High Street, Royston

Flood Risk Assessment

For
Aldi Stores Ltd

Report ref	Issue	Prepared by	Date	Reviewed by	Date
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High Street, Royston

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Appendix C Topographical Survey

Appendix D Environment Agency Indicative Flood Map

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1. Introduction

1.1. This report is commissioned by Aldi Stores Ltd to examine the flood risk associated with the re-development of land off High Street, Royston. This risk assessment is required by and in accordance with the National Planning Policy Framework (NPPF) which has now superseded Planning Policy Statement 25, Development and Flood Risk. This report is based upon information taken from the Environment Agencies indicative online flood map, the topographical survey and a site visit.

1.2. The development site is approximately 1.03ha and presently unoccupied following the demolition of a factory building with rough demolition rubble remaining and several concrete slabs. It is proposed for the site to be redeveloped to provide an Aldi foodstore with associated car parking, servicing and access.

1.3. Section 2.00 of this report describes the site location, and topography. Section 3.00 identifies the existing watercourses, drainage and flood risk to the site from all sources. Section 4.00 identifies the surface water run-off and Section 5.00 provides conclusions and recommendations.

2. Site Location, Proposed Development and Topography

2.1 The site location is shown in **Appendix A** with the proposed development layout shown in **Appendix B.** The topographical survey is shown in **Appendix C**. The site, centred on National Grid Reference 453890, 411370, is located immediately south of High Street and approximately 170m west of Royston defined district centre.

2.2 The site is presently unoccupied following the demolition of a factory building with rough demolition rubble remaining and several concrete slabs. The north eastern part of the site is heavily overgrown with bushes. The site falls steeply from the northwest to the southeast.

2.2 It is proposed for the site to be redeveloped to provide an Aldi foodstore with associated access, car parking and servicing. Access to the development is proposed from an upgraded access onto High Street.

2.3 The topographical survey produced by Ellam Land Surveys shows the site to fall steeply from the highest point in the northwest at a level of 74.6m AOD to the lowest point in the southeast at a level of 65.3m AOD. This 9.3m level difference represents an average fall of approximately 1 in 16. Abutting the southern boundary is an existing modular concrete retaining structure running the full length of the boundary within the rear gardens of the housing bounding the site. A buttressed masonry wall approximately 2.0m high also retains the south western portion of the site.

2.4 All heights specified on the topographical survey relate to the OSGB 36 datum and have been computed using the OSTN(02) Geoid model.

3. Existing Watercourses, Drainage and Flood Risk

3.1 The nearest watercourse is located approximately 200m to the south of the site and flows in an easterly direction. The Environment Agency indicative flood map is shown in **Appendix D**. The site is shown to be located entirely within Flood Zone 1 'Low Probability'. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1% AEP). The site is therefore not considered to be at risk of flooding from the watercourse.

3.2 As also shown in **Appendix D** the proposed development is not located within an Environment Agency flood warning zone.

3.3 At present no details are available on the adopted sewer systems that may be present adjacent to the site. However, it is understood that a 300mm diamter combined sewer is present within the adjacent highway (High Street) to the north. A drainage connectivity survey has not been undertaken on the site but a site visit, together with an inspection of the topographical survey, suggests that the existing drainage is likely to have been excavated and/or filled as part of the site demolition works. Despite previous connectivity it is unlikley that any existing connections remain functional and would therefore prove difficult to survey.

3.4 The site may be at risk of pluvial flooding from these existing drainage systems adjacent to the site. It is likely that these floodwaters will remain within the carriageway channels and will be conveyed along High Street and away from the proposed development. It is therefore considered that the site is not at significant risk of pluvial flooding.

3.5 A further source of flooding is as a result of excess run-off from the development. It is important that the proposed ground levels are configured such that any flooding on site is directed away from the proposed building and towards the surface water storage facilities. It should also ensure that any overland flows resulting from excess run-off are retained on site within the development area and not permitted to discharge off site.

3.6 Given the above, it is recommended that finished floor levels should be set 150mm above the average site level to ensure any floodwaters are directed away from the proposed buildings and towards the attenuation facilities.

4. Surface Water Run Off

4.1 The current Building Regulations now requires disposal of new development surface water run off to discharge by infiltration (to ground), to watercourse or to sewer in that order of priority. Sustainable Urban Drainage Systems (SUDS) should also be used wherever possible to mimic as far as practicable the natural run off.

