105 Great Central Avenue, Ruislip

Kream Developments

Flood Risk Assessment

August 2022

Document Control

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Revision	Date	Details	Made By
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Executive Summary

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. It has been produced in relation to a retrospective planning application for a garden room at 105 Great Central Avenue, Ruislip.

A previous Flood Risk Assessment was undertaken by Rappor Consultants Ltd (previously Cotswold Transport Planning Ltd) in July 2021 in support of a planning application for an extension to the existing dwelling within the site (Ref: 55304/APP/2021/2991). The LLFA approved the previous application.

This report demonstrates that the proposed development is at an acceptable level of flood risk subject to the recommended flood mitigation strategies being implemented.

The site is shown to be located within Flood Zone 2 on the Environment Agency Flood Map for Planning. Despite this, modelling undertaken by the Environment Agency of the Yeadling Brook (Eastern Arm) shows that the site is only at risk from flooding within the 0.1% AEP flood event. The threshold level for the garden room is above the 0.1% AEP flood level, and as a result deemed to be at low risk of flooding from this source.

No other sources of flooding are projected to pose a risk to the development.

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 as a result of suitable management of surface water runoff discharging from the site.

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1 Introduction

Background

1.1 The purpose of this FRA is to assess the risk of flooding to the proposed development and where possible provide sufficient mitigation to demonstrate that the future users of the development would remain safe throughout its lifetime, that the development would not increase flood risk on site and elsewhere and, where practicable, that the development would reduce flood risk overall.

Site Proposals

1.2 The proposals are for a retrospective application for a garden room in the rear of the site. The garden room is less than 250m^2 and therefore classified as a 'minor development'.

1.3 A copy of the proposed development drawings is included within **Appendix A**.

1.4 A previous Flood Risk Assessment was undertaken by Cotswold Transport Planning Ltd (now Rappor Consultants Ltd) in July 2021 in support of a planning application for an extension to the existing dwelling within the site (Ref: 55304/APP/2021/2991). The LLFA approved the previous application.

National & Local Planning Policy

1.5 The National Planning Policy Framework (NPPF)[1] sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance (PPG) is also available online[2].

1.6 The PPG 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.

1.7 The NPPF states that a site-specific Flood Risk Assessment will be required for proposals:

a) that are greater than 1 hectare in area within Flood Zone 1
b) for all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3
c) in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding
d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future
e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use

1.8 This FRA aims to provide sufficient flood risk information to satisfy the requirements of the NPPF, PPG and regional/local government plans and policies.

[1] https://www.gov.uk/government/publications/national-planning-policy-framework--2
[2] https://www.gov.uk/guidance/flood-risk-and-coastal-change

1.9 This assessment considers the risks of all types of flooding to the site including tidal, fluvial, surface, groundwater, sewer and artificial sources and provides mitigation measures to ensure that the flood risk to the site is minimised and that flood risk off-site is not increased.

Sources of Information

1.10 This FRA has been based on the following sources of information:

a) NPPF
b) NPPF-PPG
c) Site Layout Plan
d) Ordnance Survey mapping
e) Site Topographical Survey
f) DEFRA Magic mapping
g) Environment Agency mapping, consultation and model information
h) Unitarily/ Parish/ County/ City Council Consultation & Guidance
i) West London Strategic Flood Risk Assessment
j) Hillingdon Council Flood Mapping
k) Hydraulic modelling of the Yeadling Brook (East Arm) as part of the River Crane Mapping Study undertaken in 2008 by the Environment Agency
l) Web Based Soil Mapping
m) British Geological Survey Drift & Geology Maps
n) Thames Water Sewer Records
o) Local Press Flood Reports / Anecdotal Evidence

2 Existing Site & Hydrology Characteristics

Site Location & Composition

2.1 The site is located off Great Central Avenue, Ruislip. The approximate site co-ordinates for the centre of the site are E: 511547; N: 185079, with the nearest post code of HA4 6UN.

2.2 The current site is 0.05ha in area and comprises of an existing dwelling with associated garden amenity areas. Refer to **Appendix A** for the site location.

Topography

2.3 A detailed topographic survey was carried out for the site, a copy of which is included within **Appendix B**. Ground levels across the site vary from 33.60 metres Above Ordnance Datum (mAOD) in the northwest corner to 34.05mAOD located at the front of the site, along Great Central Avenue.

Ground Conditions

2.4 Geological data held by the British Geological Survey (BGS)[3] shows that the bedrock geology underlying the site is London Clay Formation.

2.5 Soilscapes mapping[4] indicates the underlying soil as impeded drainage clayey soils.

Existing Drainage & Hydrology

2.6 The Yeading Brook (Eastern Arm) runs along the eastern boundary of the site in a southerly direction from the culverted section beneath the railway to the north of the site. The Yeading Brook (Eastern Arm) is a main river. Defences are present along the watercourse.

2.7 The open watercourse continues past Bourne Primary School and beneath the A40 Polish War Memorial Roundabout, located approx. 800m to the south of the site.

2.8 The Yeading Brook is a tributary of the River Crane.

2.9 Thames Water have confirmed there is a public 300mm diameter stormwater asset within Great Central Avenue, which discharges directly to the adjacent watercourse. The nearest foul asset is a 225mm diameter foul sewer located in Great Central Avenue.

2.10 Thames Water sewer records are included within **Appendix C**.

2.11 The DEFRA Magic Map (England and Wales) shows there are no designated sites (SSSIs) in or close to the site including downstream (from a flood risk and drainage perspective).

[3] https://geologyviewer.bgs.ac.uk/
[4] http://www.landis.org.uk/soilscapes/

3 Development Vulnerability & Flood Zone Classification

National Planning Policy Framework

3.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

3.2 NPPF requires that, as part of the planning process:

a) A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.
b) Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.
c) Sustainable drainage systems are used for surface water disposal where practical.
d) Flood risk is managed through the use of flood resilient and resistant techniques.
e) Residual risk is identified and safely managed.

3.3 Table 1 of NPPF, categorises flood zones into:

a) Zone 1- Low risk, less than 0.1% Annual Event Probability (AEP) (< 1 in 1000 years)
b) Zone 2- Medium risk, 0.1% AEP (1 in 1000 - 1 in 100 years)
c) Zone 3a- High risk, 1% AEP (> 1 in 100 years)
d) Zone 3b- High risk - Functional Floodplain, 5% AEP (>1 in 20 years)

Environment Agency Flood Map for Planning

3.4 The Environment Agency Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, since these can be breached, overtopped and may not be in existence for the lifetime of a development.

3.5 The site is located within Flood Zone 2 as shown on the Environment Agency Flood Map for Planning[5] and **Figure 3.1**. This is the area shown to be at medium risk of river flooding associated with the Yeading Brook (Eastern Arm). The defended watercourse to the east of the site is within Flood Zone 3.

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

(Source: Environment Agency)

Figure 3.1 Flood Map for Planning

Flood Risk Vulnerability

3.6 The proposed development is considered to be 'more vulnerable' in terms of its land use type flood risk vulnerability as shown in Table 2 of the PPG[6].

3.7 The NPPF sets out a matrix indicating the flood risk vulnerability types of development that are acceptable in different flood zones based upon the Flood Map for Planning as shown in Table 3 of the PPG.

3.8 The application is considered to be 'minor development'[7] proposing householder alterations to an existing building and in accordance with the NPPF, an Exception Test will not be required (paragraph 164). This is in recognition that minor development is unlikely to raise significant flood risk issues.

[6] https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables
[7] https://www.gov.uk/guidance/flood-risk-and-coastal-change#Exception-Test-for-specific-development-proposals

4 Site Specific Flooding

National Planning Policy Framework (NPPF)

4.1 In accordance with the National Planning Policy Framework, this Flood Risk Assessment considers all sources of flooding including:

a) Tidal flooding – from sea;
b) Fluvial flooding – from rivers and streams;
c) Pluvial flooding – overland surface water flow and exceedance;
d) Groundwater flooding – from elevated groundwater levels or springs;
e) Flooding from sewers – exceedance flows from existing sewer systems; and
f) Artificial sources – reservoirs, canals etc.

Historic Flooding

4.2 Neither the Environment Agency nor the West London Strategic Flood Risk Assessment (SFRA)[8] have any records of flooding at or within nearby vicinity of the site.

Tidal Flooding

4.3 Inundation of low-lying coastal areas by the sea may be caused by seasonal high tides, storm surges and storm driven wave action. Tidal 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.

4.4 There are no watercourses/waterbodies in the vicinity of the site that pose a tidal risk to the site. The risk of tidal flooding is therefore negligible.

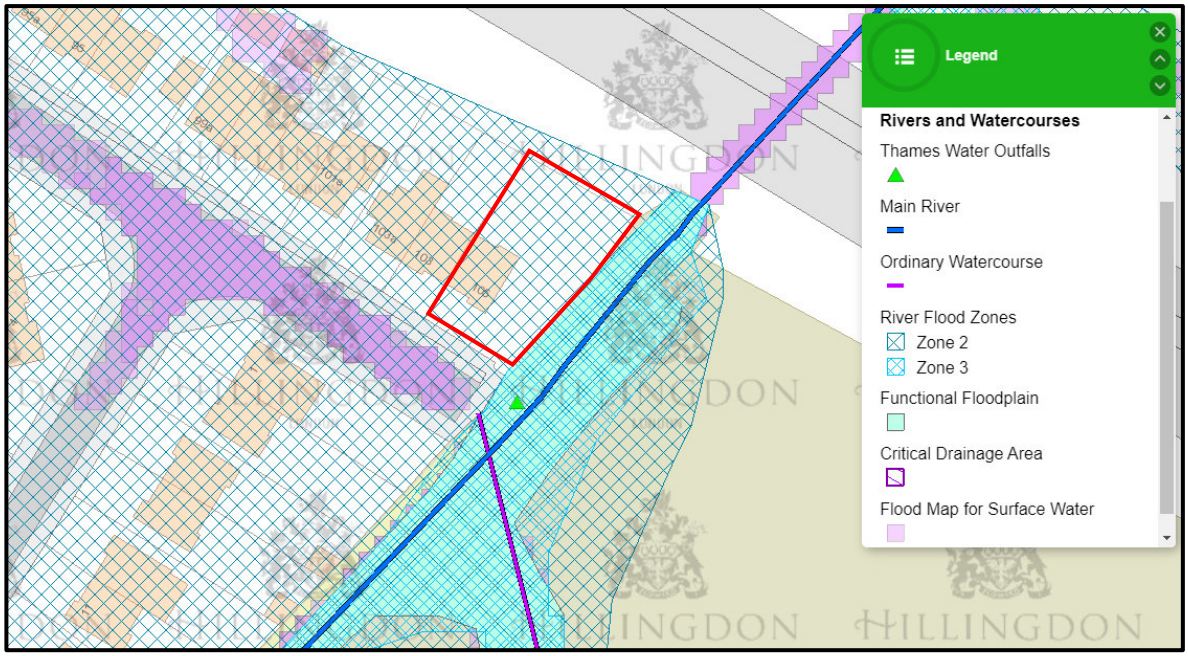
Fluvial Flooding

4.5 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.

4.6 The site is located within Flood Zone 2 as shown on **Figure 3.1**. This is the area shown to be at medium risk of river flooding associated with the Yeading Brook (Eastern Arm) located immediately east of the site.

4.7 The Hillingdon SFRA flood map[9] also shows the site to be within Flood Zone 2, as illustrated in **Figure 4.1**.

[8] https://westlondonsfra.london/
[9] https://lbhillingdon.maps.arcgis.com/apps/Viewer/index.html?appid=543f7f784310410abc4052e5658eecad



(Source: Hillingdon SFRA)

Figure 4.1 Flood Zone Map

4.8 Environment Agency flood data related to the Yeading Brook (Eastern Arm) is held on record and Rappor have a copy of the model outputs. The model was produced in 2008 as part of the River Crane Mapping Study and remains the latest applicable information to refer to for the purposes of this assessment. A copy of the information requested to verify the data held is in **Appendix D**.

4.9 As the Environment Agency model was produced in 2008, the climate change allowances applied have changed following the publication of the latest guidance in July 2021[10].

4.10 Due to the nature of the proposed development being of a 'more vulnerable' classification as defined by Table 2 in the National Planning Policy Framework (NPPF) planning guidance; it is appropriate to consider the 'central' 2080's climate change allowance. This is because of the residential nature of the development and its location within the Thames basin river catchment and the London catchment management area. The climate change allowance which now applies based on the NPPF guidance is 17%.

4.11 The climate change allowances used within the model were 20%, 25%, 35%, and 70%. Therefore, based on the new guidance, the effect of climate change is now considered to be less than previously thought. The figures included within the model are now considered conservative for this development, with the 20% allowance remaining applicable.

4.12 The model extents mapping included within **Appendix D** shows that the site is located outside of the high-risk floodplain (1% AEP) and the high risk floodplain accounting for climate change. The site is also shown to be outside of the 0.5% AEP floodplain area. The entirety of the site is shown to lie within the area at medium risk of flooding (0.1% AEP).

4.13 The flood levels applicable to the site are derived from channel model 'nodes' with the upstream node used to identify site specific flood levels. The position of the nodes are

[10] https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

denoted by red circles in **Figure 4.2**. The applicable node to the site is reference YE826. At this section of the model only in channel flood levels are available. The flood levels derived from the node YE826 are shown in **Table 4.1**.

(Source: Environment Agency)

Figure 4.2 Yeading Brook (Eastern Arm) Flood Model Nodes

Node	Flood Events					
	0.5% AEP	1% AEP	1% AEP + 20% CC	1% AEP + 35% CC	1% AEP + 70% CC	0.1% AEP
YE826	33.40	33.55	33.63	33.67	33.75	33.81

(Source: Environment Agency)

Table 4.1 Yeading Brook (Eastern Arm) Flood Model Data

4.14 The lowest existing ground level along the site's eastern boundary, with connectivity to the fluvial extents, is 33.70mAOD. This is above the 1% AEP flood level (Flood Zone 3) and higher than the 1% plus 20% climate change flood level.

4.15 The ground level where the garden room has been constructed is 33.755mAOD at its lowest point, the threshold level is approximately 150mm above this (33.905mAOD), which is 0.1m above the 0.1% AEP flood level.

