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FLOOD RISK ASSESSMENT

ON

Unit 17, Valley Road

Wombwell

S. Yorkshire

FOR

Naylor Industries

E15/6336/FRA001b

April 2015

T. Haigh B.Sc., C.Eng., M.I.C.E.

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1.0 INTRODUCTION

1.1 This report is commissioned to investigate and report on the Flood Risk for this site in accordance National Planning Policy Framework 2012 –Technical Guidance (issued march 2012) and the proposals for drainage of this site when partially redeveloped and undergoes a change of use. The report is based on information supplied by the client and from relevant authorities in both written and verbal format. Some of this information is in verbal form only. No liability can be accepted for information supplied by third parties which is subsequently found to be inaccurate or incorrect.

2.0 THE SITE

2.1 The proposed application site is shown on the location plan attached at Appendix A and comprises approximately 1.8ha of land that has previously been developed in part for industrial/commercial use.

2.2 The site lies around centred around National Grid Reference SE 40405 03582. The site lies to the east of Wombwell village centre, to the north of Brampton village and 4.5mile to the south east of Barnsley town centre. Site levels vary from 27.25m in the south eastern corner to 28.4m in the north east corner of the site. The site has already been developed with steel framed buildings and a tarmaced carpark area covering 80% of the site. The only area not developed is in the north western quadrant of the site. Here the ground levels are higher than the rest of the site and there is a small plateau of grassland at a level of 29 to 29.5m AOD. The site falls with gentle falls to the northern boundary where there is a steep bank down to the watercourse. The site has the benefit of direct drainage from the site that discharges adjacent to the north east corner of the site into this watercourse. The car park area already passes through a petrol/oil interceptor. The central portion of the site is relatively flat from east to west with gradients of 1 in 50.

2.3 The land to the west which is shown as a sports stadium and further west beyond the railway lines is Wombwell village. Immediately to the south is existing industrial development and residential development. To the north is open land which has extensive tree and shrubs. Beyond this is Darfield village residential development. The land to the north falls towards the site but is traversed by the watercourse on the sites northern boundary which is 3-4 me below the site levels. The land to the south of the site falls towards the site but has been developed and provided with an adopted drainage system. The small un-named watercourse on the northern boundary runs from west to west and drains into the river Dearne approx. 1mile to the east of the site.

2.4 There are existing roads abutting the site in Valley Road and these run south to north and are slightly below the site entrance levels as they pass the site. A site survey is attached in the appendices.

3.0 PROPOSED DEVELOPMENT

3.1 It is proposed to change the use of the site to a manufacturing unit with attached head offices for the area. The works will not include additional buildings and would not extend the carpark area but it would be made available for delivery vehicles. A copy of the illustrative layout is included at Appendix B.

4.0 IMPACT OF DEVELOPMENT

4.1 The site is currently partially developed and the existing buildings are to be retained. The car park will provide hard paved areas for vehicular movements and parking for the offices. No additional buildings will be erected. There are substantial areas of hard paved or impermeable roof areas already on the site. The proposed change of use of the site will not introduce new impermeable surfaces in the form of roofs, and car parking areas that would have connected to the existing drainage systems. There will therefore be no change in the storm-water flows from the site.

4.2 Whilst there are no reports of flooding on the site, but there are known flooding problems in the downstream catchment and also adjacent to the watercourse. Since there is no change in the drainage catchments it will not therefore be necessary to attenuate any flows leaving site.

4.3 The site does not have a site investigation to base our views on but the BGs records indicate that this site is underlain by the Middle Pennine Coal Measures which are a series of interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams, with a bed of mudstone containing marine fossils at the base, and several such marine fossil-bearing mudstones in the upper half of the unit. This is shown to be overlain by alluvium which is a mixture of silt and clays in this area, sandstones and mill stone grit at depth. An adjacent borehole shows the site to have a substantial depth of fill overlying clays and sand at depth. The use of infiltration systems is therefore discounted on the basis of this information.

4.4 The site currently falls within the flood warning zones covered by the Environment Agency. This should be maintained for the life of the development.

5.0 FLOOD RISK

5.1 The site is shown to lie outside flood zones 3 as shown on the Environment Agency Websites but lies with in Zone 2. The site does fall within a Flood warning Zone area. The development is classified as Less Vulnerable in Table 2 of the Technical Guidance to the National Planning Policy Framework March 2012 and Table 3 of that document also states that the proposed industrial development in this area is appropriate.

5.2 Due to the size of the development over 1Ha it is necessary to prepare this report as site Specific Flood risk Assessment for the site.

5.3 There are a number of potential flooding mechanisms that NPPF now requires are evaluated for each proposed development site. Each method of flooding requires an assessment to be made on its probability relative to the site development. The requirements of the document is; 1 No Flooding on the site for the 1 in 30 year storm; 2 No flooding of properties for storms up to a 1% probability (a once in a 100 years storm). The risk assessment also includes for possible flooding both on site and off site, and the effects of the development on the downstream catchment or the flow regime of the watercourse.
NPPF also requires that the effects of severe storms above the normal 1% probability are reviewed together with the effects of climatic change relating to the design life of the development.

5.4 It also requires that the effects of climate change are taken into account together with the impacts of extreme events and flood defence failures. Prior to this the Sequential Test outlined in NPPF, must also be applied to each development site.

5.5 Based on the published Environment Agency Flood Risk Maps the site does not fall within the 1% Flood Risk, but does it fall within the 0.1% Flood Risk Zone. The 0.1% risk zone is a medium probability of flooding with an annual flood risk of between 0.1% (1 in 1000 year) and a 1% (1in 100 year) risk of flooding occurring on site. The site therefore falls within the Medium probability zone 2. For clarification, the planning application is for change of use of the premises from Class B8/Class B1 use to Class B2, B8 and B1 together with internal alterations to the existing buildings but no new additional buildings. Based on this description, Paragraph 104 of the National Planning Policy Framework states: 'Applications for Minor Development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for Site Specific Flood Risk Assessment'. The proposed industrial development falls within the less Vulnerable Classification in Table 02 Technical Guidance to NPPF. The development is therefore considered appropriate in accordance with Table 3 Technical Guidance to NPPF.

5.6 NPPF requires that each flooding mechanism is addressed and levels of risk evaluated. We consider there are three main risks of flooding to the site the alternative mechanisms are not applicable to this site.

5.6.1 Inundation from floodwaters leaving watercourses or rivers entering the site. This can include the effects on culverted watercourses and where the risk of blockage can occur and from breach scenarios.

5.6.2 Rainwater falling on the site and not being able to leave the site at sufficient rate to prevent flooding on the site.

5.6.3 Overland flows from adjacent land sites or due to surcharging of sewerage systems or other watercourses.

5.6.4 The impact of the developed site on the existing drainage systems and off-site surface water systems must also be assessed as part of this flood risk assessment.

6.0 DISCUSSION OF FLOOD RISKS

6.1 Flood Risk from Watercourses, River & Tidal

6.1.1 The site does not to fall within the 1% probability Flood Risk Maps as published by the Environment Agency but does it fall within the 0.1% Flood Risk Area. There are no flood water levels available for the adjacent water course in this area but the examination of the extents of the flood map in conjunction with the site survey suggests that the 1000 year flood water level may be around 28.5m AOD. The buildings on site are therefore considered to be not at risk from fluvial flooding for the 100year flood event but may be at risk for the 1000 year event. The site levels are significantly higher that adjacent watercourses(some 2-3m) and the site is therefore considered to be acceptable for development for industrial uses.

6.1.2 There are no recorded flood events on site but there are to the west of the site, and adjacent to the watercourse. There are also reported problems in the downstream catchment. The site is significantly above the bank levels to the watercourses to the north and south. It is not considered at risk of regular flooding from this source.

6.1.3 The site falls outside all recorded flood zones from fluvial sources. The risk of flooding from river or tidal water is therefore considered acceptable for the type of development.

6.1.4 The site is shown not to have a flood risk from surface water runoff as shown on the EA Flood risk maps.

6.1.5 The site is not shown to be at risk from ground water flooding.

6.1.6 The EA flood risk also show that the site is clear of any flood risk relating to the breeching of storm-water dams or reservoirs to the north/west of the site. The flood risk areas do not encroach onto the site.

6.1.7 The site is shown as falling within a flood warning zone but does not appear to be within zone 3. This would enable the site to be evacuated if so required before flood vevents occur.