4.2 The Phase 2 Geo-Environmental Assessment produced by 3e Consulting Engineers states that the majority of the site has a relatively thin cover of made ground comprising mostly crushed brick, concrete and burnt shale material to a maximum depth of 1.7m. These materials are generally underlain by residual clays over weathered siltstone bedrock. The report states that, due to the above ground conditions, the use of soakaways for suface water disposal is not considered suitable. Furthermore, given the excessive falls across the site and adjacent ground levels, disposal of surface water by infiltration methods may increase the risk of flooding by groundwater to properties to the south of the site. It is therefore considered that soakaways are not suitable at this location.

4.3 There are no watercourses within or adjacent to the site to which the surface water could outfall.

4.4 Given the above, surface water should be discharged into the nearest available public sewer. No sewer records are available at present but it is understood that a 300mm diameter combined sewer is present within High Street to the north.

4.5 Due to the demolition of the existing buildings on site and the lack of any positive drainage systems remaining in a functioning state, a greenfield run-off rate is likely to be imposed on any off site discharge. The greenfield run-off rate should be calculated based on 5.0l/sec/ha and a total site area of 1.03ha. Given the site area, a maximum discharge rate of 5.2l/sec should be used.

4.6 Flows from the proposed development should be restricted to this maximum discharge rate using a suitable flow control device. Surface water attenuation should be provided below ground to accommodate these flow rates.

4.7 At this stage no information is available on the location or depth of the existing sewer network. However, given levels across the site relative to the adjacent highway, both surface and foul water pumping stations are likley to be required.

4.8 In accordance with PPS25, Sustainable Urban Drainage (SUDS) techniques should be employed to:

a) Reduce the peak surface water run-off from the site and hence reduce the risk of flooding both on site and downstream of the site and

b) Increase the quality of any surface water discharged from the site.

4.9 All proposed surface water systems should be designed to accommodate a 1 in 30 year storm event without flooding. Furthermore, the 1 in 100 year plus climate change storm event should be retained on site in an area that will not affect any proposed buildings. A climate change uplift of 20%, in accordance with the National Planning Policy Framework Technical Guidance, Table 5, should be applied to all rainfall estimates.

5. Conclusions & Recommendations

5.1 The site is shown to be located entirely within Flood Zone 1 'Low Probability'. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1% AEP). The site is therefore not considered to be at risk of flooding from the watercourse.

5.2 The site may be at risk of pluvial flooding from the existing drainage systems adjacent to the site. A further source of flooding is as a result of excess run-off from the development. It is important that the proposed ground levels are configured such that any flooding on site is directed away from the proposed building and towards the surface water storage facilities.

5.3 Given the above it is recommended that finished floor levels should be set 150mm above the average site level to ensure any floodwaters are directed away from the proposed buildings and towards the attenuation facilities.

5.4 The Phase 2 Geo-Environmental Assessment produced by 3e Consulting Engineers states that the majority of the site is underlain by residual clays over weathered siltstone bedrock. The report also states that, due to the above ground conditions, the use of soakaways for suface water disposal is not considered suitable. Furthermore, given the excessive falls across the site and adjacent ground levels, disposal of surface water by infiltration methods may increase the risk of flooding by groundwater to properties to the south of the site. It is therefore considered that soakaways are not suitable at this location.

4.10 As there are no watercourses within or adjacent to the site surface water flows should be directed to the existing Yorkshire Water combined sewer located within High Street. Due to the demolition of the existing buildings on site and the lack of any positive drainage systems remaining in a functioning state, a greenfield run-off rate is likely to be imposed on any off site discharge. Given the site area, a maximum greenfield discharge rate of 5.2l/sec should be used.

5.5 Flows from the proposed development should be restricted to the agreed rate using a suitable flow control device. Surface water attenuation should be provided below ground to accommodate these flow rates.

5.6 At this stage no information is available on the location or depth of the existing sewer network. However, given levels across the site relative to the adjacent highway, both surface and foul water pumping stations are likley to be required.



