

ENVIRONMENT

Henry Boot Developments
Tewin Road
Welwyn Garden City
Flood Risk Assessment

ENVIRONMENT

Henry Boot Developments Tewin Road Welwyn Garden City Flood Risk Assessment

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May 2022

DOCUMENT ISSUE RECORD

Document Number:	TRW-BWB-ZZ-XX-RP-YE-0003_FRA
BWB Reference:	LNH-2043_FRA

Revision	Date of Issue	Status	Author:	Checked:	Approved:
P01	27/08/2021	S2	Alex Petrakis BSc. (Hons)	Matthew Bailey BSc. (Hons)	Keith Alger BSc(Hons) MSc
P02	07/09/2021	S2	Alex Petrakis BSc. (Hons)	Matthew Bailey BSc. (Hons)	Keith Alger BSc(Hons) MSc
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EXECUTIVE SUMMARY

This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. It has been produced on behalf of Henry Boot Developments in respect of a planning application for Tewin Road, Welwyn Garden City (approximate grid reference: TL 245131).

This report demonstrates that the proposed development is not at significant flood risk, subject to the recommended flood mitigation strategies being implemented.

The site is situated in Flood Zone 1 and is not near any main rivers or ordinary watercourses. The Environment Agency and Lead Local Flood Authority have also confirmed the site to be located in a low flood risk area.

There is a residual risk from exceedance of the local sewer network, despite cover depths of approximately 2m. Where possible, floor levels should be raised 150mm above surrounding ground. Site levels should also be profiled to encourage exceedance flows toward the nearest drainage point.

The site is at very low risk of surface water flooding, groundwater levels have historically been recorded at a minimum depth of 19.3m bgl and all other sources of risk are considered to be low.

A separate Sustainable Drainage Statement has been prepared, despite the existing site being brownfield. This demonstrates that the site will utilise storage in attenuation tanks and restrict flows to Greenfield run-off rates, discharging into the local surface water sewer network.

In compliance with the requirements of NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area subject to suitable management of surface water runoff discharging from the site.

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1. INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance on behalf of Henry Boot Developments in respect of a planning application for Tewin Road, Welwyn Garden City (approximate grid reference: TL 245131).
- 1.2 This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals. Summary information is included as **Table 1.1**.

Table 1.1: Site Summary

Site Name	Tewin Road
Location	Welwyn Garden City
NGR (approx.)	TL 245131
Application Site Area (ha)	1.2ha (approximately)
Development Type	Commercial
Flood Zone Classification	Flood Zone 1
NPPF Vulnerability	Less Vulnerable
Environment Agency Office	South East
Lead Local Flood Authority	Hertfordshire County Council
Local Planning Authority	Welwyn Hatfield Borough Council

Sources of Data

- i. Topographical Survey by Utiliscan, July 2020 (ref: UTI-0629-10)
- ii. OS Explorer Series mapping
- iii. Environment Agency consultation
- iv. Lead Local Flood Authority (LLFA) consultation
- v. Welwyn Hatfield Strategic Flood Risk Assessment
- vi. Hertfordshire County Council Preliminary Flood Risk Assessment
- vii. Web Based Soil Mapping
- viii. Ground Investigations undertaken by BWB Consulting (ref: TRW-BWB-00-XX-RP-EN-0002)

- ix. Thames Water Sewer Records
- x. British Geological Survey Drift & Geology Maps

Existing Site

- 1.3 The site is located in the centre of Welwyn Garden City, Hertfordshire. The site is bound to the east by the existing Tewin Road Gas Compound and Tewin Road, and to the north, west and south by urban development. The site's location is illustrated within **Figure 1.1**.
- 1.4 The topographic survey, available as **Appendix 1**, shows that the site slopes in a north-easterly direction. Ground levels range from 83.5m Above Ordnance Datum (AOD) in the south west to 81.4mAOD in the north east.
- 1.5 The site is currently brownfield in nature and comprises of 2 large concrete holder bases with paved surfaces. The existing building in the southeast has a commercial use.
- 1.6 The site is expected to drain to the northeast in line with the topography, however given the urban nature of the site and surrounding area, it is served by public sewers.
- 1.7 Information published by the British Geological Survey (BGS) indicates that the site is directly underlain by superficial deposits of the Kesgrave Catchment Subgroup (sand and gravel) (Secondary A Aquifer) over the bedrock geology of the Lewes Nodular Chalk and Seaford Chalk Formations (chalk) (Principal Aquifer). Made Ground is expected to be present overlying the superficial deposits, associated with historic usage of the site.