4.16 Protection is provided to the site from the Yeading Brook (Eastern Arm) by high ground which has a standard of protection up to the 1 in 100-year flood event, as indicated by data provided by the Environment Agency in **Appendix D**.

4.17 Review of the flood extents displayed in **Appendix D**, flood level data provided, topographical ground level data, presence of defences and threshold level of the building indicates the garden room and the majority of the site are outside of the floodplain of the

Yeading Brook (Eastern Arm) for each flood event. In view of this, the fluvial risk posed to the development is considered **low**.

Pluvial Flooding

4.18 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.

4.19 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.

4.20 The Surface Water (Pluvial) Flood map provided by the Environment Agency (**Figure 4.3**) indicates that the site is at low risk of pluvial flooding. The map does project medium to high-risk flooding along Great Central Avenue which connects to the Yeading Brook (Eastern Arm) to the east; however, these are not shown to impact the site.

4.21 The pluvial maps do not fully represent any underground drainage systems and therefore any flooding entering the site from existing roads is likely to be intercepted by road gullies and discharged into the local drainage network.

4.22 Pluvial flood risk for the proposed development is considered to be low.

(Source: Environment Agency)

Figure 4.3 Surface Water Flooding Map

Groundwater Flooding

4.23 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.

4.24 The site is indicated to be underlain by bedrock geology of London Clay in BGS mapping. This is deemed impermeable.

4.25 Mapping produced as part of the West London SFRA illustrating the susceptibility of areas to groundwater flooding indicates the site is not located within an area susceptible to ground water flooding.

4.26 The risk of flooding from groundwater at this stage is considered to be low.

Sewer Flooding

4.27 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.

4.28 Thames Water records indicate there is a 300mm diameter stormwater asset within Great Central Avenue along with a 225mm diameter foul sewer. Any flooding or surcharging from these sewers will flow along the highway away from the site.

4.29 As part of the West London SFRA Thames Water have produced mapping of previous sewer flooding incidents. This mapping does not indicate that any instances of flooding have occurred at or within nearby vicinity of the site.

4.30 The risk of sewer flooding to the site is therefore considered to be low.

Flooding from Artificial Sources

Reservoirs

4.31 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.

4.32 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. This identifies the site is not at risk from this source.

5 Flood Mitigation Measures

Introduction

5.1 It is important to demonstrate that future users will not be at risk from flood hazards during the lifetime of the development, as well as ensuring that flood risk is not increased elsewhere.

Assessment Findings & Implications

5.2 This assessment undertaken has identified the development to be at low risk from all sources of flooding. The following measures are set out to further protect the development during its lifetime.

Flood Resilience

5.3 The following recommendations are in accordance with Environment Agency standing advice and Communities and Local Government document Improving the Flood Performance of New Buildings.

5.4 Resilience measures are either an integral part of the building or features inside the building. Flood resilient buildings are designed to reduce the impact of flood water entering the building to restrict permanent damage, ensure structural integrity is maintained and to assist with drying and cleaning following flooding.

5.5 The following recommendations should be considered:

a) Waterproof tanking
b) Low permeability construction
c) Temporary Flood defence door barriers
d) Sump and pump system

Flood Warning & Evacuation Plan

5.6 It is advised as a precautionary measure that the end users of the proposed development register for the Environment Agency free Flood Warning service. This can allow valuable preparation in the event of a flood.

5.7 It is recommended that a detailed flood plan for the site should be prepared to minimise the risk of flooding to site users. This should include the actions to be taken before, during and after a flood. Further details for preparing a flood plan can be found at: https://www.gov.uk/prepare-for-flooding/future-flooding.

5.8 The site should be evacuated if either a flood warning indicates that this is appropriate action, or if advised to do so by the Environment Agency, Lead Local Flood Authority, or a Category 1 responder.

5.9 Appropriate signage shall be erected around the site/building to advise all users of preparation and action for flood events. Refer to below recommended signage which can be downloaded via the EA flood warning website.

6 Proposed Drainage Strategy

Introduction

6.1 Consideration of flood issues is not confined to the floodplain. This is recognised in the NPPF and associated guidance. The alteration of natural surface water flow patterns through developments can lead to problems elsewhere in a catchment, particularly flooding downstream; and replacing permeable vegetated areas with low permeability roofs, roads and other paved areas will increase the speed, volume and peak flow of surface water runoff.

Surface Water Management

6.2 The existing connections which serve the dwelling within the site are to be used to drain the roof outlets from the garden room. This will discharge to the existing Thames Water asset in Great Central Avenue.

Foul Water Management

6.3 There will be a negligible increase in foul flow from the development.

6.4 The foul discharge from the development will be discharged to the Thames Water asset in Great Central Avenue via the existing connections which serve the site.

7 Summary and Conclusions

Summary

7.1 This assessment has considered the risks of all types of flooding to the site including tidal, fluvial, surface, groundwater, sewer and artificial sources and provides mitigation measures to ensure that the flood risk to the site is minimised and that flood risk off-site is not increased.

Conclusions

7.2 A previous Flood Risk Assessment for the site was undertaken by Rappor Consultants Ltd (previously Cotswold Transport Planning Ltd) in July 2021 in support of a planning application for an extension to the existing residential property on the site.

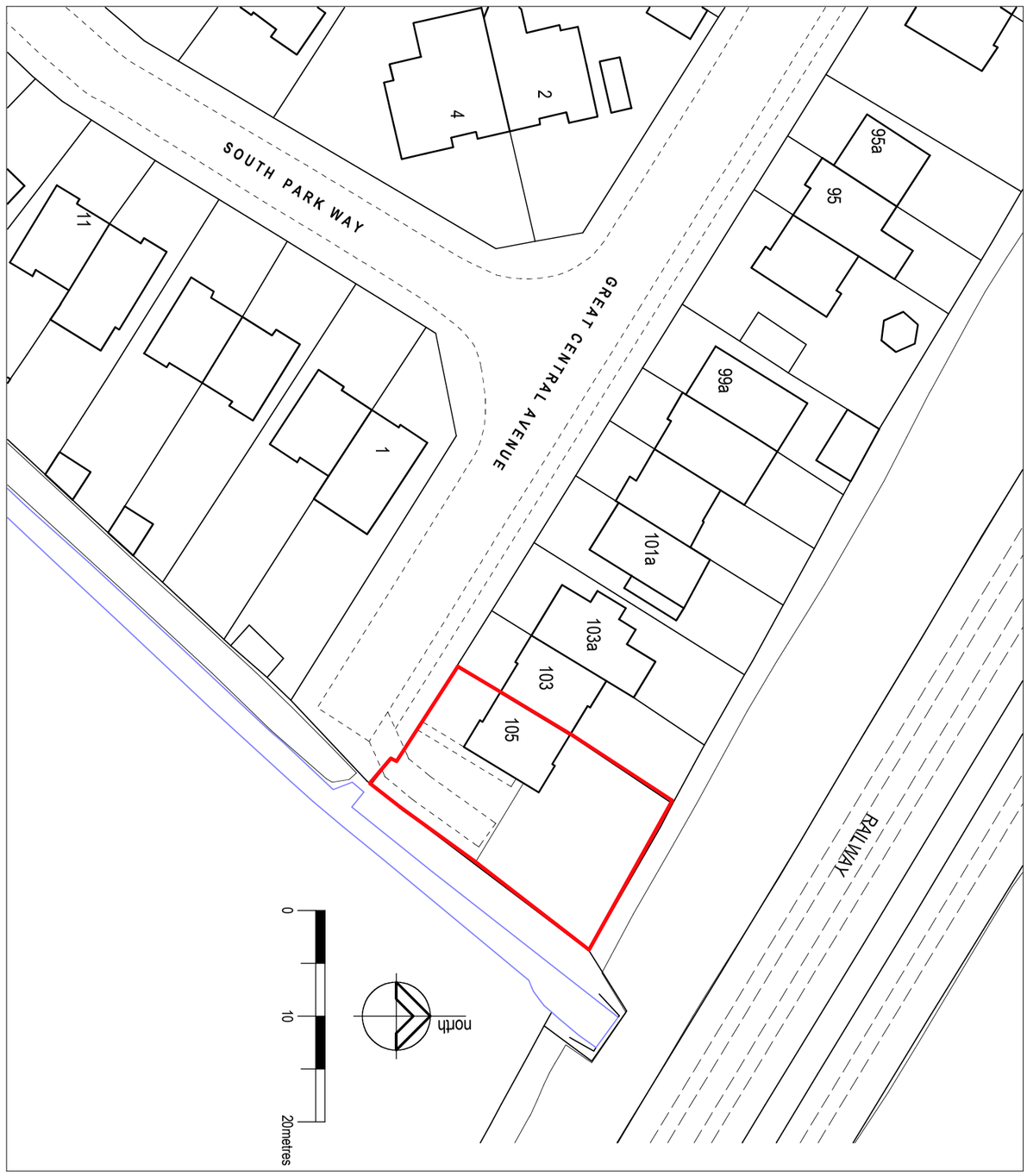
7.3 The site is identified to be within Flood Zone 2. Modelling undertaken by the Environment Agency of the Yeadling Brook (Eastern Arm) shows that the site is only at risk from flooding during the 0.1% AEP flood level. The threshold level for the garden room is approximately 33.905mAOD, which is 0.1m above the 0.1% AEP flood level. The development is understood to be at low risk of flooding from all other sources.

7.4 The threshold level for the garden room is approximately 33.905mAOD, which is 0.1m above the 0.1% AEP flood level.

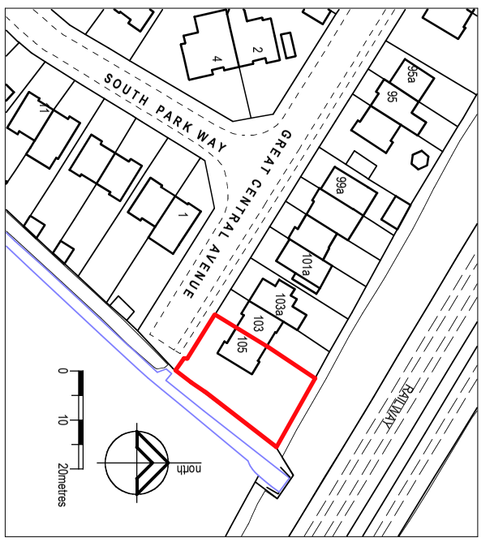
7.5 In compliance with the requirements of the National Planning Policy Framework, and subject to the mitigation measures proposed, the development will not cause or be subject to significant flood risk issues.

Appendix A – Proposed Development Drawings

EXISTING SITE PLAN 1.500



EXISTING OCATION PLAN 1.1250



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Project

105 GREAT CENTRAL AVENUE
RUISLIP
HILLINGDON

Drawing

EXISTING SITE & LOCATION PLAN

Scale	Date	Drawn
1.500 @ A3	03.12.2018	j m d

Job No	Dwg No
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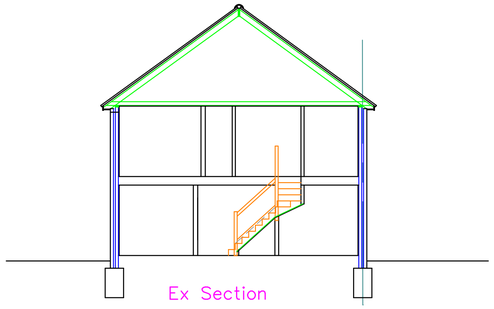

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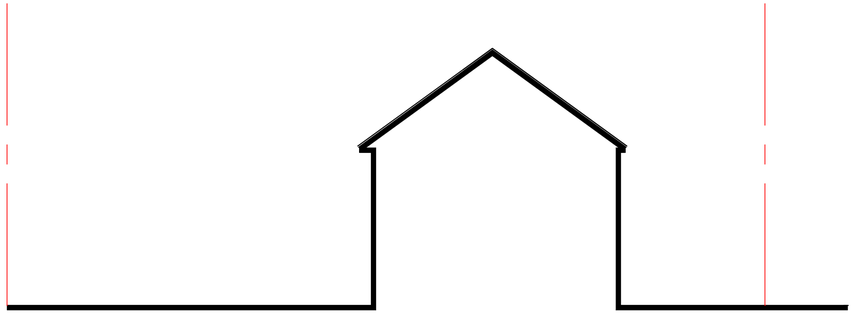
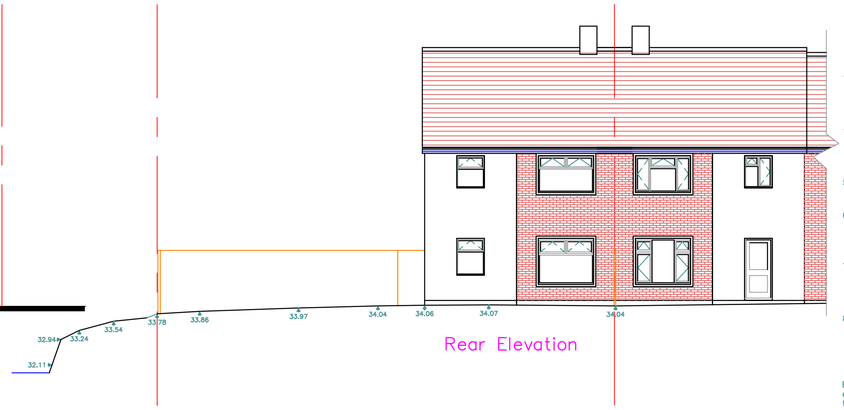


