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Eastcote and Northwood URC, HA6 1NL

Reference: 0178 - FRA- 001

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FLOOD RISK ASSESSMENT

Jan-21

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Rev 1

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Purpose of this report

- 1.1 RIDA Reports Ltd has been appointed to undertake a Level 1 Flood Risk Assessment for a development located at HA6 1NL.

Objectives

- 1.2 The objectives of this FRA are to demonstrate the following:
- * Whether the proposed development is likely to be affected by current or future flooding.
 - * Whether the proposed development will increase flood risk elsewhere.
 - * Whether the flood risks associated with the proposed development can be satisfactorily managed.
 - * Whether the measures proposed to deal with the flood risk are sustainable.

Documents Consulted

- 1.3 To achieve these objectives the following documents have been consulted and/or referenced:

The National Planning Policy Framework (NPPF)
CIRIA C753 document The SuDS Manual, 2015
Local Flood Risk Management Strategy (LFRMS)
Level 1 Strategic Flood Risk Assessment (SFRA)
Aerial photographs and topographical survey of the site
British Geological Society Records
Harrow Council Surface Water Maps
Environment Agency flood maps
The CIRIA publication 'C635 Designing for exceedance in urban drainage— Good practice'

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Development Site and Location

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- 2.1 The site is located at Joel Street, Northwood Hills. The nearest post code is HA6 1NL. Refer to appendix A for site location plan.
- 2.2 The current use of the site is a set of buildings consisting of the main church, the Templeton hall, the Kingsland hall and further building accommodating the Mansfeld and Hartfeld rooms. The current use vulnerability classification of the site is Less vulnerable . The site is located in the River Flood Zone 1. Refer to Appendix B for more details.

Development Proposals

- 2.3 The proposed development includes the extension and refurbishment of the existing URC building to create a fully accessible facilities and the construction of two semi-detached houses on Lichfield Road. Refer to Appendix B for layout of the proposed development.
- 2.4 The vulnerability classification of the proposed development is More vulnerable with an estimated lifetime between 50 and 100 years.

Site Hydrology and Hydrogeology

- Surface Water 2.5 There is a tributary of the River Pinn located approximately 200 m away from the development.
- Aquifer 2.6 The development is located within an unproductive strata. These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
- Source Protection Zone 2.7 The site is located within the source protection zone 2. This zone is defined by a 400 day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the source.
- Ground Water Levels 2.8 The ground water levels for this site are unknown. However it is likely that the water table is low.

Site Geology

- DRAFT Bedrock 2.9 The British Geological Society records of the site show that it is located within the London Clay.
- Superficial Deposits 2.10 The British Geological Society records show that the superficial deposits are None.
- Contaminated Land 2.11 The contaminated land register suggest that the site is not contaminated



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National Planning Policy Framework (NPPF)

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- 3.1 The NPPF and its technical guidance is a set of planning policies with the key objective to contribute to the achievement of sustainable development. As part of it, they ensure that flood risk and sustainability are taken into account during the planning process. This ensures that developments are not located in flood risk areas and directs developments to lower risk areas. The NPPF applies a sequential risk-based approach to determining the suitability of land for development in flood risk areas. The NPPF also encourages developers to seek opportunities to reduce the overall level of flood risk through the layout of the development and the application of Sustainable Drainage Systems (SuDS). Adoption of these principles at early stages of the project can ensure that the developments take into account appropriate mitigation which is included within the detailed design of the schemes.

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The Flood and Water Management Act (2010)

- 3.2 The Flood and Water Management Act aims to reduce the flood risk associated with extreme weather events. It provides a robust management of flood risk for people, homes and businesses and also encourages the use of SuDS for developments. A robust SuDS strategy should take into account the recommendations given in this Flood Risk Assessment. The drainage strategy should incorporate SuDS within the design and also attenuate all flows to either the greenfield or brownfield run off and take into account the risk from other sources as necessary.

Surface Water Management Plan

- 3.3 The Surface Water Management Plan for Hillingdon contributes to the emerging Hillingdon Local Plan and the Flood Risk Management Strategy. This document was followed for the production of this flood risk assessment.

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- 4.1 The flood risks were determined by identifying the sources of flooding and assessing their possible impact and likelihood to the development.

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Fluvial Flood Risk - Assessment

- 4.2 Fluvial flood risk was assessed using the Environment Agency Flood Zone Maps and the sequential risk-based approach recommended in the NPPF. The sequential test takes into account the flood risk vulnerability of land uses in relation to the flood zone categorisation. These parameters are assessed in order to determine whether the development is appropriate. Under certain circumstances the exception test is applicable.

Sequential Test

- Step 1** 4.3 The proposed development is less than 1Ha and falls within the Environment Agency Flood Zone 1. Therefore, this Flood Risk Assessment Level 1- Screening report should be sufficient under the NPPF. The Flood Zone 1 is considered to have a low probability of flooding with an annual probability of flooding of <0.1%. The chance of flooding is 1 in 1000 years or greater.

Flood Zone categorisation

- Step 2** 4.4 Within Table 2 (Flood Risk Vulnerability Classification) of the NPPF Planning Practice Guide, the proposed development is classified as 'More vulnerable'.

Flood risk vulnerability

- Step 3** 4.5 The Flood Risk vulnerability and Flood Zone Compatibility table of the NPPF Planning Practice Guide states that More vulnerable developments are appropriate in this area.

Sequential Test Results

The Exception Test

- 4.6 The exception test is not required.

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Surface water (overland flows) flood risk

- 4.7 The Environment Agency maps show that the flood risk from surface water is low. However a residual risk of localised shallow ponding remains likely. The development should look at increasing the threshold levels of the buildings and accommodating areas for free flow of run off.
- 4.8 The council's Surface Water maps confirms that the flood risk for the site is low. The FFL of the proposed properties should be located 150mm above the ground level. See appendix C for details.