6.2 Risk of Flooding from overland flows from adjacent land.

6.2.1 The site lies on a slightly sloping site. To the south and east of the site there are existing industrial development with public sewerage systems. The existing residential development to the northwest of the site is higher than the site but is cut off from the site by the existing watercourses on the sites northern boundary. The possibility of overland flows from this direction is considered to be minimal. The land to the east falls away from the site. The land to the north west of the site has a slight slope towards the site but this area is not particularly large and is served by existing public sewers which would normally afford a 1 in 30 year protection to the site. However water could leave this system in severe storms. In such a scenario the stormwater would flow along the existing roads past the site and into the watercourse. Whilst it may not possible to generate significant overland flows towards the site, the site should have a flood route designed into the new site topography to ensure new buildings are not put at risk.

6.2.2 It will therefore be necessary to ensure there are flood routes across the site to ensure the buildings are protected from overland flows. These will tend to follow the highways and the final layout should consider this as a design parameter.

6.3 Risk of Flooding from Rainwater Falling on Site

6.3.1 The risk of flooding from water falling on site and not being able to leave is considered to be medium due to the topography of the site. These flows would however not exceed current discharge rates for all storm conditions and therefore may not need to be attenuated. The flows into the existing drainage systems would not increase the surface water discharges.

6.3.2 The change of use of the site would not increase the current impermeable area of the site, or the surface water run-off from its current status. This in itself will not change the flood risk to adjacent properties or those in the downstream catchment, if flows are not attenuated.

6.3.3 Storms up to the once in 100 year risk, and with allowances to be made for climatic change, can be managed by the use of storm water storage systems if required. The design of these systems would be dependent on the agreed discharge rate for the site and the form of storage to be utilised. With no change in the drainage areas or impermeable areas of the site there would **not** be any requirement for these to be implemented under the NPPF requirements. The system if installed could ensure that storage can be provided to cater for storm up to the 100 year return period with an allowance made for climatic change. This would currently suggest a 20 to 30% increase in rainfall intensities and similarly in water storage volume requirements.

6.3.4 The storage volumes required for the adoptable system could be provided by the use of oversized or tanks on site or within the carpark areas. The use of ponds, whilst being a better ecological area, can promote concerns for public safety and the use of detention basins would entail a large area of land uptake.

6.3.5 The flows would have to be controlled by a “Hydrobrake” or similar low maintenance flow control device. If these are provided the risk of onsite flooding from rainfall would be effectively controlled to acceptable levels.

6.3.6 We therefore consider the effects on flood risk to adjacent properties are not significantly affected by the proposed change of use.

7.0 PROPOSED SURFACE WATER DRAINAGE

7.1 There are no proposals to change the current drainage system on site and there are no changes to the current impermeable areas on the site due to the change of use

8.0 CONCLUSIONS

8.1 In our opinion the site is at not risk of flooding from river or tidal water up to a 1% return period but is shown to be at risk for flood events up to the 0.1% risk level i.e. Zone 2. The site is shown to be in Zone 2 but it could be considered that the buildings fall of side of this zone. We therefore consider the site not to be at risk of fluvial flooding from rivers or water courses up to the 1 in 1000 year flood event.

8.2 It would not be necessary to attenuate flows from the site or provide storm water attenuation facilities on the site. Discharges would remain as currently exist. The flood risks on site or offsite downstream are not considered to be increased by the change of use.

8.3 The risk of overland flows from adjacent land is considered to be low due to the topography of the site and the area of developed lands to the south and west of the site. It would however be prudent to consider a flood route through the site to cater for extreme events in excess of the 1 in 100 year event. The risk of overland flows from the site to adjacent residential development will be insignificant.

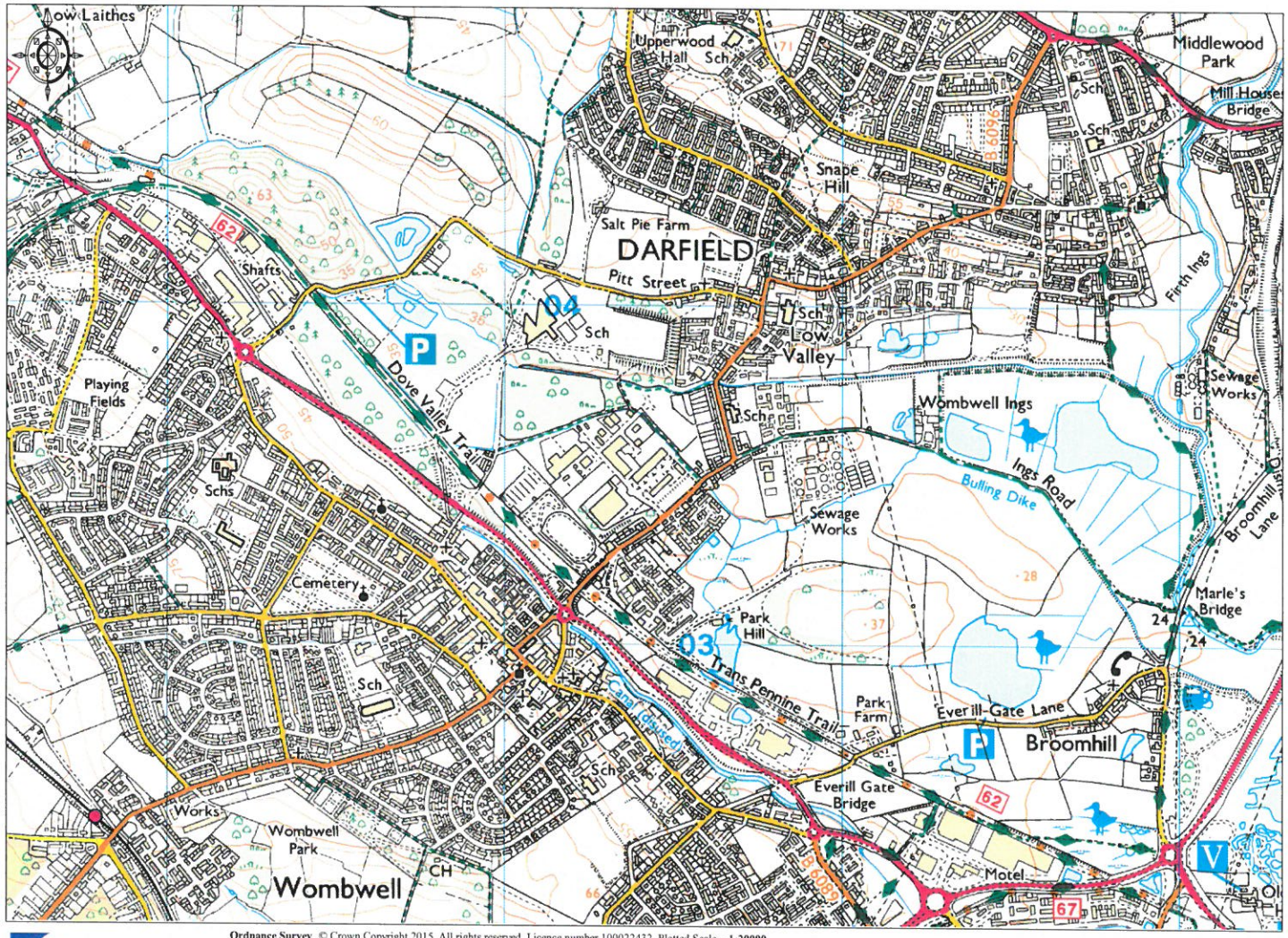
8.4 If the measures outlined above are implemented we would consider that the requirements of NPPF can be satisfied and development of the site could proceed.

T.Haigh B.Sc., C.Eng., M.I.C.E.