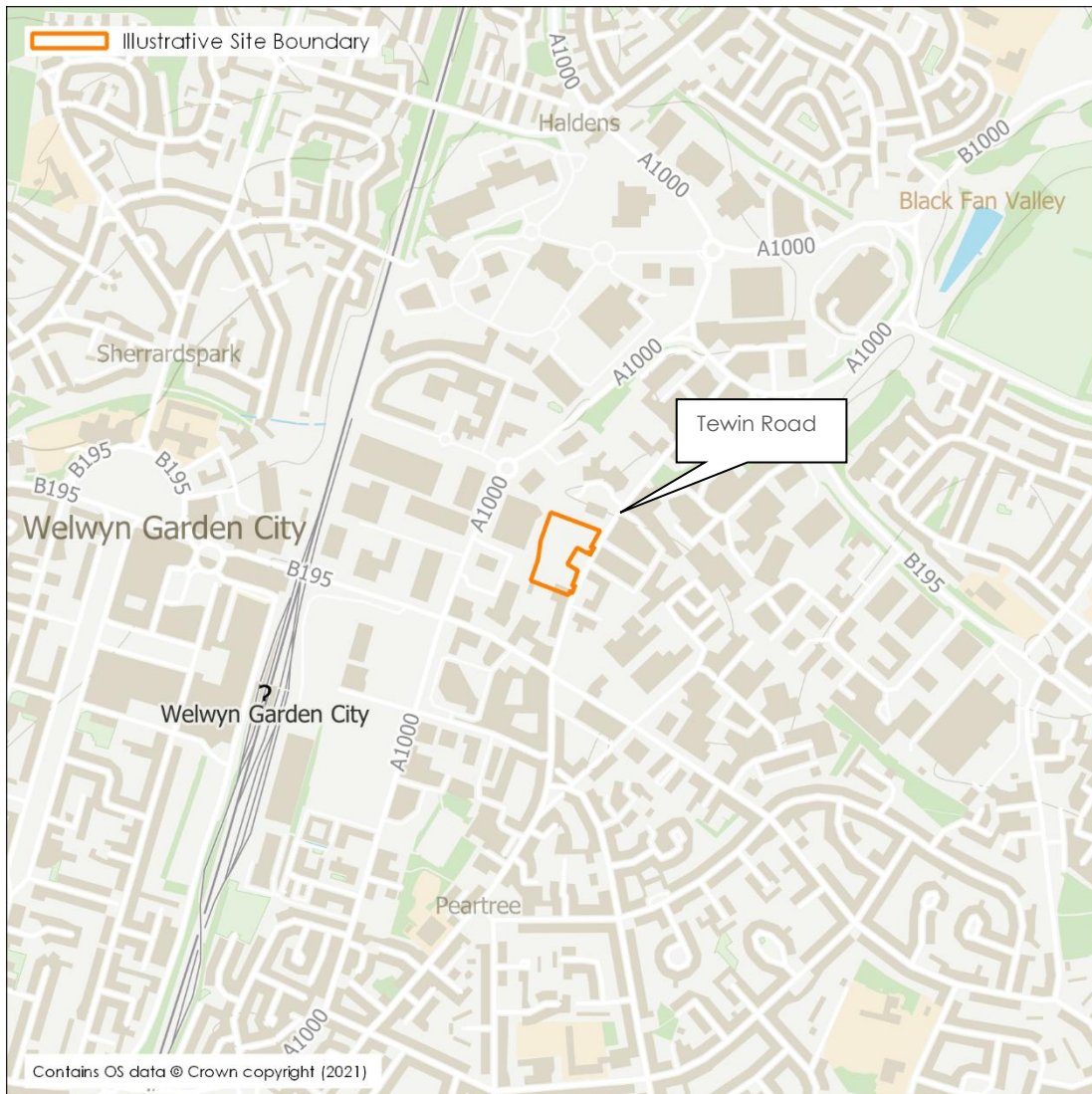


Figure 1.1: Site Location

Proposed Development

- 1.8 The proposed development relates to three separate commercial buildings that will be located on the western side of the site. The remainder of the site will comprise associated parking and landscaping. Two access points are proposed in the north east and south east of the site onto Tewin Road. The development Masterplan is available as **Appendix 2**.