Gable elevation



Rear Elevation

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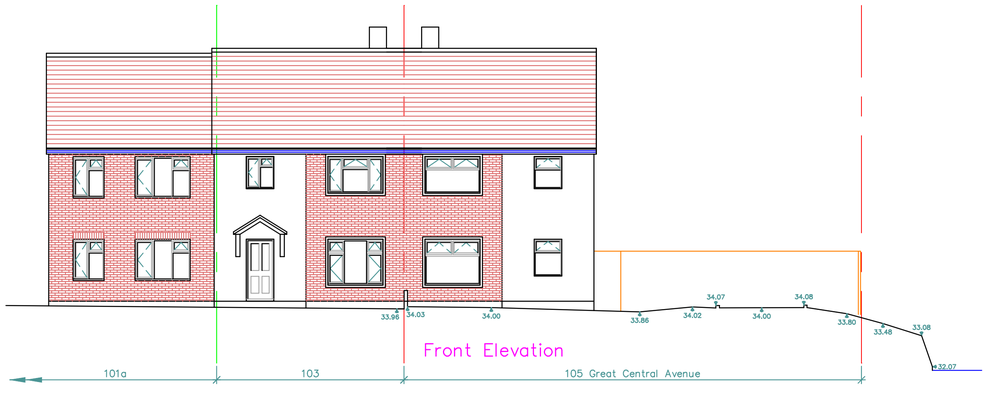
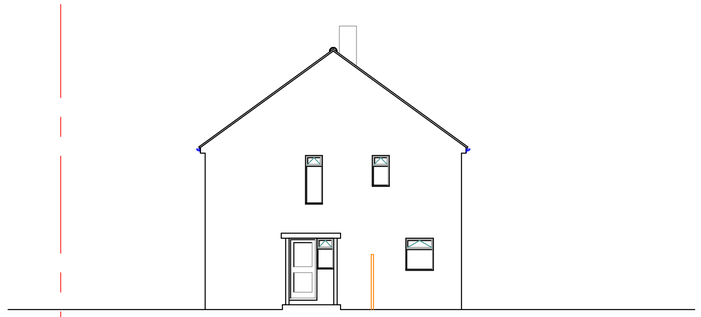
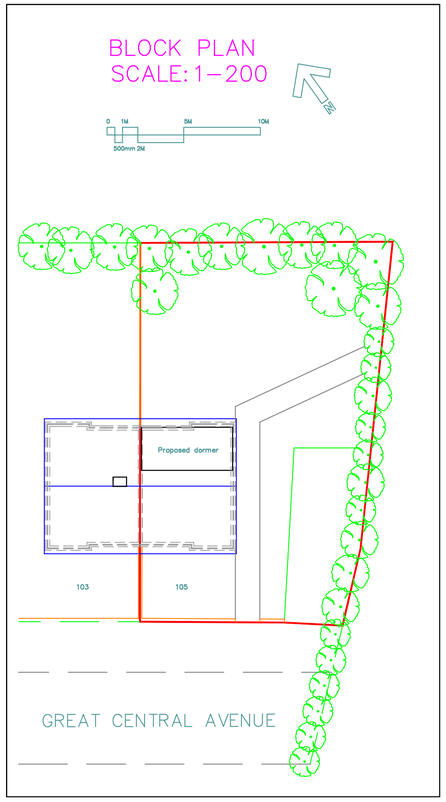


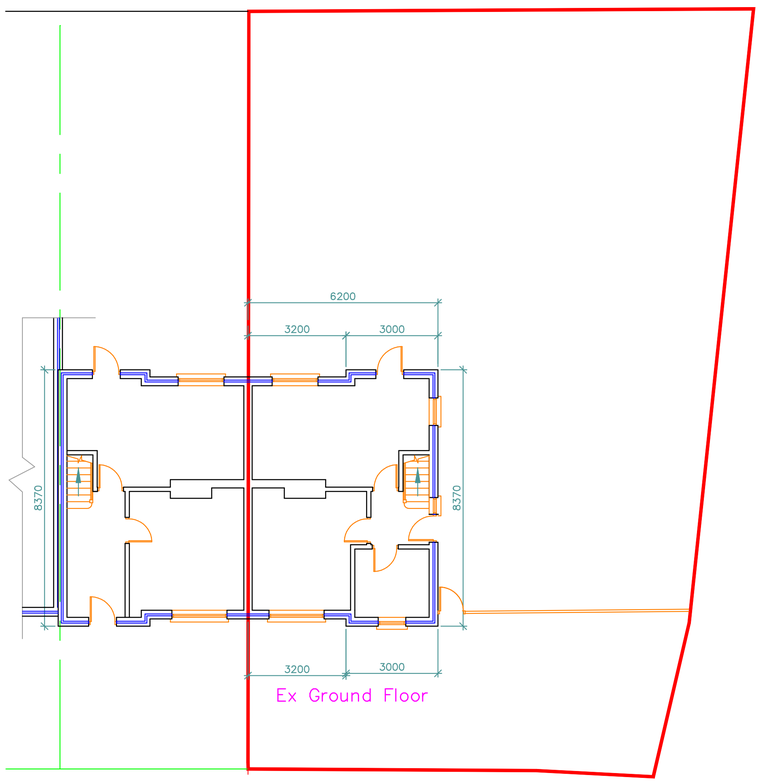
Front Elevation



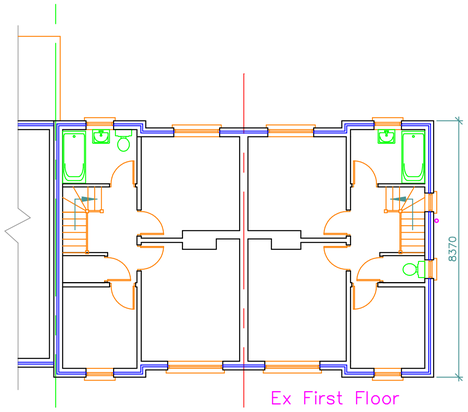
Side Elevation

BLOCK PLAN
SCALE: 1–200





Ex Ground Floor



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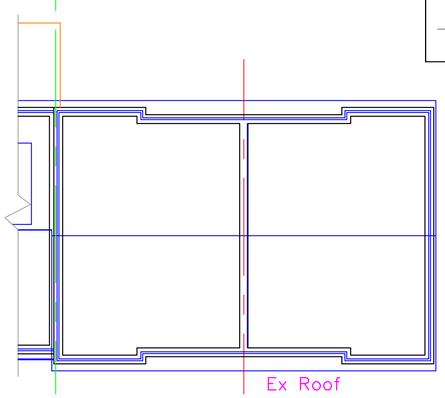

Ex Roof

REV.	DATE	DESCRIPTION

JOB 105 Great Central Ave
Ruislip

TITLE
Existing Layout

DRG. No. 3245–01 REV.

SCALE. 1:100 | © Copyright 2020 | DRN. BY JDS
DATE Nov 20
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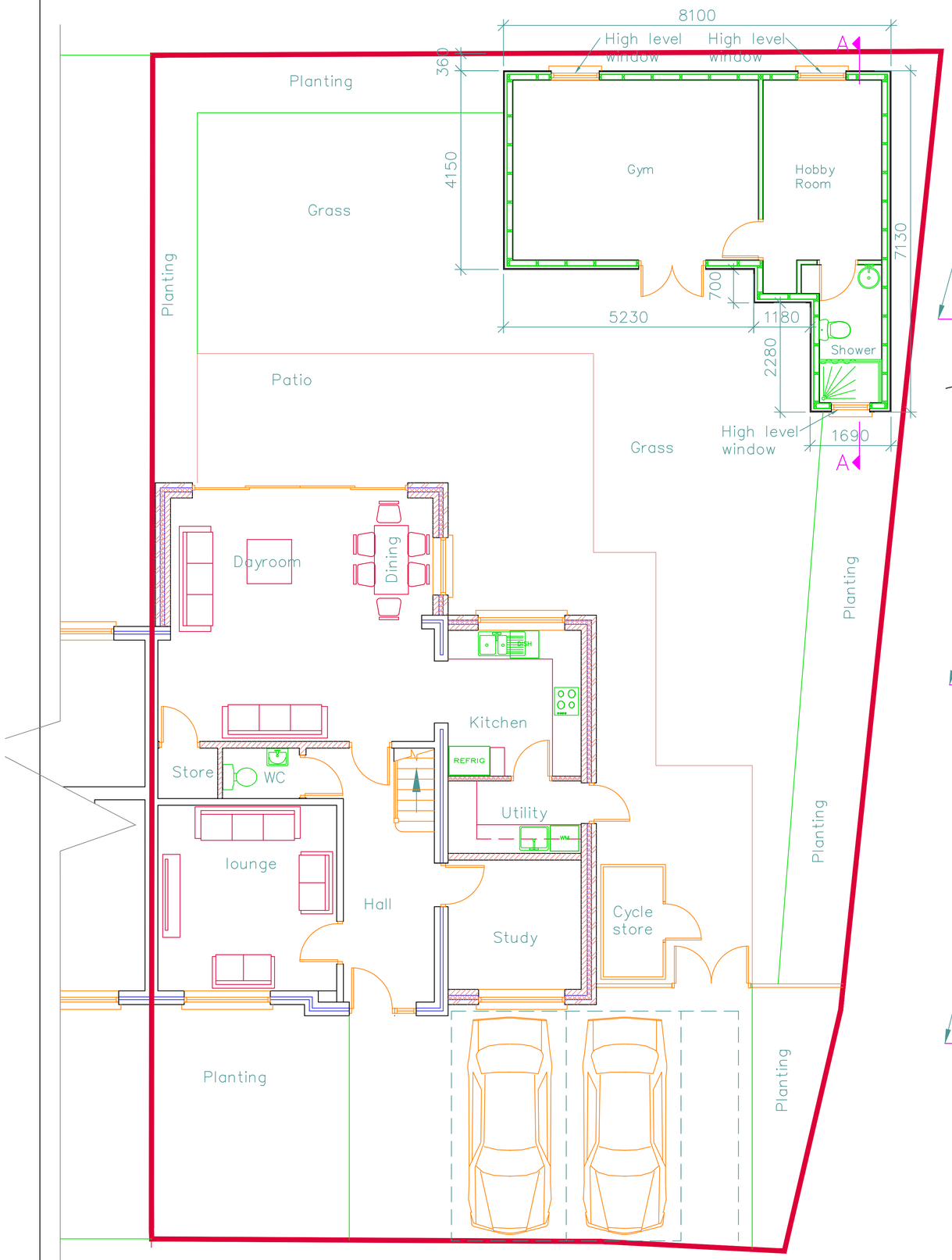
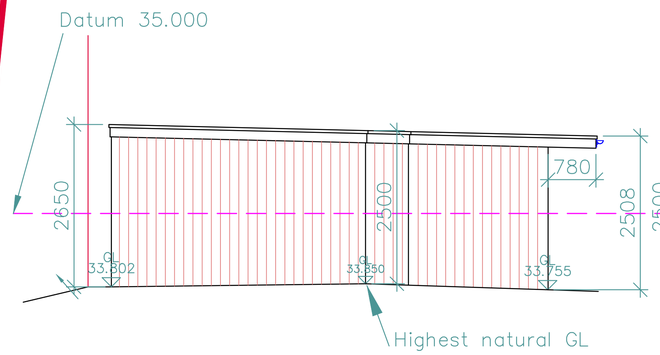
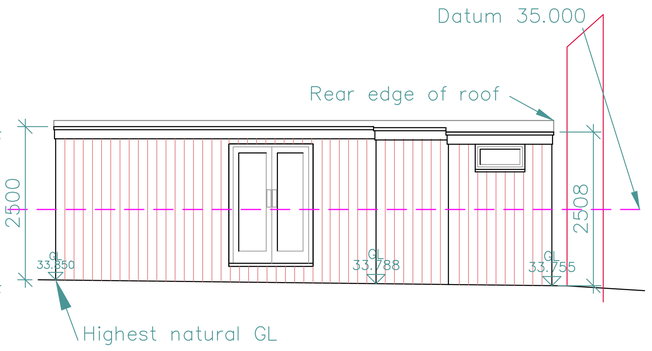
FAX. 01895 814664
TEL. 01895 812822



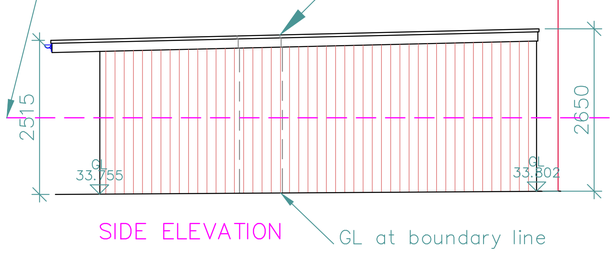
GARDEN ROOM LAYOUT



SIDE ELEVATION



FRONT ELEVATION



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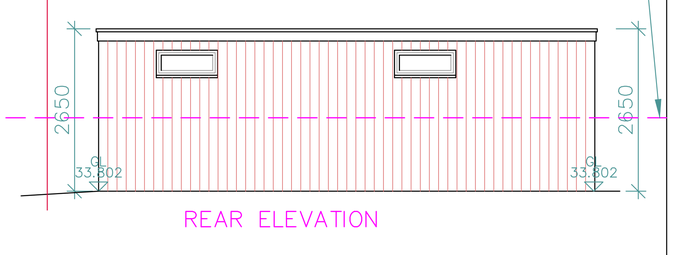
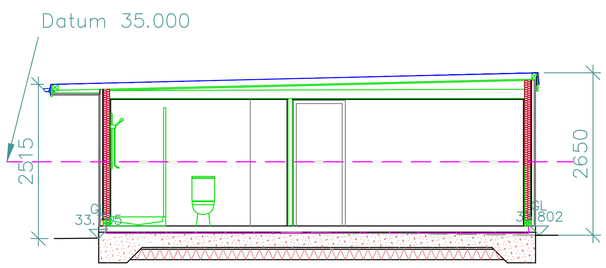


REAR ELEVATION



SECTION A–A

0 500mm 2.5M 5M

250mm 1M

1. Do not scale from this drawing.
2. All dimensions to be checked on site before ordering materials or commencing work.
3. In case of discrepancies in drawings, calculations or details refer to TOWER ASSOCIATES LTD for clarification: Unilateral decisions by contractors will not be accepted.
4. For any information not covered by this drawings refer to TOWER ASSOCIATES LTD for clarification: Unilateral decisions by contractors will not be accepted.
5. The contractor must ensure that work is being carried out to the latest revisions of all the working drawings.
6. It is the contractors responsibility to inform the Local Authority before work commence on site, and at all prescribed stages of work. All to the District Surveyors satisfaction.
7. If work commences on site before full plans approval has been given, TOWER ASSOCIATES LTD accept no responsibility for additional work or materials that the District Surveyor may require.
8. This drawing and all copies produced there from remain the copyright and property of TOWER ASSOCIATES LTD. It may be reproduced by TOWER ASSOCIATES LTD. All copies must be returned to TOWER ASSOCIATES LTD if demanded.

By using this drawing the user and his or her employer signify their agreement of the above terms and conditions.

