

Barnsley Road, Goldthorpe

Flood Risk Assessment

Report ref	Issue	Prepared by	Date	Reviewed by	Date
14013	1	J Mitchell	August 2014	M Pearse	August 2014

Clients

Aldi Stores Ltd
Faverdale North
Faverdale Industrial
Estate
Darlington
Co. Durham
DL3 0UW

Dearne Estates Ltd.
67 London Road
Newark
Nottinghamshire
NG24 1RZ

P. & D.M.J. Atkinson & Son Ltd
The Barn, Chapel Lane,
Billingley,
Little Houghton,
Barnsley,
S72 0HZ67

3e Consulting Engineers Ltd
4 Calder Close
Calder Park
Wakefield
WF4 3BA

Tel : 01924 240420

Barnsley Road, Goldthorpe

Flood Risk Assessment

Contents	Page
1 Introduction	1
2 Site Location, Topography and Proposed Development	2
3 Existing Watercourses, Drainage and Flood Risk	3
4 Surface Water Run Off	4
5 Conclusions and Recommendations	6

Appendices

Appendix A	Site Location Plan
Appendix B	Proposed Development Layout
Appendix C	Topographical Survey
Appendix D	Environment Agency Indicative Flood Maps

Barnsley Road, Goldthorpe

Flood Risk Assessment

**For
Aldi Stores Ltd
& QUORA**

1. Introduction

1.1. This report is commissioned by Aldi Stores Ltd to examine the flood risk associated with the development of land off Barnsley Road, Goldthorpe. This risk assessment is required by and in accordance with the National Planning Policy Framework (NPPF) which has now superseded Planning Policy Statement 25, Development and Flood Risk.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 1.95ha and presently unoccupied grazing land which is roughly triangular in shape and relatively level. It is proposed for the site to be developed in two parts. The western portion of the site will be redeveloped to provide an Aldi foodstore with associated car parking, servicing and access. The larger eastern portion of the site will be reserved for a future residential development.

1.3. Section 2.00 of this report describes the site location, topography and the proposed development. 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 445002, 404267, is located immediately north of Barnsley Road, Goldthorpe approximately 1km west of the village centre.

2.2 The site is presently unoccupied grazing land which is roughly triangular and generally level. The site boundaries are marked by hedgerows and wooden fencing. Residential properties lie to the east of the site with agricultural land beyond highways to all other site boundaries.

2.2 It is proposed for the site to be developed in two parts. The western portion of the site will be redeveloped to provide an Aldi foodstore with associated car parking, servicing and access. The larger eastern portion of the site will be reserved for a future residential development. Access to the development is proposed from a new access onto Barnsley Road to the south.

2.3 The topographical survey produced by Midland Survey Ltd shows the site to fall from the highest point in the southeast at a level of 41.1m AOD to the lowest point in the west at a level of 35.3m AOD. This 5.8m level difference represents an average fall of approximately 1 in 32. The existing highway to both the north and south of the site are at a level approximately 1.0m higher than 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, Thurnscoe Dike, is located approximately 300m to the north of the site and flows in a westerly direction before joining Carr Dike and heading south under the A636 Barnsley Road and away from the site. 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 anticipated that both surface and foul (or combined) sewers are present within the highway adjacent to the site or within the residential development to the east. No existing drainage has been recorded within the site boundary.

3.4 The site may be at risk of pluvial flooding from any existing drainage systems adjacent to the site. However, it is likely that these floodwaters will remain within the highway and will be conveyed away from the proposed development in both the below ground drainage systems and within the carriageway channels. 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 external ground levels 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 1 Geo-Environmental Assessment produced by 3e Consulting Engineers indicates that infiltration methods may be considered suitable for disposal of surface water run-off. However, further site investigations will be required to determine if soakaways should be considered and the permeability of the underlying strata.

4.3 There are no watercourses within or adjacent to the site to which the surface water could outfall should infiltration methods not prove feasible.

4.4 Should the additional site investigations prohibit the use of soakaways, surface water should be discharged into the nearest surface water sewer. No records are available at present but it is assumed that both surface and foul water sewers are present adjacent to the site.

4.5 Due to the un-developed nature of the site and the lack of any existing drained impermeable areas, 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 5.0 l/sec/ha and a total site area of 1.95ha. Given the site split between the foodstore and the residential development, a restricted discharge rate of 5.0 l/sec for each development 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 may be required.