2. FLOOD RISK PLANNING POLICY

National Planning Policy Framework

- 2.1 The NPPF¹ sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online².
- 2.2 The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 2.3 The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing a Flood Risk Assessment.
- 2.4 The Planning Practice Guidance includes a series of tables that define Flood Zones (Table 1), the flood risk vulnerability classification of development land uses (Table 2) and 'compatibility' of development within the defined Flood Zones (Table 3).
- 2.5 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

Flood Map for Planning

- 2.6 With particular reference to planning and development, the Flood Map for Planning produced by the Environment Agency identifies Flood Zones in accordance with Table 1 of the Planning Practice Guidance.
- 2.7 Flood Zone 1 (Low Probability) is defined as land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability).
- 2.8 Flood Zone 2 (Medium Probability) is defined as land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP); or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1% AEP).
- 2.9 Flood Zone 3a (High Probability) is defined as land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP). This is represented by "Flood Zone 3" on the Flood Map for Planning.
- 2.10 Flood Zone 3b (The Functional Floodplain) is defined as land where water has to flow or be stored in times of flood. This is not identified or separately distinguished from Zone 3a on the Flood Map for Planning.

¹ Revised National Planning Policy Framework, Ministry of Housing, Communities & Local Government, 2021

² Planning Practice Guidance: <https://www.gov.uk/government/collections/planning-practice-guidance>

2.11 The site is shown to be located within Flood Zone 1 as shown in **Figure 2.1**.



Figure 2.1: Flood Map for Planning

The Design Flood

- 2.12 The Planning Practice Guidance identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime.
- 2.13 This is a flood event of a given annual flood probability, which is generally taken as fluvial (river) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Climate Change

- 2.14 Predicted future change in peak river flows caused by climate change are provided by the Environment Agency within their online guidance³, with a range of projections applied to regionalised 'Management Catchments'.
- 2.15 The site falls within the Upper Lee Management Catchment. **Table 2.1** identifies the relevant peak river flow allowances from this river basin district.

Table 2.1: Peak River Flow Allowance for the Upper Lee Management Catchment

Allowance Category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper End	23%	27%	59%
Higher Central	9%	7%	22%
Central	3%	-1%	10%

- 2.16 When determining the appropriate allowance for use in a Flood Risk Assessment the Flood Zone classification, flood risk vulnerability and the anticipated lifespan of the development should be considered. **Table 2.2** provides a matrix summarising the Environment Agency's guidance on determining the appropriate allowances.

Table 2.2: Application of the Appropriate Climate Change Allowance

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	No allowance required unless the site is in a location that may fall within Flood Zone 2 or 3 in the future, in which case use the central allowance.				
2	Use the higher central allowance	Use the central allowance			
3a	Use the higher central allowance	Development should not be permitted	Use the central allowance		
3b	Use the higher central allowance	Development should not be permitted			Use the central allowance
If development is considered appropriate by the local authority when not in accordance with Flood Zone vulnerability categories, then it would be appropriate to use the higher central allowance.					

³ <https://environment.data.gov.uk/hydrology/climate-change-allowances?mgmtcatid=3105>

- 2.17 Given the site's position in Flood Zone 1 and the limited risk anticipated in the future from fluvial sources, due to the distance and topography between the site and nearest watercourse climate change will not be considered further.
- 2.18 The upper end climate change scenario allowances are reserved for Nationally Significant Infrastructure Projects (NSIPs), new settlements and urban extensions, where an additional 'sensitivity test' is required. Therefore, this does not need to be considered for this development.

Strategic Flood Risk Assessment

- 2.19 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.
- 2.20 The Welwyn Hatfield Level 1 SFRA⁴ has been reviewed in the production of this FRA. The SFRA provides information specific to the site location in the form of fluvial, surface water and groundwater flood risk mapping, as well as records of historical flooding. Information from the Level 1 SFRA will be referenced within **Section 3** where applicable.

Preliminary Flood Risk Assessment

- 2.21 A Preliminary Flood Risk Assessment (PFRA) is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater, and ordinary watercourses, and is prepared by the LLFA.
- 2.22 The Hertfordshire PFRA⁵ considers flooding from surface water runoff, groundwater, sewers, ordinary watercourses and canals. Information from the PFRA will be referenced within this report where applicable.

Local Plan

- 2.23 The Welwyn Hatfield Borough District Plan⁶ has also been reviewed to consider any regional objectives or guidance relating to development and flood risk. The new Local Plan, which is currently under review, was not available at the time of writing, however, the council have informed BWB that policy *SADM 14: Flood Risk and Surface Water Management* should be considered.

