Vector Structures Limited

Consulting Structural & Civil Engineers

Flood Risk Assessment

Project 2319

Client:	**Cookham Design Partnership**
Address:	**Orchard End, Sill Bridge Lane, Waltham St. Lawrence, RG10 0NT**

Report Prepared by: Robert Ashiley

Document Ref: 2319.VEC.XX.XX.RP.C.0300-A0.C1
Date: 04/09/2023

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Bringing Ideas to Life

Document Control Sheet

This document has been issued and amended as follows:

Issue Date	Issue	Prepared by	Approved by
04/09/2023	C1	Robert Ashiley, CEng, MICE	Abdul Rehman, BSc. MSc. (Hons) Eng.

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Contents

Appendices

1 INTRODUCTION

1.1 Background

1.1.1 Commission

Vector Structures Ltd have been commissioned to undertake a Flood Risk Assessment to support a planning application for a new house to be constructed in place of the existing house at Orchard End, Sill Bridge Lane, Waltham St. Lawrence, RG10 0NT. The National Grid Reference for the property is 482666, 175989.

1.1.2 Existing Site

Orchard End is just off the Sill Bridge Lane, which is bounds the property on the East side. To the north of is another property known as the Old Oak Cottage. There is a small watercourse which runs between the boundaries of Orchard End and the Old Oak Cottage.

The existing property is bounded to the West and South by other properties but there are trees and shrubbery between the existing property and the properties to the West and South

(See Appendix A – Location Plan & Block Plan)

1.1.3 Existing Site Drainage & Topography

Sewer records obtained for Sill bridge Lane indicates that there are no surface water sewers within this location. There is however a foul water sewer system taking domestic foul water flows from properties to a pumping station just off Plough Lane, to the south of the Twyford Brook. The foul water sewerage system at this location a vacuum sewage system

The current topography of the site indicates that the land at this property falls gently from East to West and any surface water runoff from the site will drain in that direction and generally towards the Twyford Brook, which is located 100m to the West of Orchard End.

1.2 Current Flood Risk

As part of this Flood Risk Assessment, data has been obtained from Environment Agency (EA) about the flood risk classification of this location. The flood map indicates that the site is located within Flood Zone 3 area. This is defined by the EA as land having less than 1 in 100 annual probability of flooding from river or sea flooding. (See Appendix B – Flood Map for Planning)

Although the area is classified by the EA as a Flood Zone 3, the flood maps produced by the EA do not distinguish whether the project site is within a Flood Zone 3a or Zone 3b. According to the EA, the differentiation between Zones 3a and 3b is the prerogative of Lead Local Flooding Authority, which for this area is the Royal Borough of Windsor & Maidenhead (RBWM).

In order to confirm the exact flood risk classification of this site, the RBWM Strategic Flood Risk Assessment has been carefully reviewed. The Strategic Flood Risk Assessment (SRFA) indicated that the project site is located within a Flood Zone 3a area and not within a Flood Zone 3b area.

The key difference between Flood Zones 3a and 3b is that a Flood Zone 3a is as an area with a high probability of flooding i.e., land having a 1 in 100 or greater annual probability or river flooding whereas a Flood Zone 3b is a functional floodplain and therefore it comprises of land where water has to flow or be stored in times of flood.

For the purposes of this Flood Risk Assessment, the project site has been confirmed using the RBWM Strategic Flood Risk Assessment as being in a Flood Zone 3a area. This means that under the current national Planning Policy Framework, the only developments that are allowed in this zone will be:

a. Essential Infrastructure
b. More Vulnerable developments
c. Less Vulnerable developments, and
d. Water Compatible developments

It must be noted that an Exception Test will still be required for Essential Infrastructure and More Vulnerable developments that are planned to be located within a Flood Zone 3a area.

Annex 3 of the National Planning Policy Framework, which defines the various types of development for Flood Risk purposes, classifies buildings to be used as residential dwellings as 'More Vulnerable development', which is the case for the redevelopment proposed at Orchard End. (See Appendix C – Annex 3 of the National Planning Policy Framework).

1.3 Existing & Proposed Development

Currently, the property at Orchard End is uninhabited. It appears to have been derelict for some time. The property covers nearly a fourth of the existing site. The erstwhile property used to be a residential dwelling and the proposed development will also be for residential/dwelling purposes.

2 FLOOD RISK ASSESSMENT

2.1 Current Flood Level

In order to undertake a detailed flood risk assessment of the proposed property, the EA was contacted to obtain the Product 4 for this location. The EA Product 4 is also known as the flood risk assessment data for planning.

The EA advised that for this location, they did not have any detailed flood risk modelling and were therefore unable to provide modelled flood levels and extents for the site. (See Appendix D – Correspondence with EA) .

The EA however provided Nationalised Generalized (JFLOW) flood levels for the grid reference for the proposed location (See Appendix E – Nationalised Generalized Flood Levels). The JLFOW flood levels provided indicated that for the grid reference of the proposed location the 1 in 100 year annual probability + 20% allowance for climate change levels was between 37.11m AOD and 37.32m AOD.

2.2 Existing & Proposed Property Levels

The existing property at Orchard End has finished floor levels that vary from 36.86m AOD to 36.89m AOD for rooms within the ground floor of the property (See Appendix A). The lowest threshold level for the existing property is 37.02m AOD, which is at the rear of the existing property.

For the new property, it is proposed that the lowest threshold level for the property will be set the highest nationalised Generalized (JFLOW) flood level with an added 300mm freeboard for enhanced flood protection in accordance with current EA flood protection guidance.

It is therefore proposed that the lowest property threshold for the new property will be set at 37.62m AOD , which is the current predicted flood level of 37.32m AOD plus a 300mm freeboard.

2.3 Flooding from Surface Water

All surface water from the property will drain northwards towards a shallow ditch located between Orchard Ed and Old Oak Cottage.

The EA Flood Maps for Planning have indicated that Orchard End is at a low risk of flooding from surface water. Therefore, overland runoff from rainfall is unlikely to be an issue for the proposed development.

2.4 Foul Water Drainage Proposals

Currently, properties within this area are served a vacuum sewage system for collection of domestic foul water flows. This system terminates at a pumping station operated by Thames Water located just South of the Twyford Brook on Sill Bridge

Due to the sensitivity of vacuum systems, it is advised that the proposed property's connection to the public vacuum sewer system is redesigned, and a new connection application submitted to the local sewerage undertaker, Thames Water, to ensure to ensure a safe and durable connection to the existing system.

