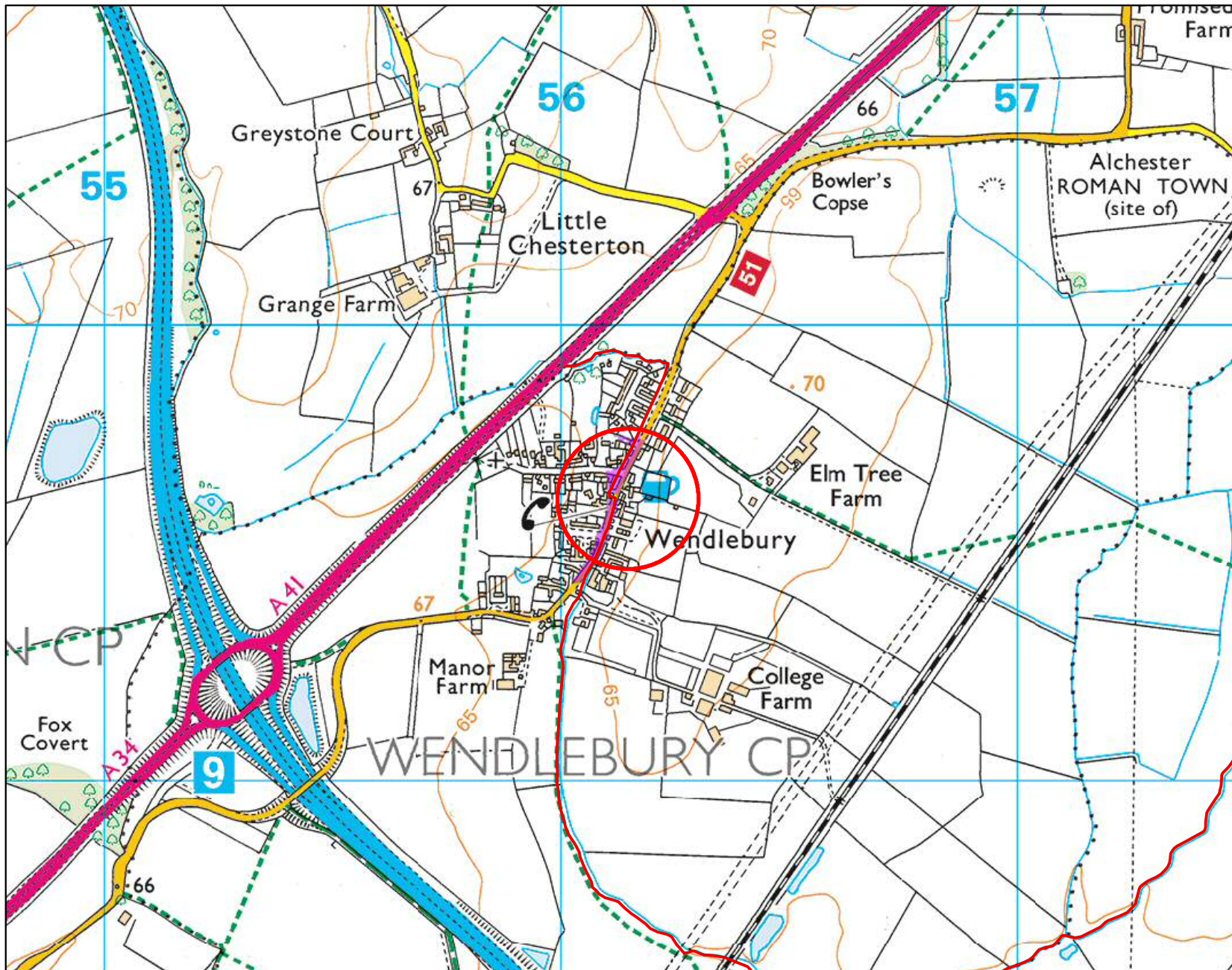
The modelled flood levels for the closest most appropriate model grid cells for your site are provided below:

2D grid cell reference	Model	Easting	Northing	flood levels (mAOD)				
				20% AEP	5% AEP	1% AEP	1% AEP with climate change allowance (+20% on river flows)	0.1% AEP
Floodplain 1	Wendlebury Brook 2014	456,153	219,704	62.77	62.87	62.95	62.99	63.06
Floodplain 2	Wendlebury Brook 2014	456,124	219,603	No Value	62.77	62.86	62.91	62.99
Floodplain 3	Wendlebury Brook 2014	456,119	219,577	No Value	No Value	No Value	62.88	62.97
Floodplain 4	Wendlebury Brook 2014	456,111	219,550	No Value	No Value	No Value	No Value	62.90
Floodplain 5	Wendlebury Brook 2014	456,095	219,505	No Value	No Value	62.57	62.65	62.78

This flood model has represented the floodplain as a grid.
The flood water levels have been calculated for each grid cell.

Historic Map centred on The Villas, Wendlebury, Oxfordshire

Created on 24/06/2015 REF: OX_1126_01



Kilometres

0 0.1 0.2 0.4

Legend

— Main River

year

2008

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Historic flood data

OX_1126_01

Our records show that the area of your site has been affected by flooding.
Information on the floods that have affected your site is provided in the table below:

Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
EA061140001	Wendlebury_Fluvial	03/06/2008	10/06/2008	main river	channel capacity exceeded (no raised defences)

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Start and End Dates shown above may represent a wider range where the exact dates are not available.



Appendix D – Extract from FD2320/TR2 (FRA guidance for new development)

This table is recommended for development planning and control use.