⁴ Welwyn Hatfield Borough Level 1 Strategic Flood Risk Assessment (JBA, 2019)

⁵ Hertfordshire Preliminary Flood Risk Assessment (June 2011)

⁶ Welwyn Hatfield Borough District Plan, 2005.

Other Relevant Policy and Guidance

Improving the Flood Performance of New Buildings; Flood Resilient Construction

- 2.24 The Flood Resilient Construction⁷ document is the outcome of a joint research project between Communities and Local Government and the Environment Agency. A Research and Development Technical Report⁸ is also available.
- 2.25 The document provides guidance on flood resilient design and construction and possible techniques and building materials. These documents are referred to in this Flood Risk Assessment and have been considered when recommending mitigation and resilience measures.

⁷ Improving the Flood Performance of New Buildings; Flood Resilient Construction, CLG, May 2007

⁸ Flood Resistance and Resilience Solutions; an R&D Scoping Study, Defra/Environment Agency, 2007

3. POTENTIAL SOURCES OF FLOOD RISK

3.1 Flooding can occur from a variety of sources, or combination of sources, which may be natural or artificial. **Table 3.1** below identifies the potential sources of flood risk to the site in its current condition, and the impacts which the development could have in the wider catchment, prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 4**.

Table 3.1: Pre-Mitigation Sources of Flood Risk

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site is located in Flood Zone 1.
Coastal				X	The site is not in an area at risk of coastal flooding
Canals				X	There are no canals in the vicinity.
Groundwater			X		Site investigations show groundwater levels recorded at 19.3m to 23.5m below ground level (bgl).
Reservoirs and waterbodies			X		The site is shown to fall outside of the area at risk of reservoir failure.
Pluvial runoff			X		The site is shown to be at very low risk, with a nominal area at 'low risk' on Tewin Road.
Sewers		X			The sewer network around the site may have limited capacity, which could be exceeded in an extreme storm event.
Effect of development on the wider catchment			X		The existing site is currently paved. Therefore, impermeable surfaces will not increase.

Fluvial Flood Risk

3.2 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

- 3.3 With reference to the Flood Map for Planning displayed in **Figure 2.1**, the site is shown to be at limited risk of river flooding, lying in Flood Zone 1.
- 3.4 There are also shown to be no ordinary watercourses in the immediate vicinity. Fluvial risk is therefore considered to be low.

Coastal/Tidal Flood Risk

- 3.5 Inundation of low lying coastal areas by the sea may be caused by seasonal high tides, storm surges and storm driven wave action. Coastal flooding is most commonly a result of a combination of two or more of these mechanisms, which can result in the overtopping or breaching of sea defences. River systems may also be subject to tidal influences.
- 3.6 The site does not lie in an area at risk of coastal flooding.

Flood Risk from Canals

- 3.7 The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders and boreholes and manages water levels by transferring it within the canal system.
- 3.8 Water in a canal is typically maintained at predetermined levels by control weirs. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues rising it will reach the level of the storm weirs. The control weirs and storm weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water to enter the canal or for the weirs to become obstructed. In such instances the increased water levels could result in water overtopping the towpath and flowing onto the surrounding land.
- 3.9 Flooding can also occur where a canal is impounded above surrounding ground levels and the retaining structure fails.
- 3.10 There are no canals within the vicinity of the site.

Groundwater Flood Risk

- 3.11 Groundwater flooding occurs when the water table rises above ground elevations. It is most likely to happen in low lying areas underlain by permeable geology. This may be regional scale chalk or sandstone aquifers, or localised deposits of sands and gravels underlain by less permeable strata such as that in a river valley.
- 3.12 Previous site investigations undertaken by BWB Consulting (ref: TRW-BWB-00-XX-RP-EN-0002) report that groundwater levels of between 19.3m bgl and 23.5m bgl have been recorded. Made ground is also present which further raises the site due to historical usage. Additionally, given the limited watercourses in the vicinity, the groundwater risk is considered low.

Flood Risk from Reservoirs & Large Waterbodies

- 3.13 Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 3.14 To help identify this risk, reservoir failure flood risk mapping has been prepared, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst-case scenario and is only intended as a guide.
- 3.15 The site falls outside of the areas predicted to be at risk of reservoir flooding.

Pluvial Flood Risk

- 3.16 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 3.17 Risk of flooding from surface water mapping has been prepared, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. An extract from the mapping is included as **Figure 3.1**.
- 3.18 The mapping shows that the site itself is at very low risk of surface water flooding. Tewin Road experiences minor flooding in an extreme 1 in 1000yr event to the east and south. Therefore, the development will not impede any overland flows sourced offsite.