4.8 In accordance with the NPPF, 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 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 therefore recommended that finished floor levels are set 150mm above external ground levels to ensure any floodwaters are directed away from the proposed buildings and towards the attenuation facilities.

5.3 The Phase 1 Geo-Environmental Assessment produced by 3e Consulting Engineers indicates that infiltration methods may be considered suitable for disposal of surface water run-off. However, further site investigations will be required to determine if soakaways should be considered and the permeability of the underlying strata.

5.4 Should the additional site investigations prohibit the use of soakaways, surface water should be discharged into the nearest surface water sewer. Due to the un-developed nature of the site and the lack of any existing impermeable areas, a greenfield run-off rate is likely to be imposed on any off site discharge.

5.5 The greenfield run-off rate should be calculated based on 5.0 l/sec/ha and a total site area of 1.95ha. Given the site split between the foodstore and the residential development, a restricted discharge rate of 5.0 l/sec for each development should be used.

5.6 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.

5.7 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 may be required.

APPENDIX A
Site Location Plan



Ordnance Survey © Crown copyright
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consulting engineers

4, Calder Close
Calder Park
Wakefield
WF4 3BA

tel: 01924 240 420
fax: 01924 240 421

www.3econsult.com

Project Barnsley Road, Goldthorpe
For Aldi Stores Ltd

Title Site Location Plan

Scale
1:25,000

Drawn
AHC

Checked
ACV

Date
Apr '14

Job No. 14013

Drawing No.

Fig 1

Rev 0

APPENDIX B

Proposed Development Layout

DEVELOPMENT AREA
approx 2.81 ACRES
(1.14HA)

Assumed Site Boundary
FOODSTORE SITE
approx 1.99 ACRES
(0.81 HA)

Proposed
ALDI Foodstore
1687sq.m GIA
1744sq.m GEA
(1254sq.m sales area)