Reservoirs Risks

- 4.9 The Reservoir Flood Map (RFM) produced by the Environment Agency do not show the risk to individual properties of dam breach flooding. The maps do not indicate or relate to any particular probability of dam breach flooding. The maps were prepared for emergency planning purposes and can be used to help reservoir owners produce on-site plans and the Local Resilience Forum produce off-site plans, and to prioritise areas for evacuation/early warning in the event of a potential dam failure. The RFM shows that the development could be within the possible dam breach flooding path. It is recommended that the Local Resilience Forum is contacted during detailed design. See Appendix C.

Groundwater flood risk

- 4.10 The SWMP confirms that the site has limited susceptibility to ground water flooding.
- 4.11 The risk from groundwater flood to the site is considered very low. No interventions required.

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Flooding from drainage systems in adjacent areas

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- 4.12 The SWMP and the SFRA Level 1 shows that the site is within an area of high sewer flooding incidents. The site is also located within an area that contributes to the flooding of a critical drainage area (as described within the Hillingdon SWMP). Therefore the site is considered to be located within the CDA 053- Joel Street. See appendix C for details. The risk of flooding from adjacent drainage systems is considered to be medium, due to the site location within a critical drainage area, it is recommended that a sustainable system is applied to the site. The principles for this drainage system are given below.

Critical Drainage Area - Risk Mitigation

- 4.13 The surface water run-off will be disposed using SuDS techniques. The aim is to provide a sustainable design that accommodates the proposed attenuation volume and replicated the existing drainage regime using the SuDS hierarchy is shown in the figure 4 below.
- 4.14 The SuDS techniques highlighted in red below can be used on site. This assessment is based on the ground conditions and the potential discharge points available. This will be sized during detailed design.

Figure 4: The SuDS Hierarchy (Source:EA Thames region, SuDS a practical guide)

Most Sustainable	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
↑	Living roofs	✓	✓	✓
	Basins and ponds	✓	✓	✓
	- Constructed wetlands			
	- Balancing ponds			
	- Detention basins			
↓	Filter strips and swales	✓	✓	✓
	Infiltration devices	✓	✓	✓
	- soakaways			
Least Sustainable	Permeable surfaces and filter drains	✓	✓	
	- gravelled areas			
	- solid paving blocks			
	Tanked systems	✓		
	- over-sized pipes/tanks			
	- storms cells			

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- 4.15 The proposed surface water management will include the reduction of impermeable areas by 280m², providing permeable surfaces and underground storage tanks. In general the proposed drainage provides a positive intervention in the reduction of flooding in this area. See appendix D for details of SW drainage strategy.



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- 5.1 The development is outside of the Environment Flood Risk zones from rivers. However is within a critical drainage area. As such the development should incorporated SuDS principals to manage the surface water flows. Under the NPPF the development is development use is appropriate within the flood zone.
- 5.2 The development fully complies with the NPPF as it has been designed to not result in net loss of flood storage; not impede water flows, not increase flood risk elsewhere and be safe for use.

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Appendix A & B

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notes

Do not scale.
All dimensions to be checked on site and verified with the architect prior to construction.
Any discrepancies or uncertainties regarding this drawing to be discussed with the architect prior to construction.
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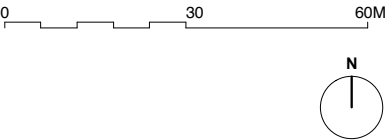
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— site boundary

revision notes

changes since previous issue:

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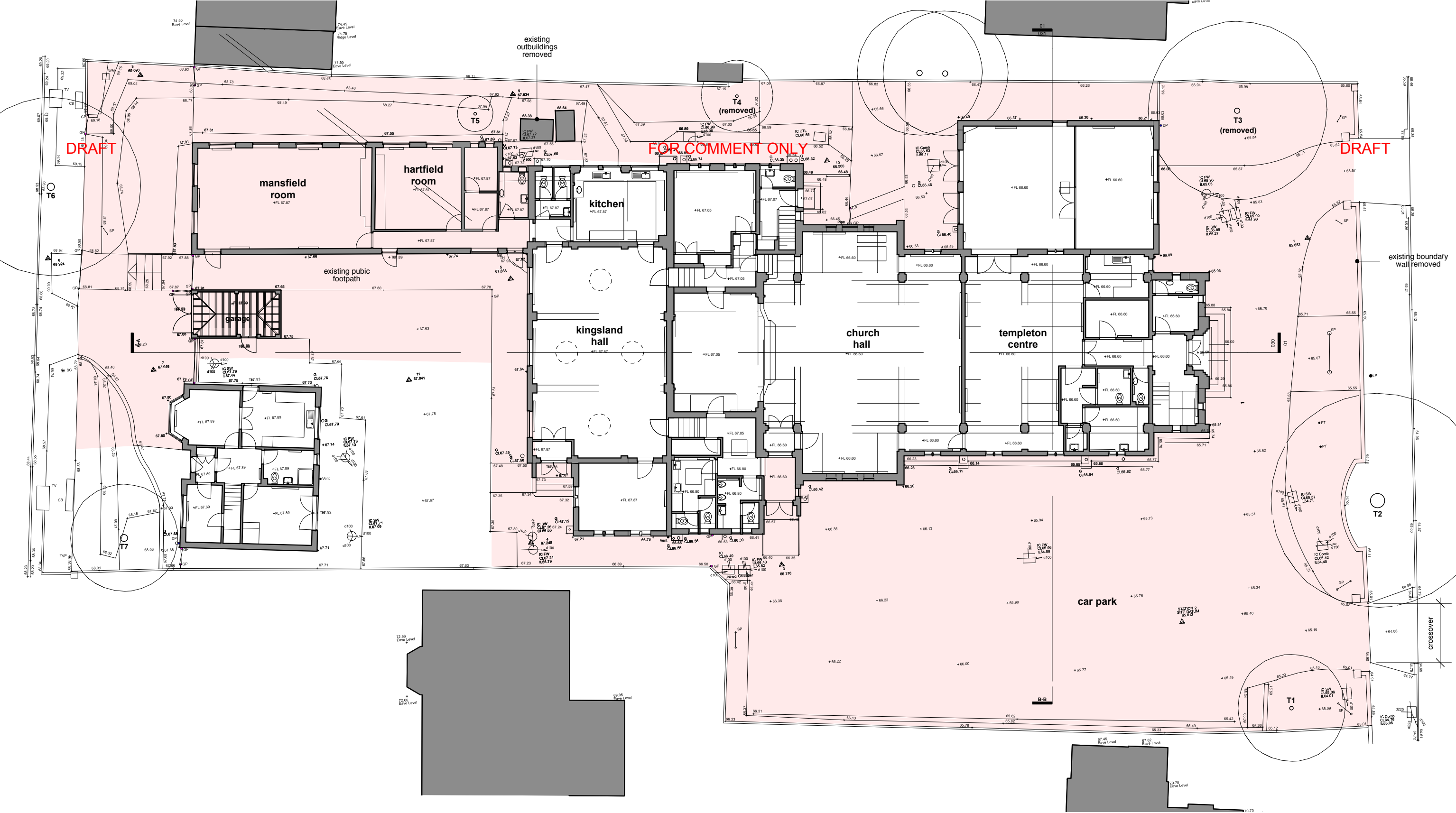
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p1	03.06.20	issued for planning