3 MODELLED FLOOD LEVELS & STANDING ADVICE

3.1 Modelled Flood Level

As stated earlier, the EA provided Nationalised Generalized (JFLOW) flood levels for the grid reference for the proposed location. This was because there was no Product 4 information available for this location.

The flood level data supplied by the EA for the 1 in 100 year return period + 20% allowance for the three Flood Points generated by the JLOW model is as below:

Flood Point	Eastings	Northings	Flood Level(m AOD)
1	482651	175997	37.11
2	482672	175942	37.31
3	482676	175972	37.32

Full details of the information provided by the EA on current modelled flood levels using the Nationalised Generalized Flood Model is in Appendix E - JFLOW Flood Levels

3.2 EA Standing Advice

The EA has produced standing advice to assist Local Planning Authorities (LPA) in requirements for undertaking Flood Risk Assessments. The standing advice also sets out guidance for when the EA needs to be consulted and when it does not. The EA does not necessarily need to be consulted, even if there is a flood risk to a site.

For sites falling within the category of 'non-residential' extensions with a footprint of less than 250m^2; and householder development and alterations' that are located in Flood Zone 3, the Consultation Matrix advises that the EA would not be formally consulted on the planning application and the Local Planning Authority (LPA) will deal with the application based on the requirements of the standing advice.

The standing advice states that applications must ensure that one of the following flood mitigation options are included as part of the Flood Risk Assessment:

- Floor levels within the proposed development will be set no lower than existing levels and, flood proofing of the proposed development has been incorporated where appropriate.
- Flood levels within the extension will be set 300mm above the known or modelled 1 in 100 annual probability river flood (1%) or 1 in 200 annual probability sea flood (0.5%) in any year. This flood level is the extent of the Flood Zones. This must be demonstrated by a plan that shows finished floor levels relative to the known or modelled flood level.

3.3 National Planning Policy Guidance

Flood Risk is defined by the National Planning Policy Framework as is a combination of the probability and the potential consequences of flooding. Areas at risk of flooding are those at risk of flooding from any source, either presently or in the future. Sources of flooding include rivers and the sea, direct rainfall on the ground surface and rising groundwater.

The Royal Borough of Windsor and Maidenhead Strategic Flood Risk Assessment (See Appendix F- Extract from the SFRA) indicates that Orchard End is currently located within a Flood Zone 3a area. This zone comprises land which d which has a 1% or greater annual probability of river flooding. This has been defined by SRFA.

In accordance with Table 2: Flood Risk Vulnerability and flood zone 'incompatibility' of the National Planning Policy Framework, building used for swelling houses area classified as More Vulnerable and therefor to construct such a building within a Flood Zone classified as Zone 3a, and Exception Test is required. (See Table 1 below)

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *

Key:

✓ Exception test is not required

X Development should not be permitted

* In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses.

Table 1 – Flood Risk Vulnerability Classification

As the proposed development is a building for the purposes of a dwelling and to be located within a Flood Zone 3a area, an Exception Test has been undertaken to demonstrate that:

- the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
- the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

3.4 Provision of Wider Sustainable Benefit and Safety of Building

As stated earlier, the proposed building is being located within an existing property with a derelict building. The new building will replace the derelict building and therefore enhance value of the street and indeed the neighbourhood.

Using the parcel of land which currently houses, an existing building also ensures that no new Greenfield sites within the area are earmarked or targeted for the building of this new property but that the Brownfield site which housed the existing building is reused. The reuse of an existing plot of land enhances the wider sustainability of the area by protecting existing greenfield and undeveloped areas.

In undertaking the Flood Risk Assessment, consideration has been given to existing flood extents as advised by the Environment Agency. The new development will be set at a heigh of at least 300mm above the modelled 1 in 100-year river flooding level to give an additional level of protection and ensure the safety of the building itself or any occupiers during a flood event of this magnitude.

Further measures, including the preparation of a Personal Flood Plan will be recommended to ensure yet more additional levels of protection for the proposed development.

4 CONLCUSIONS & RECOMMENDATIONS

4.1 Conclusions

The proposed property will be replacing an existing property with approximately the same footprint area at the location. This enhances sustainability by ensuring the no new Greenfield sites are used for the construction of a new property.

Information provided by the EA have also confirmed the worst case flood levels for 1 in 100 year flooding event from a nearby river is 37.32 m AOD. The proposed building will therefore have a threshold level of at least 37.62m AOD thereby ensuing and additional 300mm freeboard to enhance flood protection as advised by the EA.