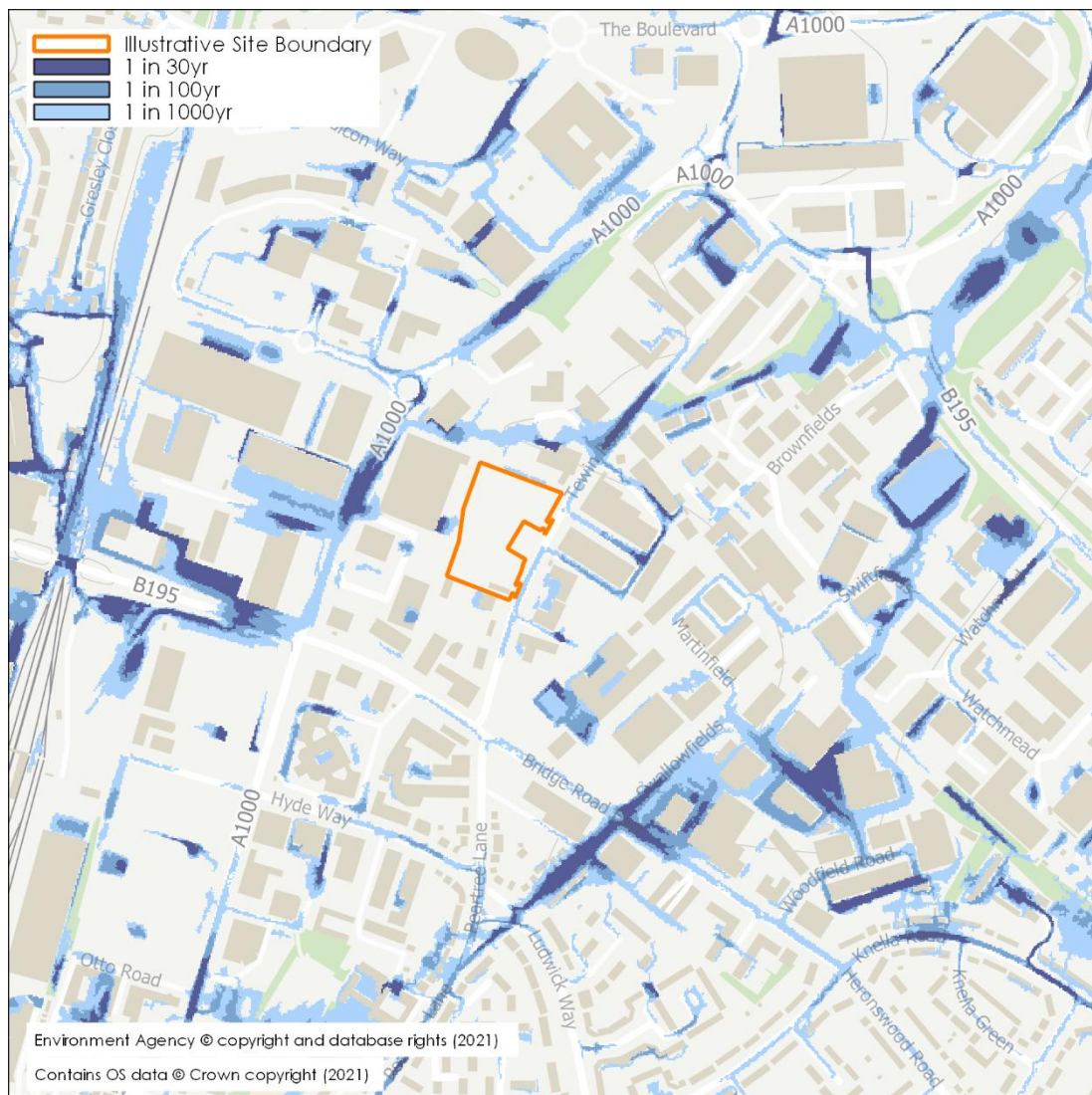


Figure 3.1: Surface Water Flood Map

Flood Risk from Sewers

- 3.19 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.
- 3.20 A Thames Water Asset Location Search (ALS) was completed to understand the surrounding sewer network and the risk it may pose, which is available as **Appendix 3**. The plans show that 225mm diameter separate surface water and foul sewers are present in Tewin Road that flow north. The manholes within the vicinity are shown to have a depth to invert of 2.14m, which will provide some mitigation in the risk of exceedance, however, exceedance may still occur during extreme events. The road and pavement however are expected to convey exceedance given that the development slopes toward the road.