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project
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drawing
location plan
existing

scale	date	revision
1:1250@A3	jul 17	
job number	drawing number	revision
1132	000	p1



notes

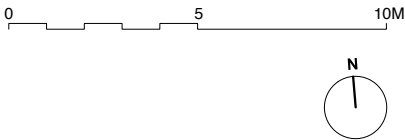
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revision notes

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revision	date	comment
p1	11.03.20	issued for comment
p2	02.06.20	issued for comment
p3	03.06.20	issued for planning

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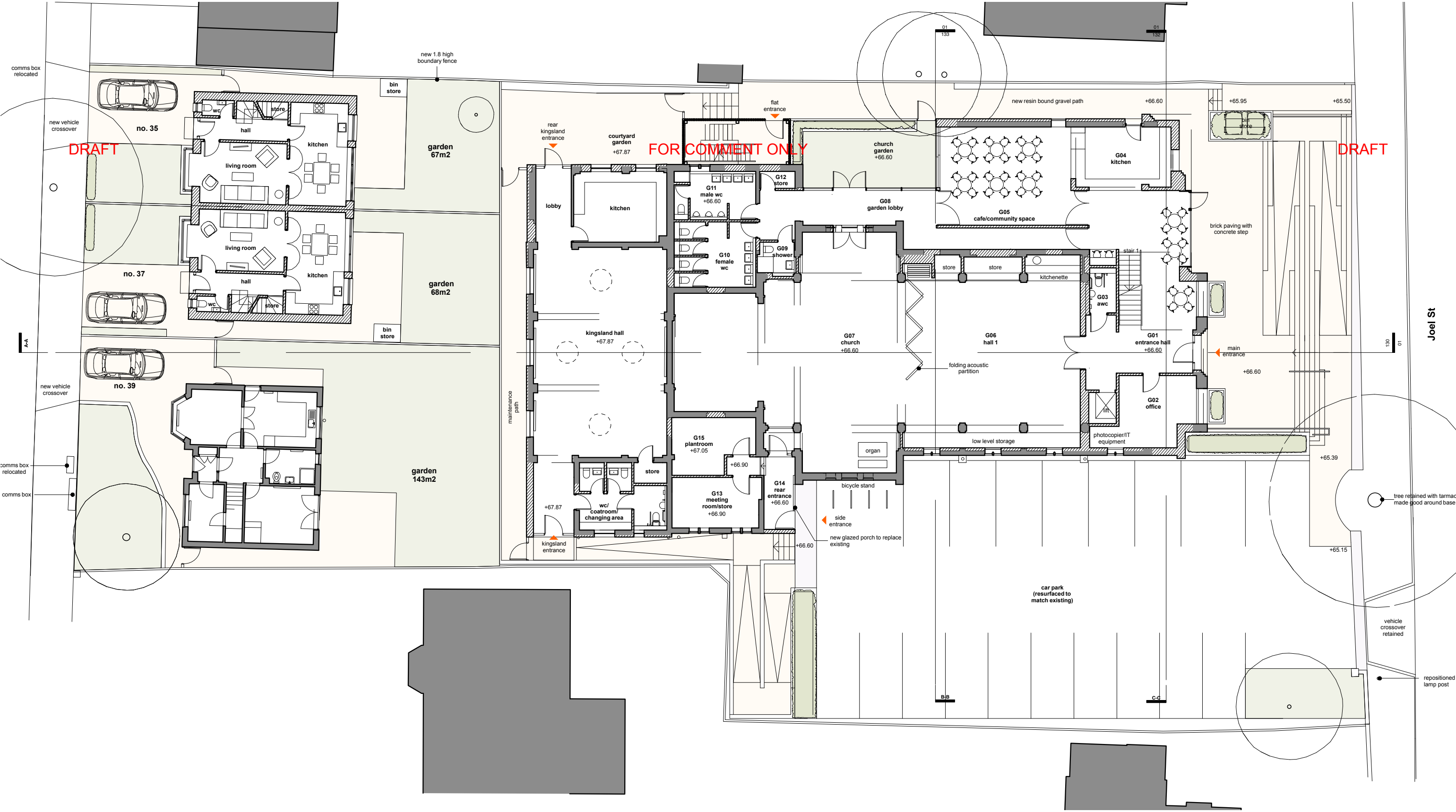
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project
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drawing
site and ground floor plan
existing

scale	date	revision
1:200@A3	jul 17	
job number	drawing number	revision
1132	010	p3