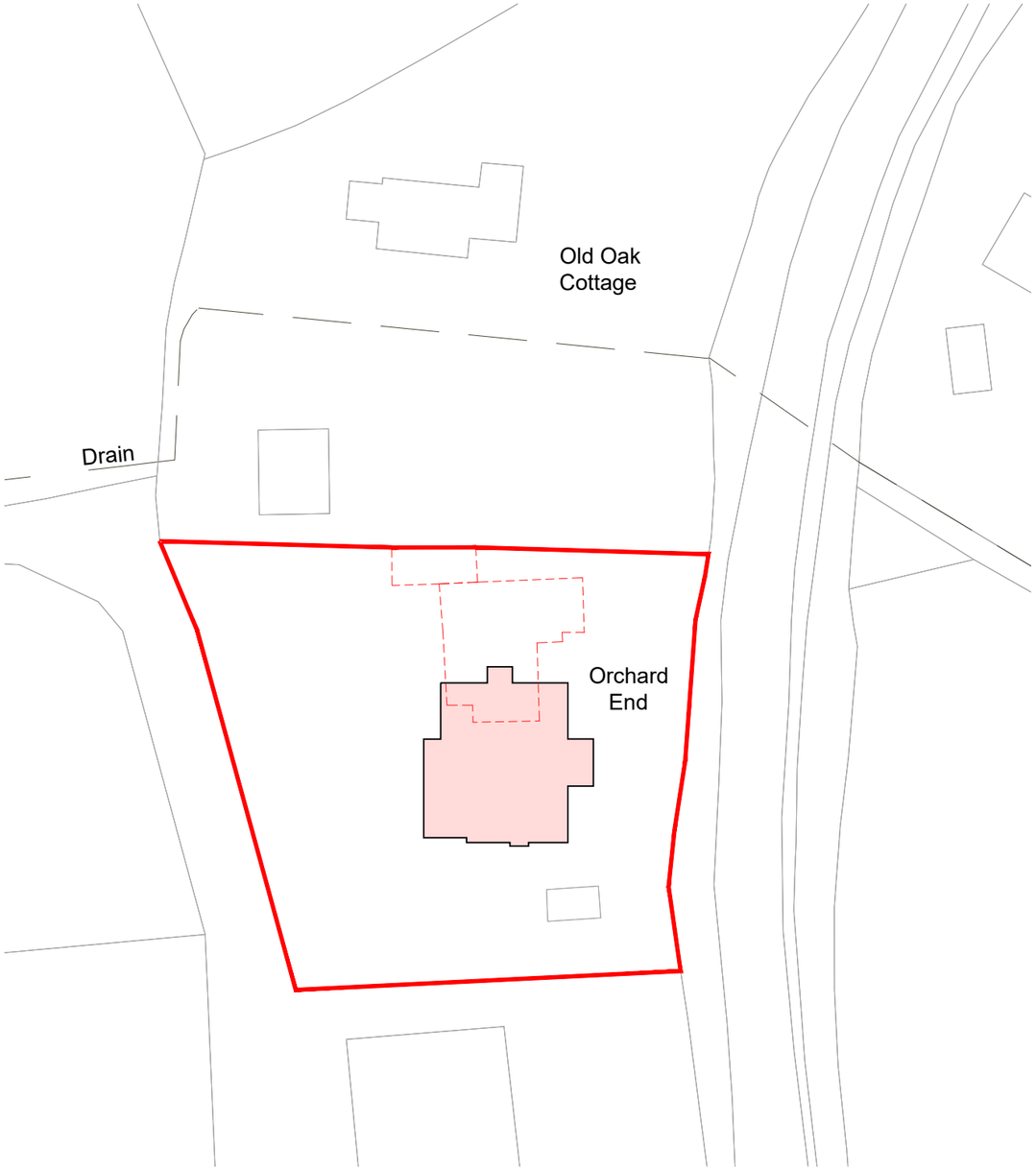
The external area of the property is expected to be landscaped and therefore not additional impermeable area is expected as part of this development. It is therefore unlikely that there will be any additional risk to surface water runoff and flooding as a result of this project.

4.2 Recommendations

It is recommended that the owners and/or occupiers of the proposed building register with the Environment Agency for Flood Alerts to ensure that at all times, they have ample warning in respect of any flood events which will enable the necessary precautions to be taken.

It is also recommended that a Personal Flood Warning is prepares for this property by its ultimate occupiers to have a clear understanding of how to keep their belongings safe in the event of a severe flood.

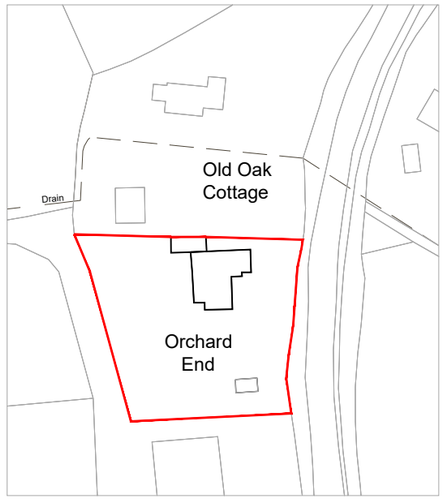
Appendix A – Location & Block Plan



Block Plan - 1:500

0 5 10 20 30m

1:500



Location Plan - 1:1250

0 12.5 25 50 75m

1:1250

ReQuestAPlan
Map number: TQRQM23151141135004

Title: Location Map-Orchard End
Map Produced for: Cookham Design Partnership
© Crown copyright and database rights 2023 OS 100042766
Project ID:
Date of Purchase: 31-05-2023
1 Years subscription from 31-05-2023 for 1 workstation.

Do not Scale. Use figured dimensions only. Subject to site survey and all necessary consents. All dimensions to be checked by user and any discrepancies, errors or omissions to be reported to the Architect before work commences This drawing is to be read in conjunction with all other relevant materials.

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PROJECT
Orchard End, Sill Bridge Lane,
Waltham,St Lawrence RG10 0NT

