5.5.4 Based on the ground conditions identified by the BGS and NSRI Soilscapes Data, it can be considered that infiltration is unlikely to be a viable drainage solution for surface water run-off generated by the proposed development site, in terms of infiltration characteristics. If infiltration is perused as a possible method for surface water management then further investigation is advised; with soakaway testing to BRE365 to be undertaken in specific locations where infiltration is considered most feasible.

5.6 Discharge to Watercourse

5.6.1 The Environment Agency's mapping data is supported by various other publications in identifying the presence of a principal watercourse (Netherley Brook) approximately 3km to the east of site, with multiple tributaries located within 2km of site.

5.6.2 Due to the distance and existing land-use between the site and the identified watercourses it is understood that discharge directly to the watercourse would be unfeasible at this time; therefore there are no proposals to discharge the surface water run-off generated by the development to the watercourse.

5.7 Discharge to a Public Sewer

5.7.1 United Utilities (UU) records identify multiple public surface water and combined systems within the vicinity of site. A surface water system is understood to run north-west along Cuckoo Lane to the south and west of site and a combined sewer system is understood to be located within Grange Lane to the east of site and within the residential developments to the south-east of site (see online sewer records in Appendix G).

5.7.2 It is understood that the surface water run-off generated by the existing development onsite discharges to the public combined sewer network located within Grange Lane to the east of site (as indicated in the Existing Drainage Situation Plan; Figure 8 on the subsequent page; see Appendix N).

5.7.3 In order to comply with the guidance set out in the NPPF the proposed surface water management strategy will mimic the pre-development situation where at all possible. The surface water run-off generated by the majority of the development is therefore proposed to discharge to the existing public sewer network (Preliminary Drainage Layout; Appendix O).

5.7.4 Detailed design will be required to confirm the feasibility of the proposed strategy following more detailed levels review. Consents may be required from United Utilities, along with approval of the proposed discharge rates.

5.7.5 Based on topographic constraints it is understood that multiple outfalls to the public sewer network will be required from site; therefore the flows generated by the majority of site are proposed to discharge to the existing combined sewer within Grange Lane, utilising the existing connections where feasible; to mimic the pre-development situation (as illustrated in Figure 9 on the subsequent page; Appendix O).

5.7.6 The flows generated by the proposals along the north-western and south-western boundaries are proposed to discharge into the existing surface water sewer system along 'Cuckoo Lane' and 'Gateacre Park Drive' via new connections due to the identified topographic constraints.