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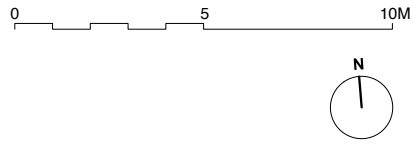
key

- grass lawn
- new paving/resin bound gravel
- existing building
- new construction

revision notes

changes since previous issue:

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planning

revision	date	comment
p1	11.03.20	issued for comment
p2	27.03.20	issued for comment
p3	04.05.20	issued for comment
p4	22.05.20	issued for comment
p5	02.06.20	issued for comment
p6	03.06.20	issued for comment
p7	22.09.20	issued for comment
p8	09.10.20	issued for comment
p9	04.11.20	issued for comment
p10	20.11.20	issued for comment
p11	30.11.20	issued for planning

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project		
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drawing		
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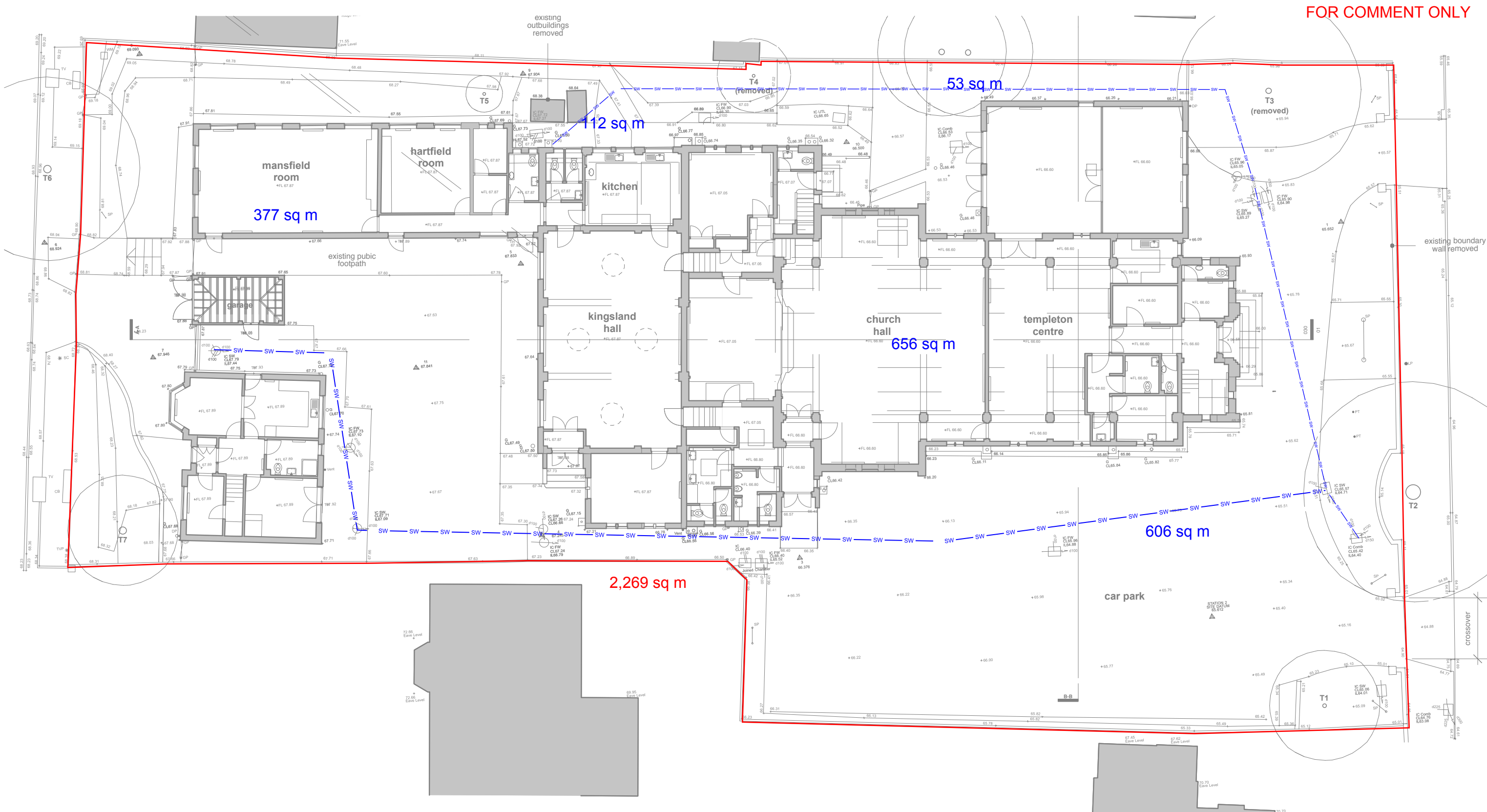
Appendix D