CLIENT
Mr & Mrs Wilson

Drawing
Proposed Block & Location Plan

REV

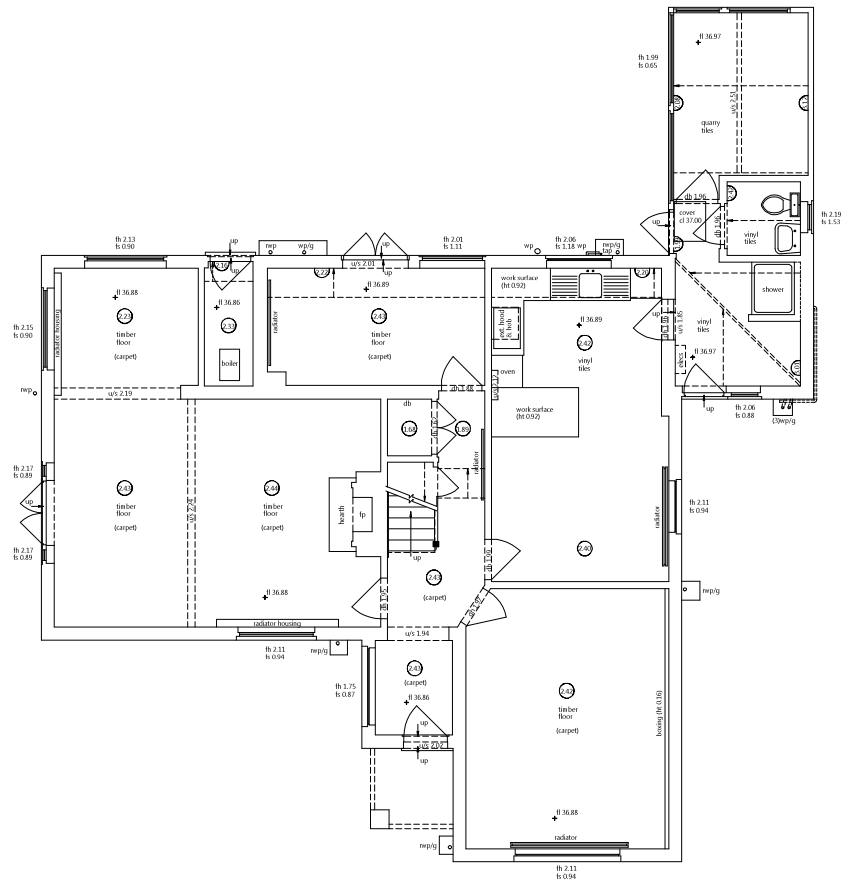
Date
05-2023

Job Code:
2157-SOW

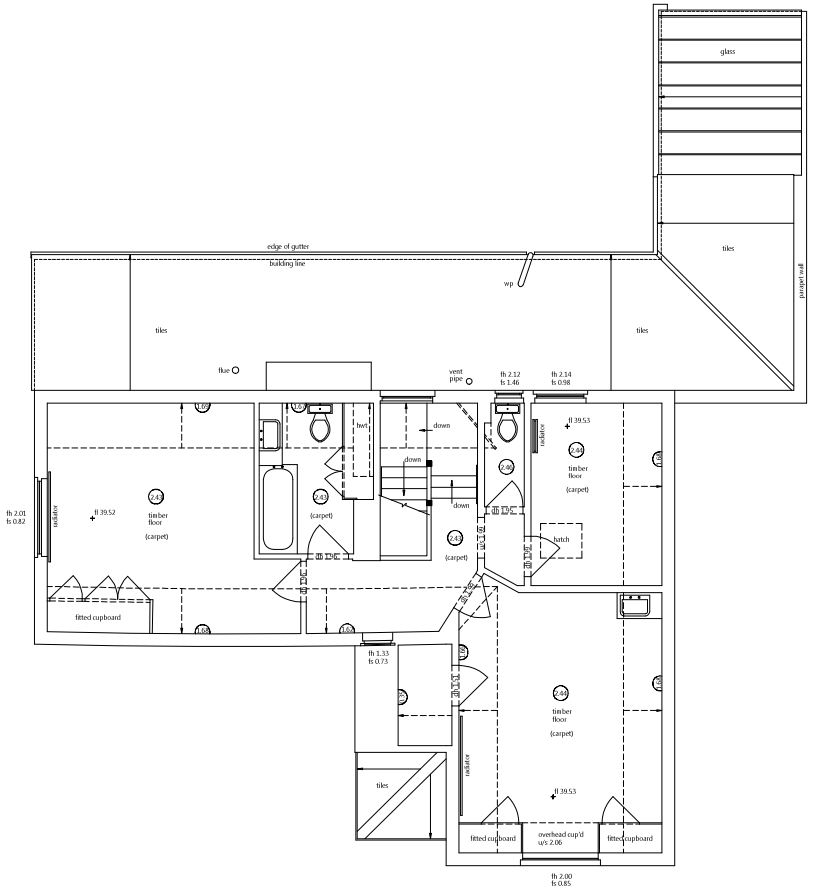
Scale (@ A3)
1:500/1:1250

PL-01

CDP



GROUND FLOOR



FIRST FLOOR

NOTES

All levels are in metres derived from GPS transformation

LEGEND

TBM - temporary bench mark
2.25 - room height
f/b - floor board & direction
tbr - timber
conc - concrete
bk - brick
q/tile - quarry tile
mh - manhole cover
ic - inspection cover
ffl - finished floor level
tl - threshold level
fh - floor to head height
fs - floor to sill height
u/s - underside height
ah - arch head height
sp - arch springing point height
r/l - rooflight
susc - suspended ceiling
rad - radiator
trad - towel rail radiator
htr - heater
hwt - hot water tank
blr - boiler
hd - hand dryer
wf - water fountain
db - distribution board
fp - fire place
w/s - work surface
bag - boxing
ht - height
cup'd - cupboard
st - stone
ren - render
rwp - rain water pipe
wp - waste pipe
svp - soil vent pipe
vp - vent pipe
g - gully
cr - cable riser
pr - pipe riser
m/box - meter box
ss - single socket
ds - double socket
s - light switch
pcs - pull cord light switch
lf - light fitting
ff - fluorescent light fitting
wl - wall light
cs - cooker switch
bt - telecom socket
blk - blank socket
ext - extractor
shp - shaver point
tv - aerial point
thm - thermostat
fs - fuse switch
bzr - intruder alarm sensor
sd - smoke detector
bgp - break-glass fire point
fhr - fire hose reel
fb - fire bell
el - emergency light
s - siren
fe - fire extinguisher
f/blk - fire blanket
a/box - alarm box
ab - air brick

Sheet Layout

Client	Cookham Design Partnership
Project	Orchard End, Waltham St Lawrence
Title	Ground & First Floor Plan
Scale	1:50 @ A1
Project No	2062
Sheet No	1 of 2
Date	November 2022
Surveyed by	A.Trusilove

Revisions

pointZERO surveys

TOPOGRAPHICAL AND MEASURED BUILDING SURVEYORS

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Appendix B – Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Orchard End	**482666/175989**	**19 Jun 2023 15:04**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

