84 East Road

Flood Risk Assessment

Job Number: 1368

Date	Version	Notes/Amendments
August 2023	1	Issued for Information

Contents **Page**

Acronyms	
AOD	Above Ordnance Datum
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
FRA	Flood Risk Assessment
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
SFRA	Strategic Flood Risk Assessment

Introduction

Flume Consulting Engineers have been appointed to undertake a Flood Risk Assessment (FRA) for the proposed development at 84 East Road, West Drayton, UB7 9HA.

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' (PPG). This FRA also incorporates advice and guidance from the Environment Agency (EA), the Strategic Flood Risk Assessment (SFRA) produced by the London Borough of Hillingdon and CIRIA documents.

The EA's indicative floodplain map shows that the site is located in Flood Zone 1. This assessment will therefore focus on the flood risk to the site from surface water, as well as from other sources.

Site Description and Location

The existing property is a two storey end of terrace dwelling. The dwelling fronts onto East Road which is occupied entirely by similar dwelling types. To the east of the existing house is an existing extension and outbuilding. The rear (facing south) has a large space between this property and the one next door, which is also set some distance away from the boundary fence line.

The site postcode is UB7 9HA and the OS grid reference is TQ 07186 78875.

FIGURE 1. SITE LOCATION

Development Proposal

The developed proposals involve the demolition of the existing side extension and single storey outbuilding and the construction of a new end-terrace dwelling. The new property, which generally replaces hardstanding areas and drained roof areas, will not increase the surface water run-off.

The proposed development is expected to be finished throughout to the same floor level as the existing ground floor, and will be accessed via main entrance. Vehicular access will be maintained and remain unchanged from the existing case (via East Road). Pedestrian street access is also unaffected.

FIGURE 2. PROPOSED DEVELOPMENT

Flood Risk Assessment

Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 1 (Low risk). Land in this flood zone is assessed as having annual probability of river flooding less than 0.1% (Figure 3).

Developments in this flood zone do not have any restrictions, provided they do not increase the risk of flooding elsewhere.