REV.	DATE	DESCRIPTION

JOB
105 Great Central Ave, Ruislip, HA4 6TU

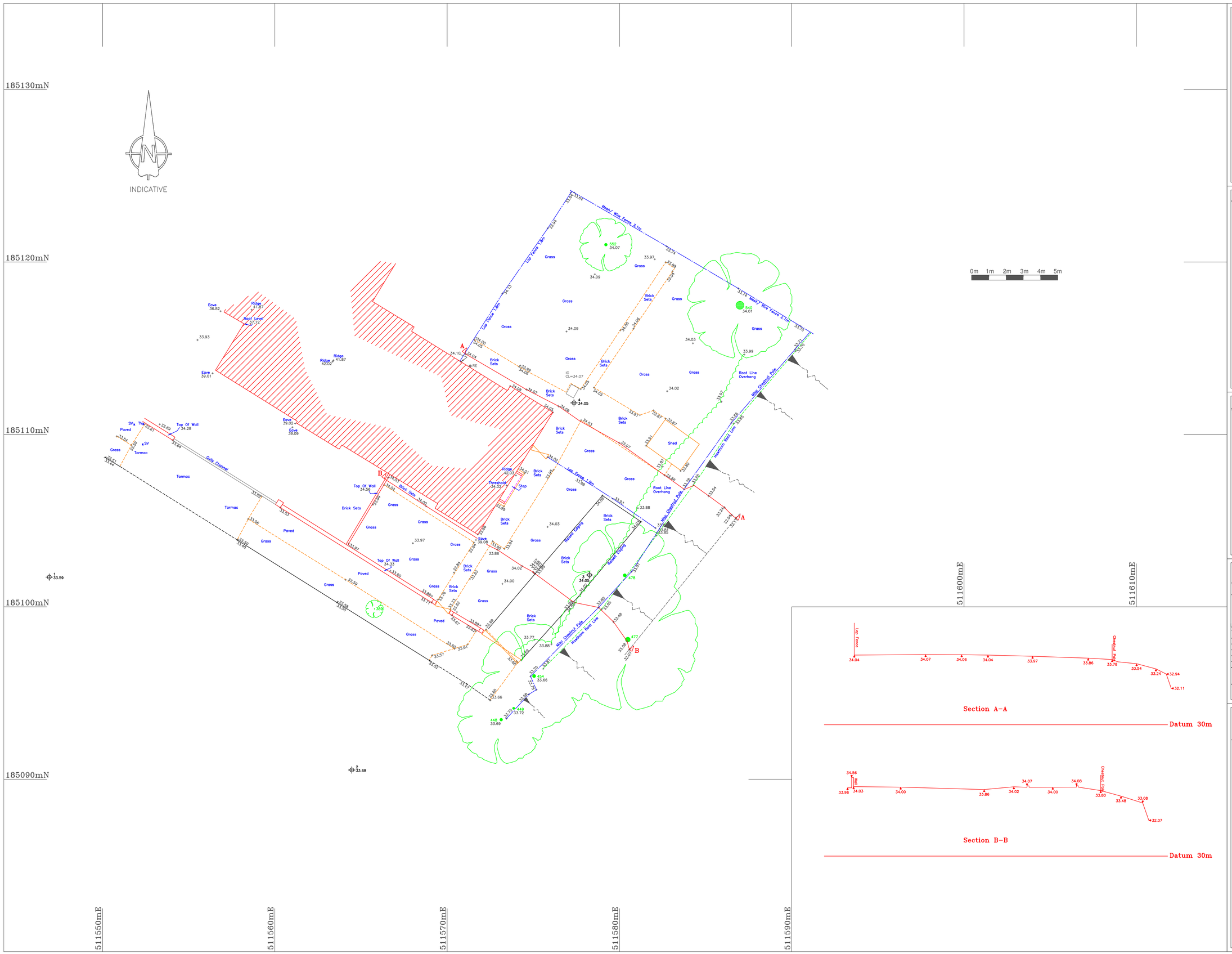
TITLE
GARDEN ROOM LAYOUT

DRG. No. 3245–08 REV. –

SCALE. 1: 50 | | DRN. BY JV
DATE APR 22
CHECKED PDN
DATE APR 22

TOWERS ASSOCIATES LTD
Harefield Oil Terminal, Harvil Rd, Harefield, MIDDX. UB9 6JL.
TEL. 01895 812822

Appendix B – Topographical Survey



NOTES:

Whilst every effort has been made to correctly identify species of trees on the site, we advise that an arboriologist be consulted before any final decisions are made.

Grid coordinates are based on Ordnance Survey National Grid

Tree Schedule

ID	Girth	Spread	Height	Species
389	0.10	1.00	4.00	Hawthorn
448	0.50	5.00	7.00	Ash
449	0.40	4.00	7.00	Ash
454	0.60	6.00	8.00	Hawthorn
477	0.80	8.00	8.00	Ash
478	0.60	6.00	7.00	Hawthorn
540	1.50	6.00	7.00	Fruit MB
552	0.50	3.00	4.00	Fruit

ABBREVIATION KEY – TOPOGRAPHIC SURVEY

AV	Air Valve
BO	Bollard
BIG	Back Inlet Gully
BT	British Telecom
CPS	Concrete Paving Slabs
CL=	Cover Level
CATV	Cable Television Cover
DY	Double Yellow Line
DR	Double Red Line
DW	Dashed White Line
ECB	Electric Cable Cabinet
ECP	Electric Cable Pit
EP	Electricity Pole
ER	Earth Rod
FAI	Fresh Air Inlet
FH	Fire Hydrant
F/B	Flower Bed
GV	Gas Valve
Gy	Gully
IL=	Invert Level
LC	Lamp Column
LP	Lamp Post
MB	Multi Bole
MK	Service Marker
PM	Parking Meter
RE	Rodding Eye
RS	Road Sign
RWP	Rain Water Pipe
SC	Stop Cock
SW	Single White Line
SY	Single Yellow Line
SV	Stop Valve
SVP	Soil and Vent Pipe
TCB	Telephone Cable Cabinet
TP	Telephone Pole
UTL	Unable To Lift
WG	Weir Gully
WM	Water Meter
WO	Wash Out

ABBREVIATION KEY – BUILDING SURVEY

	Floor To Ceiling
	Floor To False Ceiling
AB	Air Brick
DS	Double Socket
Dh	Door Head Level
Ceil HT	Ceiling Level
FA	Fire Alarm
FL	Floor Level
FS=	Floor To Sill
FS	Fuse Box
GL	Ground Line
Ht=	Height
LS	Light Switch
RWP	Rain Water Pipe
SA	Smoke Alarm
SD	Smoke Detector
SH=	Sill To Head
SS	Single Socket
Stat	Thermostat
SW	Switch
Tel	Telephone/Outlet
TV	Arial/Cable Socket
UA=	Under Arch (center)
UO=	Under Opening
UB=	Under Beam
UD=	Under Duct
UP=	Under Pipe
WL	Wall Light
Wh=	Window Head Level
Ws=	Window Sill Level

Co-ordinate Table

ID	Easting	Northing	Height
1	511546.908	185101.721	33.592
2	511564.468	185090.537	33.681
3	511578.266	185101.844	34.045
4	511577.364	185111.830	34.054

REV. SUFFIX	DATE	INITIAL	REVISION DETAILS

LEVELING: Related To Ordnance Survey Utilising GPS

DATUM

CAD OPERATOR	CDH	APPROVED BY	BED	DATE	21.04.2020

Survey and Engineering Services Ltd

Land, Architectural and Engineering Surveyors

CLIENT: T Daniels

LOCATION: *105 Great Central Avenue Ruislip*

DRAWING TITLE: *Detail Survey*

ORIGINAL JOB No.:

JOB No.: *180420*

DRAWING No.:

REVISION SUFFIX:

SCALE: *1:100*

DATE: *21st April 2020*

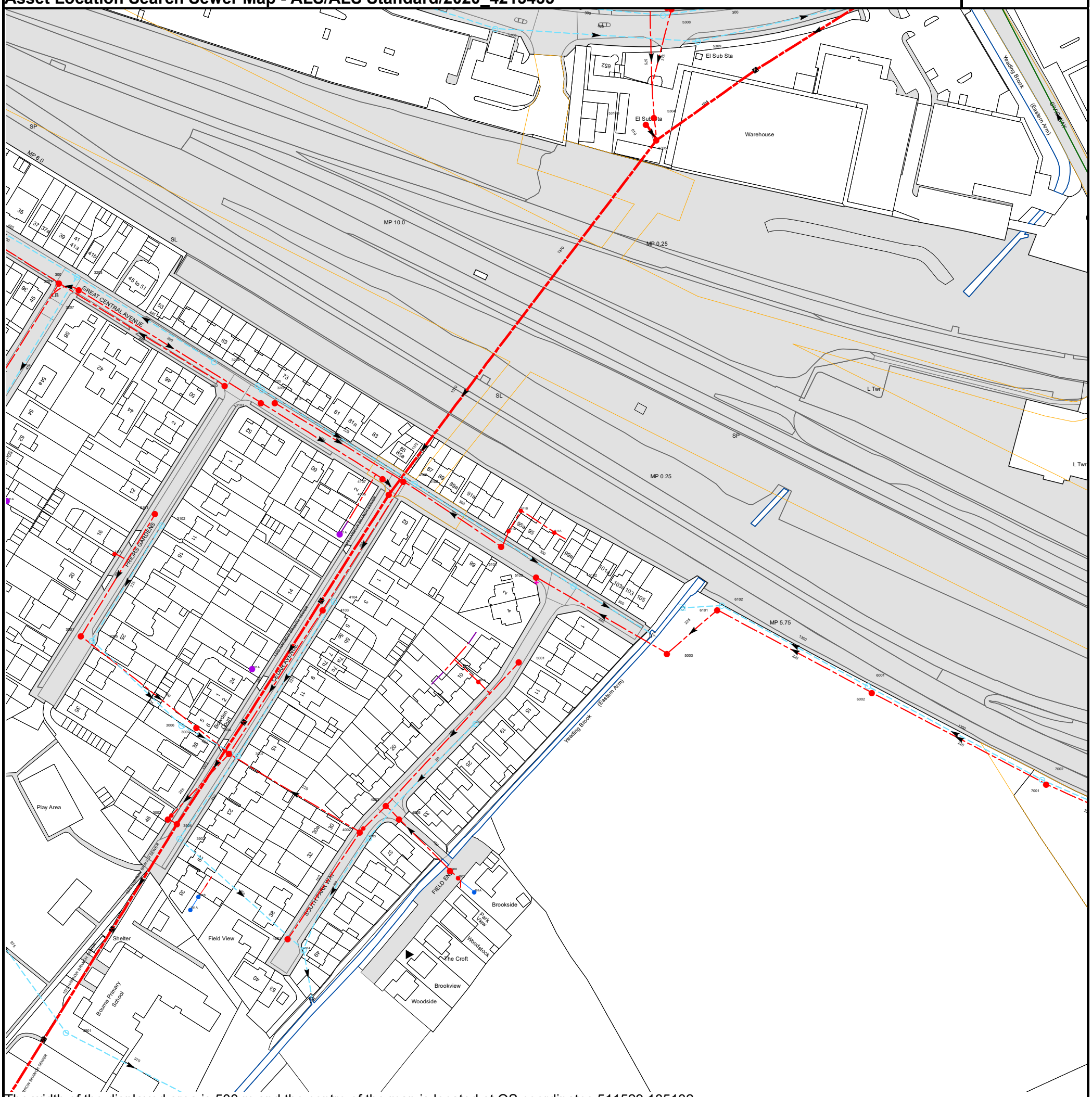
The Granary
Lee Farm
Lee Lane
Pinkneys Green
Maidenhead
SL6 6PE

Registered Company No: 5366478

Tel No / Fax: +44 (0) 1628 675 781
e-mail: mail@ses-surveyors.co.uk

Appendix C – Sewer Records

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4213435



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 511529,185132

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.

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
5306	34.43	33.02
5305	34.41	28.88
5310B	34.53	31.28
5304	33.81	28.9
5309	34.09	32.91
5308	34.08	32.22
5303	34.08	30.68
4003	33.14	31.63
3007	33.56	32.48
3004	33.53	31.07
3002	33.74	31.77
3006	33.73	32.83
301A	n/a	n/a
3005	33.89	33.01
3001	33.97	32.34
4103	33.82	31.31
4104	33.85	32.95
311A	n/a	n/a
411A	n/a	n/a
3102	34.27	33.31
3101	34.25	32.94
211A	n/a	n/a
4105	33.9	28.46
4107	n/a	n/a
4101	34.24	32.45
3103	n/a	n/a
3206	34.39	33.22
3202	34.39	33.35
3205	34.4	33.33
3204	34.46	33.55
3207	n/a	n/a
3201	35.08	32.81
3203	35.07	33.24
3901	32.96	31.5
4904	33.17	32
4901	33.16	31.9
391A	n/a	n/a
391B	n/a	n/a
3902	33.36	32.21
4903	33.43	32.3
4002	33.09	31.12
3504	33.46	28.28
4005	33.13	31.73
3003	33.41	30.15
4102	33.87	31.49
4106	33.87	32.8
4906	n/a	n/a
4902	33.35	32.82
491A	n/a	n/a
4004	33.67	32.59
401A	n/a	n/a
5101	33.63	32.12
511C	n/a	n/a
5001	33.65	32.42
511B	n/a	n/a
5103	n/a	n/a
511A	n/a	n/a
5102	33.55	32.49
5003	n/a	n/a
5104	n/a	n/a
6101	n/a	n/a
6102	n/a	n/a
6001	n/a	n/a
6002	n/a	n/a
7002	n/a	n/a
7001	n/a	n/a

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

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)