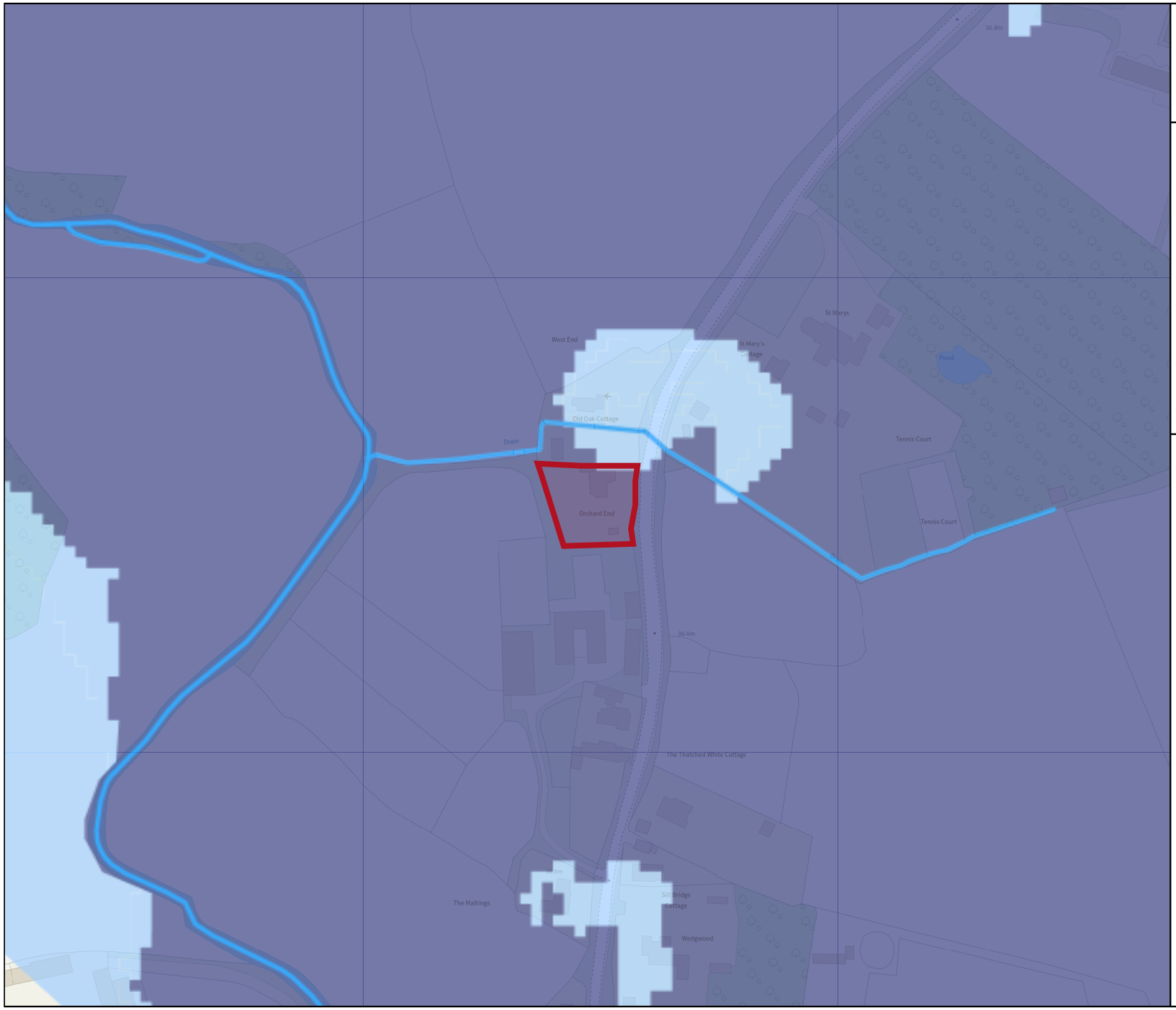
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
Orchard End

Location (easting/northing)
482666/175989

Scale
1:2500

Created
19 Jun 2023 15:04

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

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Learn more about this area's flood risk

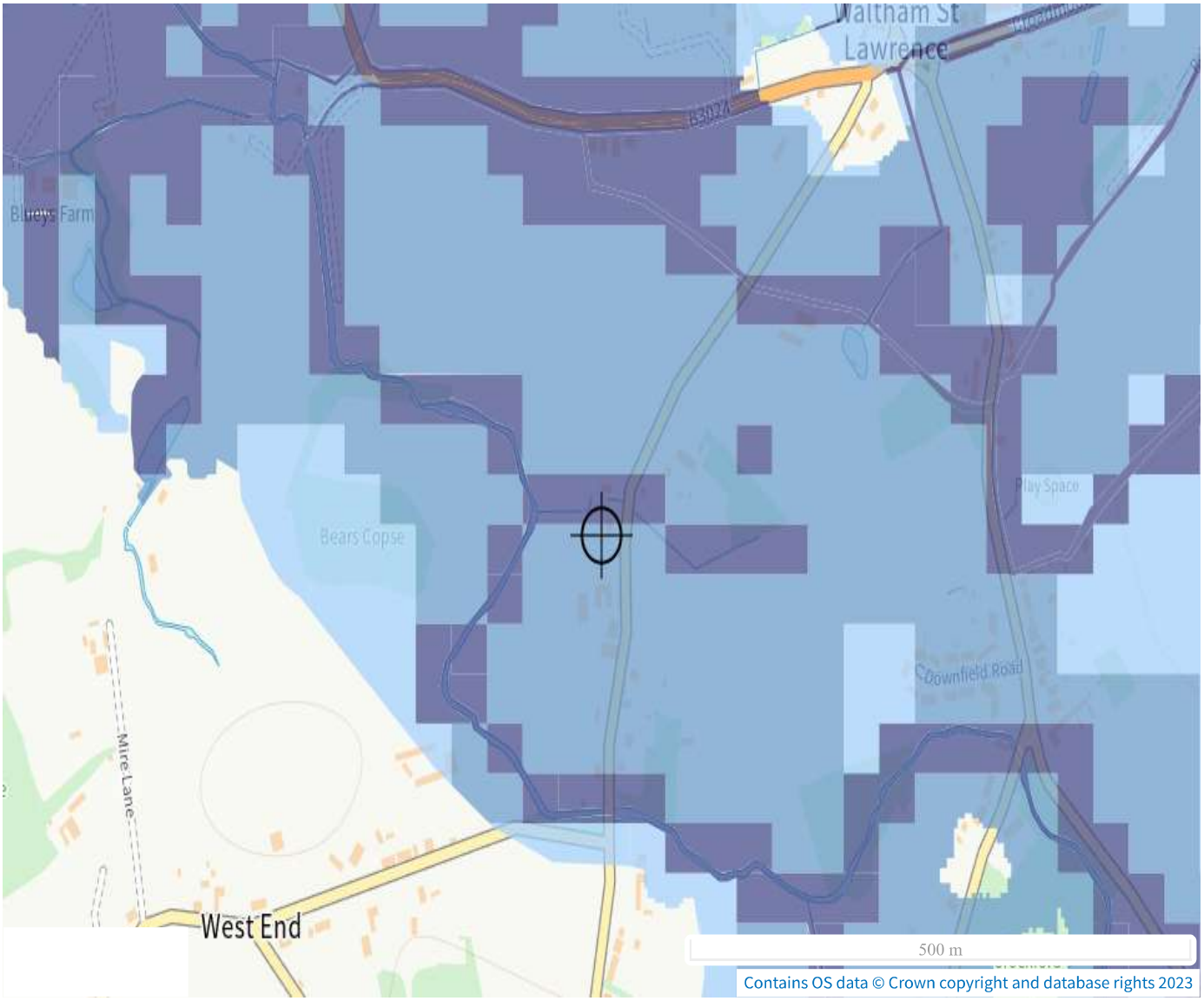
Select the type of flood risk information you're interested in. The map will then update.