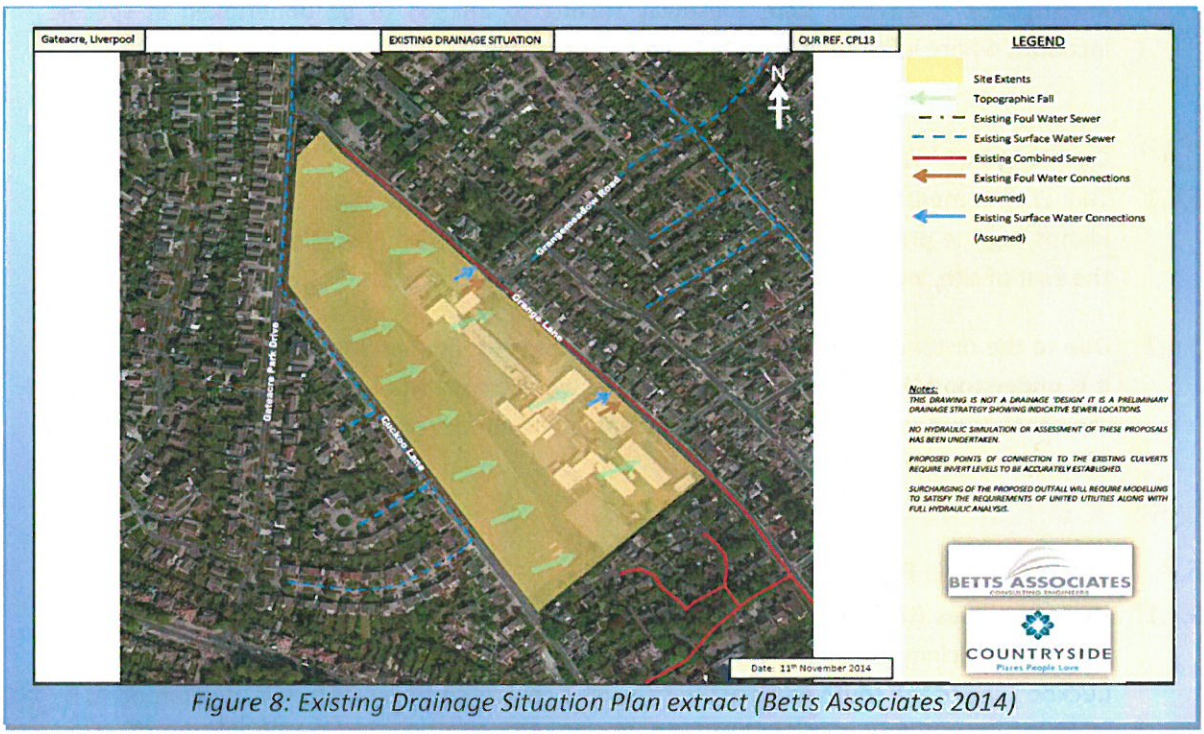

Figure 8: Existing Drainage Situation Plan extract (Betts Associates 2014)

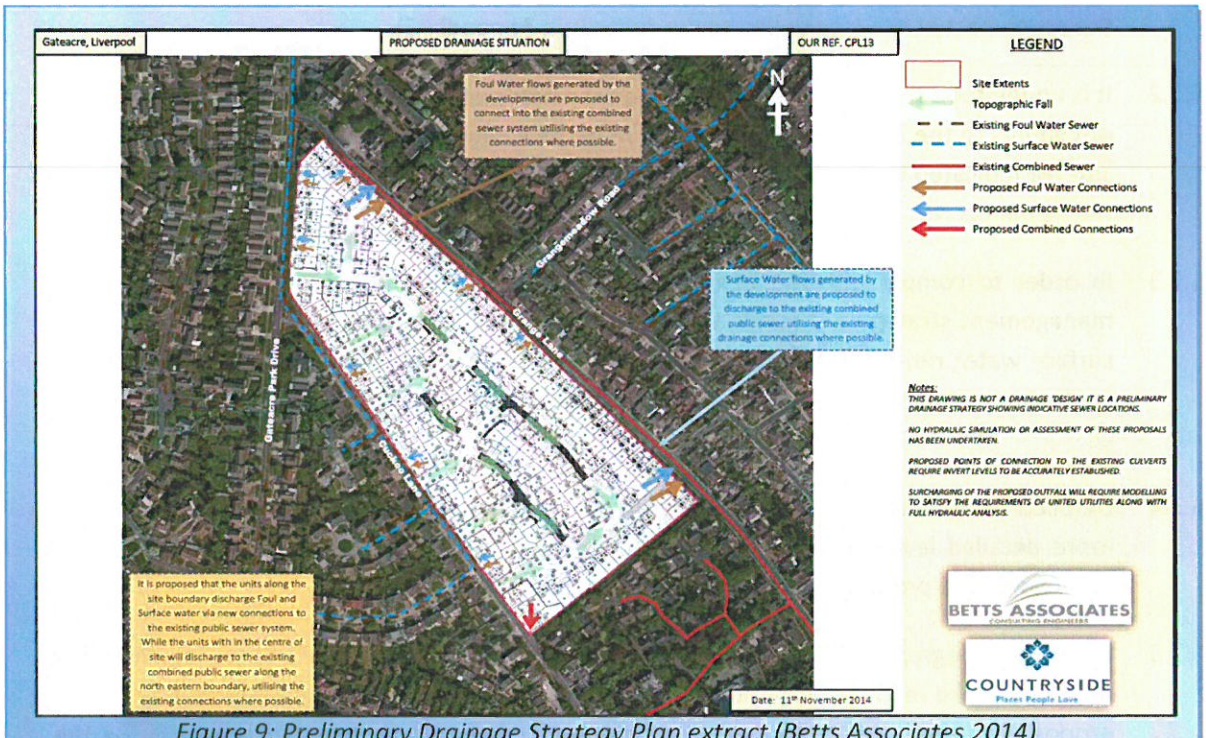

Figure 9: Preliminary Drainage Strategy Plan extract (Betts Associates 2014)

5.7.7 In order to minimise the flood risk to the proposed dwellings and neighbouring property, the discharge of surface water run-off generated by the proposals is proposed to be restricted to the pre-development rate (50mm/hr) with 30% betterment.

5.7.8 A flow restriction will be most likely in the form of a Hydrobrake® or similar approved flow control device. The proposed restricted discharge rate for the development is therefore calculated to be 255.1l/s for events up to and including the 1 in 100 year event with an allowance for climate change; see Appendix I for full details of the surface water calculations.