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APPENDIX A

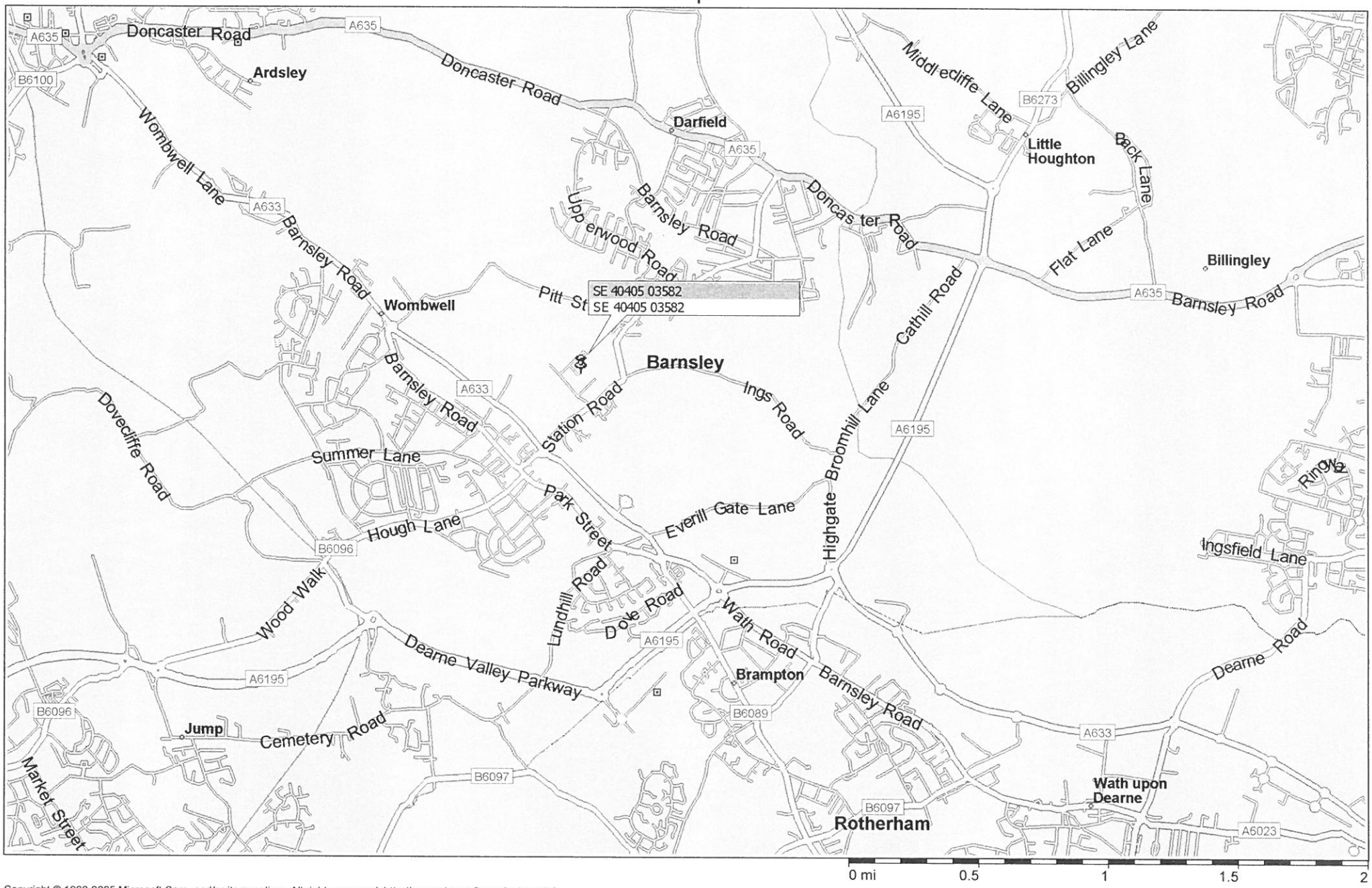
LOCATION PLANS



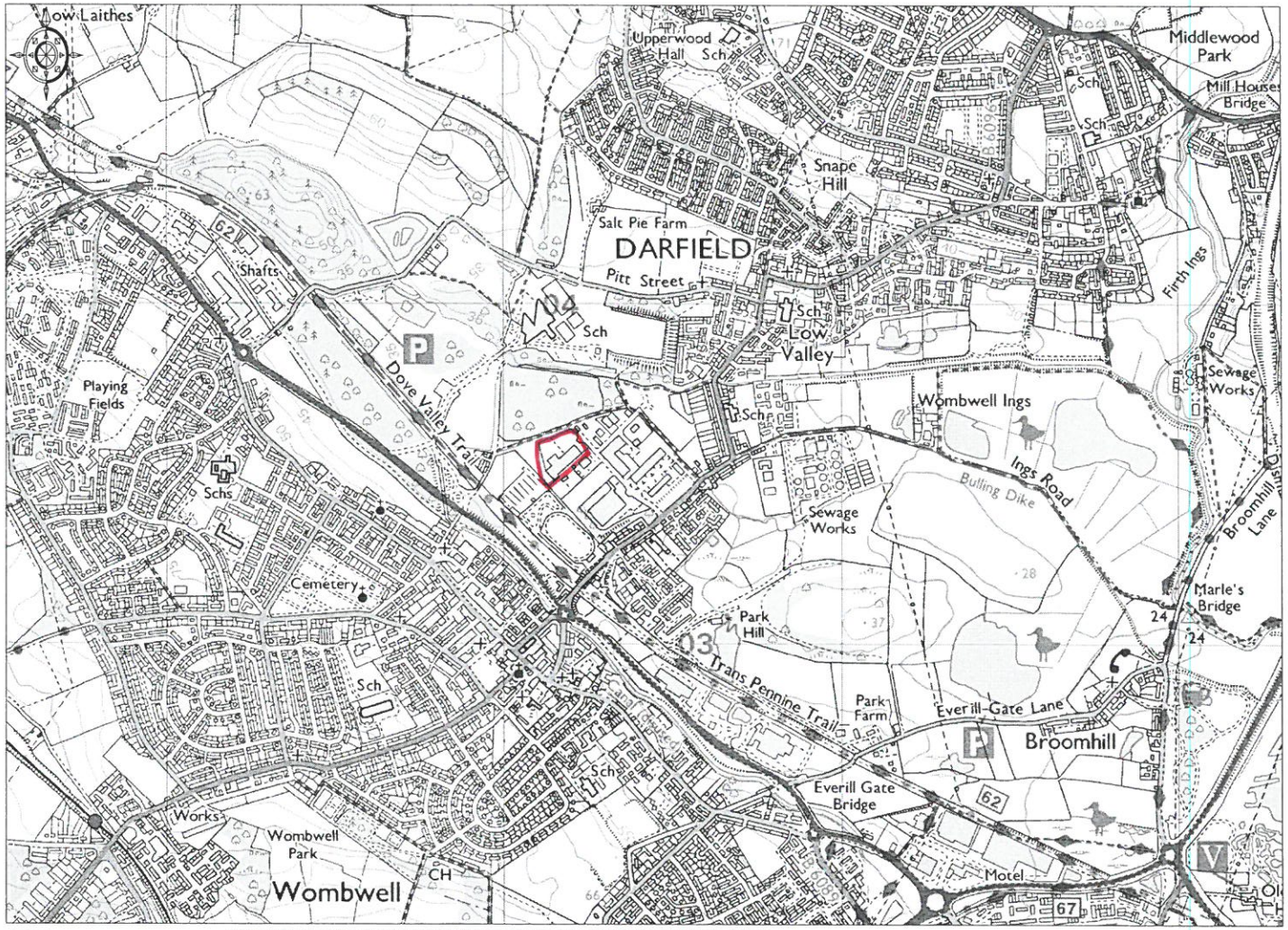
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Map



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NORTH

Notes:

1. All boundaries, dimensions and levels are to be checked on site before construction and any discrepancies are to be reported. Boundaries are determined from information given from a digital Ordnance Survey.
2. Do not scale this drawing.

Supplied by: Promap Ltd



Location Plan

PLANNING

JOB No.	1300	*SCALE*	1:2500 @ A4
DRWG No.	01	*DATE*	February 2015
REV No.	/	*DRAWN*	AW
STATUS.	I	*CHECK*	AW

client Naylor Industries plc
Clough Green
Cawthorne
Barnsley, S75 4AD

project Valley Road, Wombwell
Proposed Change of use

APPENDIX B

AERIAL VIEW


W 1°23'24
© 2015 Google
© 2015 Infoterra Ltd & Bluesky
119 m
N53°31'30"
Google earth
2002
Imagery Date: 9/21/2008 53°31'37.55" N 1°23'41.72" W elev 31 m eye alt 598 m

APPENDIX C

PROPOSED SITE LAYOUT

job number	drawing number	revision
1300	02	/

Notes

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Do not scale this drawing

Work to figured dimensions only

Contractors and consultants are to advise Mapmaster Ltd of any discrepancies.

All steelwork sizes indicated on these drawings are to be confirmed by Structural Engineer before works commence.

Sub Station 2

Sub Station 1

Proposed location of lights
Columns in yard to be mounted on 6m high columns with support for 3 no. flood lights.
Floodlights mounted on building to be 4m above ground level.