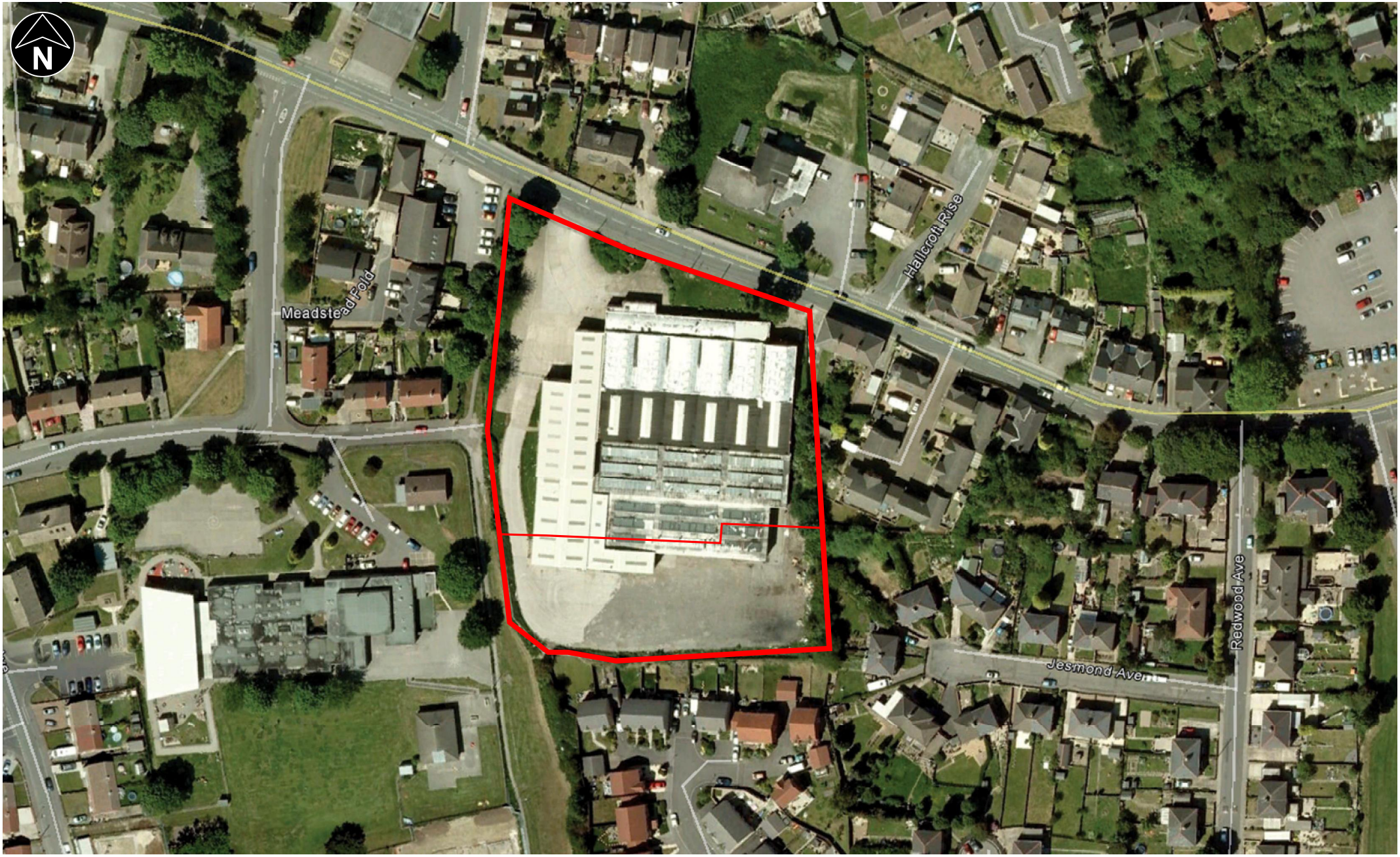
ALDI

Possible Development Site - High Street, Royston

Client: Aldi Stores Ltd
Date: 25/06/13
Job/Dwg: 12791 - View Pack
Scale: NTS@A4

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www.harrispartnership.com
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Pedestrian Crossing

Alexandra Working Mens Club

INDICATIVE TRUE NORTH

HIGH STREET

Improved access subject to LA highway approval

Existing Tree to be removed

1 in 20 access road

Aldi Signage subject to seperate application

Proposed stepped access (subject to land-owner)

1 in 2.5 embankment

1 in 2.5 embankment

1 in 2.5 embankment

Proposed Pedestrian Access

Pedestrian priority crossing

No Gradient

1 in 35

1 in 30

121 no. Parking spaces

(2.5m x 5m Bays)