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from rivers or the sea

High

Medium

Low

Very low

Location you selected

View the flood risk information for another location (/postcode)

Appendix C – Annex 3 of the National Planning Policy Framework

Annex 3: Flood risk vulnerability classification

Information on flood risk vulnerability 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 infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood.
- Wind turbines.
- Solar farms.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; 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, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the ‘more vulnerable’ class; 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.
- Car parks.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence 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.

*Landfill is as defined in Schedule 10 of the Environmental Permitting (England and Wales) Regulations 2010.

Appendix D – Correspondence with Environment Agency

THM320905 PRODUCT EA Product 4 Flood Risk Detailed Map enquiry

Enquiries_THM <enquiries_THM@environment-agency.gov.uk>
Tue 8/29/2023 12:25 PM
To:Robert Ashiley <robert@vectorstructures.co.uk>

Dear Robert Ashiley,

Thank you for your email requesting Product 4 data.

Please accept my apologies for the delay in responding.

We unfortunately do not have any detailed flood risk modelling in this location. We are sorry that we are therefore unable to provide modelled flood levels and extents for your site.

The Flood Map for Planning in this location is likely to be based on JFLOW data which is not suitable for use in site specific Flood Risk Assessments. Please advise if you would like to request JFLOW data for this location.

You can access our flood map for planning on our website:

https://flood-map-for-planning.service.gov.uk/

You can find more information on the long term risk of flooding for this location on our website:

https://flood-warning-information.service.gov.uk/long-term-flood-risk

You can find recorded flood outlines for this location via the link below:

https://data.gov.uk/dataset/recorded-flood-outlines1

You can find out the risk of flooding from surface water for this location via the link below:

https://data.gov.uk/dataset/d5ca01ec-e535-4d3f-adc0-089b4f03687d/risk-of-flooding-from-surface-water-suitability

You may be interested in the following guidance / information publically available:

- 'Planning Practice Guidance' - provides information about planning considerations in areas at risk of flooding. https://www.gov.uk/government/collections/planning-practice-guidance
- 'Planning applications: assessing flood risk' - information about completing Flood Risk Assessments. https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications
- 'Site specific flood risk assessment: Checklist' – a checklist to help ensure you have considered all the relevant factors in your flood risk assessment. https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

Please be aware that from 20th July 2021 the climate change allowances required in flood risk assessments have been updated. Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#contents for more information.

I hope that we have correctly interpreted your request. Please refer to our Open Government Licence for the permitted use of the supplied data: http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Please be aware that many of our datasets are now available online. Simply visit environment.data.gov.uk

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

Customers & Engagement Team - Thames
Environment Agency | Red Kite House, Howbery Park, Wallingford, OX10 8BD

enquiries_THM@environment-agency.gov.uk

Please be aware that many of our datasets are now available online. Simply visit environment.data.gov.uk

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From: Robert Ashiley <robert@vectorstructures.co.uk>
Sent: 25 July 2023 12:05
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: RE : EA Product 4 Flood Risk Detailed Map enquiry

You don't often get email from robert@vectorstructures.co.uk. Learn why this is important

Dear Sirs,
I am undertaking a Flood Risk Assessment for a property in Waltham St. Lawrence, RG10 0NT and would be grateful if you could provide me with the Detailed Flood Map (Product 4) covering the area.

The FRA is required as part of a planning application to redevelop an existing property as per the requirements of the Royal Borough of Windsor and Maidenhead.

The National Grid Reference for the site is 482666, 175989. Your prompt assistance would very much appreciated. Please also advise if any payment is required to obtain this information. Thank you.

Kind regards,
Robert

Robert Ashiley

Civil Engineer

C.Eng, MICE

Associate Director

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Maidenhead Office: 01628 290424 | info@vectorstructures.co.uk
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Appendix E – Nationalised Generalized Flood Levels

Provision of Levels from the National Generalised Modelling (JFLOW)

You asked us to provide you with water levels/depths from the JFLOW model used to produce Flood Zones in the vicinity of your site.

The only water level/depths information we have in this location was produced from JFLOW. The only water level/depth information we have in this location has been averaged over a 100m grid. For this modelling we created hydrological inflows using generalised catchment information and spread this across the floodplain using a simple spreading representation. This was for the purpose of creating generalised flood extents. This data has not been used to produce the flood extents as shown on our Flood Map.

It is not our policy to provide water levels/depths produced from the JFLOW model, as a 'by-product' of running this model to produce Flood Zones. No water level data exists as a direct output from this modelling.

Please be aware of the following points regarding JFLOW data.

- Our work to produce Flood Zones followed a 10 year programme which delivered more detailed mapping for 821 locations. However, in order to complete Flood Zones we needed national coverage, hence a generalised approach was used to provide this national coverage within the time available, to fill the gaps between the 821 locations where we had more detailed information. The Flood Zones are therefore not as accurate as we would normally specify for river modelling, but they do provide an adequate indication of the extent of flood risk such that developers can consider flooding as part of their proposals to ensure they are not unknowingly putting additional lives at risk. This is the purpose for which the Flood Zones were produced.

- Neither water depths nor water levels were outputs that were specified when we commissioned this generalised modelling for Flood Zones. Whilst the modelling process does provide some information on depth of water, it would have been possible to produce the flood extents without storing the water depth values, since water depth is only a 'by-product' of the calculation process. As the JFLOW modelling method was developed, tested and reviewed for production of the Flood Zone extents only, we currently have no information on the accuracy of the water depth data.

- The models were run using a Digital Terrain Model (DTM) with a 5m x 5m grid. However the DTM grids were generalised to between 5m and 100m (depending on the type of model and location, for reasons such as processing speed). Fluvial modelling produced depth data which can be processed using the DTM to provide water level data. However the differing grid sizes means that there is a significant potential for inaccuracy in producing level data, because of the DTM generalisation.

- Therefore because of the nature of the model and the DTM, in many cases it will not be possible to confidently assess whether or not a site is above the resulting water level. This is because there are further inherent uncertainties in the depth calculation and within the DTM itself.