C:\Users\Dropbox\Mapmaster\Jobs\551 Naylor\Naylor Logo.jpg

PLANNING

revision	date	chkd

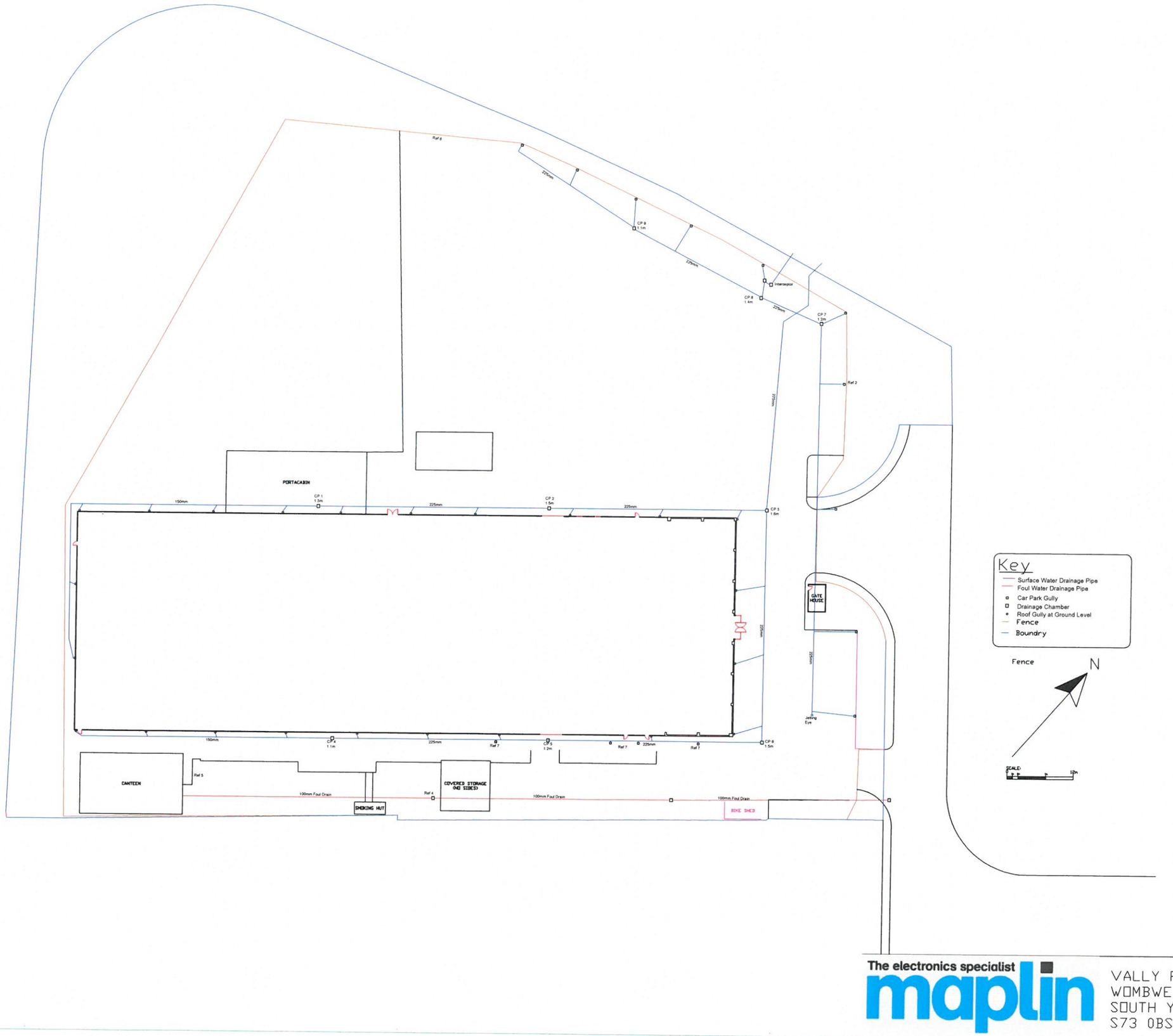
client
Naylor Industries plc
Clough Green
Cawthorne
Barnsley, S75 4AD

project
Naylor
Valley Road, Wombwell

drawing
Proposed Site Layout

scale	date
1:250 @ A0	February 2015

job number	drawing number	revision
1300	02_250_REV2	1



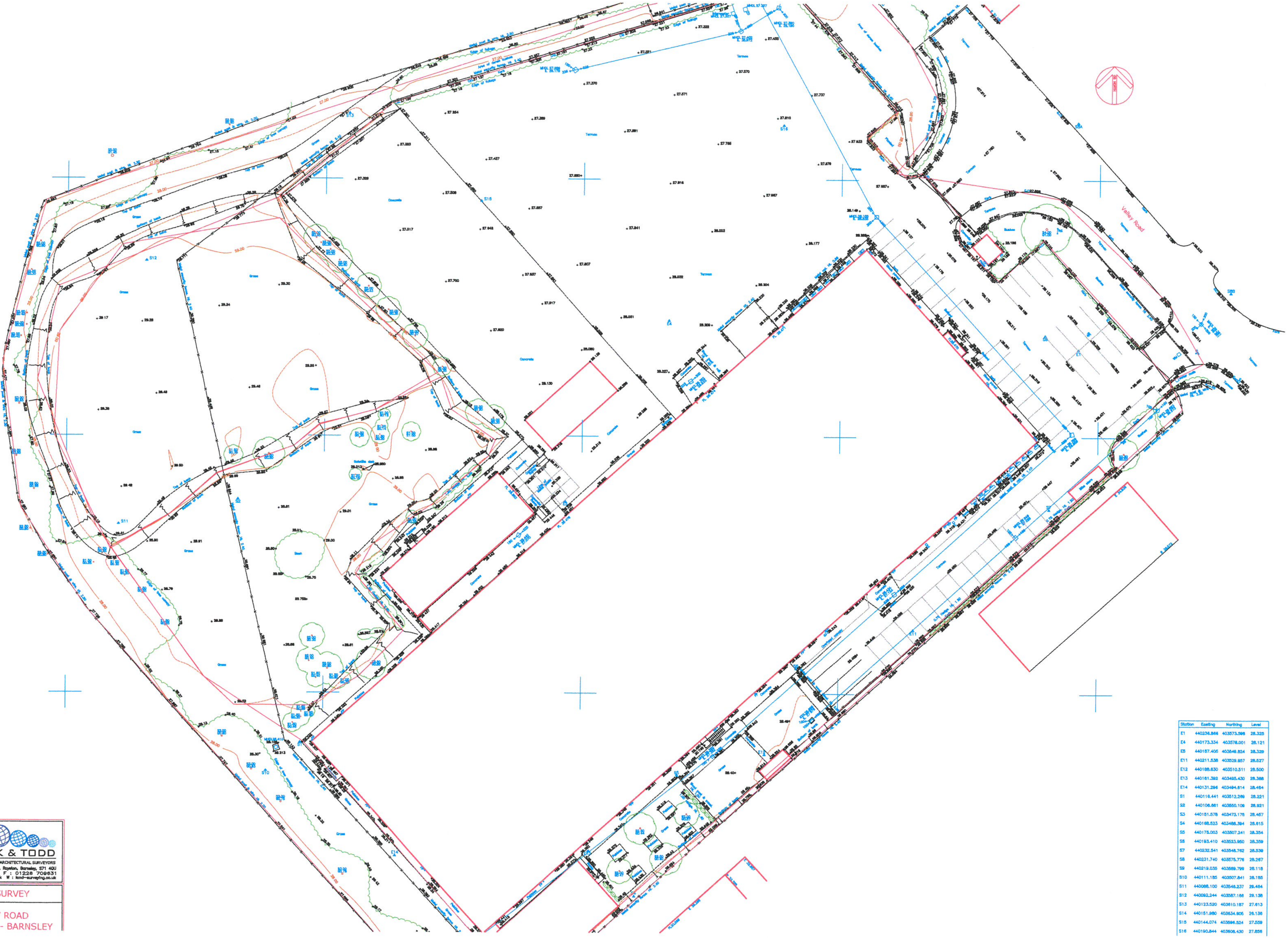
The electronics specialist

maplin

VALLY ROAD
WOMBWELL
SOUTH YORKSHIRE
S73 0BS

APPENDIX D

SITE SURVEY



Station	Easting	Northing	Level
E1	440236.866	403573.598	28.325
E4	440173.334	403578.001	28.121
E5	440157.405	403649.824	28.329
E11	440211.538	403529.957	28.527
E12	440188.630	403510.511	28.500
E13	440161.392	403495.430	28.368
E14	440131.296	403494.614	28.464
S1	440116.441	403512.269	28.221
S2	440106.661	403650.109	28.921
S3	440151.578	403473.178	28.467
S4	440168.523	403488.394	28.615
S5	440175.003	403507.241	28.354
S6	440193.410	403523.960	28.359
S7	440232.541	403548.762	28.539
S8	440231.740	403575.776	28.267
S9	440219.035	403689.799	28.118
S10	440111.185	403507.841	28.185
S11	440088.100	403546.237	29.464
S12	440092.244	403587.168	29.138
S13	440123.520	403610.187	27.613
S14	440151.980	403634.606	28.138
S15	440144.074	403696.524	27.559
S16	440190.844	403606.430	27.856