AG35 DEANE VALLEY PARKWAY

Store
Entrance

1.0m
contour

Scale: 1:1000

APPENDIX C
Topographical Survey

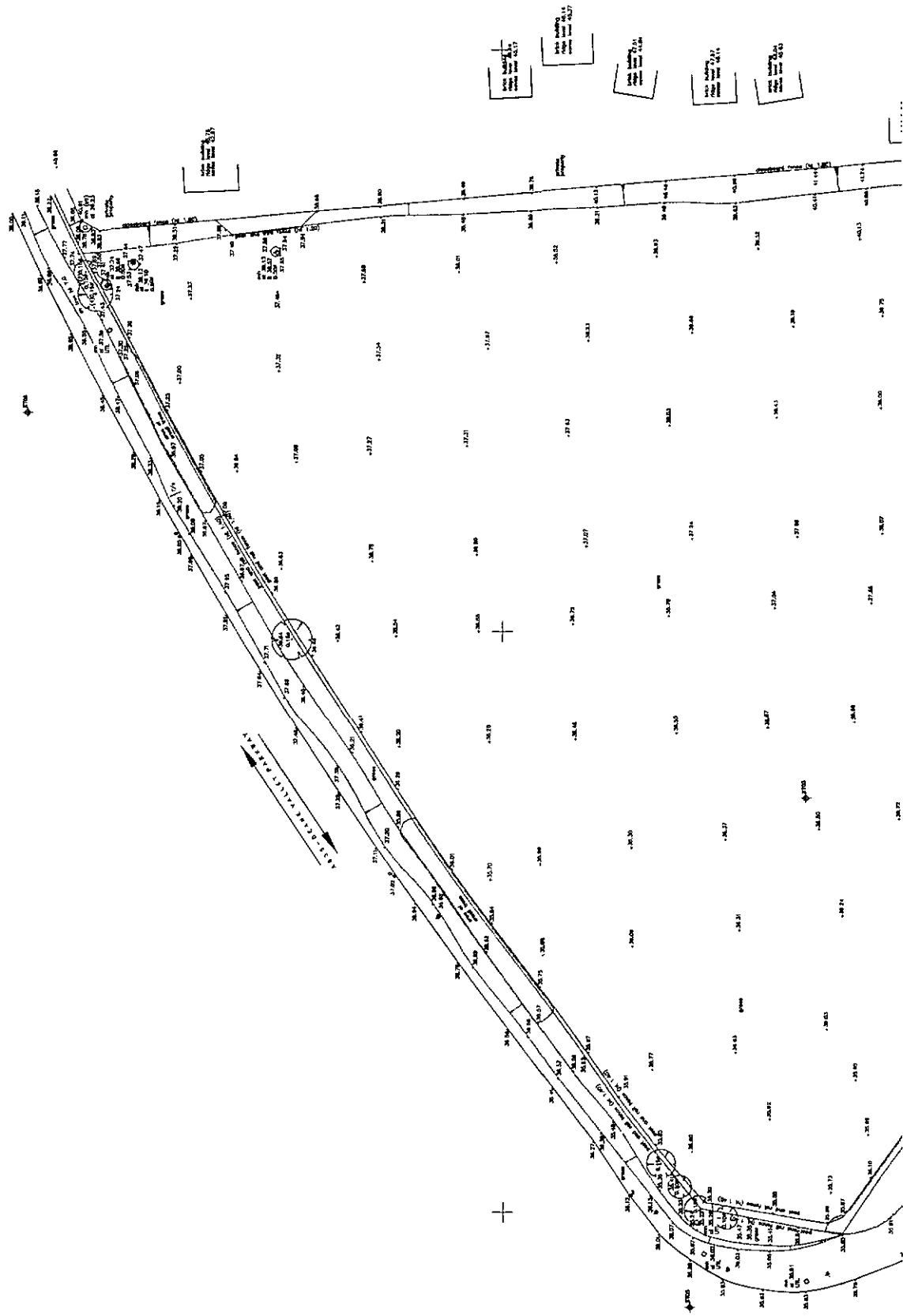
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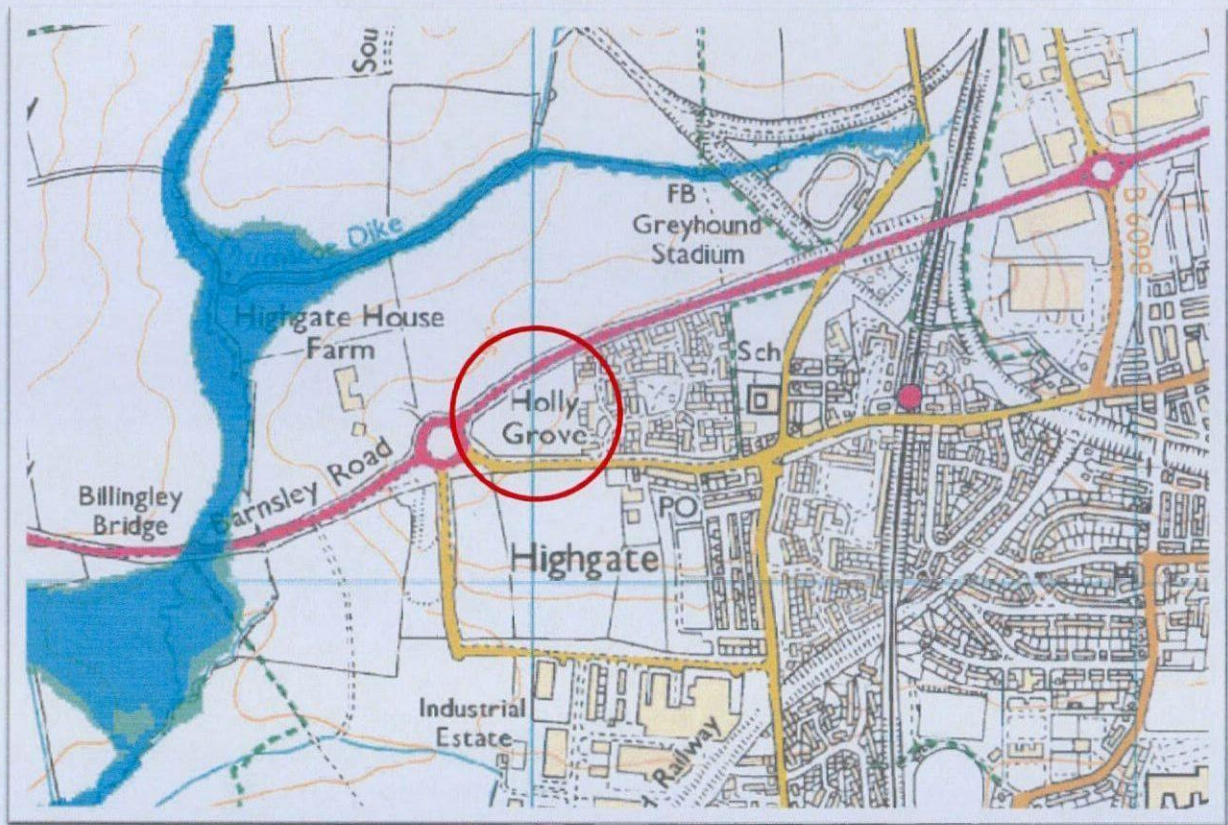