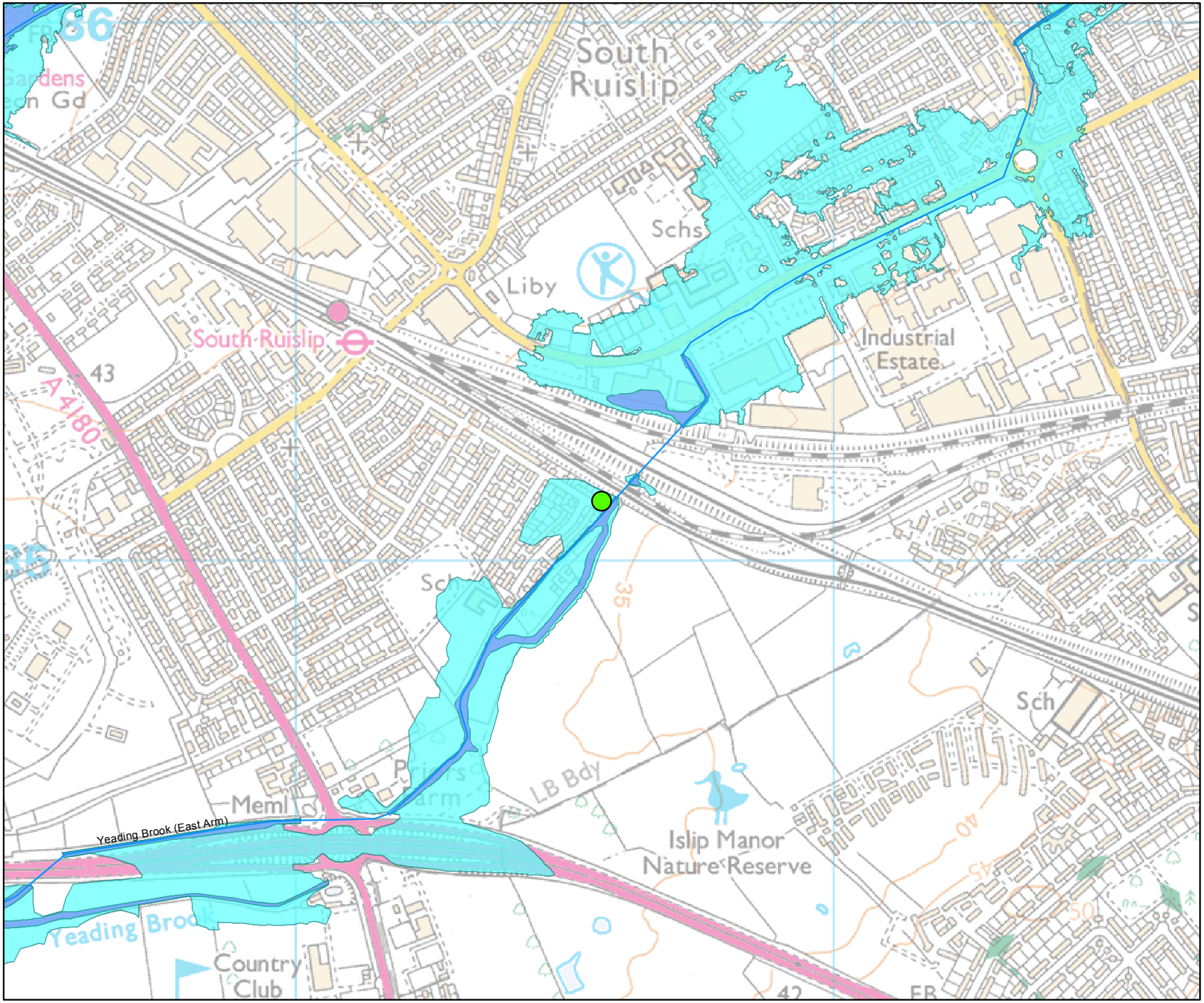
- Foul Sewer
- Surface Water Sewer
- Combined Sewer
- Gulley
- Culverted Watercourse
- Proposed
- Abandoned Sewer

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 '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. 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 Insight on 0845 070 9148.

Appendix D – Flood Data

Flood Map for Planning centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 150 300 600

Metres

Legend

- Main Rivers
- Site location

Flood Map for Planning

- Flood Storage Area
- Areas Benefiting from Flood Defences
- Flood Zone 3
- Flood Zone 2

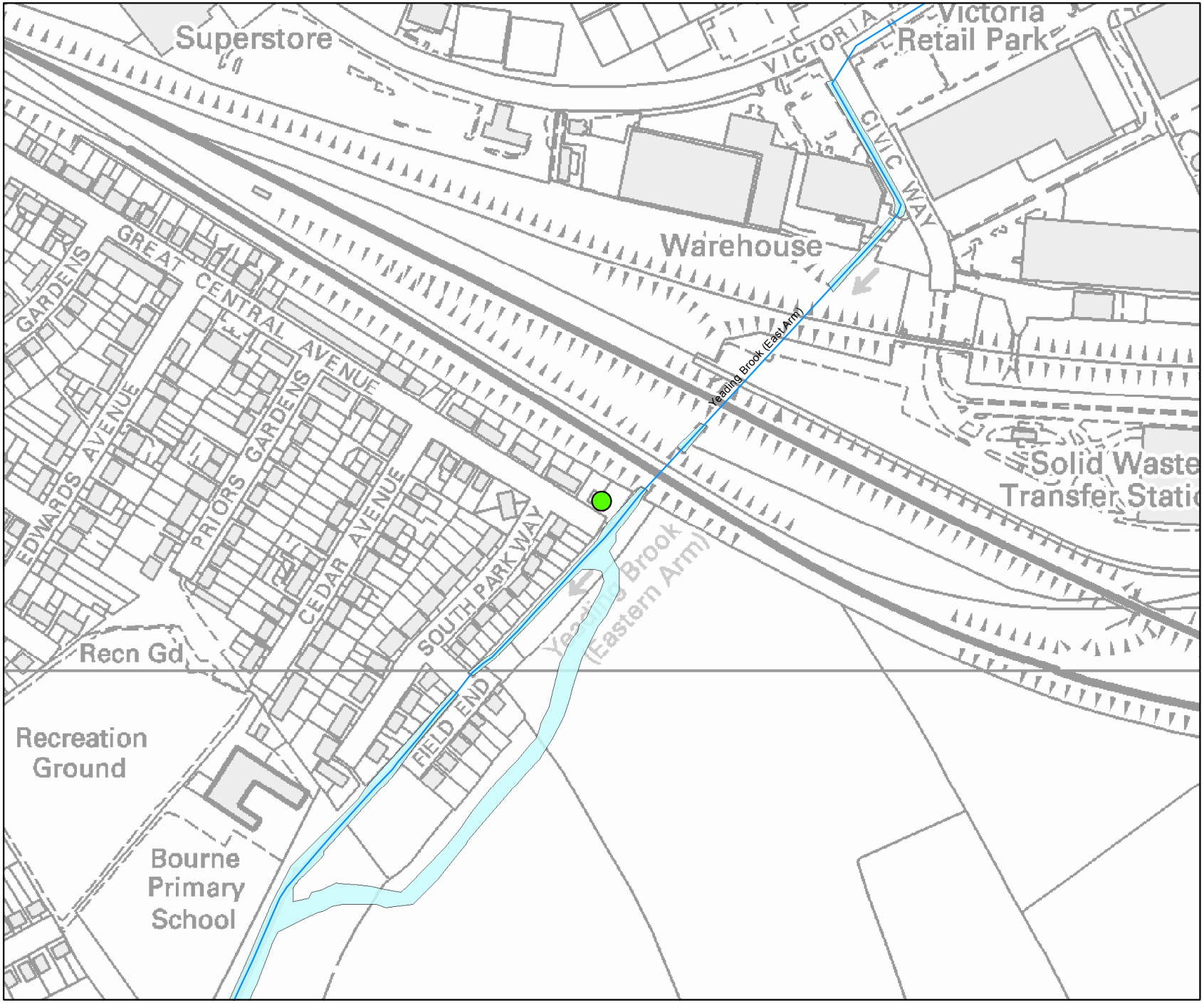
Flood Map for Planning (assuming no defences)

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.

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.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 5 (20%) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

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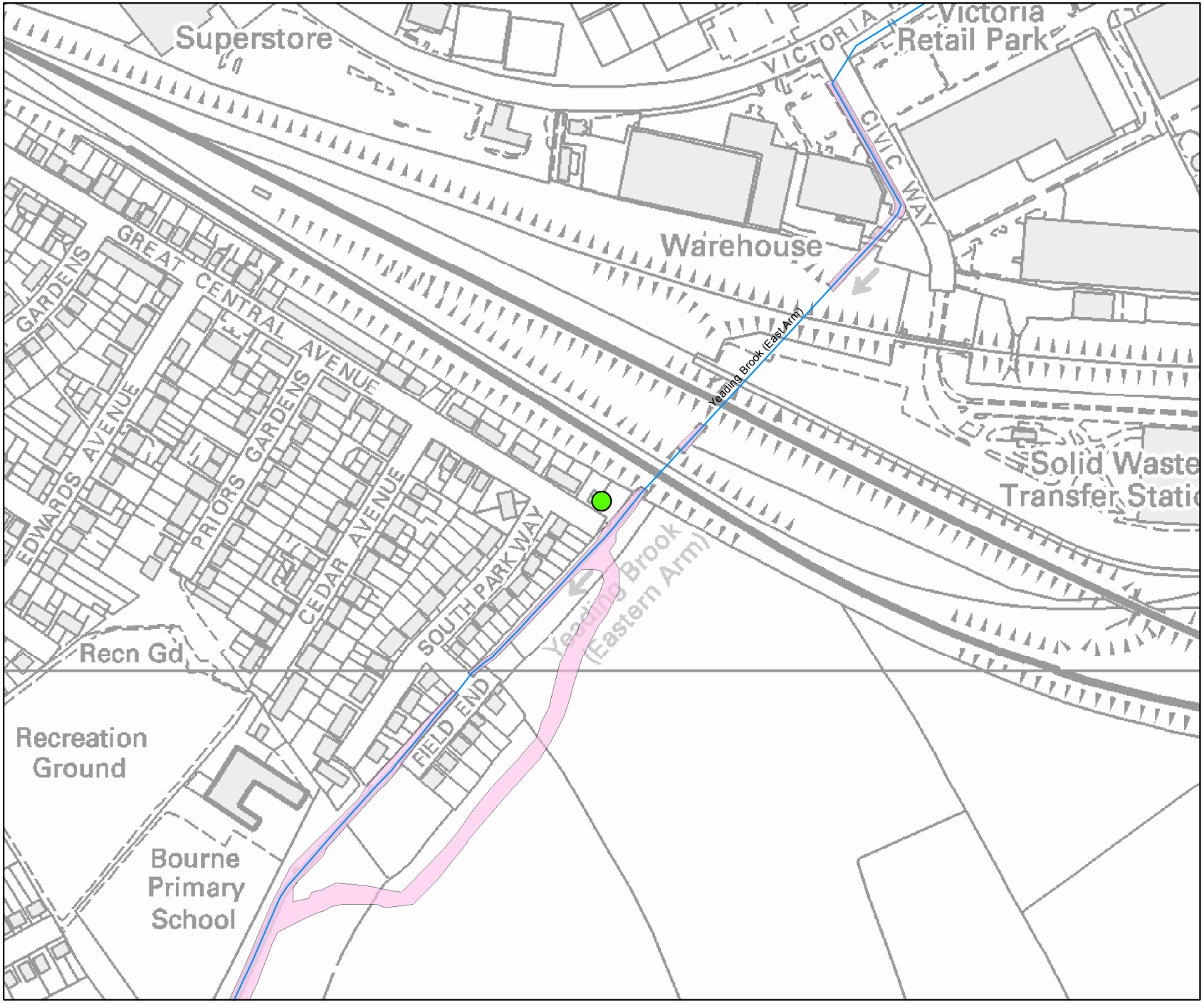
Hertfordshire & North London

Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

Main Rivers

Site location

Defended Flood Outlines

1 in 10 (10%) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

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https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
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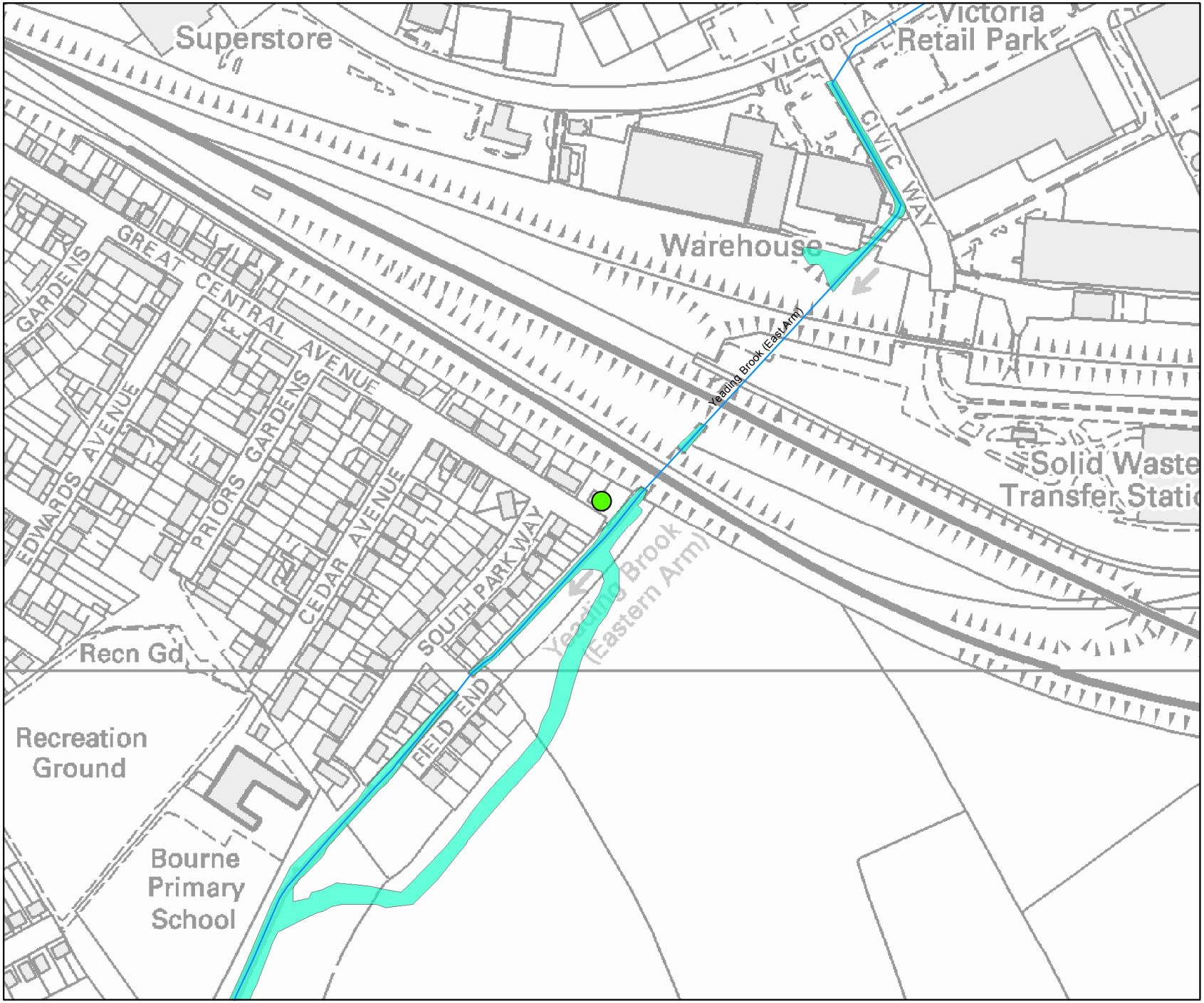
Hertfordshire & North London

Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 20 (5%) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
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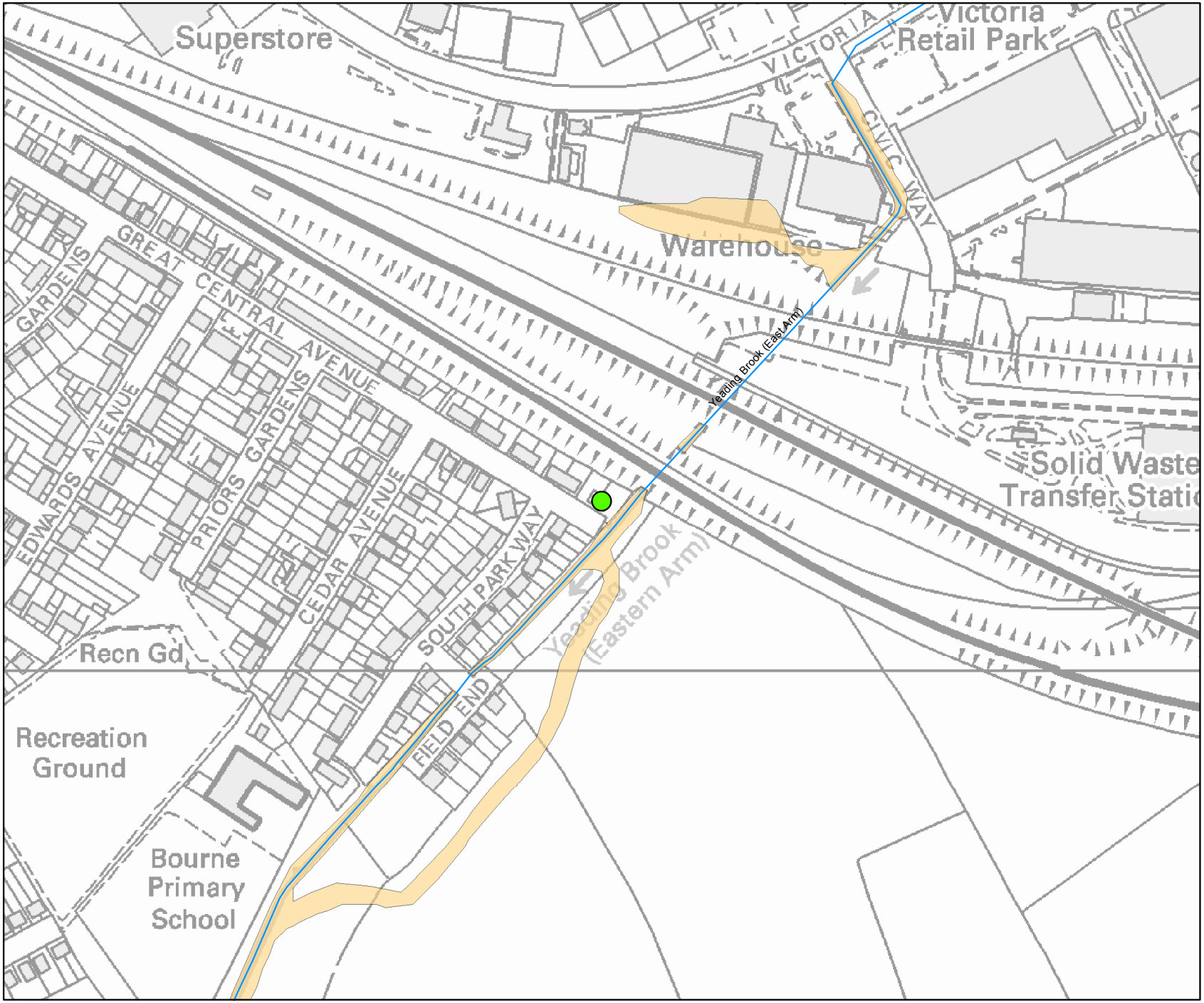
Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 50 (2%) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

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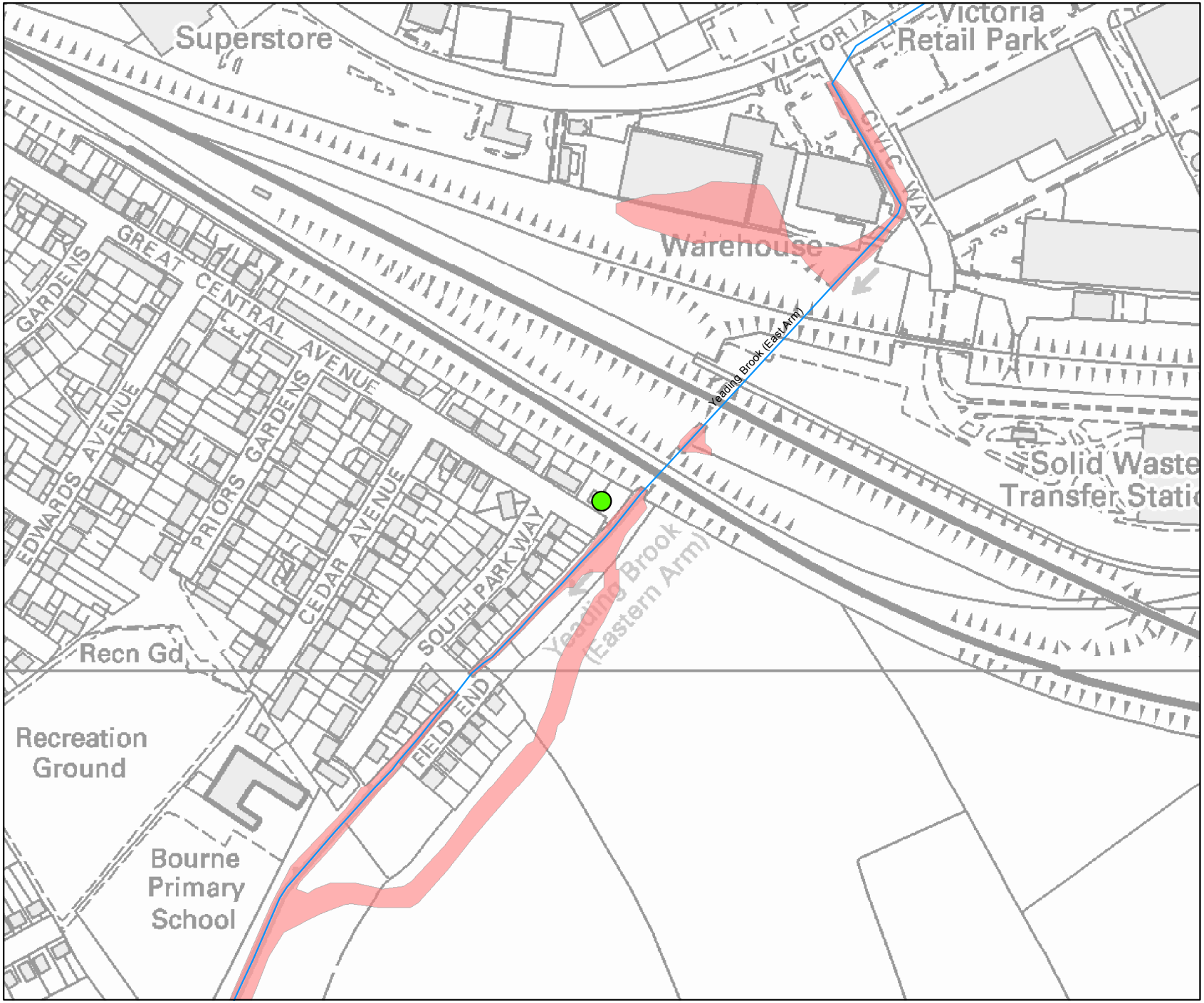
Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 100 (1%) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
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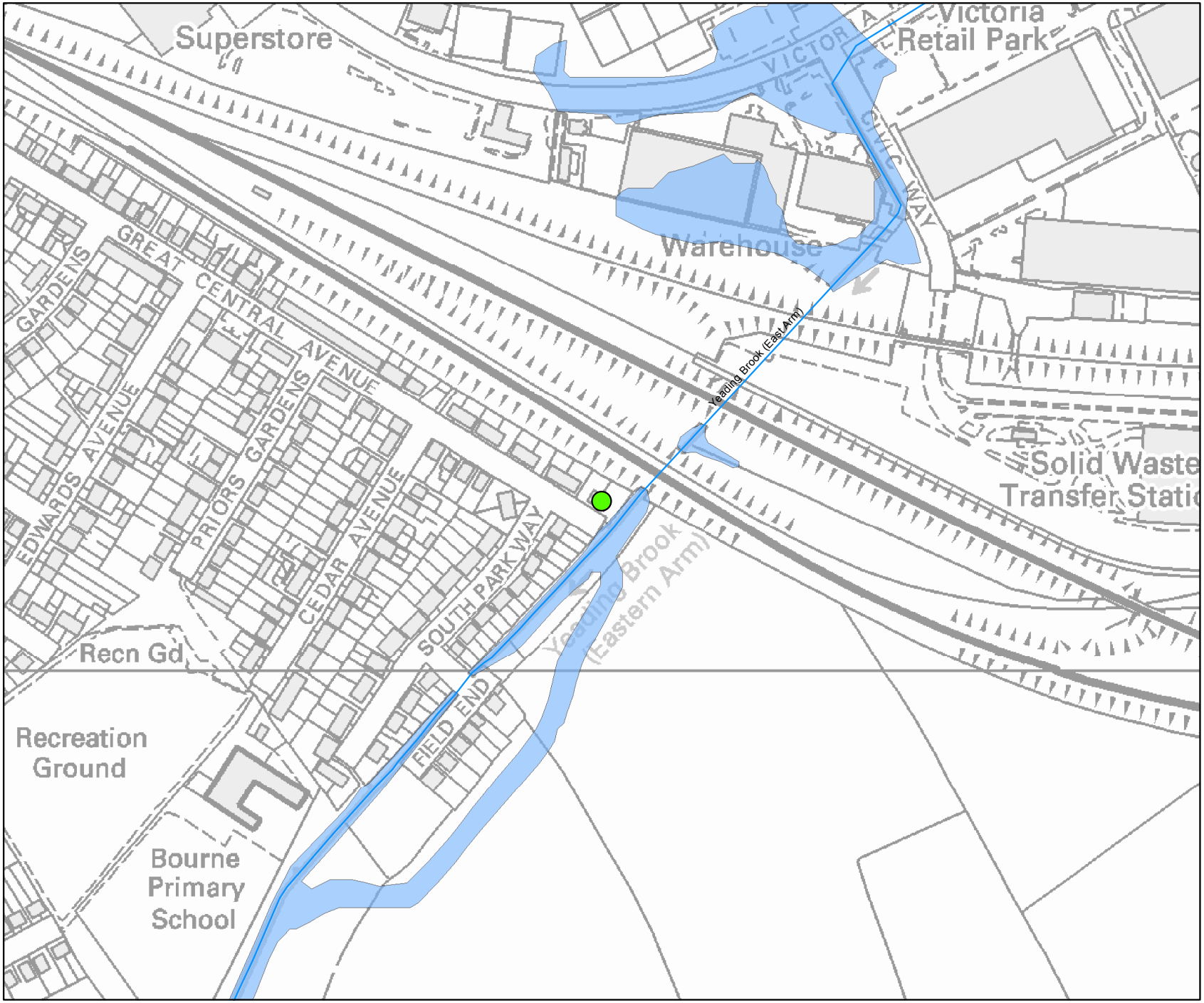
Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 100+20% (*CC) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