YCOCK & TODD
EY CONSULTANTS•ARCHITECTURAL SURVEYORS
43 Church Street, Royston, Barnsley, S71 4QU
26 709630 F : 01228 709631
nd-surveying.co.uk W : land-surveying.co.uk

SITE SURVEY

VALLEY ROAD
MBWELL - BARNSLEY

APPENDIX E

FLOOD RISK MAPS

Environment Agency

Enter a postcode or place name: Go

Other topics for this area... Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

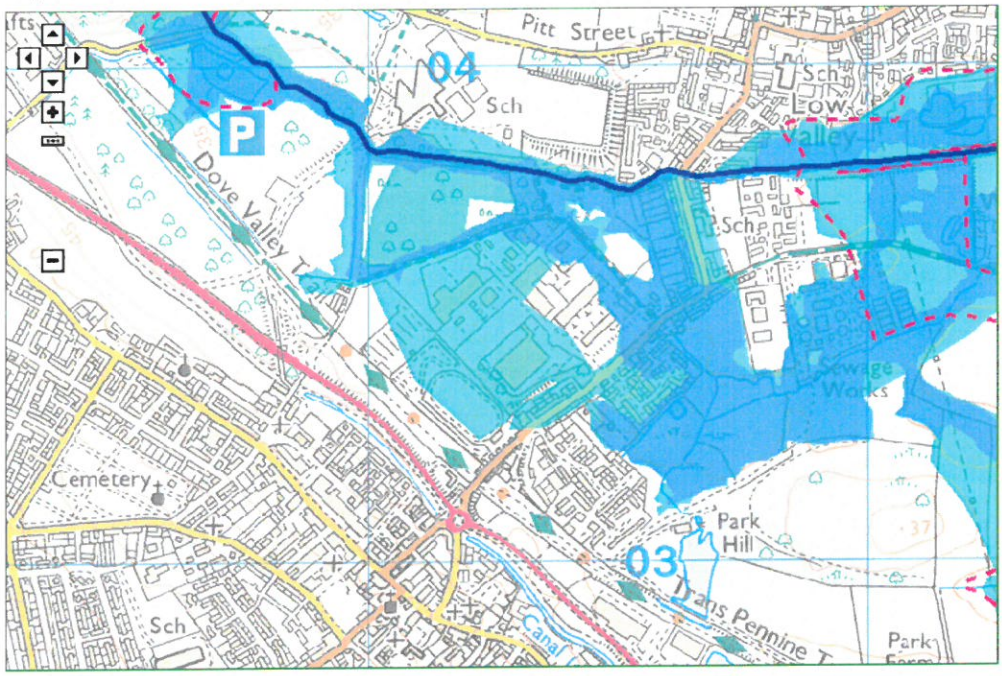
Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

- Flood Map for Planning (Rivers and Sea)
  - Flood Zone 3
  - Flood Zone 2
  - Flood defences (Not all may be shown*)
  - Areas benefiting from flood defences (Not all may be shown*)
- Main Rivers
  - River line

Map of X: 440,270; Y: 403,449 at scale 1:10,000

Other maps Data search Text only version



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More about flooding:

Understanding the Flood Map for Planning (Rivers and Sea)

A more detailed explanation to help you understand the flood map shown above.

Current flood warnings

We provide flood warnings online 24 hours a day. Find out the current flood warning status in your local area.

*** Legend Information:** Flood defences and the areas benefiting from them are gradually being added through updates. Please contact your local environment agency office for further details.

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Last updated: 31st March 2015

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Enter a postcode or place name: Other topics for this area...

Go | Risk of Flooding from Surface Water | View other Interactive Maps

Risk of Flooding from Surface Water

Surface water flooding happens 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.

The shading on the map shows the risk of flooding from surface water in this particular area.

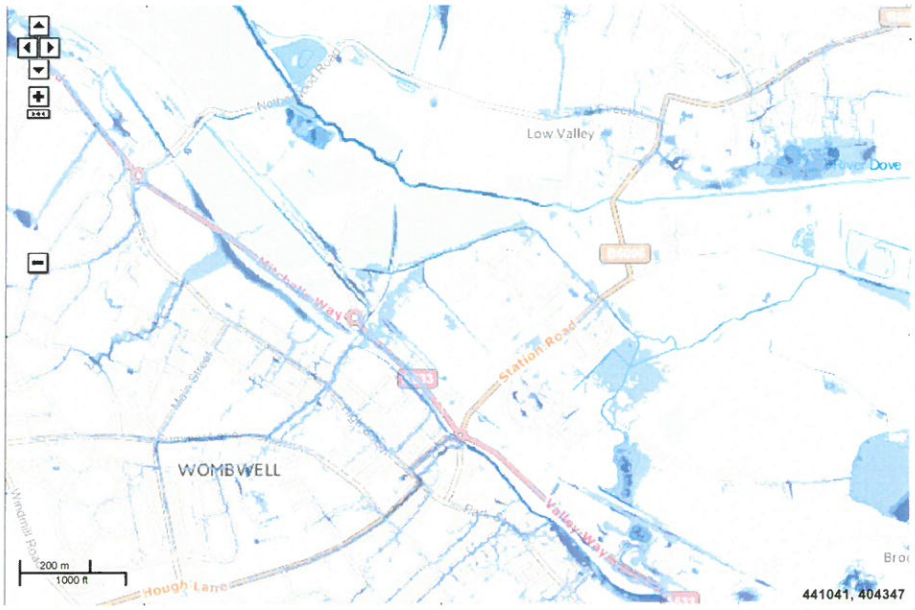
Click on the map for a more detailed explanation.

Map of X: 440,166; Y: 403,472 at scale 1:10,000

Map legend

- Risk of Flooding from Surface Water
  - High
  - Medium
  - Low
  - Very Low

Data search



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Enter a postcode or place name: Other topics for this area...

Go | Risk of Flooding from Reservoirs | View other Interactive Maps

Risk of Flooding from Reservoirs

Reservoir flooding is extremely unlikely to happen.

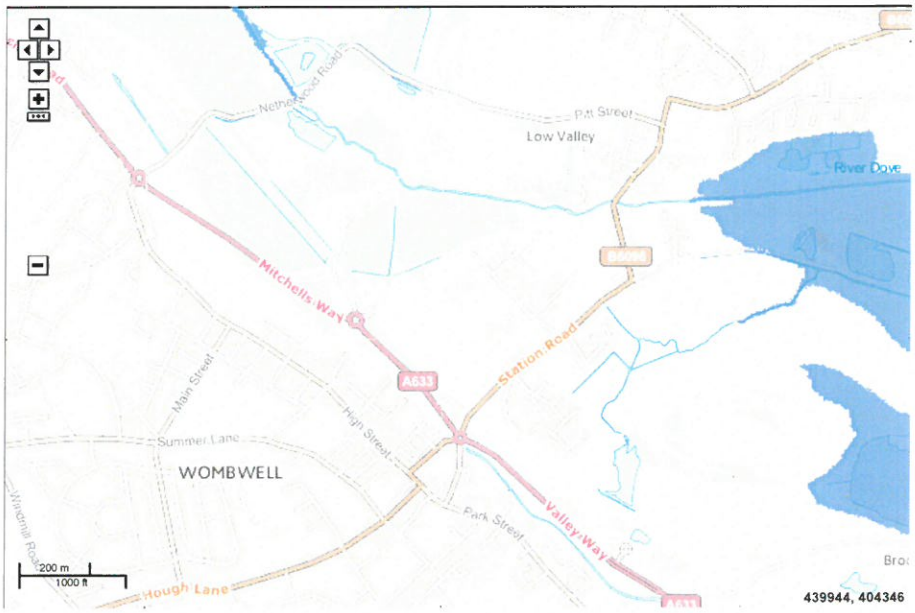
The shading on the map shows the area that could be flooded if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely that any actual flood would be this large.

Click on the shading to see details of reservoirs that could cause flooding in this area.