- Depth or level outputs from the National Generalised Modelling (JFLOW) are only suitable to be used for decision making at a broad catchment or Shoreline Management Plan coastal cell scale (or larger).

- They are not suitable for use in site specific Flood Risk Assessments or Strategic Flood Risk Assessments and must not normally be used for these studies. However, where in exceptional circumstances Nationalised Generalised Modelling outputs are requested to be used for anything other than at a broad catchment or Shoreline Management Plan coastal cell scale further verification must be undertaken. As part of this verification the outputs must be proven to be suitable and appropriate bearing in mind the conclusions

the user wishes to draw from them and this use must be agreed in writing by the local Environment Agency staff.

- If any agreement is given by the Environment Agency in pursuance of the above, the User accepts and agrees that such agreement by the Environment Agency that that National Generalised Modelling outputs are suitable for a particular use does not imply agreement that the proposals are appropriate or that the Environment Agency has no further comment on flood risk, rather that following verification the User has proven that the outputs are suitable to help assess the flood risk in the particular circumstances.

- Any assessment of Flood Risk undertaken must be appropriate for the decisions that need to be based upon it, consider the risks and also take into account any limitations of the data used.

- Please read the enclosed Notice and be aware that the Environment Agency does not guarantee that this data is suitable for your purposes.

- The consultants employed to deliver JFLOW Flood Zones to the Environment Agency were Jeremy Benn Associates (JBA). I should make you aware that JBA will not release information that either is owned by the Environment Agency or based upon Environment Agency information as they are not licenced to do so. You will need to request any information you require from the Environment Agency (Customers and Engagement team).

- Information provided relates solely to flood risk issues and is based on the best available information to date in the Environment Agency. If further information becomes available to the Environment Agency (on flood risk issues or on other environmental issues which affect a FRA) or policy changes, we reserve the right to comment further or to supply further information or to amend information sent.

- If this information is supplied in connection with a flood risk assessment of development proposals and any material amendments made thereto at any stage prior to the submission of a planning application, the User should be aware of the need to consult the Environment Agency further.

National generalised (JFLOW) flood levels for RG10 0NT
Our Ref: THM320905

JFLOW includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Unique identifiers (for cross referencing to the water levels);
Flood defence locations (where available/relevant) and unique identifiers; (supplied
Flood Map flood storage areas (where available/relevant);
Statutory (Sealed) Main River (where available within map extents);

A table showing:
i) X/Y coordinate locations, unique identifiers and levels for un*defended* scenarios.

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please request our guidance which sets out the 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

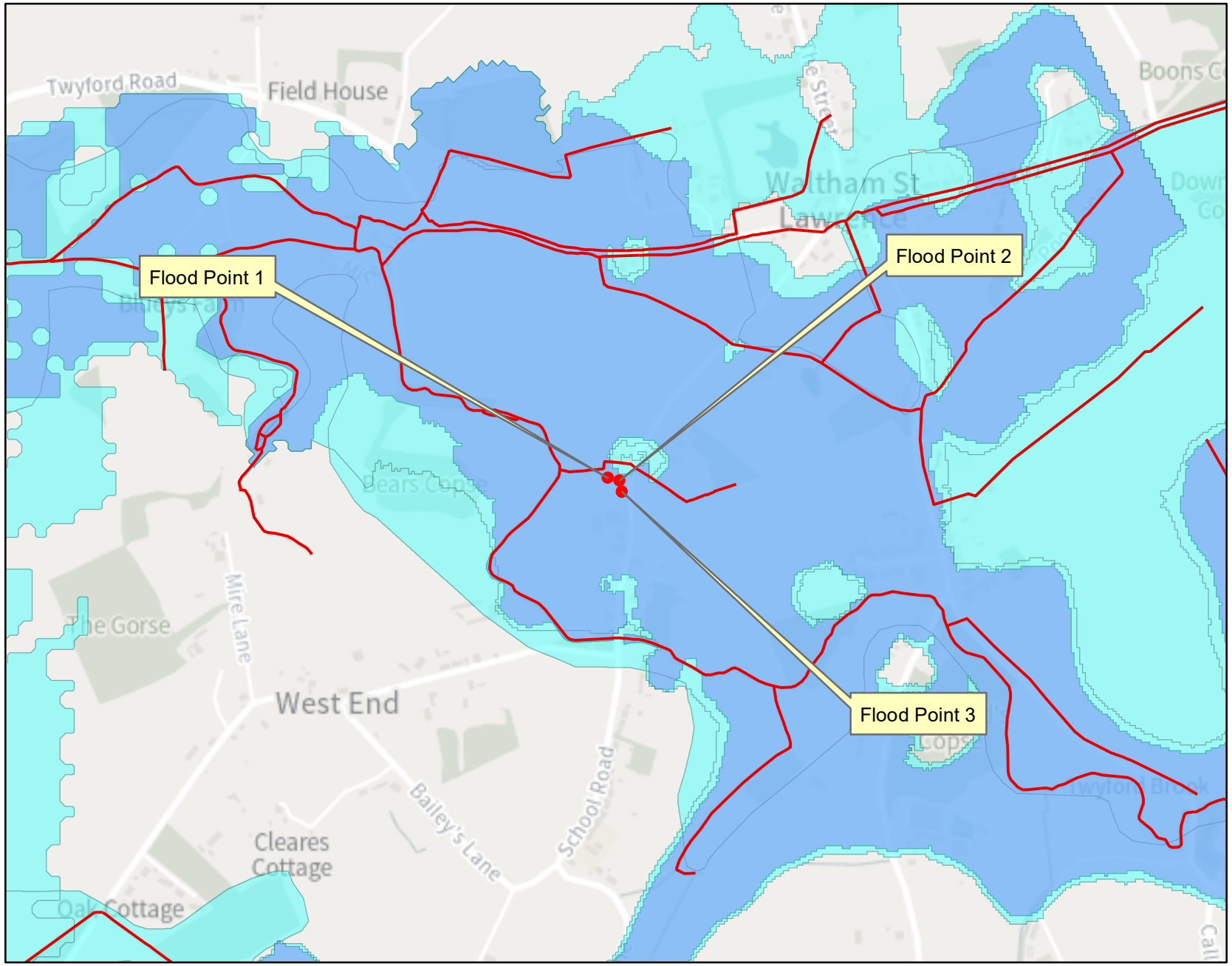
This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at:

https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

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

https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Flood Map for Planning centred on RG10 0NT
Created on 01/09/2023 REF: THM320905