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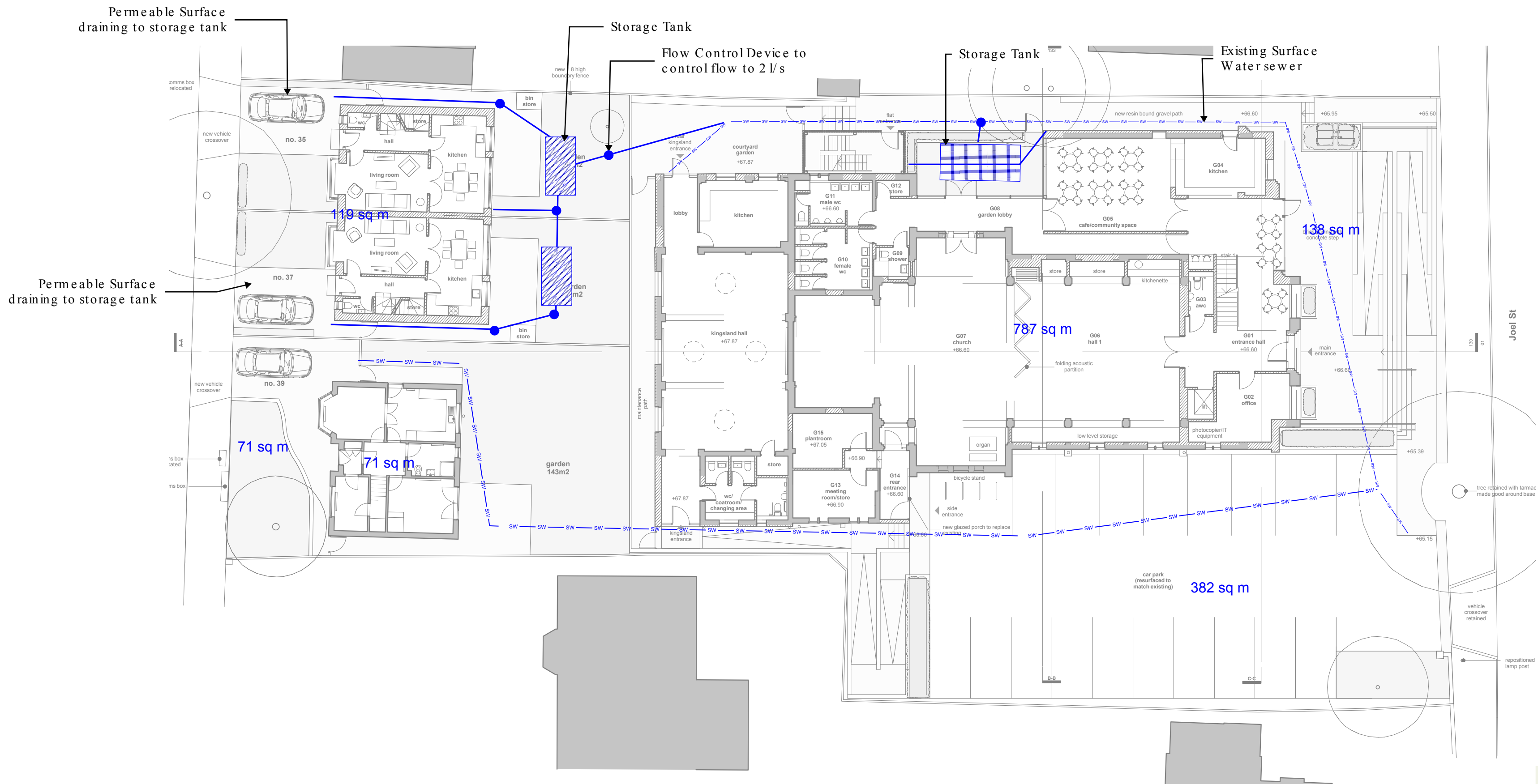
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Drawing Scale Bar		DRAFT	
Drawing scale	Line length	Drawing scale	Line length
1:5	= 0.25 metres	1:200	= 10.0 metres
1:10	= 0.5 metres	1:250	= 12.5 metres
1:20	= 1.0 metres	1:500	= 25.0 metres
1:25	= 1.25 metres	1:1000	= 50.0 metres
1:50	= 2.5 metres	1:1250	= 62.5 metres
1:100	= 5.0 metres	1:2500	= 125 metres

GENERAL NOTES

This drawing should be read

EXISTING PERMEABLE AND IMPERMEABLE AREA
SCALE 1:200



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PROPOSED DRAINAGE STRATEGY
SCALE 1:200

KEY

- Proposed Permeable Surface
- Impermeable Surface
- Grass - Self draining
- Ex SW drainage
- Prop SW drainage
- Prop Storage tank

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Rev Details Date By Chd

Drawing Status:

PRELIMINARY

RIDA

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGIES

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Project:

Eastcote and Northwood URC, HA6 INL

Drawing:

Drainage Strategy

Print Size: Project No: Drawing No: Revision:

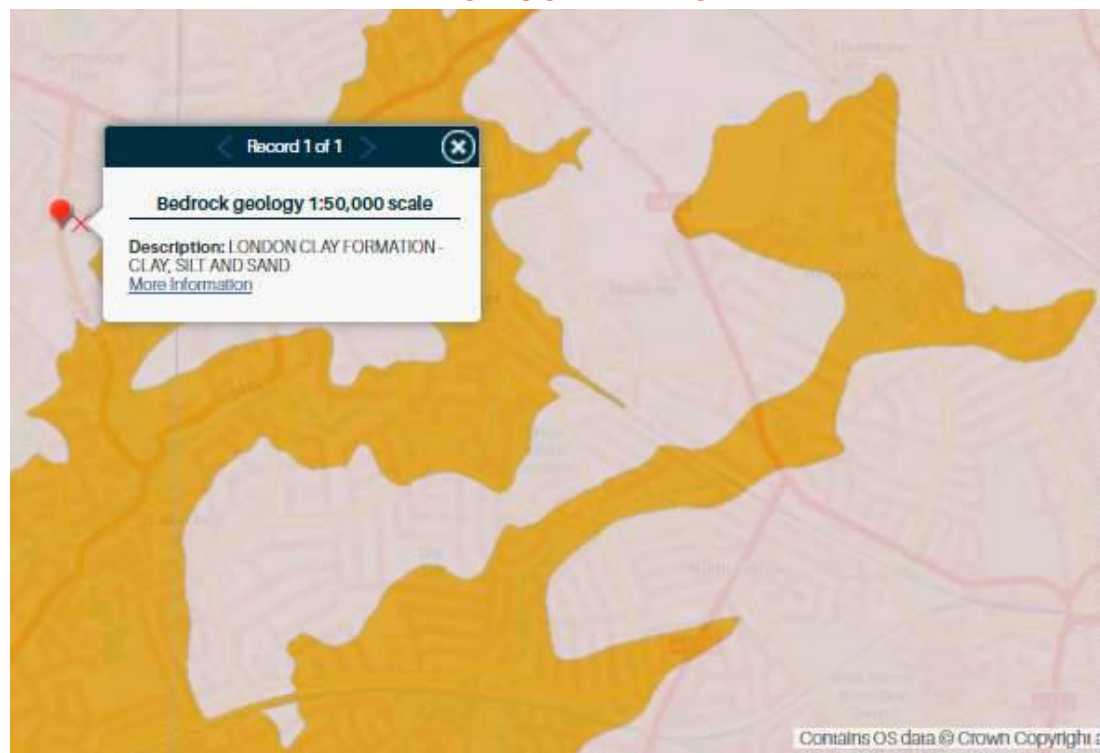
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Appendix C