Pedestrian priority crossing

Pedestrian priority crossing

Pedestrian priority crossing

1 in 35

1 in 20

1 in 20

1 in 3 embankment

1 in 20

1 in 40

1 in 60

1 in 40

1 in 35

1 in 2.5

Landscape buffer

Gated security fence to rear of store

Site Boundary

FOODSTORE SITE

approx **2.53** ACRES

(1.03 HA)

5 no. Cycle Hoops

Proposed

ALDI Foodstore

1728sq.m GIA

1788sq.m GEA

1108sq.m Nett Sales Area

1254sq.m Gross Sales Area

FFL +70.500

MALE WC

FEMALE WC

CUSTOMER ASSISTED WC

MEETING ROOM

LOBBY

MANAGERS OFFICE

STAFF ROOM

LOCKER ROOM

CLEANERS CUPD

PLANT ROOM

SALES AREA

ENTRANCE LOBBY

FREEZER STORE

CHILLER STORE

LOADING BAY

NIGHT CHILLER

ARCTIC CIRCLE EIREE HIGH STEALTH CONDENSER

MOTORCYCLES

MOTORCYCLES

22800

7000

55000

WINMARTH COURT

1.8m high timber closed board fence to boundary

1.8m high timber closed board fence to boundary

2m high timber acoustic closed board fence

2m high timber closed board fence to boundary

Proposed 0.5m retaining wall

Proposed 1m retaining wall

Proposed 2m retaining wall

Existing retaining wall

Existing retaining wall

Existing Trees to be removed

1 in 3 embankment

1 in 3 embankment

1 in 3 embankment

Flat Area

Flat Area

Flat Area

73.000 72.000 71.665 71.030 71.275 70.570 70.480 70.200 69.950 69.250 69.200 69.000 69.000 68.000 68.000 67.000 67.000 66.000 65.400 65.400 71.250 71.250 71.250 71.000 71.000 71.100 71.000 71.000 70.800 70.480 70.480 70.350 70.350 70.000

74.56 74.57 74.81 74.185 74.20 73.66 73.75 73.951 73.75 73.588 73.13 73.52 73.380 73.23 73.19 72.38 72.45 72.85 72.51 72.27 72.08 72.87 71.89 71.83 71.48 69.97 69.37 69.19 67.43 66.90 65.26 64.06 65.88 65.30 72.38 71.76 70.67 69.24 68.32 67.89 66.74 65.51 66.41 64.65 63.87 65.19 63.11 65.31 65.42 65.37 65.53 65.41 71.44 66.58 66.56 66.71 65.69 66.19 66.28

0 2 4 6 8 10m

SCALE 1:200

CAD file reference

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Rev	Date	Description	Rev By	Chk'd By
A	00.00.00	-	---	---

Project Title	Proposed Development High Street Royston
Client	Aldi Stores Ltd
Status	Planning
Scale	1:200
Drawing Size	A1
Drawn By	LH
Checked By	JDB
Date	02/14