- 3.21 The plans also show a large 1200mm diameter surface water sewer that flows east to west across land to the north of the site, which joins Tewin Road to the northeast of the site. This however has a large cover depth of approximately 6m.
- 3.22 Welwyn and Hatfield Borough Council did not refer to any previous sewer flooding at the site. Please see **Appendix 4** for further liaison.

Effect of Development on Wider Catchment

Development Land Use/Drainage Considerations

- 3.23 Given the site is currently brownfield, it is unlikely that development will increase surface water runoff rates. However, in line with best practice, mitigation is further discussed in **Section 4**.

4. FLOOD RISK MITIGATION

- 4.1 **Section 3** has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

Sequential Arrangement

- 4.2 The entire site has been strategically located outside of areas at risk of flooding and sits within Flood Zone 1.

Development Levels

- 4.3 Where possible, buildings should be raised 150mm above surrounding ground levels to mitigate residual risks of groundwater, pluvial and sewer flooding.
- 4.4 Ground levels should be profiled to encourage pluvial runoff and overland flows away from the built development and towards the nearest drainage point.

Safe Access and Egress

- 4.5 Tewin Road is shown to contain a nominal area at low risk of surface water flooding. However, safe access/egress can be achieved for site users and the emergency surfaces in a southerly direction.

Surface Water Drainage

- 4.6 To mitigate the development's impact on the current runoff regime it is proposed to incorporate surface water attenuation and storage as part of the development proposals.
- 4.7 Further information on the drainage approach is provided within the accompanying Sustainable Drainage Statement, reference TRW-BWB-GEN-XX-RP-C-0001.
- 4.8 In brief, the development will utilise 2no. attenuation tanks with 2no. hydrobrakes outflow to restrict flows into the existing Thames Water surface water sewer. A minimum of 88% betterment upon existing rates (1 in 1yr) will be provided, increasing to 97% betterment during a 1 in 100yr plus 40% climate change scenario.

Foul Water Drainage

- 4.9 It is proposed to drain used water from the development separately to surface water. It is proposed that the site connects into the existing Thames Water Assets foul sewer.

5. CONCLUSIONS AND RECOMMENDATIONS

- 5.1 This Flood Risk Assessment (FRA) has been prepared in accordance with requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Henry Boot Developments in respect of a planning application for the commercial development at Tewin Road, Welwyn Garden City.
- 5.2 This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.
- 5.3 This report demonstrates that the proposed development is not at significant flood risk, subject to the recommended flood mitigation strategies being implemented. The identified risks and mitigation measures are summarised within **Table 5.1**:

Table 5.1: Summary of Flood Risk Assessment

Flood Source	Risk & Proposed Mitigation Measures
Fluvial	The site is located in Flood Zone 1. There are no main rivers or ordinary watercourses within the immediate vicinity.
Pluvial runoff	The site is categorized as very low risk. Tewin Road, the access point of the site, contains a nominal area at low risk immediate to the site. Development levels should be profiled to ensure rainwater is directed away from built development and towards the nearest drainage point.
Sewers	The local sewer network may be exceeded in extreme events, despite cover depths in excess of 2m local to the site. Where possible, finished floor levels should be set 150mm above the surrounding ground, to remove residual risk.
Other sources	All other sources of risk have been considered as low/negligible.
Impact of the Development	The site has been located so as to not encroach or displace any floodplain. Surface water runoff from the development will be controlled appropriately and discharged to the local surface water sewer network, providing a minimum 88% betterment upon existing discharge rates. The foul water from the development will be discharged to the public sewer in Tewin Road, which the operator has confirmed has capacity.
This summary should be read in conjunction with BWB's full report. It reflects an assessment of the Site based on information received by BWB at the time of production.	

- 5.4 In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area subject to suitable management of surface water runoff discharging from the site.

APPENDICES

Appendix 1: Topographical Survey

Appendix 2: Development Masterplan

Sorting Office

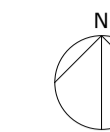
ESS

BRIDGEFIELDS

Mast

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500 @ A1



AREA SCHEDULE : GEA

	GEA						Total GEA	
	UNIT 01		UNIT 02		UNIT 03		Sqm	Sqft
Ground Floor	3,296.10	35,479	1,080.39	11,629	1,467.96	15,801		
First Floor	408.45	4,397	164.11	1,766	202.04	2,175		
Total	3,704.55	39,876	1,244.50	13,396	1,670.00	17,976	6,619.05	71,247

The contractor is to check all dimensions on site and report any discrepancies to the architect. All rights described in chapter IV of the copyright, designs and patents act 1988 have been generally asserted.