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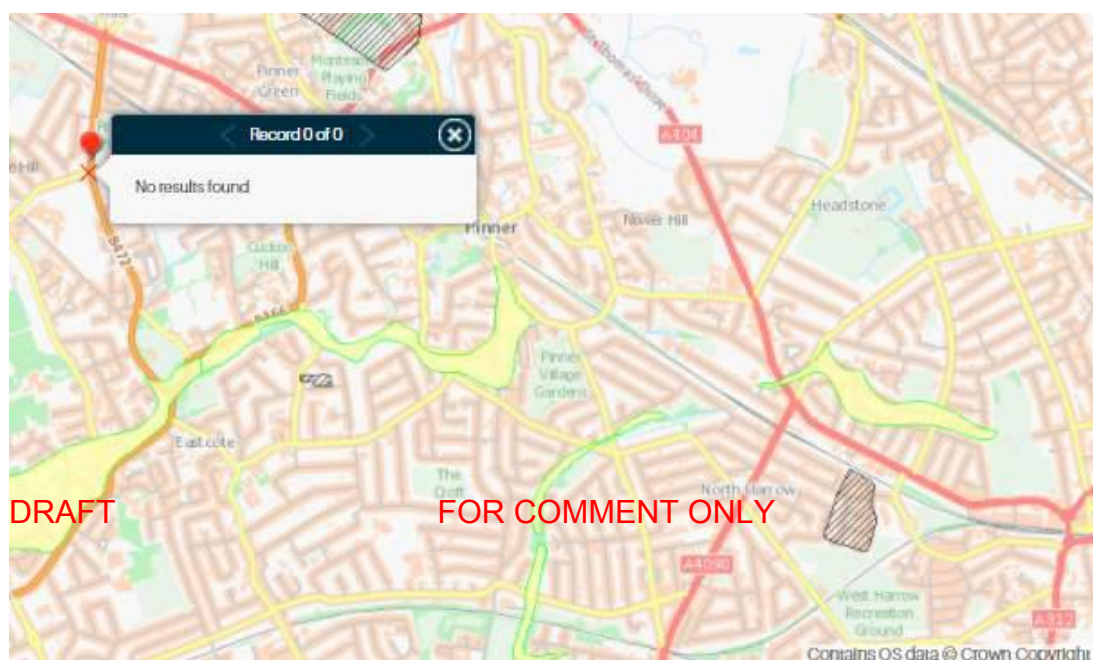
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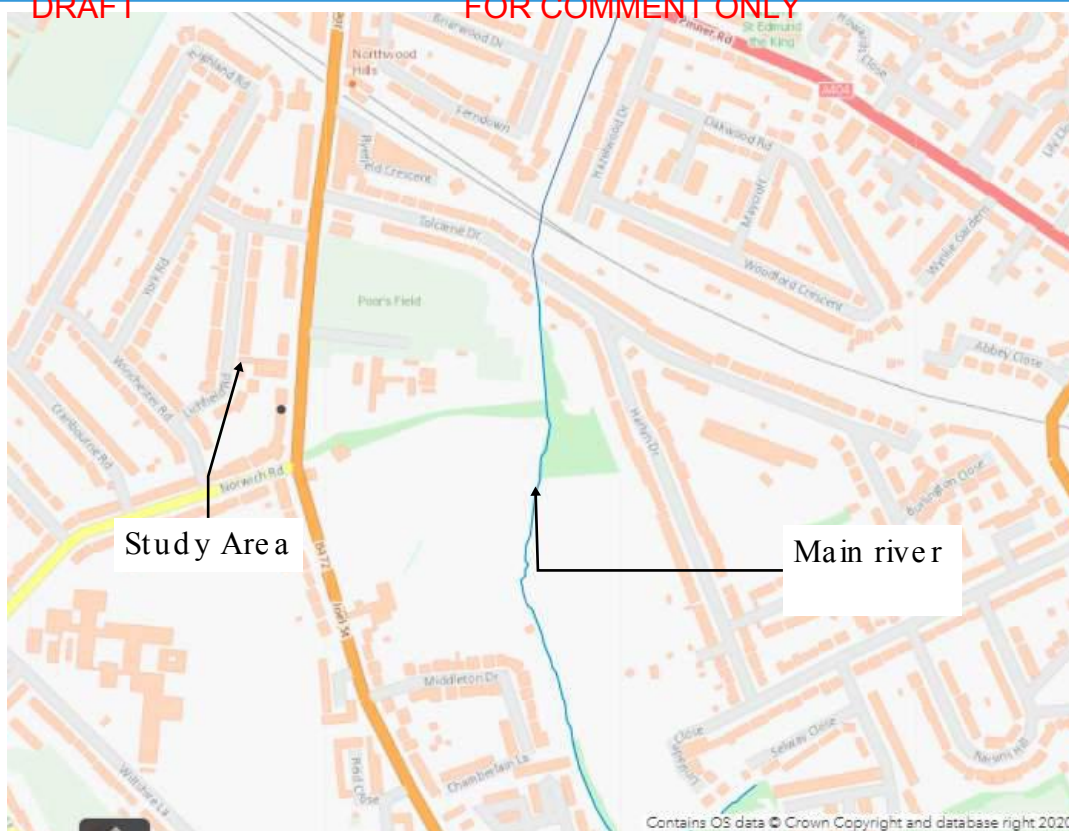