Map legend

- Risk of Flooding from Reservoirs
- Maximum extent of flooding

Map of X: 440,166; Y: 403,472 at scale 1:10,000 Data search



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Enter a postcode or place name: Go

Other topics for this area... Flood Warning Areas

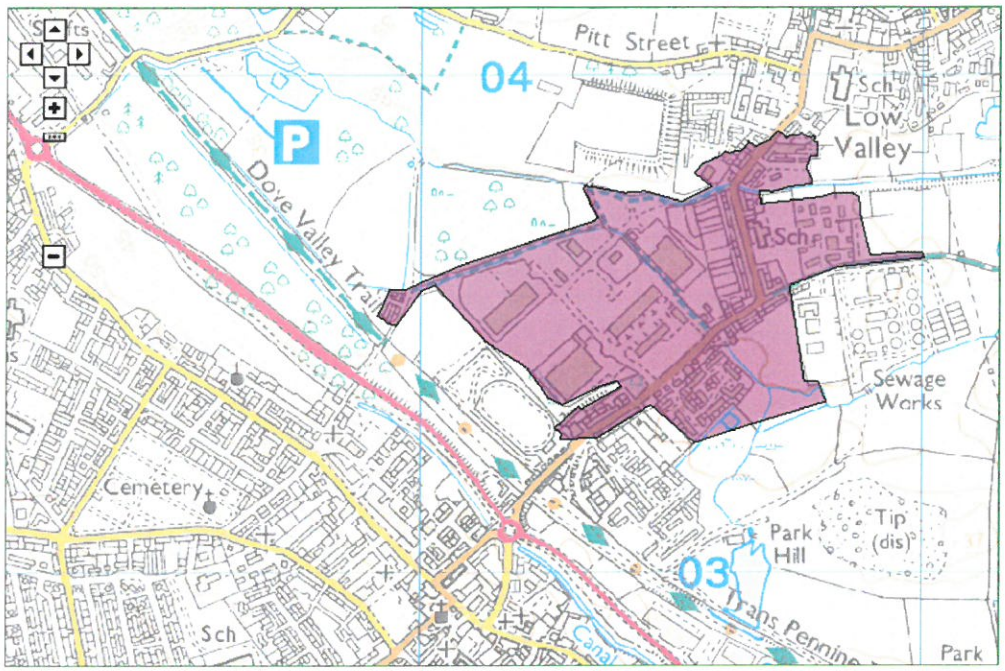
Flood Warning

Map legend

Click on an area for details.

- Flood Warning Areas
  - Areas where we issue flood warnings
- Flood Alert Areas
  - Areas where we issue flood alerts
- River and Sea levels
  - River and Sea levels

Map of X: 440,166; Y: 403,472 at scale 1:10,000 Other maps Data search Text only version



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More about Flood Warnings:

Flood Warning Areas

If your home or business is within a purple shaded area on the map then you can receive free flood warnings. We issue flood warnings to specific areas when flooding is expected. **If you receive a flood warning you should take immediate action**.

For further information visit our Flood warning pages.

Flood Alert Areas

If your home or business is within a pink shaded area on the map then you can receive free flood alerts. We issue flood alerts when flooding is possible. In many areas we issue flood alerts for flooding from rivers, the sea and groundwater. **If you receive a flood alert you should be prepared for flooding and to take action**.

It is very difficult to predict the exact location of flooding from groundwater as it is often related to local geology. We can't say for definite which properties are at risk from groundwater flooding. To help people we provide flood alerts for large areas that could be affected if groundwater levels were high.

For further information visit our Flood warning pages.

River Levels

River level monitoring sensors are placed in the waters at key points and measure changes in water level. This data is recorded at 15 minute intervals; it's then sent back to our offices to be published online at least once a day. The information may be updated more frequently to meet operational needs, for example when water levels are high. This is the most up to date information available about river and sea levels.

For further information visit our River and Sea Levels pages.

HiFlows

HiFlows-UK provides data on the flood peaks at around 1000 river flow gauging stations in the UK, for use in the flood estimation methods.

For further information visit our HiFlows-UK pages.

Environment Agency

Enter a postcode or place name: Go

Other topics for this area... Flood Warning Areas

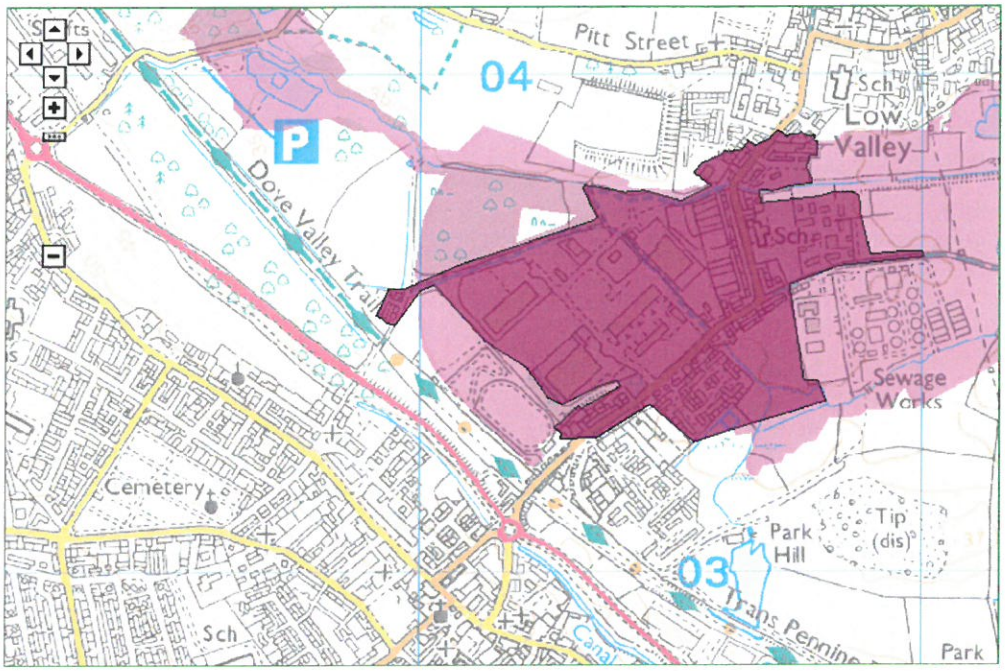
Flood Warning

Map legend

Click on an area for details.

- Flood Warning Areas
  - Areas where we issue flood warnings
- Flood Alert Areas
  - Areas where we issue flood alerts
- River and Sea levels
  - River and Sea levels

Map of X: 440,166; Y: 403,472 at scale 1:10,000 Other maps Data search Text only version



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More about Flood Warnings:

Flood Warning Areas

If your home or business is within a purple shaded area on the map then you can receive free flood warnings. We issue flood warnings to specific areas when flooding is expected. **If you receive a flood warning you should take immediate action.**

For further information visit our Flood warning pages.

Flood Alert Areas

If your home or business is within a pink shaded area on the map then you can receive free flood alerts. We issue flood alerts when flooding is possible. In many areas we issue flood alerts for flooding from rivers, the sea and groundwater. **If you receive a flood alert you should be prepared for flooding and to take action.**

It is very difficult to predict the exact location of flooding from groundwater as it is often related to local geology. We can't say for definite which properties are at risk from groundwater flooding. To help people we provide flood alerts for large areas that could be affected if groundwater levels were high.

For further information visit our Flood warning pages.

River Levels

River level monitoring sensors are placed in the waters at key points and measure changes in water level. This data is recorded at 15 minute intervals; it's then sent back to our offices to be published online at least once a day. The information may be updated more frequently to meet operational needs, for example when water levels are high. This is the most up to date information available about river and sea levels.

For further information visit our River and Sea Levels pages.

HiFlows

HiFlows-UK provides data on the flood peaks at around 1000 river flow gauging stations in the UK, for use in the flood estimation methods.

For further information visit our HiFlows-UK pages.