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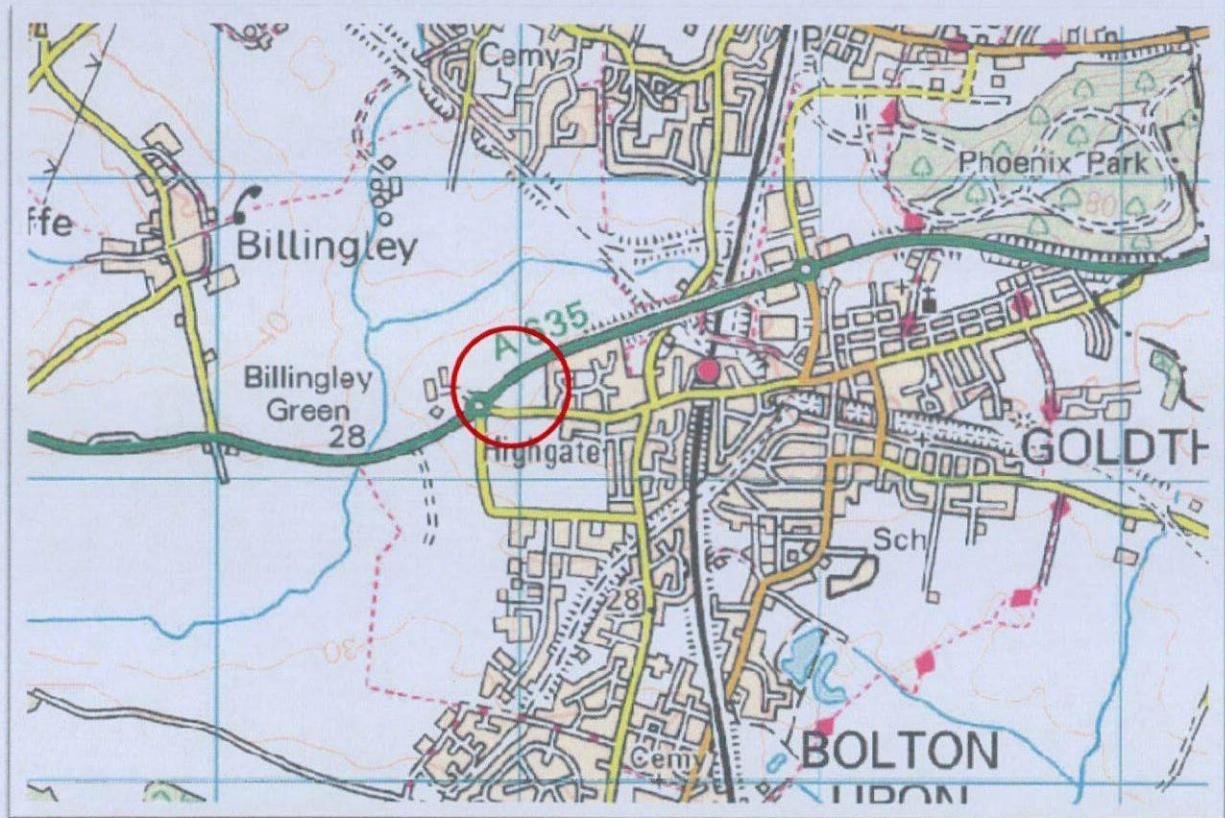


APPENDIX D

Environment Agency Flood Map



ENVIRONMENT AGENCY INDICATIVE FLOOD MAP



ENVIRONMENT AGENCY FLOOD WARNING ZONES