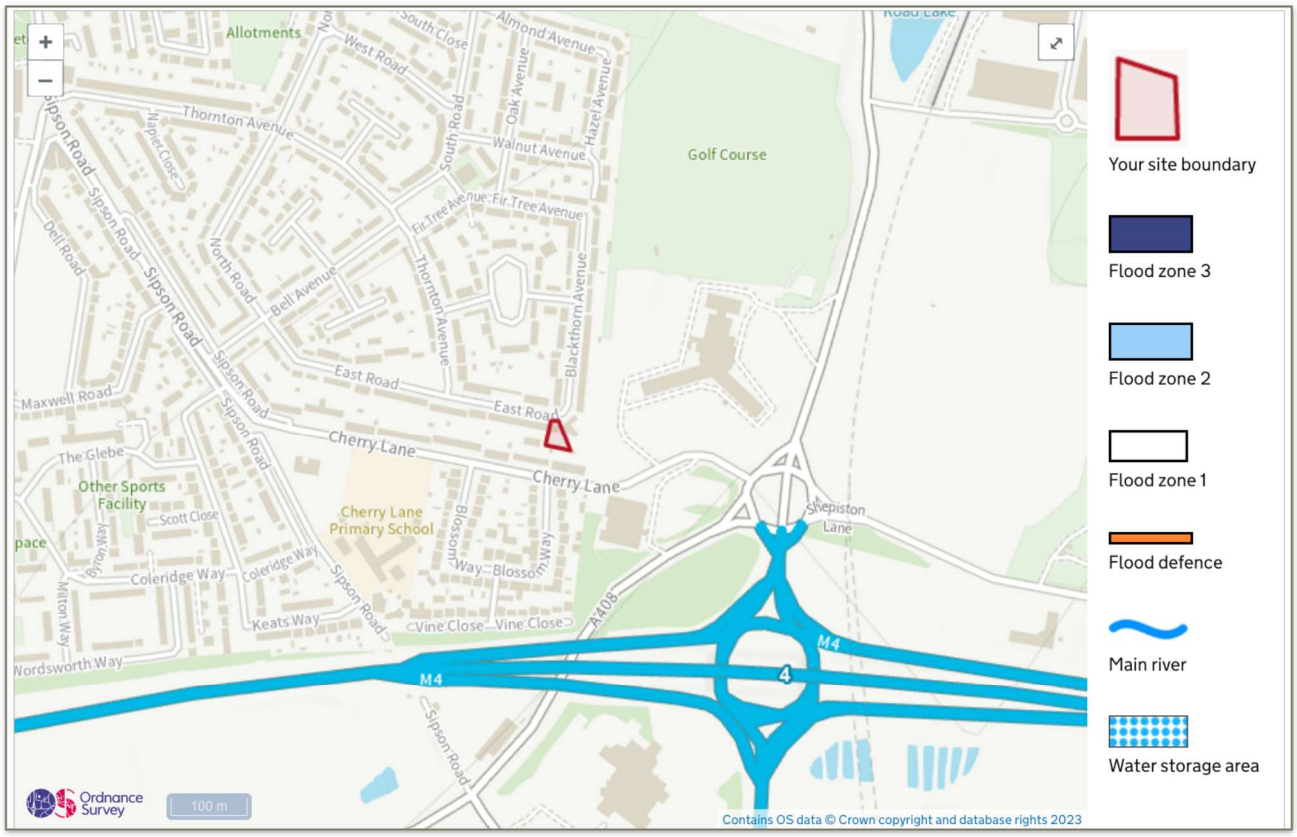

FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2023)

Flood Risk from Groundwater

Flooding from groundwater typically occurs following prolonged periods of wet weather within low laying areas underlain by permeable aquifers. When aquifers are fully saturated, flooding at surface level can occur from the sub-surface strata.

The susceptibility or vulnerability of the particular area, is highlighted on the groundwater vulnerability map (Figure 4), which indicates a *Unproductive* groundwater vulnerability in the area.

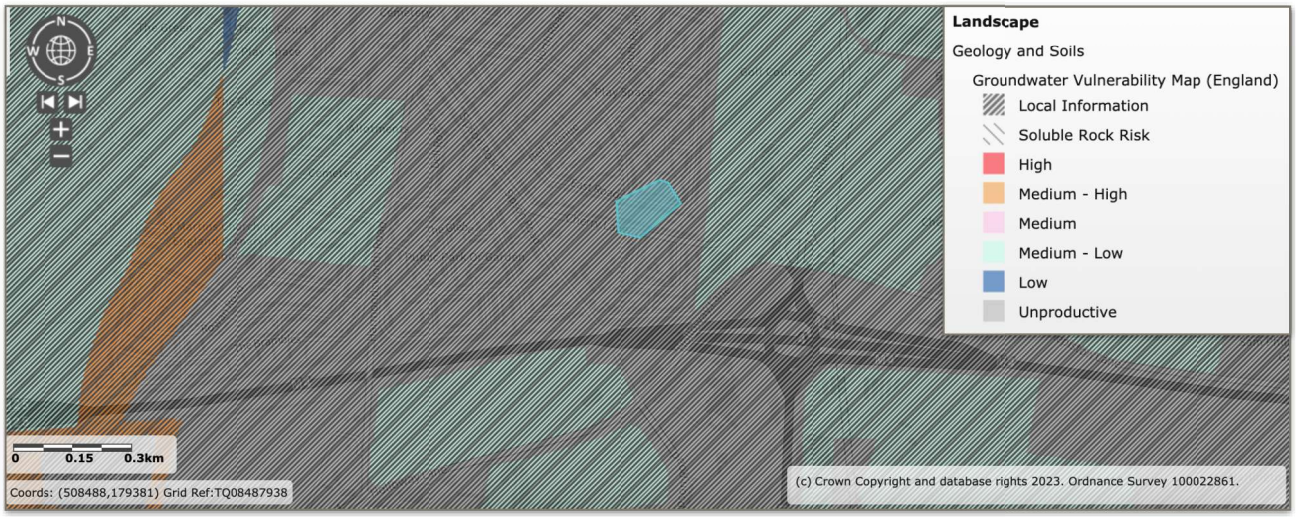

FIGURE 4. DEFRA'S GROUNDWATER VULNERABILITY MAP (DEFRA.GOV.UK, 2023)

Areas which are categorised as *Unproductive* are typically geological regions comprising of rocks that have low significance for water supply or baseflow to rivers, lakes and wetlands. They consist of bedrock or superficial deposits with a low permeability that naturally offer protection to any aquifers that may be present beneath; indicating a low risk of elevated groundwater in the area.