5.7.9 The restricted flow generates a storage requirement during periods of intense rainfall. The resultant storage requirement for the annual return period storm event with a restricted discharge rate of 255.1l/s and an impermeable area of 4.046ha and FEH catchment characteristics, is approximately between 37cu.m and 193cu.m (Appendix K).

5.7.10 The resultant storage requirement for the 1 in 30 year return period storm event with a restricted discharge rate of 255.1l/s and an impermeable area of 4.046ha and FEH catchment characteristics, is approximately between 485cu.m and 804cu.m (Appendix K).

5.7.11 The resultant storage requirement for the 1 in 100 year return period storm event with a 30% allowance for climate change with a restricted discharge rate of 255.1l/s and an impermeable area of 4.046ha and FEH catchment characteristics, is approximately between 1230cu.m and 1766cu.m (Appendix K).

5.7.12 The stormwater storage figures quoted above are estimates only and the detailed drainage design will determine with accuracy the stormwater storage requirements.

5.8 Climate Change

5.8.1 There are indications that the climate in the UK is changing significantly and it is widely believed that the nature of climate change will vary greatly by region. Current expert opinion indicates the likelihood that future climate change would produce more frequent short duration and high intensity rainfall events with the addition of more frequent periods of long duration rainfall.

5.8.2 The NPPF Technical Guidance Table 5 states that the recommended national precautionary sensitivity ranges for increase of peak rainfall intensity is 30% until 2115. It is widely believed that the impact of climate change means there is likely to be a long term increase in the average sea levels, with an expectation that sea levels will rise gradually.

5.8.3 An increase in flood water levels means that future flooding events will occur more frequently and will have a greater impact. Any increase in the level of flood risk to the proposed development from climate change is likely to be related to the increase in rainfall intensity and duration and its impact upon the surface water drainage system.

5.8.5 Climate Change should be accounted for within the design and it is recommended that an increase in peak rainfall intensity of 30% is allowed for.

6.0 FOUL WATER MANAGEMENT

6.1 Based on the proposals for the construction of 202no. residential units the approximate peak foul water flows generated by the development are 9.4l/s. This is based on 4000 litres per dwelling per 24 hours; the guidance contained within Sewers for Adoption (SfA).

6.2 Consultation with United Utilities has identified the presence of a foul water system running north-west along Cuckoo Lane to the south and west of site, along with multiple combined sewer systems within Grange Lane and the residential developments to the south-east of site.

6.3 A copy of the UU sewer records and correspondence is included in Appendix G.

6.4 The foul water flows generated by the existing development are understood to discharge into the public combined sewer network within Grange Lane at present, the foul water flows generated by the proposals are proposed to discharge to the public sewer network as they do currently utilising the existing connections where feasible.

6.5 Based on topographic constraints it is understood that multiple connections to the public sewer network will be required from site; the flows generated by the majority of site are proposed to discharge to the public combined sewer within Grange Lane, utilising the existing connections where feasible (as illustrated in Figure 9 on the preceding page; Appendix O).

6.6 The flows generated by the dwellings along the north-western and south-western boundaries are proposed to discharge into the existing foul water sewer system along 'Cuckoo Lane' and 'Gateacre Park Drive' via new connections due to the identified topographic constraints.

7.0 SUMMARY AND CONCLUSIONS

7.1 The Flood Risk Assessment has been prepared to support a detailed planning application for the construction of 202no. residential dwellings on the existing Gateacre School site to the south-west of 'Grange Lane' Gateacre. The development proposals are to include estate roads, private access roads, external works, footpaths, car parking, external lighting, landscaping, boundary walls, fencing, external services and drainage.

7.2 The proposed development site lies solely within Flood Zone 1 and is approximately 8.249ha; the NPPF requires that all planning applications for development proposals that exceed 1 hectare be accompanied by a Flood Risk Assessment.

7.3 The development is 'residential' in its nature and as such is classified as 'more vulnerable' from the NPPF Table 2, this is considered an appropriate development type within Flood Zone 1.

7.4 An Internet based search for flooding events did not recall any historical flooding to the immediate site area, review of the Liverpool City Council's PFRA also failed to highlight any flooding issues within the immediate site area. Consultation with various interested parties furthermore failed to highlight any historical flooding in or adjacent to the proposed development area.