- Notes
- APPLICATION BOUNDARY
 - ELECTRIC CAR CHARGING BAYS
 - ELECTRIC VEHICLE CHARGING CABLES
 - CYCLE RACKS WITH BASKETED STAIRS
 - LITTER BIN
 - BENCH AND ASSESS BICYCLE REPAIR FACILITIES
 - ARTS AND CRAFT BOLLARD
 - PROTECTIVE FENCE WITH REFLECTIVE PANE
- PERMITS AND APPROVALS KEY
- REMOVE HARD DRIVE TO BE CAST CONCRETE TO PERMITTED SPECIFICATIONS
 - REMOVE WALLS TO BE REINFORCED WITH ANY CAR PARKING MARKS TO BE INSTALLED AS TO PERMITTED SPECIFICATION
 - PROTECTIVE FENCING TO BE LAID WITH DITCH COURSE OF HARD DRIVE TO BE AHEAD OF FOOT AND CYCLE PATHS LAD AT BOUNDARY
 - RETAINING STRUCTURE TO STRUCTURAL ENGINEERS DESIGN

Aquarius House

Tank

El Sub Sta

UNIT 01
3704.55 Sqm
39,876 Sqft
(Total GEA)

CAR PARK 16 SPACES

UNIT 02
1244.50 Sqm
13,396 Sqft
(Total GEA)

CAR PARK 24 SPACES

UNIT 03
1578 Sqm
17,976 Sqft
(Total GEA)

CAR PARK 30 SPACES

Depot

El Sub Sta

EXISTING TREE REMOVED

Garden Court

El Sub Sta

P11	Building moved to allow for HVV easement along rear boundary associated site layout changes. No change to building areas. Redline boundary adjusted to ownership extents	11/05/21	CC	JD
P10	Planning Submission	05/10/21	CC	JD
P9	Planning Submission	17/09/21	CC	JD
P8	Planning Submission	10/09/21	CC	JD
P7	Planning Submission	27/08/21	CC	JD
P6	Substation added. General layout updates	19/08/21	CC	JD
P5	Unit 03 Loading dock position updated	26/07/21	CC	JD
P4	Site Plan Updates based on latest Topo Survey	15/07/21	CC	JD
P3	General Updates	18/06/21	CC	JD
P2	Indicative Site plan - General Updates	04/06/21	CC	JD
P1	Initial Issue	21/05/21	CC	JD
Rev	Description	Date	By	Chk

First Floor
3 Bleeding Heart Yard
Greville Street, London EC1R 4SP
Telephone +44(0)2038746707
Website www.jeffersonsheard.com



Project
Tewin Road
Welwyn Garden City

Drawing
Site Block Plan

Scale	1:500	Drawn	CC	Date	MAY 21
Drawing Purpose	PLANNING SUBMISSION			Status	S5
Ref	1734-JSA-WY-XX-DR-A-01201	Rev.	P11		
Job No.	Origin	Zone	Level	Type	Dis. Number

Appendix 3: Thames Water Asset Location Search



Your reference	tewin court
Our reference	ALS/ALS Standard/2021_4456405
Search date	25 June 2021

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: Tewin Road Cafe, Tewin Road, Welwyn Garden City, AL7 1BD