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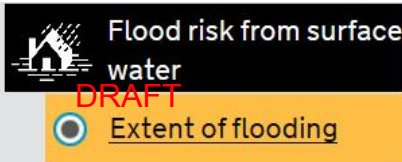
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SITE FLOOD RISK

Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding



Flood risk



High



Medium

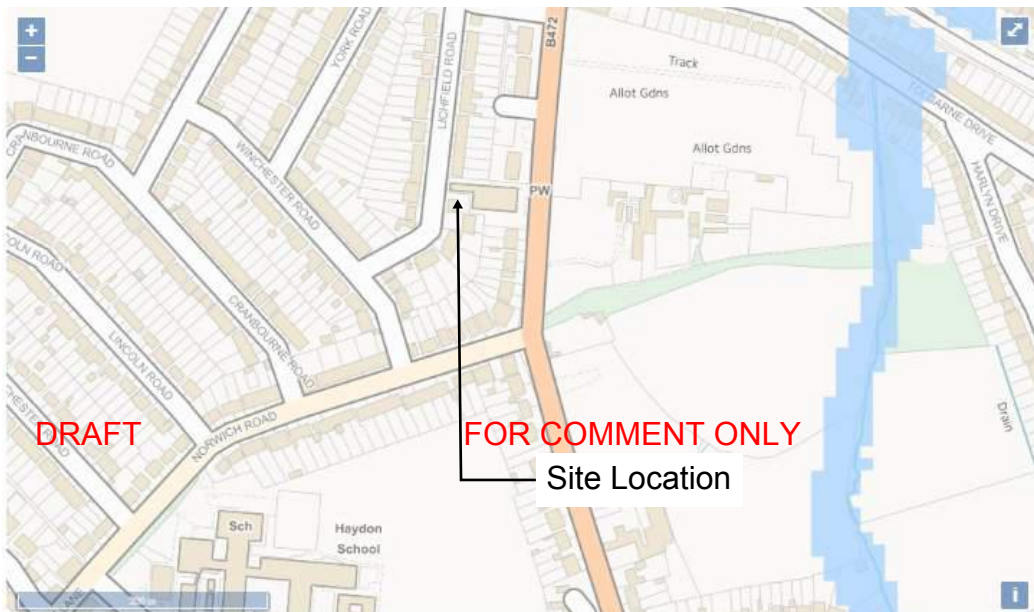
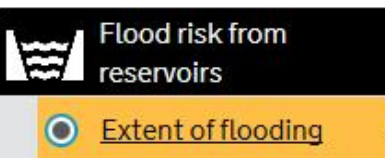


Low



Very low

Map taken from:
<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=384177&northing=255346&address=10000852442&map=RiversOrSea>
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Flood risk