These maps consider very large areas of the underlying geology, and ignore subtle shifts in local geology and ground levels. Furthermore, according to the SFRA there are no recorded instances of flooding relating to groundwater in the vicinity of the proposed site (only fluvial and pluvial sources):

Source: Environment Agency (from historical flood outline)

Date	Source of boundary	Source of flooding	Cause of flooding
Nov-65	other	main river	channel capacity exceeded (no raised defences)
Sep-68	surveyed - Agency	ordinary watercourse	channel capacity exceeded (no raised defences)
Aug-77	Local Authority	other	local drainage/surface water
Jan-79	Local Authority	main river	channel capacity exceeded (no raised defences)

Groundwater flooding is an important consideration for subterranean basements. However, no basements are proposed in this instance. To mitigate the possibility of any groundwater emergence at ground level, the EA notes that a replacement floor constructed to a high standard with reinforced concrete and with a continuous damp proof membrane can be an effective solution where groundwater pressures are low. Further *Flood Mitigation Measures* are noted in the respective chapter below. Therefore the likelihood of groundwater flooding at ground level is considered to be low risk.

Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. The Environment Agency's Surface Water Flood Risk Map can also reflect surface water flooding along the line of small ordinary watercourses. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

The EA's indicative Surface Water Flooding Map, Figure 5, shows that the site is at *Low - Very Low* risk of surface water flooding.