Drawing Title	Proposed Site Plan
Job-Dwg No	1124-015
Rev	-

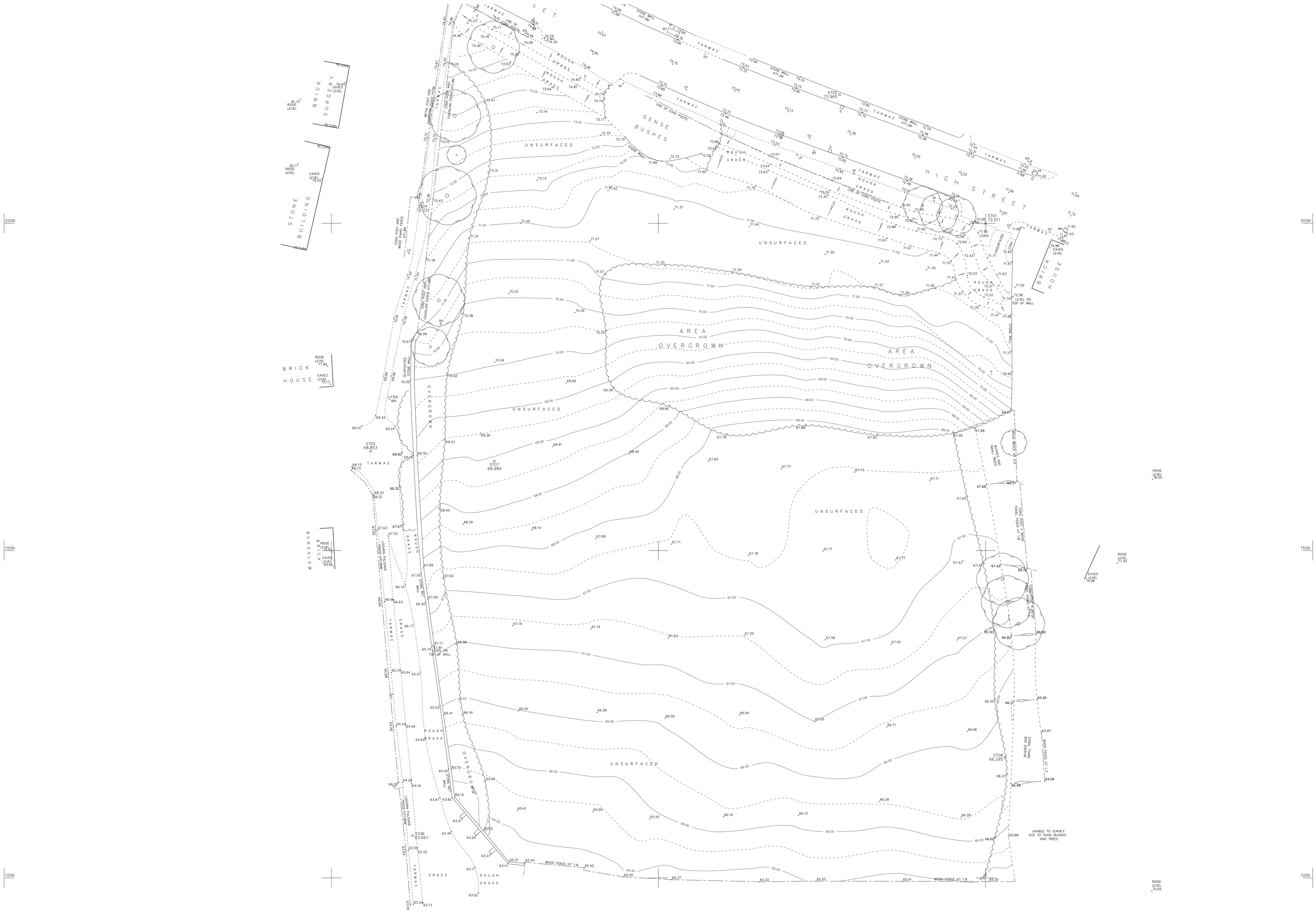
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LOCATION
HIGH STREET, ROYSTON

CLIENT
HARRIS PARTNERSHIP

SURVEY NOT TO BE MOVED OR ROTATED
ALL SERVICES TO BE FIELD VERIFIED
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LEGEND

AV	AIR VALVE	CC	CONCRETE COVER	FWS	FOUL WATER SEWER	LP	LAMP POST
B	BOLLARD	CM	CABLE MARKER	G	GULLY	MC	METAL COVER
BH	BOREHOLE	CP	CATCH PIT	GV	GAS VALVE	MH	MANHOLE
BS	BUS STOP	CTV	CABLE TV I.C	HV	HIGH VOLTAGE	MV	MEDIUM VOLTAGE
BT	BRITISH TELECOM	DP	DOWN PIPE	IC	INSPECTION COVER	P	POST / POLE
		ECP	ELEC. CABLE PIT	JB	JUNCTION BOX	RE	RODDING EYE
		EP	ELEC. POLE/PYLON	KW	KERB WEIR	RS	ROAD SIGN
		ER	EARTH ROD	LB	LETTER BIN	S	STAY
		FH	FIRE HYDRANT	LH	LAMP HOLE	SC	STOP COCK
						ST	STOP TAP
						SV	STOP VALVE
						SWS	SURFACE WATER SEWER
						TL	TRAFFIC LIGHTS
						TP	TELEGRAPH POLE
						TH	THRESHOLD
						VP	VENT PIPE
						WM	WATER METER
						WO	WASH OUT

SHEET	1 OF 1	LEVEL DATUM	NEWLYN
SCALE	1 : 200	GRID DATUM	ARBITRARY
DRAWN	N.SYKES	B.M. USED	OBM on No.1 STATION Road Value 68.090m
CHECKED	NS		
DATE	AUGUST 2013	DRAWING NO. 6794/1	



ENVIRONMENT AGENCY INDICATIVE FLOOD MAP



ENVIRONMENT AGENCY FLOOD WARNING ZONES