7.5 The development is considered to be accessible for emergency access and egress during times of extreme flooding as the 100 year floodplain does not extend into the proposed development area.

7.6 This Flood Risk Assessment has reviewed all sources of flood risk to both the proposed development and to the existing adjacent development as a result of the proposals, including; fluvial, tidal, pluvial, groundwater, sewers and flooding from artificial sources. As a result of the relatively low flood risk from all of the sources reviewed, the principle focus of this report is on the effective management of surface water drainage.

7.7 Based on the ground conditions identified by the BGS and NSRI Soilscapes Data, in terms of infiltration characteristics, it can be considered that infiltration is unlikely to be viable for surface water management at the proposed development site. However, if infiltration is perused as a possible method then further investigation is advised; with soakaway testing to BRE365 to be undertaken in specific locations where infiltration is considered most feasible.

7.8 As infiltration does not appear feasible at this time based on infiltration characteristics and the nearest watercourse is not a practical option for the discharge of surface water from site, due to proximity; it is proposed that the surface water run-off generated by the proposals discharge to the public sewer network to mimic the existing situation.

7.9 It is understood that multiple connections to the existing public sewer network will be required from site to accommodate the proposed layout and identified topographic constraints. The flows generated by the majority of site are proposed to discharge to the existing combined sewer within Grange Lane, utilising the existing connections where

feasible. The flows generated by the proposals along the north-western and south-western boundaries are proposed to discharge into the existing surface water system along 'Cuckoo Lane' and 'Gateacre Park Drive' via new connections.

7.10 The discharge of surface water run-off generated by the proposals is proposed to be restricted to the pre-development rate with 30% betterment; the proposed rate is calculated to be 255.1l/s. A flow restriction will be most likely in the form of a Hydrobrake® or similar approved flow control device.

7.11 Detailed design will be required to confirm the feasibility of the proposed strategy following more detailed levels review. Consents will be required from United Utilities, along with approval of the proposed discharge rates; therefore early discussion is advised.

7.12 The proposed onsite surface water drainage system will need to be sized to prevent overland run-off offsite from storm events up to and including the 100 year return period storm event with a 30% allowance for climate change.

7.13 SuDS methods should be incorporated into the surface water management strategy wherever possible; the use of soft landscaping, permeable paving and swales (where appropriate) may offer a reduction in surface water run-off generated by the development site. Although the exact SuDS methods to be used within the proposals are to be confirmed during detailed design, the implementation of a pond system along the northern boundary is identified on the proposals.

7.14 The foul water flows generated by the proposals are proposed to discharge in part to the public sewer network within Grange Lane as they do currently, utilising the existing connection where appropriate. A detailed design will be required to confirm feasibility based on the topographic levels following more detailed investigation, further discussion with United Utilities will be required to confirm the strategy. Based on topographic constraints it is understood that multiple connections to the public sewer network will be required; however the flows generated by the majority of site are proposed to discharge to the public combined sewer within Grange Lane, with the flows generated by the dwellings along the north-western and south-western boundaries are proposed to discharge into the existing foul water sewer system along 'Cuckoo Lane' and 'Gateacre Park Drive' via new connections.

7.15 As with any drainage system blockages within either the foul or surface water sewer systems have the potential to cause flooding or disruption.

7.16 The Flood Risk Assessment is considered to be commensurate with the development proposals and in summary, the development can be considered appropriate in accordance with the NPPF.

8.0 RECOMMENDATIONS

8.1 Any overland flows generated by the proposed development must be directed away from existing and proposed buildings; safe avenues of overland flow away from any existing and proposed buildings are advised. As with any development it is also advised that external levels fall away from property to minimise the flood risk from a variety of sources.

8.2 Opportunities should be taken to provide soft landscaping where at all possible on site to assist in minimising surface water run-off. Added benefits include biodiversity and visual enhancements. The use of permeable paving and swales may be appropriate in some areas to reduce the surface water run-off generated by the proposals.

8.3 Consideration is recommended into the stormwater attenuation requirements due to restricting the surface water discharge from the proposed development site. The resultant storage requirement for the annual return period storm event with a restricted discharge rate of 255.1l/s and an impermeable area of 4.046ha and FEH catchment characteristics, is approximately between 37cu.m and 193cu.m. The resultant storage requirement for the 1 in 100 year return period storm event with a 30% allowance for climate change, with a restricted discharge rate of 255.1l/s is approximately between 1230cu.m and 1766cu.m. The stormwater storage figures quoted above are estimates only and the detailed drainage design will determine with accuracy the stormwater storage requirements.