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ
Tel: 0345 3572401

Asset location search



Property Searches

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available



















Manhole Reference	Manhole Cover Level	Manhole Invert Level
7302	80.85	75.21
7303	80.87	75.23
8305	n/a	n/a
8304	n/a	n/a
3101	82.05	79.38
4202	81.23	74.19
4205	81.67	77.2
4206	81.61	77.96
4201	81.67	76.96
3201	81.67	75.64
5203	n/a	n/a
4207	79.87	76.63
4204	79.86	76.62
421A	81.63	78.03
5201	80.96	76.78
4203	82.54	79.5
4303	82.53	79.03
431E	n/a	n/a
5301	82.14	76.88
4301	82.57	80.28
431C	n/a	n/a
431F	83.49	79.89
4302	81.86	77.23
431B	n/a	n/a
431A	n/a	n/a
331A	83.95	80.49
391B	n/a	n/a
4901	84.73	81.77
4902	85.22	83.35
5902	83.08	80.94
5901	83.09	80.48
3901	85.54	83
3005	85.46	83.43
3004	84.83	79.96
3006	n/a	n/a
3002	84.25	80.51
3003	84.86	77.61
5001	82.51	80.13
5002	82.53	79.66
3103	83.18	79.57
3104	82.99	76.3
3105	81.99	78.51
3102	82	79
521A	n/a	n/a
5101	81.98	79.34
5102	81.99	78.88
611A	n/a	n/a
6101	80.88	78.27
6208	79.67	78.26
6203	79.64	77.93
6201	80.22	77.82
6209	79.93	n/a
6207	78.38	76.94
6103	80.95	78.85
6202	78.19	75.58
6206	78.19	75.57
6205	78.01	75.89
6204	77.08	72.83
6102	80.81	79.14
7201	76.1	75.03
7101	80.97	76.14
7301	76.49	72.45
7104	80.67	79.85
7202	76.11	73.88
7102	81.08	76.37
7103	n/a	n/a
5801	83.19	81.03
5903	83.52	80.4
491C	n/a	n/a
491B	n/a	n/a
491A	n/a	n/a
391A	n/a	n/a
791B	n/a	n/a
701C	n/a	n/a
701A	n/a	n/a
521B	n/a	n/a
521H	79.75	73.8
5205	79.24	76.27
521C	81	77.03
5204	79.4	76.1
521D	81.2	76.89
521G	79.98	76.27
521E	81.15	76.72
521F	80.74	76.6

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

-  **Foul:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  **Trunk Surface Water**
-  **Trunk Foul**
-  **Storm Relief**
-  **Trunk Combined**
-  **Vent Pipe**
-  **Bio-solids (Sludge)**
-  **Proposed Thames Surface Water Sewer**
-  **Proposed Thames Water Foul Sewer**
-  **Gallery**
-  **Foul Rising Main**
-  **Surface Water Rising Main**
-  **Combined Rising Main**
-  **Sludge Rising Main**
-  **Proposed Thames Water Rising Main**
-  **Vacuum**

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plans are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
- 5) 'na' or 'D' on a manhole level indicates that data is unavailable.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Dam Chase
-  Fitting
-  Meter
-  Vent Column




Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Control Valve
-  Drop Pipe
-  Ancillary
-  Weir





End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Outfall
-  Undefined End
-  Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories








-  Public/Private Pumping Station
-  Change of characteristic indicator (C.O.C.I.)
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Operational Site
-  Chamber
-  Tunnel
-  Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

-  Foul Sewer
-  Surface Water Sewer
-  Combined Sewer
-  Gully
-  Culverted Watercourse
-  Proposed
-  Abandoned Sewer

- 6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0800 009 4540.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0800 009 4540 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number	Made payable to ' Thames Water Utilities Ltd ' Write your Thames Water account number on the back. Send to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW or by DX to 151280 Slough 13

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Appendix 4: Welwyn Hatfield Borough Council Liaison

Dear Alex,

I have seen you have enquired further regarding flood Risk and drainage. I understand you are awaiting a response from the risk and resilience manager but I wanted to remind you of my previous response, see below. I also wanted to inform you of an updated 2019 Strategic Flood Risk Assessment which can be viewed here: https://www.welhat.gov.uk/media/15922/1-WHBC-L2-SFRA-Report-2019/pdf/1_WHBC_L2_SFRA_Report_2019.pdf?m=637140985445470000.

"In 2015 the council commissioned a Level 1 and Level 2 Strategic Flood Risk Assessment of the borough, this can be viewed here: <https://www.welhat.gov.uk/article/6206/Strategic-Flood-Risk-Assessment-Level-1-and-Level-2>

This was completed on behalf of the council by consultants and approved by the Environment Agency. The study assesses the flood risk from all types of flooding in the borough, taking into account the existing climate and predicted changes in the climate. This should contain all relevant flood risk information. Hertfordshire County Council (HCC) are the Lead Local Flood Authority and manage the risk of local flooding in Hertfordshire, I suggest that you contact HCC for further guidance and information.

It is also worth noting the Welwyn Hatfield Draft Local Plan was submitted to the Secretary of State in 2016 and the examination remains ongoing. Hearing sessions concluded in March 2021 and the Council received the Inspectors feedback in July. Given the progressed stage of the Draft Local Plan examination, the policies included are considered to have substantial weight in decision making. Policy SADM 14: Flood Risk and Surface Water Management sets out more detailed criteria for sustainable drainage and flood risks."

Kind regards,

Hayden Kreetzer
Planning Officer
Welwyn Hatfield Borough Council
Tel: 01707 357346
Email: h.kreetzer@welhat.gov.uk

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