High



Medium



Low



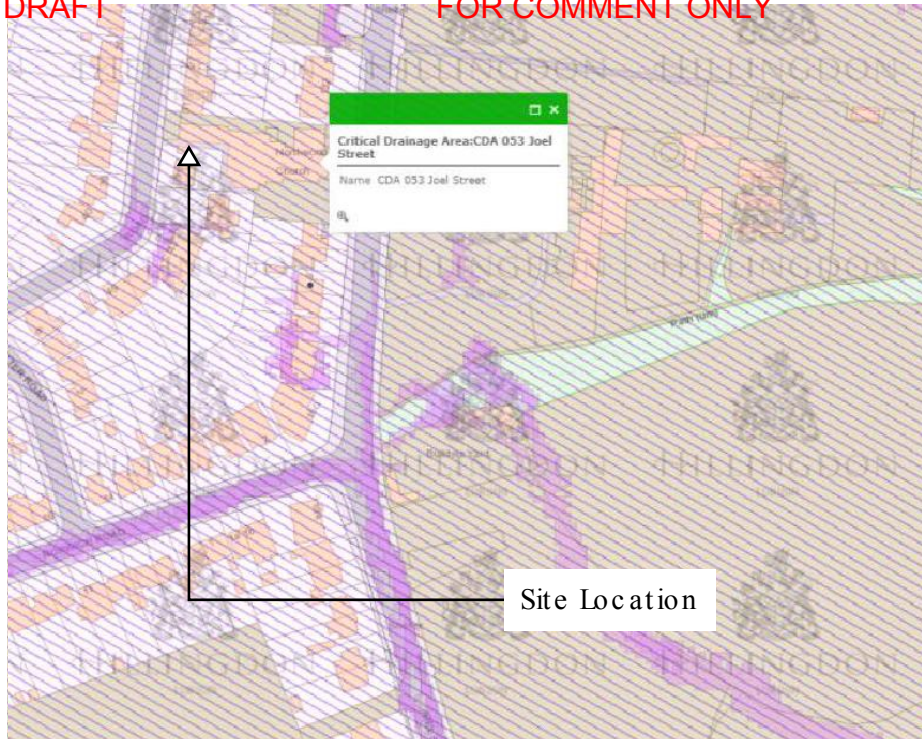
Very low

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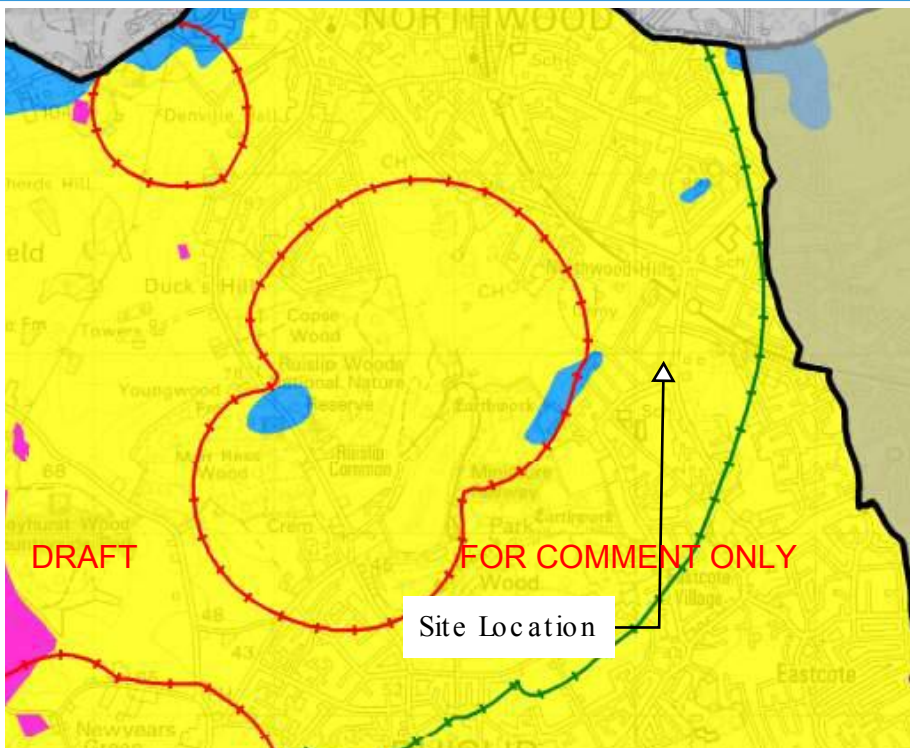


London Borough of
Hillingdon



Infiltration SUDS Suitability Map

Surface Water Management Plan



Legend

-  Borough Administrative Boundary
-  Infiltration SUDs Potentially Suitable
-  Infiltration SUDs Potentially Unsuitable
-  Infiltration SUDs Suitability Uncertain
-  Historic Landfill Site
-  EA Groundwater Source Protection Zone
-  Inner Zone
-  Outer Zone

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Flood map for planning

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Your reference
Eastcote and

Location (easting/northing)
510150/189949

Created
8 Jan 2021

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

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

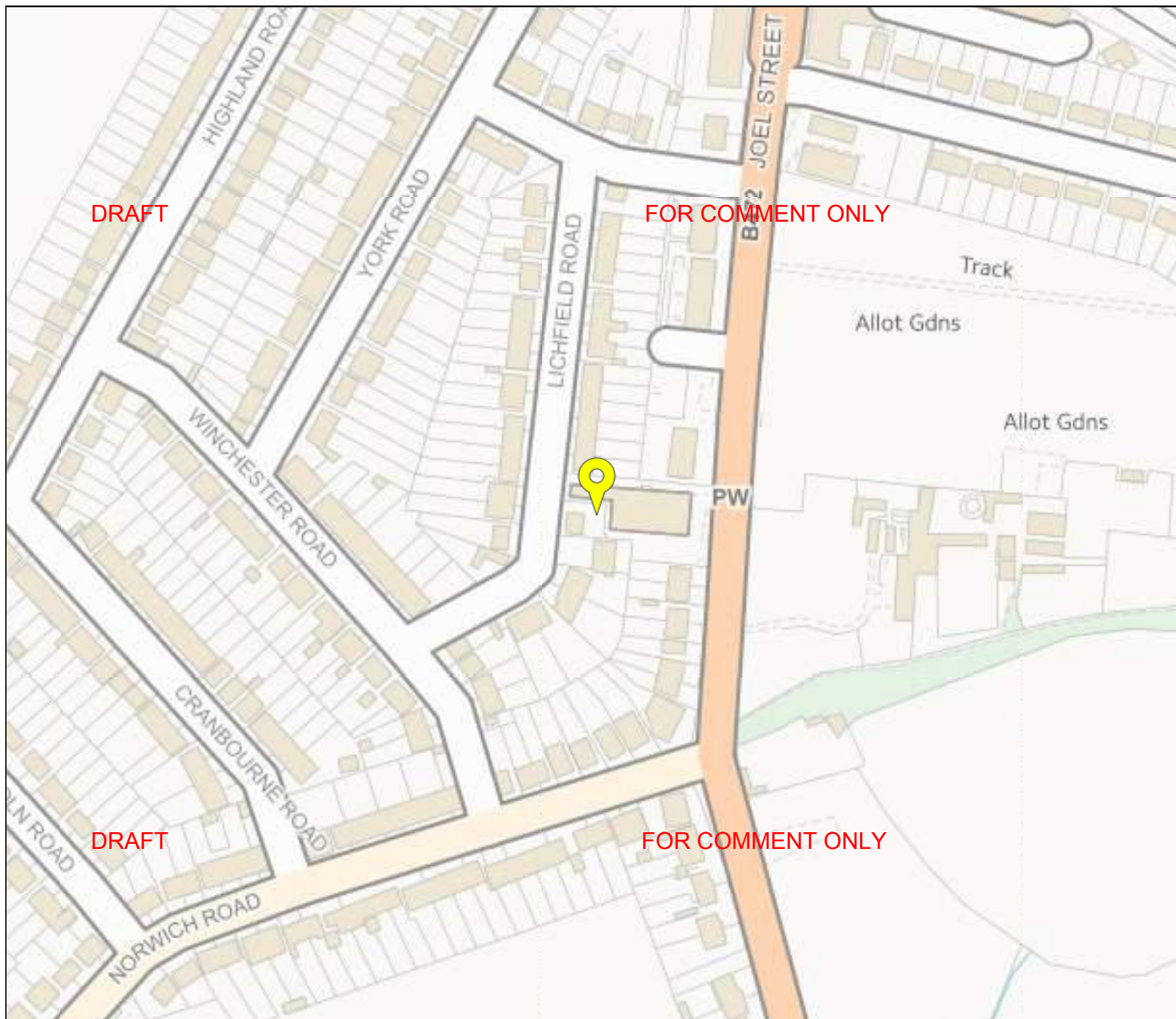
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Flood map for planning

Your reference
Eastcote and DRAFT

Location (easting/northing)
510150/189949

Scale
1:2500

Created
8 Jan 2021

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area **DRAFT**

0 20 40 60m