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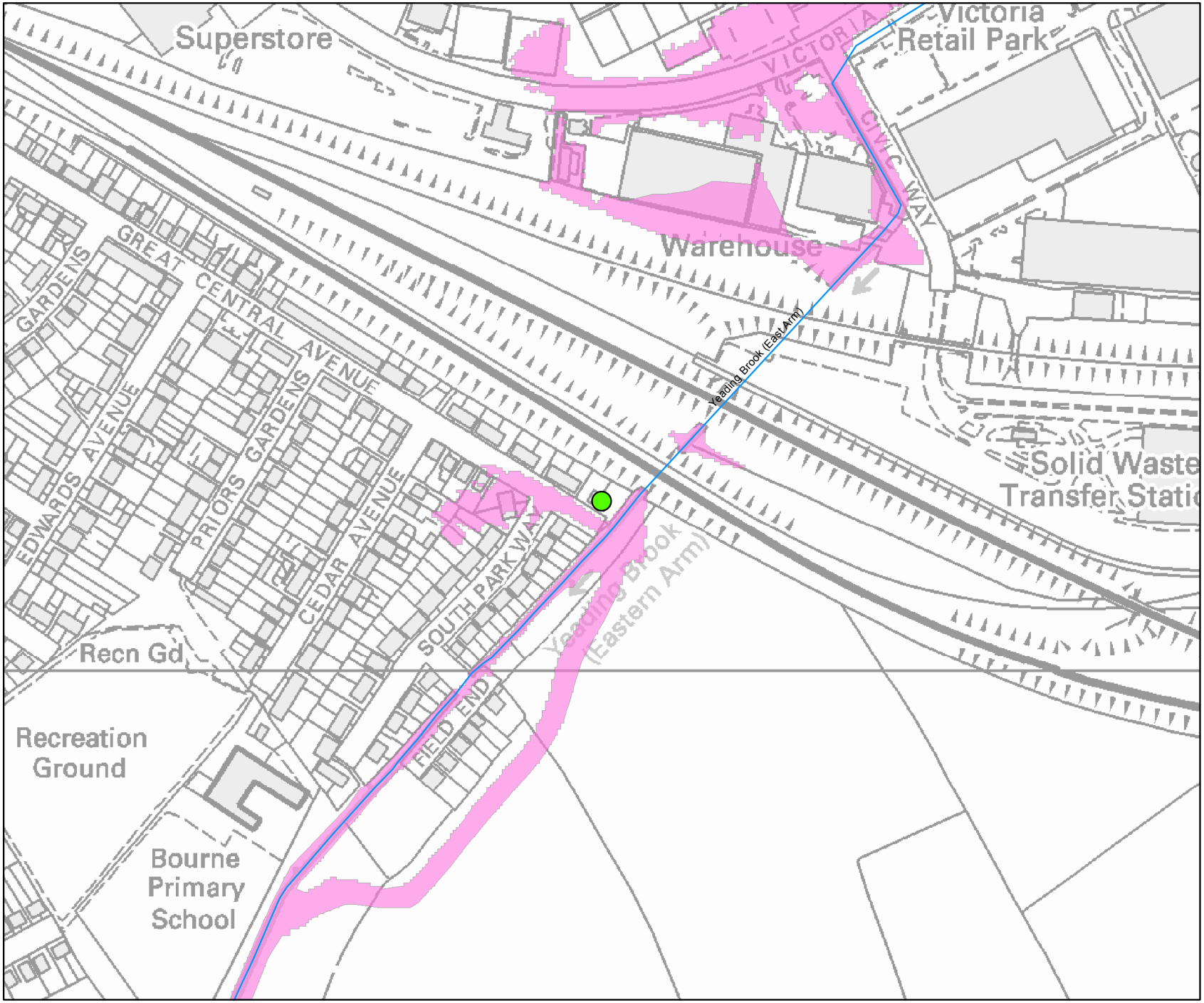

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200

Metres

Legend

Main Rivers

Site location

Defended Flood Outlines

1 in 100+25% (*CC) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
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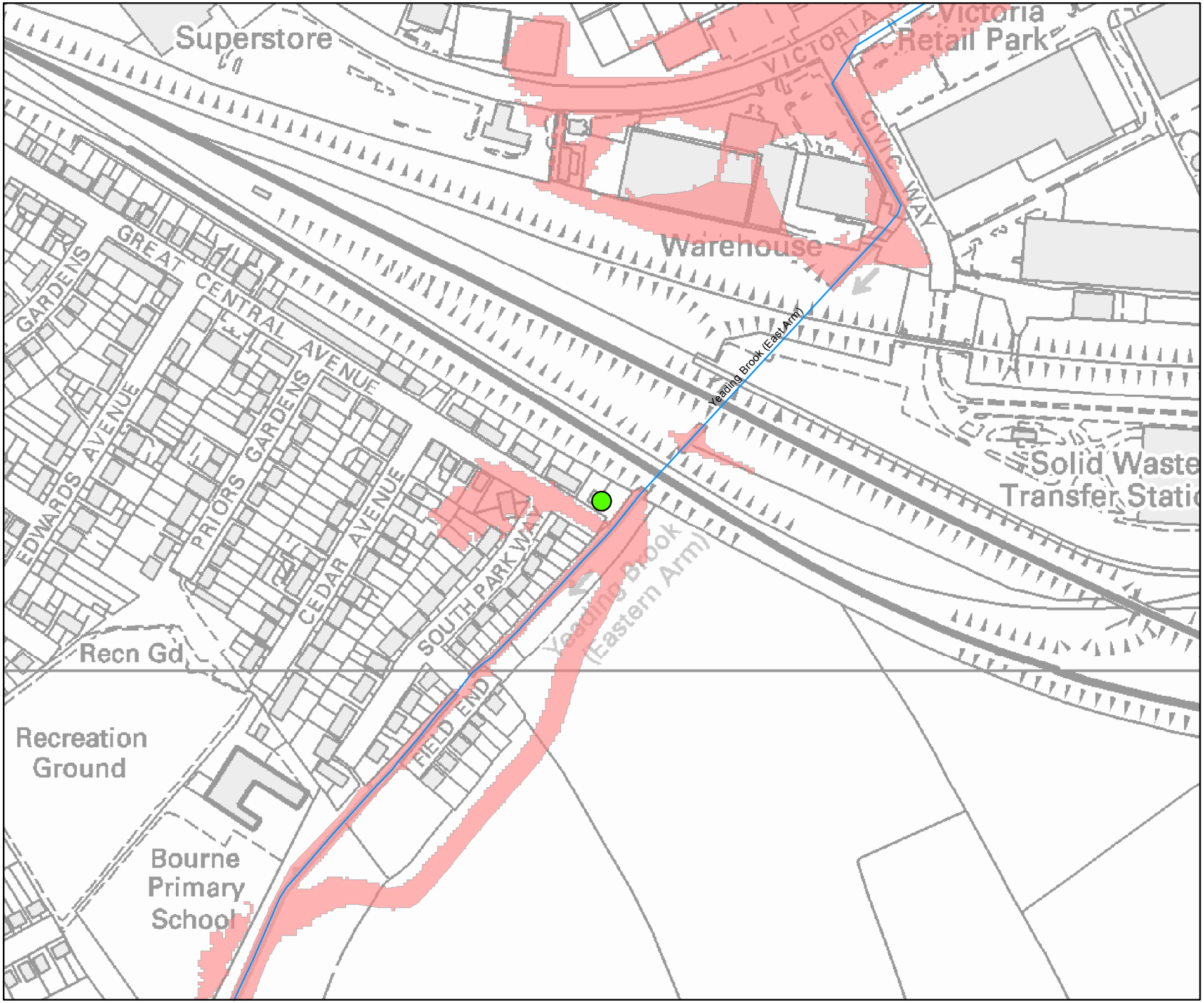
Hertfordshire & North London

Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200

Metres

Legend

Main Rivers

Site location

Defended Flood Outlines

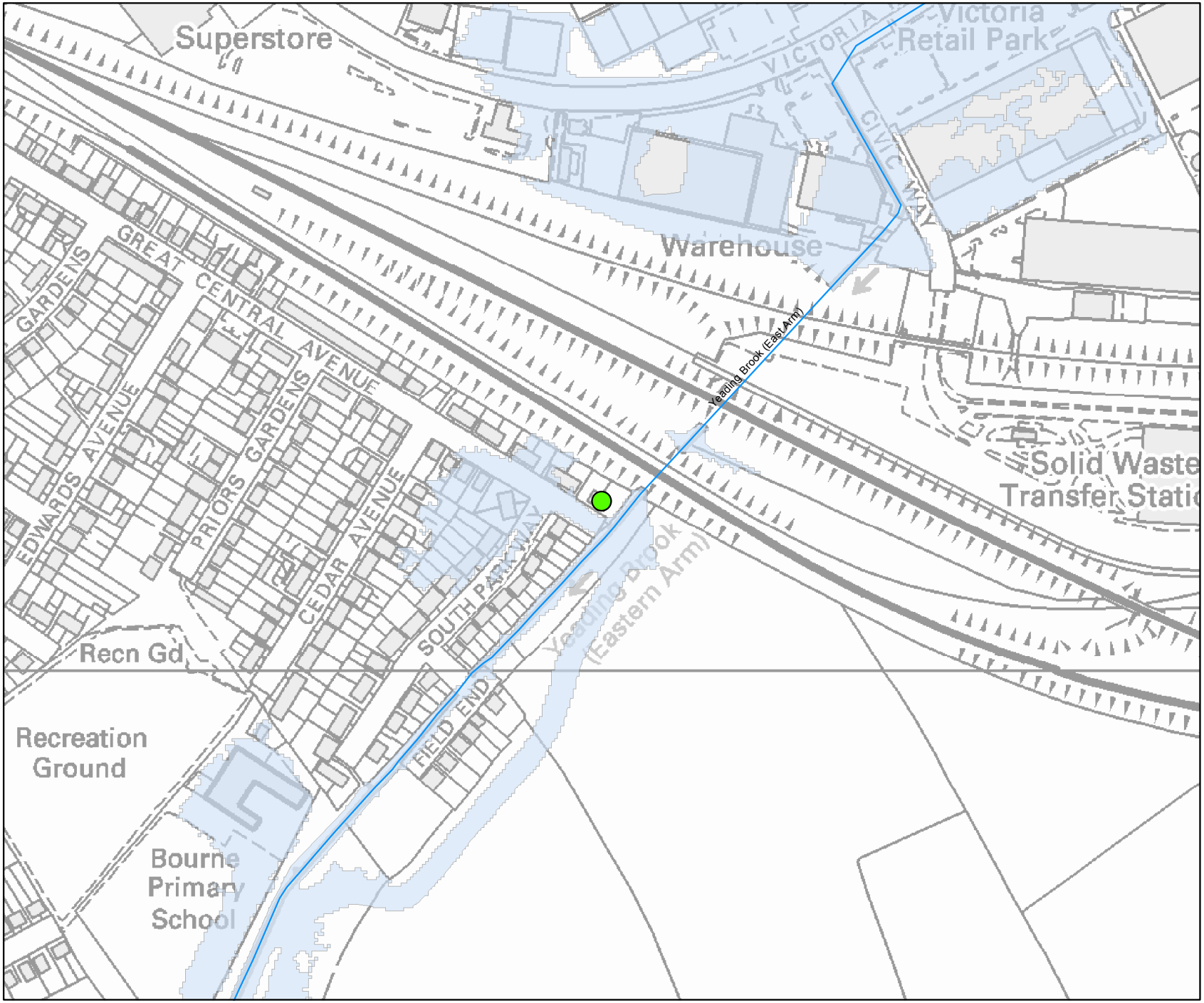
1 in 100+30% (*CC) Defended

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites withinthe catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence. https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



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Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

Main Rivers

Site location

Defended Flood Outlines

1 in 100+70% (*CC) Defended

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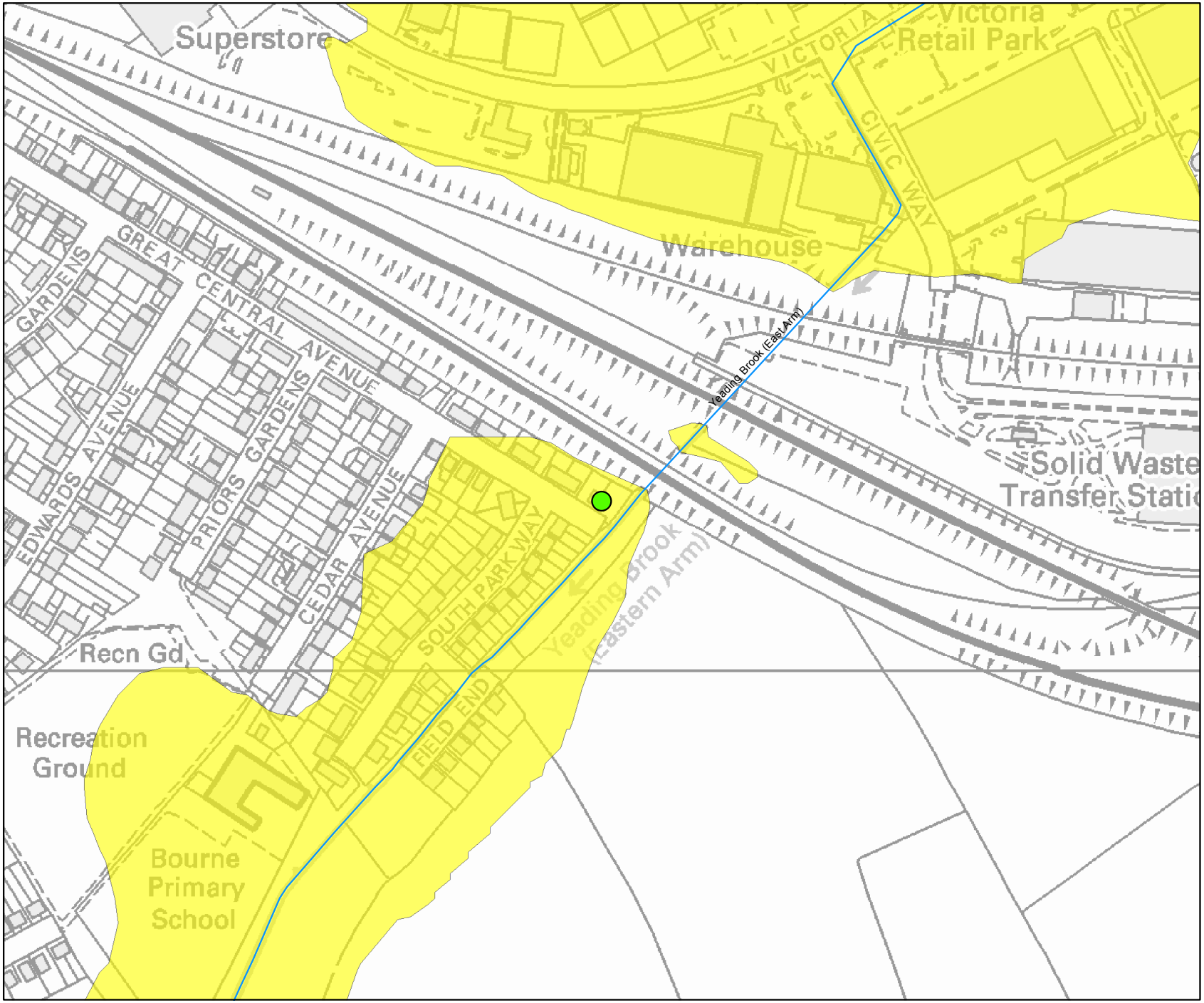