Table 4 - Hazard to People Classification using Hazard Rating ($HR = d \times (v + 0.5) + DF$) for (Source Table 13.1 of FD2320/TR2 - Extended version)

HR	Depth of flooding - d (m)												
	DF = 0.5				DF = 1								
Velocity v (m/s)	0.05	0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.0	0.03+0.5 = 0.53	0.05+0.5 = 0.55	0.10+0.5 = 0.60	0.13+0.5 = 0.63	0.15+1.0 = 1.15	0.20+1.0 = 1.20	0.25+1.0 = 1.25	0.30+1.0 = 1.30	0.40+1.0 = 1.40	0.50+1.0 = 1.50	0.75+1.0 = 1.75	1.00+1.0 = 2.00	1.25+1.0 = 2.25
0.1	0.03+0.5 = 0.53	0.06+0.5 = 0.56	0.12+0.5 = 0.62	0.15+0.5 = 0.65	0.18+1.0 = 1.18	0.24+1.0 = 1.24	0.30+1.0 = 1.30	0.36+1.0 = 1.36	0.48+1.0 = 1.48	0.60+1.0 = 1.60	0.90+1.0 = 1.90	1.20+1.0 = 2.20	1.50+1.0 = 2.55
0.3	0.04+0.5 = 0.54	0.08+0.5 = 0.58	0.15+0.5 = 0.65	0.19+0.5 = 0.69	0.23+1.0 = 1.23	0.30+1.0 = 1.30	0.38+1.0 = 1.38	0.45+1.0 = 1.45	0.60+1.0 = 1.60	0.75+1.0 = 1.75	1.13+1.0 = 2.13	1.50+1.0 = 2.50	1.88+1.0 = 2.88
0.5	0.05+0.5 = 0.55	0.10+0.5 = 0.60	0.20+0.5 = 0.70	0.25+0.5 = 0.75	0.30+1.0 = 1.30	0.40+1.0 = 1.40	0.50+1.0 = 1.50	0.60+1.0 = 1.60	0.80+1.0 = 1.80	1.00+1.0 = 2.00	1.50+1.0 = 2.50	2.00+1.0 = 3.00	2.50+1.0 = 3.50
1.0	0.08+0.5 = 0.58	0.15+0.5 = 0.65	0.30+0.5 = 0.80	0.38+0.5 = 0.88	0.45+1.0 = 1.45	0.60+1.0 = 1.60	0.75+1.0 = 1.75	0.90+1.0 = 1.90	1.20+1.0 = 2.20	1.50+1.0 = 2.50	2.25+1.0 = 3.25	3.00+1.0 = 4.00	3.75+1.0 = 4.75
1.5	0.10+0.5 = 0.60	0.20+0.5 = 0.70	0.40+0.5 = 0.90	0.50+0.5 = 1.00	0.60+1.0 = 1.60	0.80+1.0 = 1.80	1.00+1.0 = 2.00	1.20+1.0 = 2.20	1.60+1.0 = 2.60	2.00+1.0 = 3.00	3.00+1.0 = 4.00	4.00+1.0 = 5.00	5.00+1.0 = 6.00
2.0	0.13+0.5 = 0.63	0.25+0.5 = 0.75	0.50+0.5 = 1.00	0.63+0.5 = 1.13	0.75+1.0 = 1.75	1.00+1.0 = 2.00	1.25+1.0 = 2.25	1.50+1.0 = 2.50	2.00+1.0 = 3.00	3.50	4.75	6.00	7.25
2.5	0.15+0.5 = 0.65	0.30+0.5 = 0.80	0.60+0.5 = 1.10	0.75+0.5 = 1.25	0.90+1.0 = 1.90	1.20+1.0 = 2.20	1.50+1.0 = 2.50	1.80+1.0 = 2.80	3.40	4.00	5.50	7.00	8.50
3.0	0.18+0.5 = 0.68	0.35+0.5 = 0.85	0.70+0.5 = 1.20	0.88+0.5 = 1.38	1.05+1.0 = 2.05	1.40+1.0 = 2.40	1.75+1.0 = 2.75	3.10	3.80	4.50	6.25	8.00	9.75
3.5	0.20+0.5 = 0.70	0.40+0.5 = 0.90	0.80+0.5 = 1.30	1.00+0.5 = 1.50	1.20+1.0 = 2.20	1.60+1.0 = 2.60	3.00	3.40	4.20	5.00	7.00	9.00	11.00
4.0	0.23+0.5 = 0.73	0.45+0.5 = 0.95	0.90+0.5 = 1.40	1.13+0.5 = 1.63	1.35+1.0 = 2.35	1.80+1.0 = 2.80	3.25	3.70	4.60	5.50	7.75	10.00	12.25
4.5	0.25+0.5 = 0.75	0.50+0.5 = 1.00	1.00+0.5 = 1.50	1.25+0.5 = 1.75	1.50+1.0 = 2.50	2.00+1.0 = 3.00	3.50	4.00	5.00	6.00	8.50	11.00	13.50
5.0	0.28+0.5 = 0.78	0.60+0.5 = 1.10	1.10+0.5 = 1.60	1.38+0.5 = 1.88	1.65+1.0 = 2.65	3.20	3.75	4.30	5.40	6.50	9.25	12.00	14.75
Flood Hazard Rating (HR)	Colour Code	Hazard to People Classification											
Less than 0.75		Very low hazard - Caution											
0.75 to 1.25		Danger for some - includes children, the elderly and the infirm											
1.25 to 2.0		Danger for most - includes the general public											
More than 2.0		Danger for all - includes the emergency services											