8.4 The development and its drainage systems should be designed to cope with intense storm events up to and including the 100 year return period rainfall event with an allowance for Climate Change (CC), based on the design life of the proposed development this allowance for CC is in the form of a 30% increase in rainfall intensity.

BIBLIOGRAPHY & REFERENCES

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CIRIA 523: Sustainable urban drainage systems – best practice manual (2001).
CIRIA 609: Sustainable drainage systems. Hydraulic, structural and water quality advice (2004).
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Planning Policy Statement 25: Development and Flood Risk (2006).
Sewers for Adoption 7th Edition, WRc (2012).
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Web-based References

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British Geological Survey – http://www.bgs.ac.uk/opengeoscience/home.html
Chronology of British Hydrological Events – www.dundee.ac.uk/
CIRIA – http://www.ciria.org/
Cranfield University – http://www.landis.org.uk/soilscapes/
Environment Agency – www.environment-agency.gov.uk/
FloodProBE – http://www.floodprobe.eu/
Flood Forum – http://www.floodforum.org.uk/
Flood London – http://www.floodlondon.com/
Flood Resilience Group – http://www.floodresiliencegroup.org/frg/
Google Maps – http://maps.google.co.uk/
Liverpool City Council – http://liverpool.gov.uk/
London Resilience – http://www.londonprepared.gov.uk/
Preston City Council - http://www.preston.gov.uk/yourservices/
Streetmap – http://www.streetmap.co.uk/
US Army Corps of Engineers – http://www.hec.usace.army.mil/software/hec-ras/
United Utilities - http://www.unitedutilities.com/default.aspx
Watertight International – http://www.watertightinternational.com/

APPENDIX A: LOCATION PLAN

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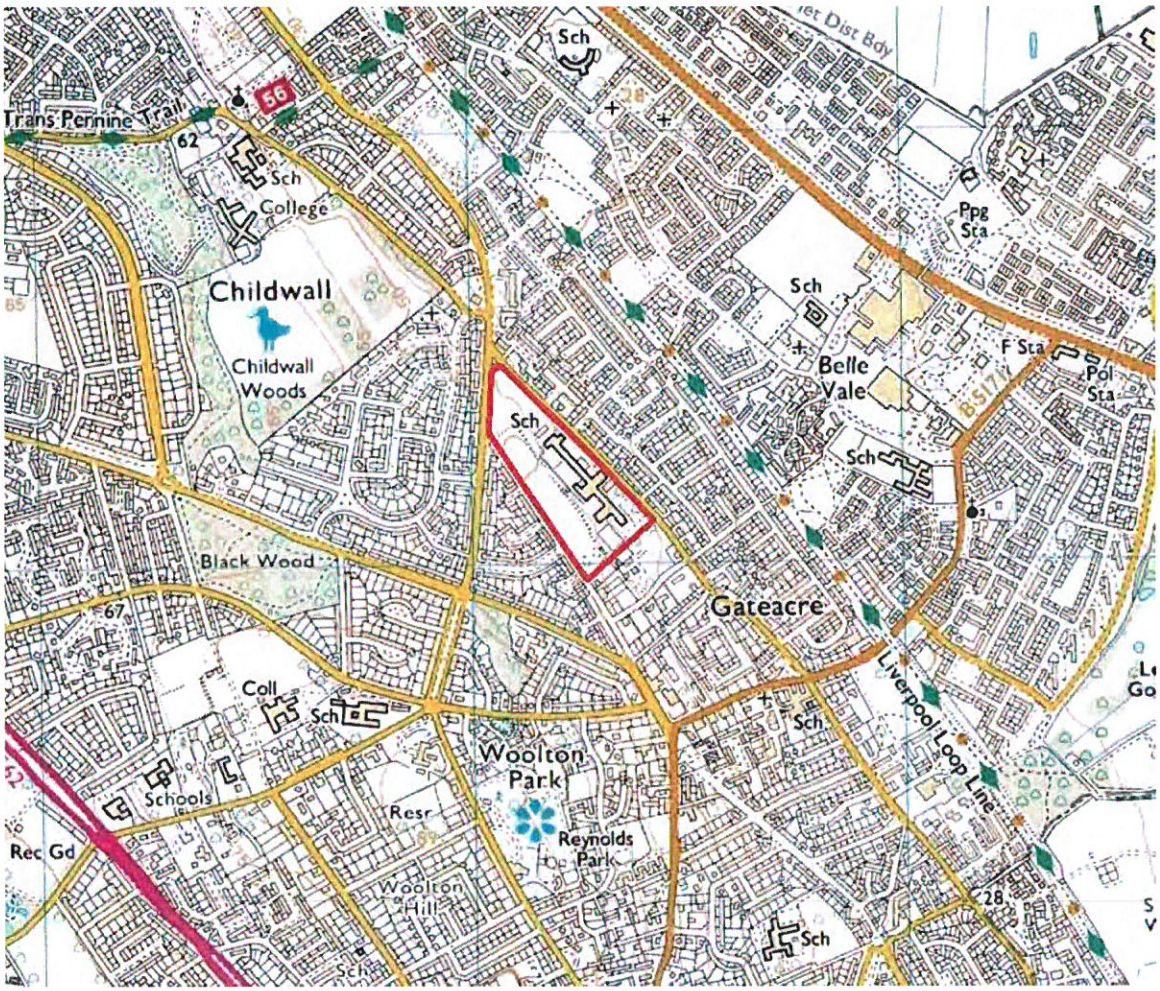
LOCATION PLAN