Environment Agency

Enter a postcode or place name: Go

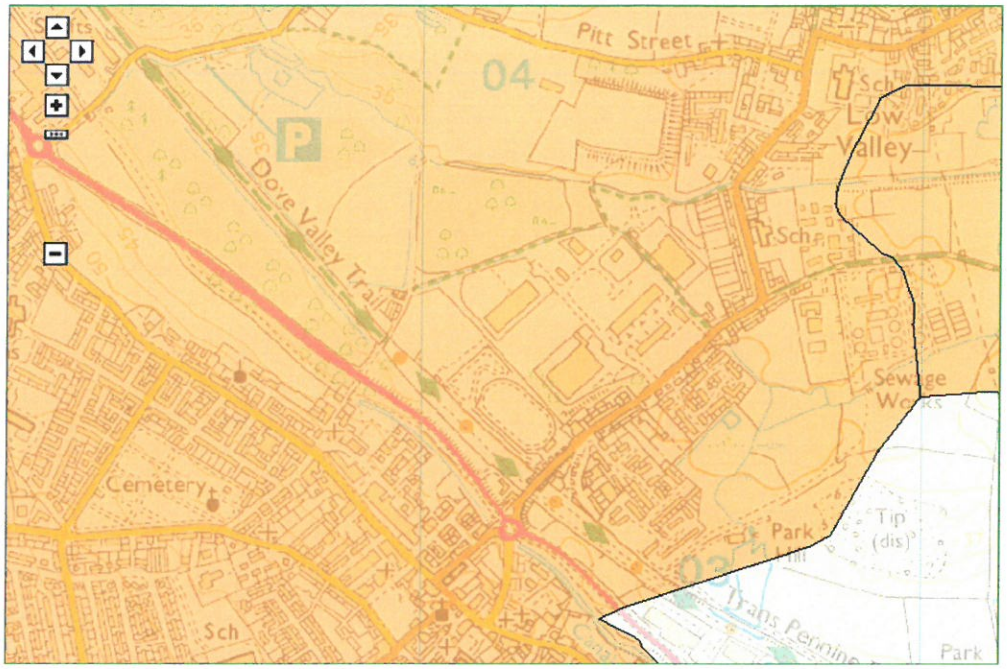
Other topics for this area... Groundwater

Groundwater

Map legend

- Groundwater source protection zones
  - Inner zone (Zone 1)
  - Inner zone - subsurface activity only (Zone 1c)
  - Outer zone (Zone 2)
  - Outer zone - subsurface activity only (Zone 2c)
  - Total catchment (Zone 3)
  - Total catchment - subsurface activity only (Zone 3c)
  - Special interest (Zone 4)
- Aquifer Maps - Superficial Deposits Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
  - Unknown (lakes and landslip)
- Aquifer Maps - Bedrock Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
- Groundwater Vulnerability Zones
  - Major Aquifer High
  - Major Aquifer Intermediate
  - Major Aquifer Low
  - Minor Aquifer High
  - Minor Aquifer Intermediate
  - Minor Aquifer Low

Map of X: 440,166; Y: 403,472 at scale 1:10,000 Other maps Data search Text only version



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More about Groundwater

Groundwater Source Protection Zones:

Groundwater provides a third of our drinking water. We ensure that your water is safe to drink defining Source Protection Zones. These zones help to monitor the risk of contamination from any activities that might cause pollution in the area.

The Source Protection Zones are not displayed at scales greater than 1:20,000 (Ordnance Survey 1:50,000 scale) as the data was only modelled to this level and is not accurate pass this. They should not be compared against field boundaries.

Understanding Groundwater Source Protection Zones maps

British Geological Survey Aquifer Maps:

From 1st April 2010 new aquifer designations replace the old system of classifying aquifers as Major, Minor and Non-Aquifer. This new system is in line with our Groundwater Protection Policy (GP3) and the Water Framework Directive (WFD) and is based on British Geological Survey mapping.

The Aquifer Extents are not displayed at scales greater than 1:75,000 (Ordnance Survey 1:250,000 scale) as the data was only modelled to this level and is not accurate pass this.

Understanding Groundwater Source Protection Zones maps

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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 14th August 2014

Environment Agency

Enter a postcode or place name: Other topics for this area...

Go | Risk of Flooding from Rivers and Sea | View other Interactive Maps

Risk of Flooding from Rivers and Sea

River flooding happens when a river cannot cope with the amount of water draining into it from the surrounding land. Sea flooding happens when there are high tides and stormy conditions.

The shading on the map shows the risk of flooding from rivers and the sea in this particular area.

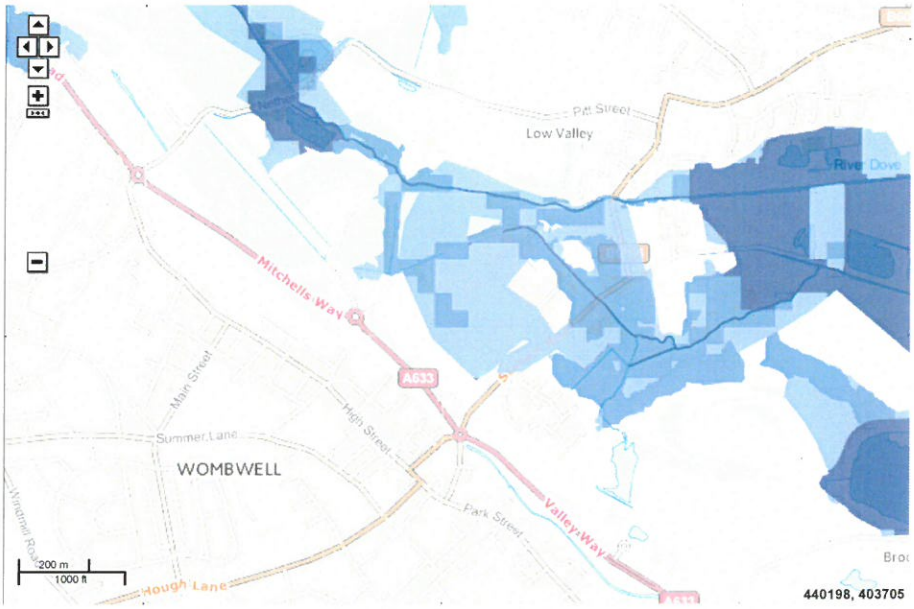
Click on the map for a more detailed explanation.