Environment Agency

Kilometres

0 0.25 0.5

Legend

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

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.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

National generalised (JFLOW) flood levels

THM320905

The modelled flood levels for the closest most appropriate points for your site that are provided below:

Grid cell reference	Easting	Northing	Maximum Depths (m)		
			1% annual probability	1% annual probability + (20%)	0.1% annual probablility
Floodpoint 1	482651	175997	0.20	0.23	0.33
Floodpoint 2	482672	175992	0.12	0.16	0.23
Floodpoint 3	482676	175972	0.24	0.27	0.33

Grid cell reference	Easting	Northing	Maximum Levels (mAOD)		
			1% annual probability	1% annual probability + (20%)	0.1% annual probablility
Floodpoint 1	482651	175997	37.08	37.11	37.21
Floodpoint 2	482672	175992	37.27	37.31	37.38
Floodpoint 3	482676	175972	37.29	37.32	37.38

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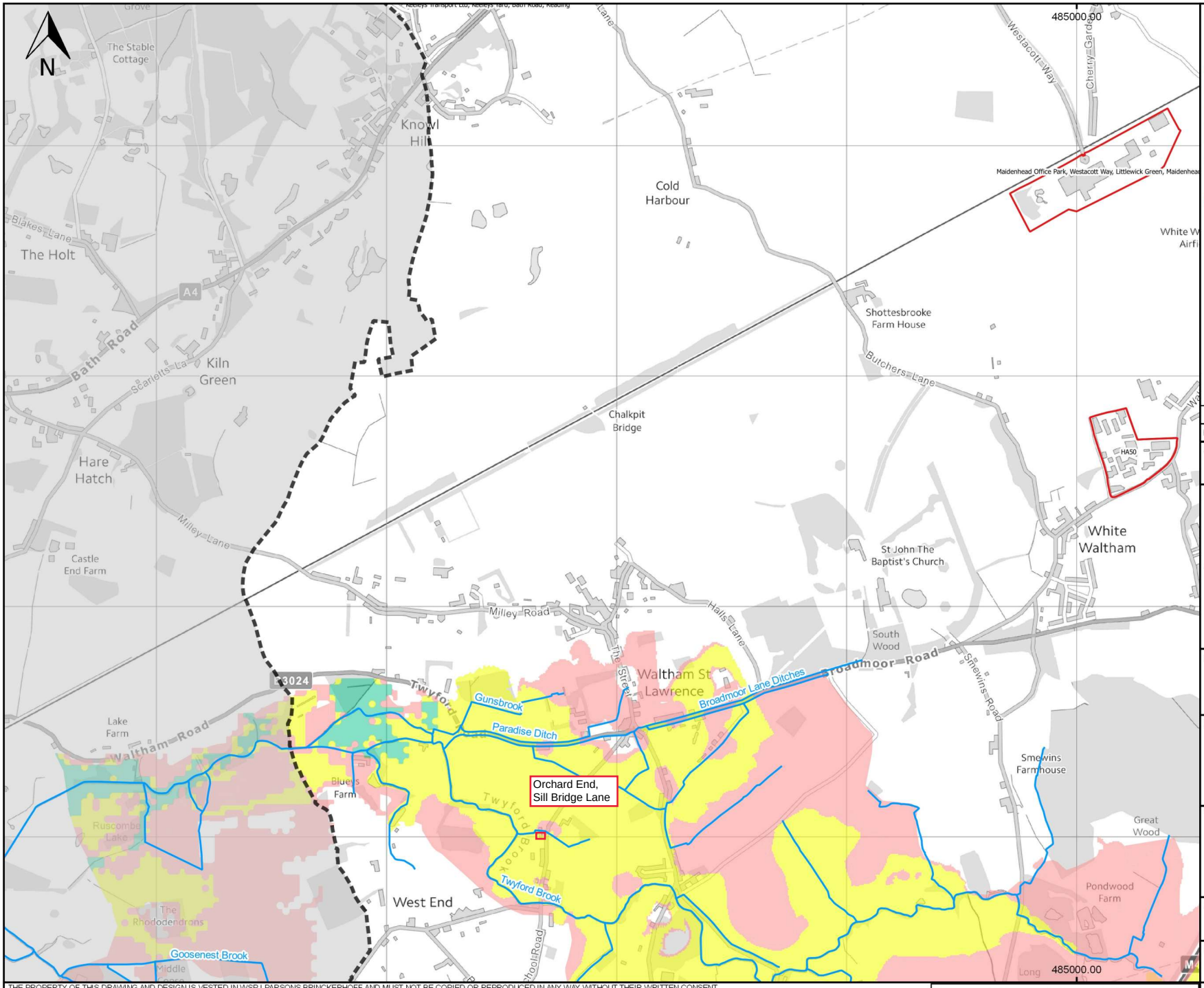
Appendix F – Extract from Strategic Flood Risk Assessment for Royal Borough of Windsor & Maidenhead



KEY:

- RBWM Boundary
- EA Main Rivers
- Zone 2 Medium Probability
- Zone 3a High Probability
- Zone 3b Developed
- Zone 3b Functional Floodplain
- Areas Benefitting from Defences
- Flood Defences

REV	DATE	BY	DESCRIPTION	CHK	APP
A	17/05/17	OB	FIRST DRAFT	CF	CF

STATUS: FOR INFORMATION ONLY

THE ROYAL BOROUGH OF WINDSOR AND MAIDENHEAD

CLIENT: ROYAL BOROUGH OF WINDSOR AND MAIDENHEAD

PROJECT: RBWM LEVEL 1 SFRA

TITLE: FIGURE 7

SCALE @A3:	CHECKED:	APPROVED:
1:16,000		
QGIS FILE: Atlas_Level_1.qgs	DRAWN:	DATE: 18/05/17
PROJECT No: 50600499	DRAWING No: 0499-SFRA-LV1	REV: A

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0 0.25 0.5 0.75 1 km

Created by: ukomb001 - 2017-05-18 15:22:27 - //SER02COL2UK/GIS/data/WSP_UK/WSP_D/Basing/RBWM SFRA/Analysis/Data/2017-03-28 Sequential Test OB/Workspaces/Atlas_Level_1.qgs