Gateacre, Liverpool



OS X (Eastings)	342280
OS Y (Northings)	388178
Nearest Post Code	L25 4SA
Lat (WGS84)	N53:23:14 (53.387273)
Long (WGS84)	W2:52:10 (-2.869310)
LR	SJ422881
mX	-319410
mY	7020634
Mapcode	GBR 7YW.8R

APPENDIX B: TOPOGRAPHIC SURVEY

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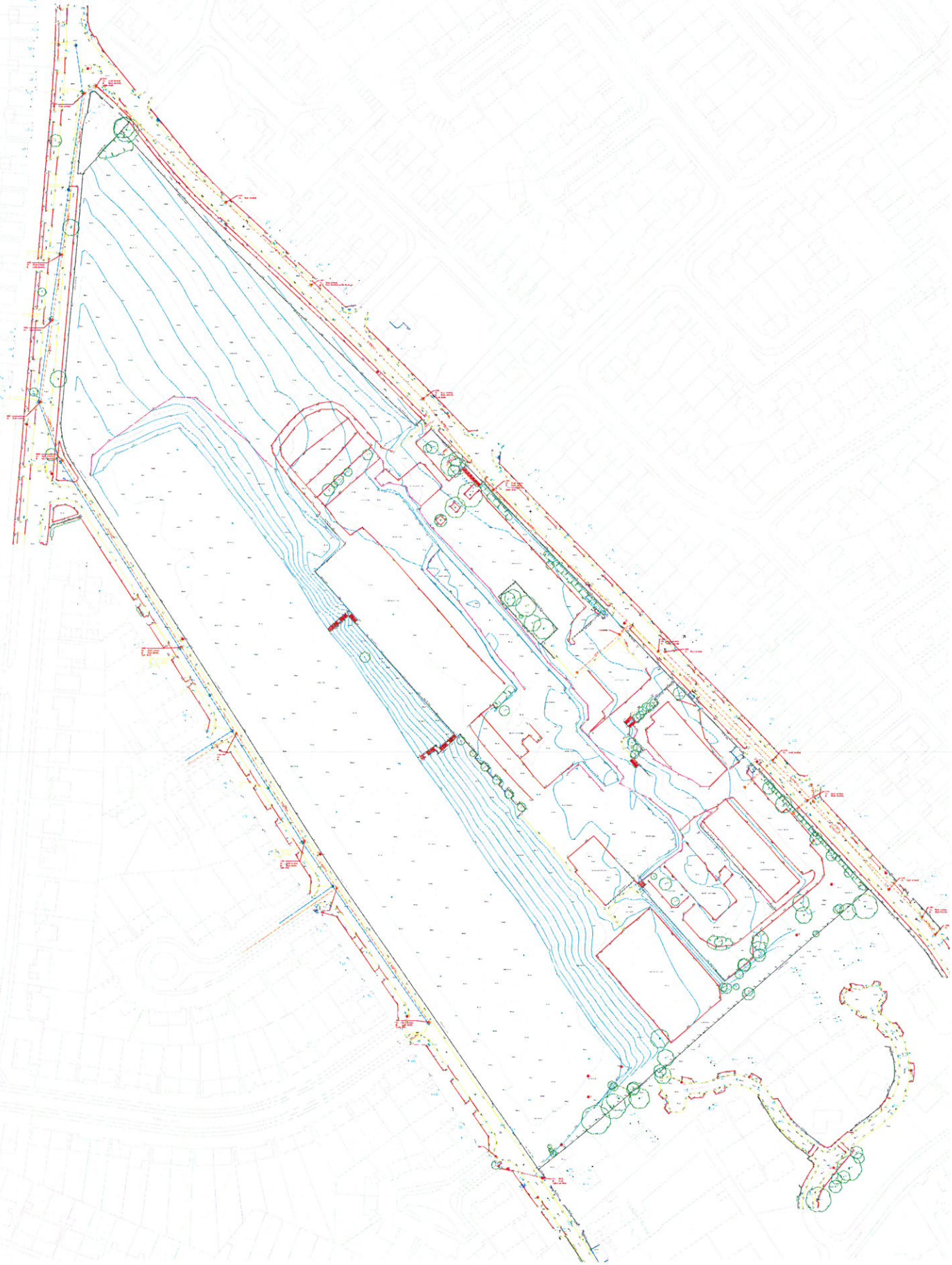