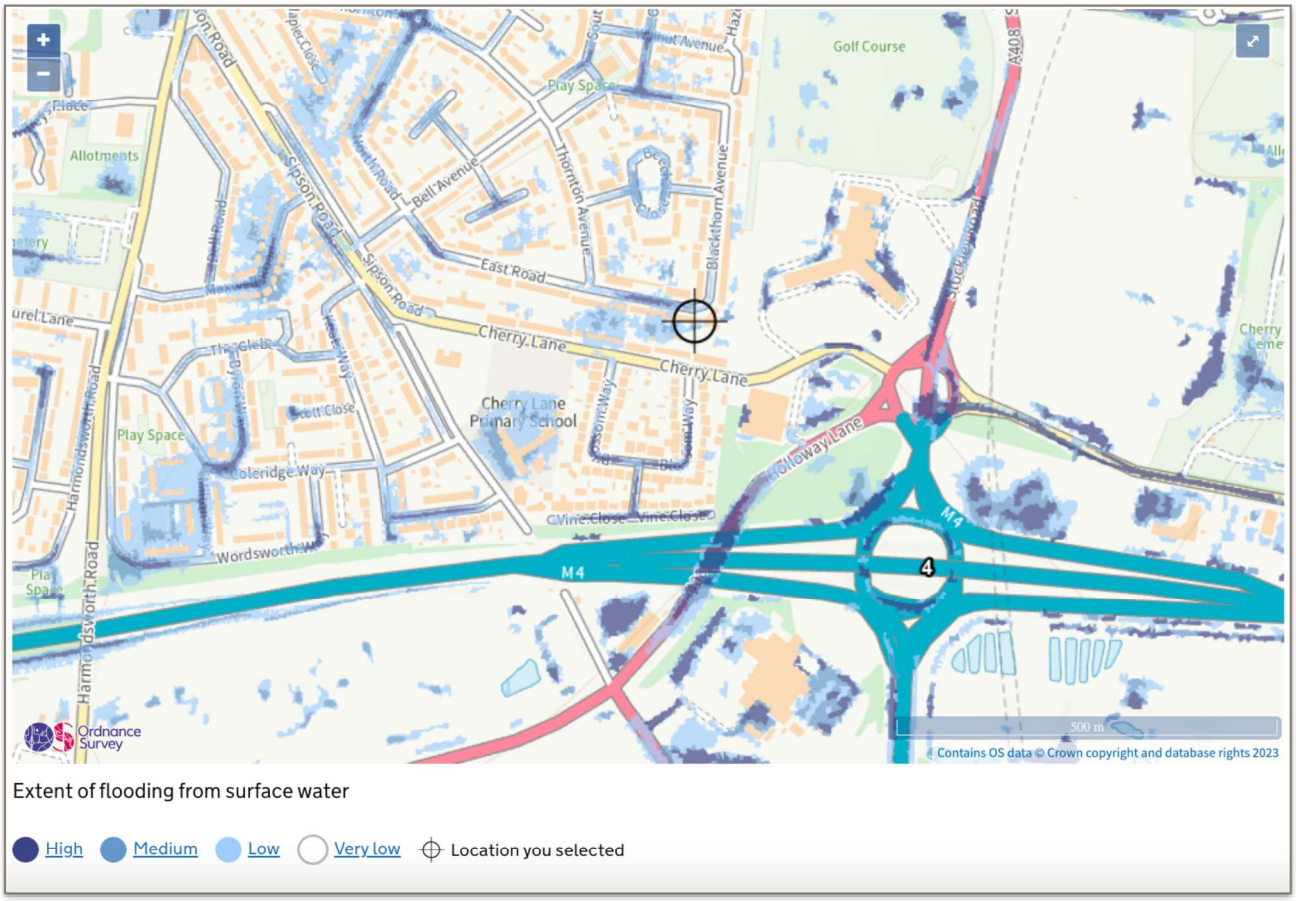

FIGURE 5. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2023)

The map also shows that only the East Road is at risk of flooding in the 1 in 100-year (1%) storm event. However, surface water will be maintained within the roads' channels. Flood water within road channels is expected during extreme storm events, considering that most surface water drainage system will be surcharged during high storm event.

Flooding from surface water is difficult to predict, or indeed model accurately, as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. Furthermore, as part of the extension, permeable paving and other SuDS features should be promoted within the design. External ground levels immediately outside of the building will fall away from

the building thresholds, ensuring the minimisation of storm water ingress. This can be achieved by either reducing the external ground levels below internal floor levels, and/or incorporating channel drainage system along the entrance into the building to positively drain overland flows.

Therefore, the likelihood of surface water flooding in the proposed scenario is considered low risk.

Flood Risk from Reservoir Failure

The EA's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.