Map legend

- Risk of Flooding from Rivers and Sea
  - High
  - Medium
  - Low
  - Very Low

Map of X: 440,166; Y: 403,472 at scale 1:10,000

Data search



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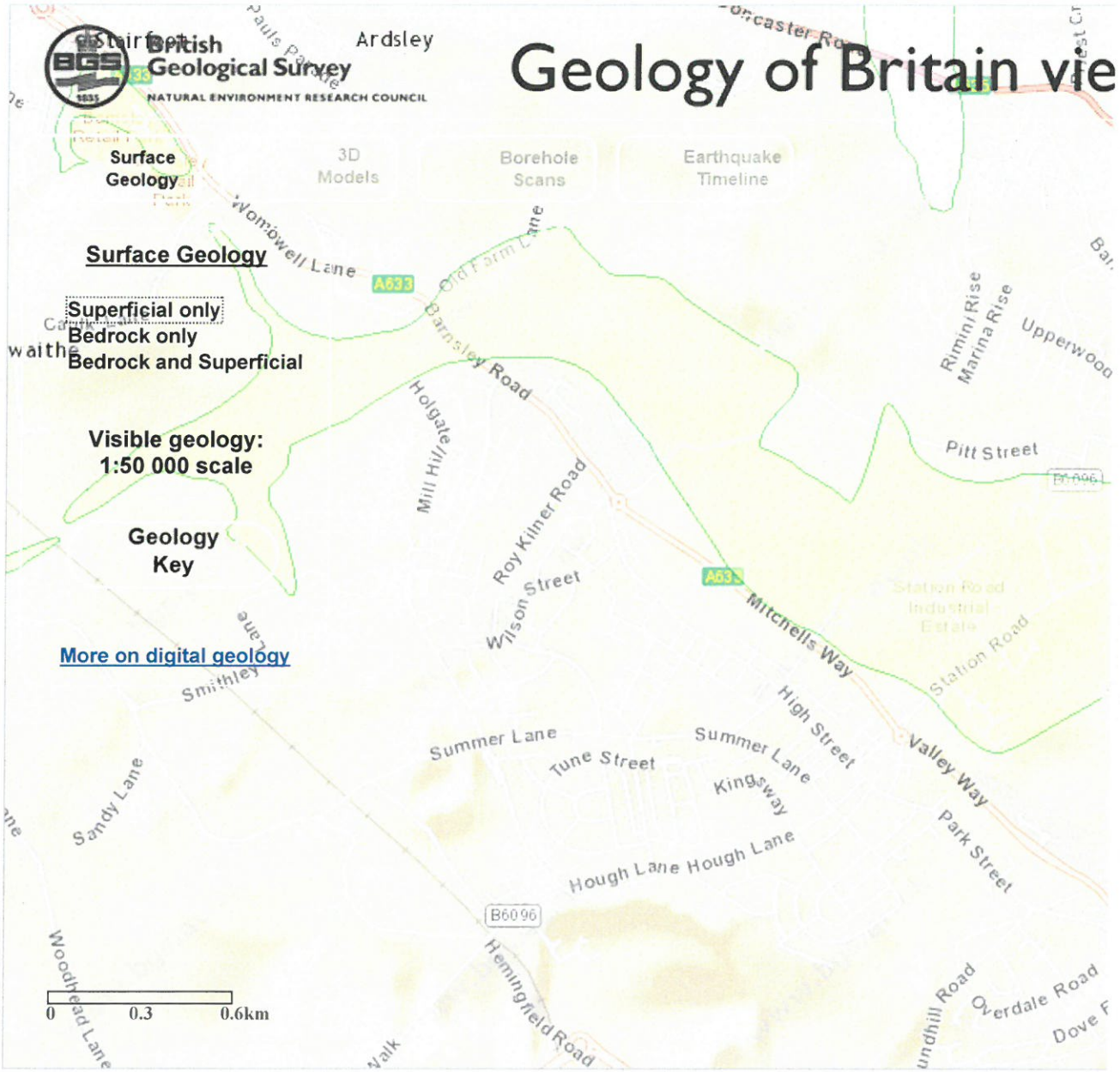
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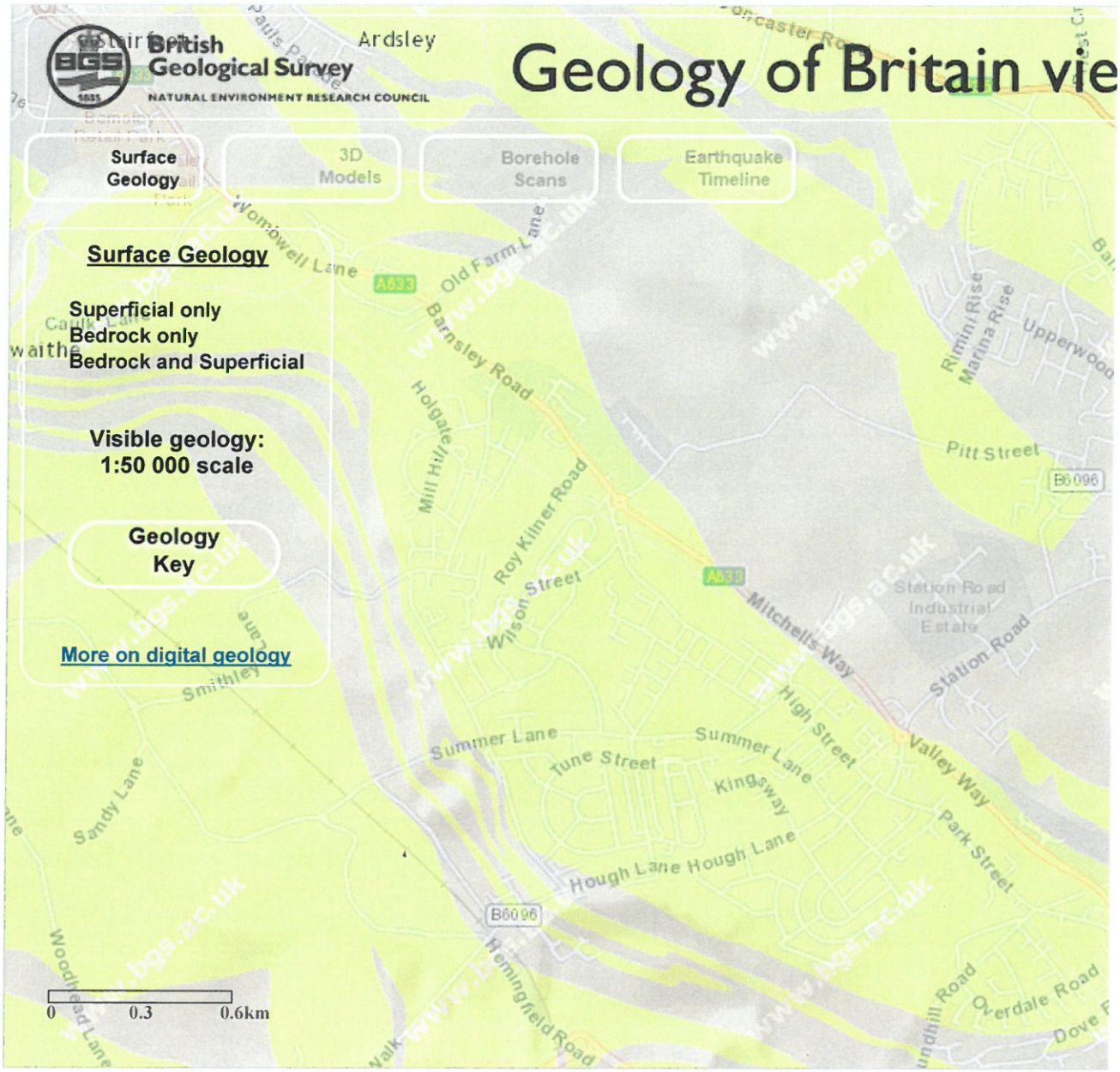
Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 24 February 2015

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APPENDIX F

GEOLOGY MAPS
&
BOREHOLE RECORD


British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL
Geology of Britain vie
Surface Geology
3D Models
Borehole Scans
Earthquake Timeline
Surface Geology
Superficial only
Bedrock only
Bedrock and Superficial
Visible geology: 1:50 000 scale
Geology Key
More on digital geology
Ardsley
Womwell Lane
A633
Old Farm Lane
Barnsley Road
Holgate/Mill Hill
Roy Kilner Road
Wilson Street
Mitchells Way
Pitt Street
Rimini Rise
Marina Rise
Upperwood
Station Road Industrial Estate
Station Road
High Street
Valley Way
Park Street
Summer Lane
Tune Street
Kingsway
Hough Lane
Sandy Lane
Smithley Lane
Woodhead Lane
B6096
Hemingfield Road
Overdale Road
0 0.3 0.6km


British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL
Geology of Britain vie
Surface Geology
3D Models
Borehole Scans
Earthquake Timeline
Surface Geology
Superficial only
Bedrock only
Bedrock and Superficial
Visible geology: 1:50 000 scale
Geology Key
More on digital geology
Ardsley
Barnsley Road
Old Farm Lane
Womaswell Lane
A633
Holgate
Mill Hill
Roy Kilner Road
Wilson Street
Pitt Street
B6096
A635
Mitchells Way
Station Road Industrial Estate
Station Road
High Street
Valley Way
Park Street
Summer Lane
Tune Street
Kingsway
Hough Lane
Sandy Lane
Woodhead Lane
Hemingfield Road
Overdale Road
Rimini Rise
Marina Rise
0 0.3 0.6km

SE 40 SW / 67 A

FORM 407

SOUTH YORKSHIRE COUNTY COUNCIL
DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

SITE: Station Road Industrial Estate LOCATION: Wombwell BOREHOLE No. 1

CUT/FILL(M) — CHAINAGE(M) — OFFSET(M) — SHEET 1 OF 1

BORING METHOD/SIZE(MM) Shell and Auger - 150mm

BORING			SAMPLES		STRATA				TESTING	
DATE	CASING (M)	WATER (M)	DEPTH (M)	TYPE	KEY	DEPTH (M)	LEVEL (M)	DESCRIPTION	'N' RQD	%
12/10/77						0.00	28.32			
						0.20	28.12	TOPSOIL		
			0.35	U4				MADE GROUND		11
			0.80					Well compacted dark grey mudstone with red and black shale, ashes, coal and clay		
			1.25	SPT					22	5.5
	1.50									
			1.80	U4						12
			2.25							
						2.50	25.82			
			2.75					MADE GROUND		
			3.20	SPT				Well compacted dark grey-black mudstone with black shale and coal fragments	19	15
	3.40					3.50	24.82			
			3.55	U4				Firm light grey-orange-brown silty sandy stony CLAY with sandstone pebbles		24
		12-13/10 pm	4.00							
	4.20	water struck	4.45	SPT					16	12
	4.70		4.55	U4		4.70	23.62			19
			5.00					Medium dense, medium brown fine to coarse grained clayey SAND and GRAVEL		
12/10/77				SPT					26	16
13/10/77			5.45							
			5.80-6.35	B						
			6.35	SPT					14 blows for 150mm N=28 (SPT hammer broke)	18
13/10/77			6.65			6.65	21.67	End of borehole		
			6.65	W						

REMARKS Groundwater encountered at 4.45m casing at 3.40m
Final standing level at end of drilling was 4.00m