APPENDIX C: PROPOSED PLANNING LAYOUT

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Former Gateacre School site

	Number	Sqft		Total	Parking ratio %
Longford	8	893	3 bed	7144	200
Stamford	22	900	2 bed	19800	200
Ashop	20	1075	3 bed	21500	200
Dunham	23	1184	4 bed	27232	200
Pocklington	28	1238	4 bed	34664	200
Baybridge	6	1249	4 bed	7494	200
Cam	11	1259	4 bed	13849	200
The Glaston	7	1380	4 bed	9660	200
The Melton	11	1442	4 bed	15862	200
The Cannock	6	1543	4 bed	9258	200
The Rufford	10	1623	4 bed	16230	200
The Hatherton	11	1695	4 bed	18644	200
The Rushott	8	1753	4 bed	14024	200
Paddington	11	1827	4/5 bed	20097	200
Aylesbury	8	2166	5 bed	17328	200
Regent	12	2194	5 bed	26328	200
Site total	202			279115	

	Acres	Hectares
Area	19.5	7.89
Coverage	14314	35369
Density	10.36	25.60

LEGEND

- FOOTPATHS AND PATIOS TO BE MARSHALLS 450x450mm STANDARD B.S. CONCRETE FLAGS BUTT JOINTED, ON 30mm THICK SAND BED ON 100mm THICK LAYER OF WELL CONSOLIDATED HARDCORE. PATHS GENERALLY TO BE 900mm WIDE. COLOUR GREY.
- HATCH DENOTES LANDSCAPING, PLEASE REFER TO SPECIALIST CONTRACTORS DRAWING
- PARKING BAYS / DRIVEWAYS IN TRAFFICABLE BLACK BITUMEN MACADAM WEARING SURFACE TO LOCAL AUTHORITY STANDARDS. REFER TO CIVIL ENGINEERS DRAWINGS.
- 1800mm HIGH TIMBER FENCE. SEE RSD 9102A (TYPE A)
- 1800mm HIGH CLOSE BOARDED GATE. SLAM TO LOCK WITH ACCESS KEY. GATES MARKED WITH ★ TO BE SLAM TO LOCK WITH COMMUNAL ACCESS KEY.
- FRONT ENTRANCE DOOR. ALL DOORS TO HAVE FLUSH THRESHOLD. UNLESS NOTED OTHERWISE PROVIDE 1200 x 1200mm LEVEL PLATFORM AT ENTRANCE TO DWELLING.
- PATIO / FRENCH DOORS. ALL DOORS TO HAVE FLUSH THRESHOLD.
- TREES TO BE REMOVED (REFER TO TREE SURVEY).
- 1800mm HIGH BRICK WALL. SEE RSD 9001 TYPE 1.
- HATCH DENOTES EXTENT OF GABION RETAINING STRUCTURE
- HATCH DENOTES CHANGE OF ROAD SURFACE
- LINE DENOTES RETAINING STRUCTURE

NOTES

- PATHS GENERALLY TO BE 900mm WIDE
- PATIOS GENERALLY TO BE 2700 x 1800mm UNLESS INDICATED OTHERWISE
- PAVING SLABS TO ABUT HOUSE WHERE FOOTPATH OR PATIOS ADJACENT TO DWELLING
- MOWING STRIP TO BE PROVIDED WHERE TURFED AREAS ABUT HOUSE TO CONSIST OF 150mm WIDE WHITE STONE CHIPPINGS
- GROUND LEVEL ADJACENT TO HOUSE TO BE 150mm BELOW S.S.L. UNLESS OTHERWISE NOTED
- FOR SURFACE FINISHES TO ADOPTABLE ROADS, ADOPTABLE FOOTPATHS AND SERVICE VERGES PLEASE REFER TO CIVIL ENGINEERS DETAILS
- ALL DWELLING ENTRANCES TO HAVE LEVEL THRESHOLDS