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 1000 (0.1%) Defended

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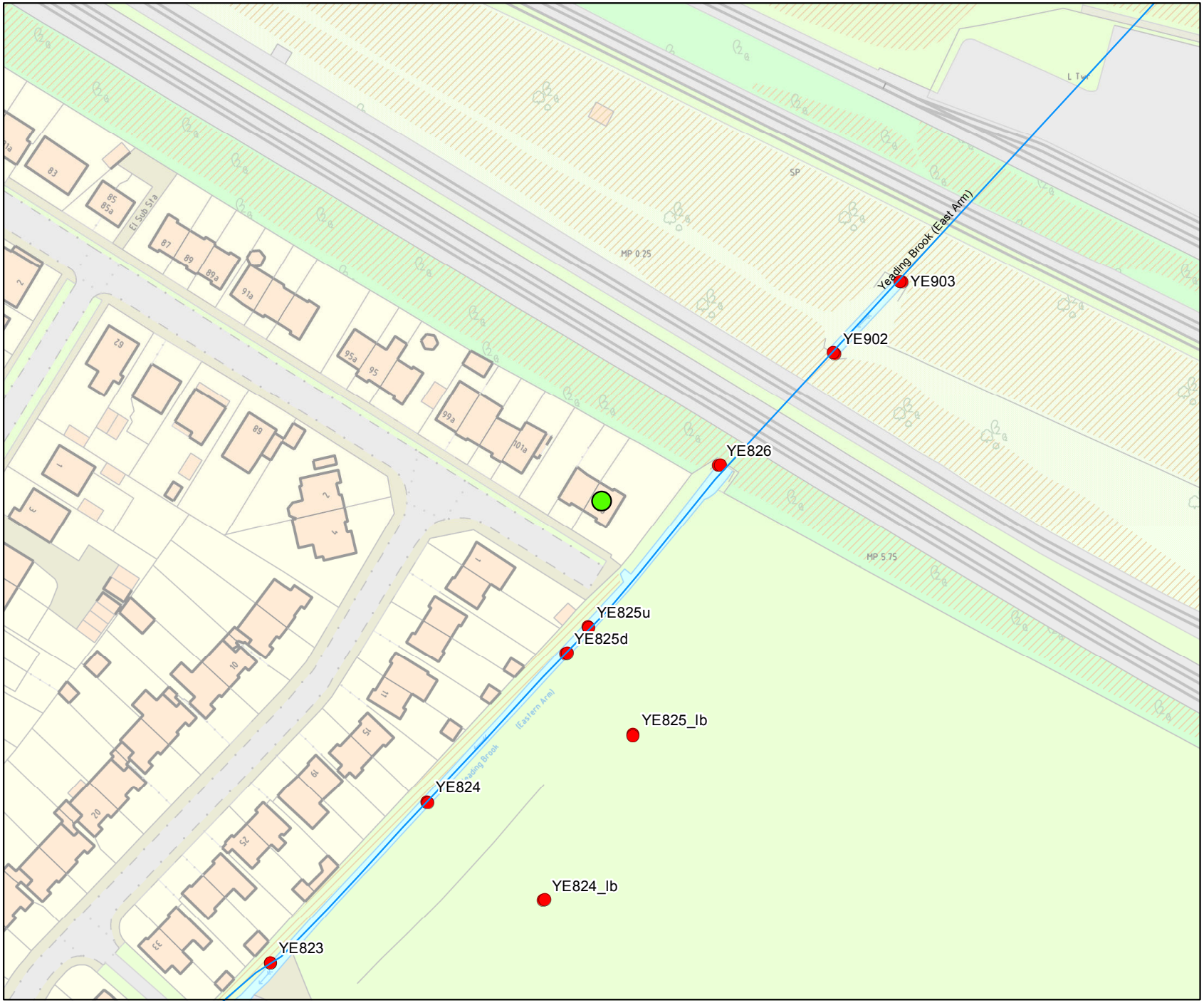

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

Main Rivers

Site location

1D Node Results

Node Results

The data in this map has been extracted from the River Crane Mapping Study (Halcrow 2008).
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Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Environment Agency ref: HNL 174021 BC

The following information has been extracted from the River Crane Mapping Study (Halcrow 2008)

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Caution:
The modelled flood levels and extents are appropriate for catchment wide strategic flood risk mapping. However, for more detailed flood risk assessment it is recommended that each of the underlying flood mapping, hydraulic modelling and hydrological assumptions are re-evaluated to determine the appropriateness in a more detailed analysis.

All flood levels are given in metres Above Ordnance Datum (mAOD)
All flows are given in cubic metres per second (cumecs)

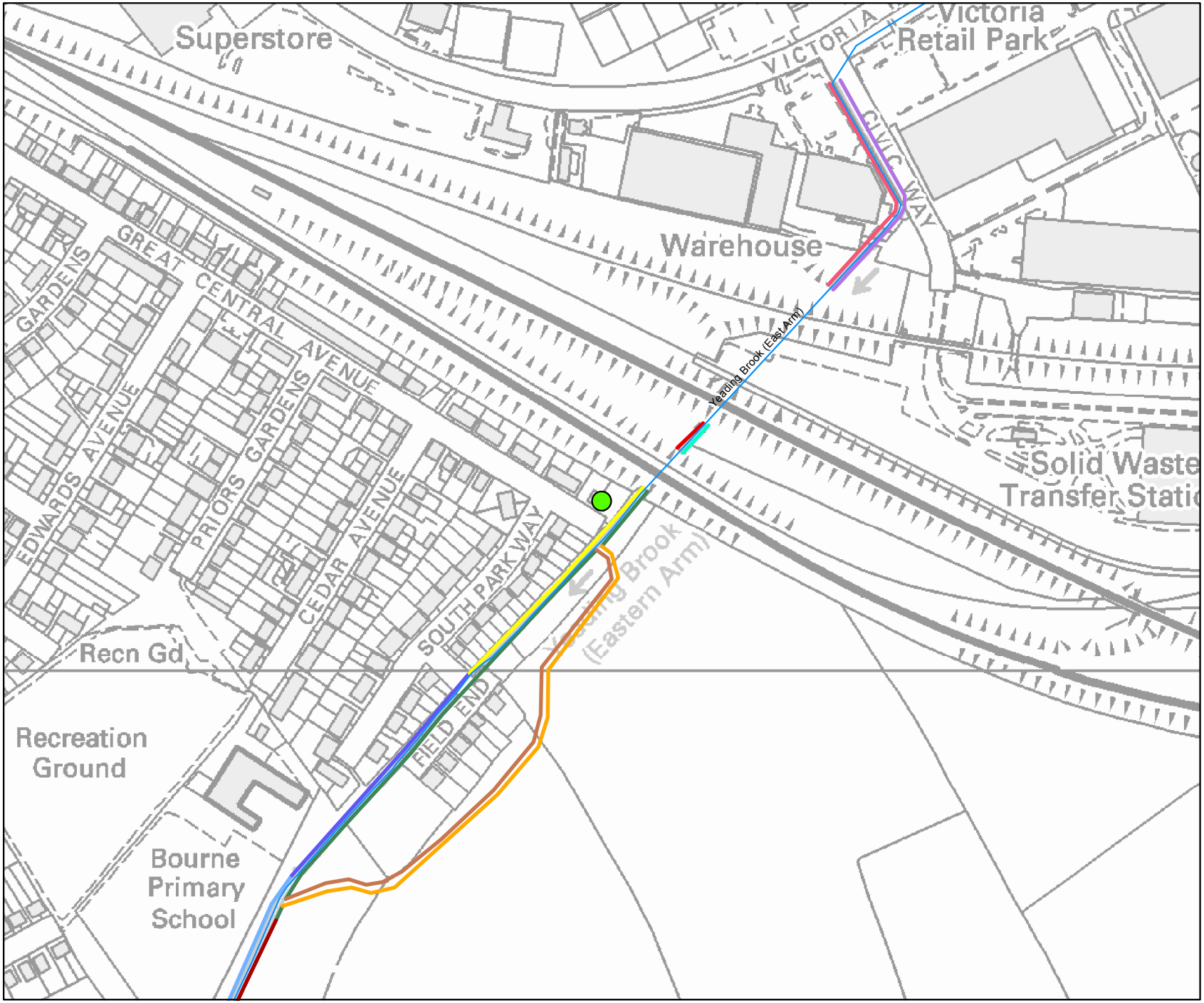
MODELLED FLOOD LEVEL

			Return Period									
Node Label	**Easting**	**Northing**	**5 yr**	**10 yr**	**20 yr**	**50 yr**	**100 yr**	**100yr + 20%**	**100yr + 25%**	**100yr + 35%**	**100yr + 70%**	**1000yr**
YE826	511598	185117	33.27	33.34	33.40	33.49	33.55	33.63	33.65	33.67	33.75	33.81
YE825u	511566	185079	33.14	33.22	33.30	33.39	33.46	33.55	33.58	33.62	33.74	33.84
YE824	511533	185042	32.98	33.05	33.12	33.22	33.30	33.41	33.44	33.49	33.67	33.75
YE823	511497	185007	32.80	32.87	32.93	33.02	33.08	33.18	33.20	33.24	33.41	33.63
YE903	511639	185159	33.40	33.48	33.54	33.65	33.73	33.86	33.88	33.93	34.06	34.38
YE902	511623	185143	33.30	33.36	33.42	33.49	33.54	33.59	33.60	33.63	33.67	33.87
YE825_lb	511566	185079	32.70	32.70	32.70	32.71	32.77	32.87	32.89	32.94	33.02	33.39
YE824_lb	511558	185021	32.70	32.70	32.70	32.70	32.76	32.86	32.89	32.93	33.02	33.39
YE825d	511566	185079	33.14	33.22	33.30	33.39	33.46	33.55	33.58	33.62	33.74	33.84

MODELLED FLOWS

			Return Period									
Node Label	**Easting**	**Northing**	**5 yr**	**10 yr**	**20 yr**	**50 yr**	**100 yr**	**100yr + 20%**	**100yr + 25%**	**100yr + 35%**	**100yr + 70%**	**1000yr**
YE826	511598	185117	4.65	5.31	6.01	7.03	7.87	9.18	9.49	10.04	12.08	17.14
YE825u	511566	185079	4.65	5.31	6.01	7.03	7.87	9.18	9.49	10.03	12.08	17.13
YE824	511533	185042	4.53	5.08	5.65	6.48	7.19	8.26	8.51	8.94	10.65	15.41
YE823	511497	185007	4.53	5.08	5.65	6.48	7.19	8.26	8.51	8.94	10.65	15.39
YE903	511639	185159	4.65	5.31	6.01	7.03	7.88	9.19	9.50	10.04	12.08	17.14
YE902	511623	185143	4.65	5.31	6.01	7.03	7.88	9.19	9.49	10.04	12.08	17.14
YE825_lb	511566	185079	0.20	0.23	0.36	0.55	0.69	0.91	0.97	1.08	1.42	1.71
YE824_lb	511558	185021	0.20	0.24	0.36	0.55	0.69	0.92	0.98	1.08	1.43	1.72
YE825d	511566	185079	4.53	5.08	5.65	6.48	7.19	8.27	8.52	8.96	10.67	15.42

Structures and Defences centred on: HA4 6TU - 30/06/2020 - HNL 174021 BC



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AL7 1HE

N

0 50 100 200

Metres

Legend

- Main Rivers
- Site location

NAFRA DEFENCE

- 46841
- 154814
- 154816
- 154817
- 154818
- 154819
- 154820
- 161844
- 163509
- 180978
- 524356

The following information on defences has been extracted from the Asset Information Management System (AIMS)

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Environment Agency ref: HNL 174021 BC

The following information on defences has been extracted from the Asset Information Management System (AIMS)

Defences

Asset ID	Asset Type	Asset Protection	Asset Comment	Asset Description	Design Standard of protection (years)	Downstream Crest Level	Upstream Crest Level	Condition of Defences (1=Good, 5 = Poor)
154819	high_ground	fluvial	Cast insitu concrete channel walls with railing and Crash barrier to crest.	Lined Channel	2	35.55	34.23	2
154816	high_ground	fluvial	vegetated channel with timber toe-boarding revetment. Part of River Crane Flood Alleviation scheme contract 2 1 in 100 SoP.	Field End Timber Camp Sheeting Bank protection.	100	34.34	33.39	2
154814	high_ground	fluvial	Vegetated channel with timber toe-boarding revetment. Part of River Crane Flood Alleviation scheme contract 2	Field End bank protection left bank	100	33.34	33.27	2
154817	high_ground	fluvial	Vegetated channel with timber toe-boarding revetment. Part of River Crane Flood Alleviation scheme contract 2 1 in 100 SoP.	Field End timber camp sheeting Bank protection.	100	33.39	33.18	2
154818	high_ground	fluvial	Vegetated channel with timber toe-boarding revetment. Part of River Crane Flood alleviation scheme contract 2 designed to 1 in 100 SoP.	Timber Camp sheeting bank protection	100	33.18	33.24	2
46841	high_ground	fluvial	Enlargened and deepened rectangular, reinforced concrete channel. Splays provided at each end to reduce head loss at the change in channel cross section. Part of river Crane flood alleviation scheme contract 2 1 in 100 yrs SoP.	Field End Channel lining	100	35.53	35.47	3

154820	high_ground	fluvial	Earth banks, probably backed by retaining wall to protect retail park.	Natural Bank	2	35.98	34.24	3
163509	high_ground	fluvial	1 in 8 gradient trapezoidal bypass channel to alleviate flooding from Yeading Brook. French drain in invert. Confluence with channel protected by Reno mattress and Enkamat geotextile. Grassed. Part of river crane FAS contract 2 1 in 100 yrs SoP.	Field End Bypass Channel L/B.	100	33.41	33.17	2
161844	high_ground	fluvial	1 in 8 gradient trapezoidal bypass channel to alleviate flooding from Yeading Brook. French drain in invert. Confluence with channel protected by Reno mattress and Enkamat geotextile. Grassed. Part of river crane FAS contract 2 1 in 100 yrs SoP.	Field End Bypass Channel R/B.	100	33.59	33.17	2
180978	high_ground	fluvial	Enlargened and deepened rectangular, reinforced concrete channel. Splays provided at each end to reduce head loss at the change in channel cross section. 1 in 100 yrs SoP.	Part of River Crane Flood alleviation scheme contract 2	100	35.52	35.86	3
524356	high_ground	fluvial	Enlarged and widened channel with 1 in 3 slopes. Part of River Crane flood alleviation scheme contract 2	Field End widened bank, slopes set at 1 in 3	100	No Data	No Data	No Data

Rappor Consultants Ltd

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