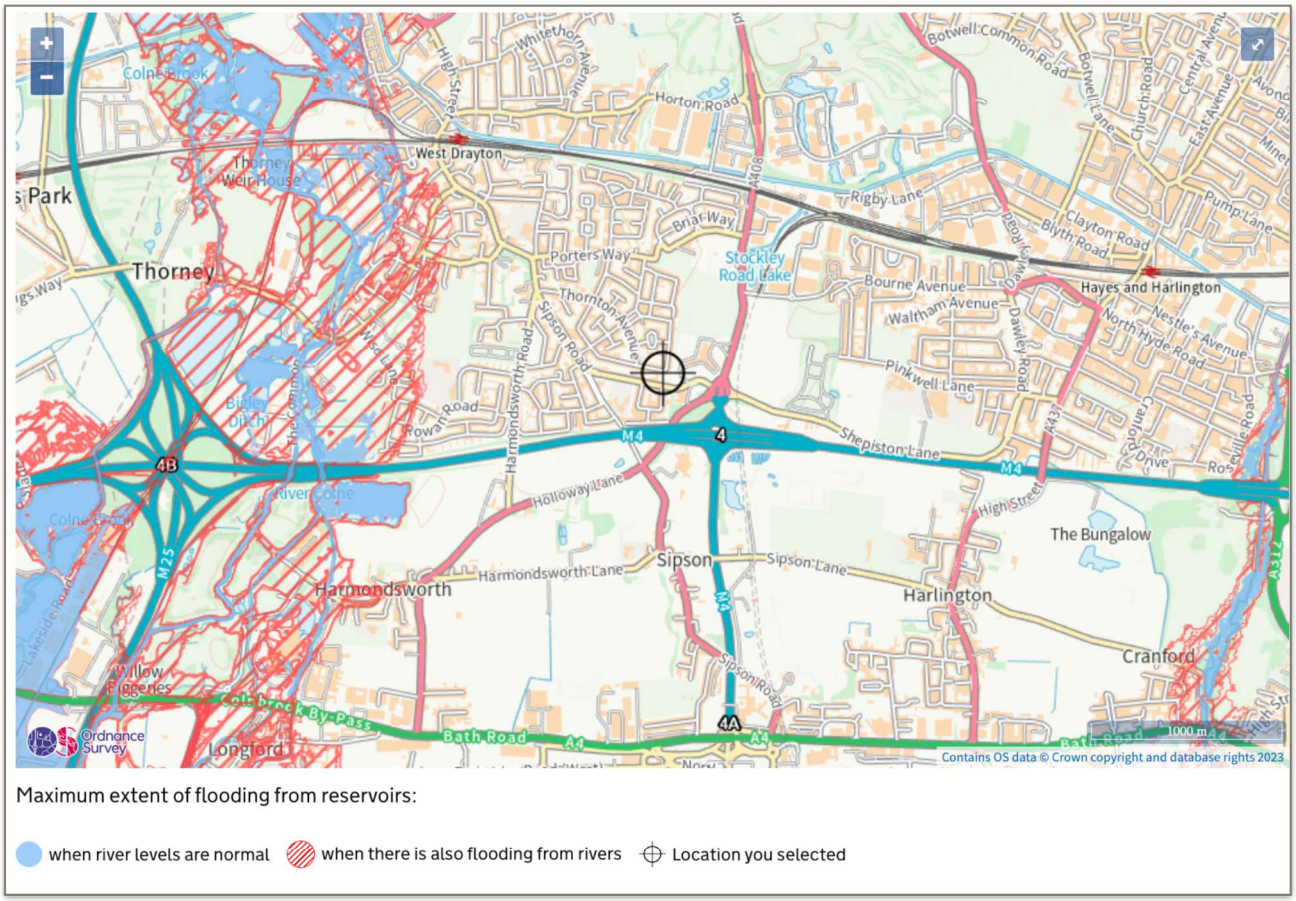

FIGURE 6. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2023)

Figure 6 shows that Reservoir Failure has no impact on the Flood Risk to the site.

Flood Mitigation Measures

The proposed development resides in Flood Zone 1 and is not at risk of flooding. Developments in this flood zone do not have any restrictions, provided they do not increase the risk of flooding elsewhere.

Surface Water Flood Risk is considered low. As part of the proposals, permeable paving and other SuDS features should be promoted within the design. External ground levels immediately outside the building will fall away from the building thresholds, ensuring the minimisation of storm water ingress. This can be achieved by either reducing the external ground levels below internal floor levels, and/or incorporating channel drainage system along the entrance into the building to positively drain overland flows. Finally, all drainage systems should be routinely maintained to reduce the risk of blockage and surface water flood risk.

Groundwater flooding as a sole source is deemed to be relatively low risk to the site. Any adjustment in external proposed levels will be designed to ensure surface water is directed away from building thresholds, should groundwater migrate to surface level. Appropriate consideration of this risk should be included within the design due to the possible elevated groundwater levels. It is recommended that, where feasible and practical, additional mitigation measures are incorporated in the proposed design. Furthermore, the EA notes that a replacement floor constructed to a high standard with reinforced concrete and with a continuous damp proof membrane can be an effective solution where groundwater pressures are low.[1]

Finally, all drainage systems should be routinely maintained to reduce the risk of blockage and surface water flood risk. It is also recommended that channel drainage is introduced immediately outside of the proposed building threshold as this would assist in alleviating ponding issues.

[1] 'Flooding from groundwater: Practical advice to help you reduce the impact of flooding from groundwater' - *Environment Agency*

Conclusions

The site resides in Flood Zone 1 where there is less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Developments in this flood zone have no restrictions other than ensuring surface water drainage proposals do not increase the flood risk on site and the surrounding areas.

The proposed development will not increase the impermeable areas on the site, as the external area is currently positively drained hardstanding/roof areas. It will therefore not increase the flood risk from surface water, as there will be no increase in the surface water run-off rate or volumes.

The FRA has further demonstrated that the proposed extension has an acceptable flood risk within the terms and requirements of NPPF and accompanying technical guidance.

Note:

This report has been prepared for the purposes of submitting for planning to the local planning authority for review in relation to the associated flood risk for the proposed development, and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

	Prepared By	Checked By	Approved for issue
Name	Tom Quigg BSc MSc CEng MICE	Magaly Sedeño BA	Tom Quigg BSc MSc CEng MICE
Signature	TQ	MST	TQ
Date	21 August 2023	21 August 2023	21 August 2023