N

0 2.5 5 10 15 25 m

SCALE BAR 1:500

COUNTRYSIDE
Places People Love

site: Former Gateacre Community Comprehensive School, Grange Lane, Gateacre

title: Proposed Planning Layout

scale: 1:500
drawn by: AC
date: April 2014
checked:

drawing no: SK384-PL-01

sheet no: Sheet 1 of #

revision:

APPENDIX D: EA INFORMATION & CORRESPONDENCE

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Chris Pickles

From: Chris Pickles
Sent: 30 October 2014 4:05 PM
To: enquiries@environment-agency.gov.uk
Subject: Gateacre, Liverpool
Attachments: LOCATION PLAN.pdf

To whom it may concern,

Gateacre, Liverpool L25 4SA

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment for the above site (location plan attached), including details of historical flooding; this would be greatly appreciated.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind regards
Chris

Christopher Pickles
Flood Risk & Engineering Technician

Betts Associates Ltd
Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
T - 01244 288178
F - 01244 288516
chris.pickles@betts-associates.co.uk
www.betts-associates.co.uk

CIVIL | STRUCTURAL | GEO-ENVIRONMENTAL | TECHNICAL DUE DILIGENCE
FLOOD RISK MANAGEMENT | STRUCTURAL SURVEYS | PARTY WALL DUTIES | ECOLOGY

Chris Pickles

From:	GMMC Info Requests <Inforequests.gmmc@environment-agency.gov.uk>
Sent:	10 November 2014 10:31 AM
To:	Chris Pickles
Subject:	GMMC3466AB Response attached from the Environment Agency
Attachments:	Standard_Notice[1].pdf

Environment Agency

Our Ref: GMMC3466AB
Date: 10/11/14

Dear Chris,

Enquiry regarding Gateacre, Liverpool, L25 4SA

Thank you for your enquiry which was received on 30/10/14.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

We have no record of flooding affecting this site. However, this does not mean flooding has not occurred in the past or that it will not flood in future. We recommend that you also contact United Utilities and Liverpool Council who may hold additional information (the former especially in relation to sewer flooding, the latter in relation to surface water risk & groundwater flooding).

The location lies in Flood Zone 1 and the nearest watercourse is over 1km away.

I have attached our Standard Notice or licence which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

Anne

Anne Ball - Customer and Engagement Officer
Greater Manchester, Merseyside and Cheshire
Direct line: 01925 542937
Email: **Inforequests.GMMC@environment-agency.gov.uk**

Our email address is changing.
On 1 September we're introducing area based email addresses to ensure your enquiry is managed by a member of your local customer team.

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 L25 4SA at scale 1:10,000 Data search

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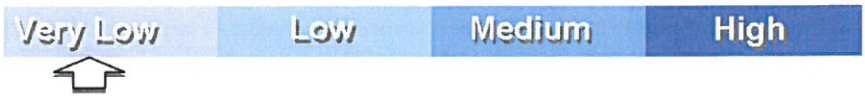
Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 29 October 2014

Environment Agency

Interactive Maps

Risk of Flooding from Rivers and Sea for X:342242, Y:388155

The location you have selected is in an area that has a very low chance of flooding from rivers or the sea.



What does 'very low' mean?

Very low means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail.

Floods Destroy. Be prepared

It is important to remember that while the risk is low, we can never eliminate all flooding. Surrounding roads and services may still be affected and could impact you.

- Check if you can receive free flood warnings
- Complete a flood plan
- Find out how to prepare your property for flooding

Planning a development

This information is not suitable for use in land-use planning. If you are planning a development, you need to use the Risk of Flooding for Land-Use Planning (Rivers and Sea) for England or Development Advisory Map for Wales. This is because for planning purposes you need to use information based on flooding without defences.

Further information

You can also check the level and flow estimates for rivers and sea, and the latest river and sea levels.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

This area may be at risk from other types of flooding.

- Check your risk of flooding from surface water.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map

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Environment Agency

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: 342,379; Y: 388,188 at scale 1:10,000 Data search

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Last updated: 29 October 2014

Environment Agency

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.

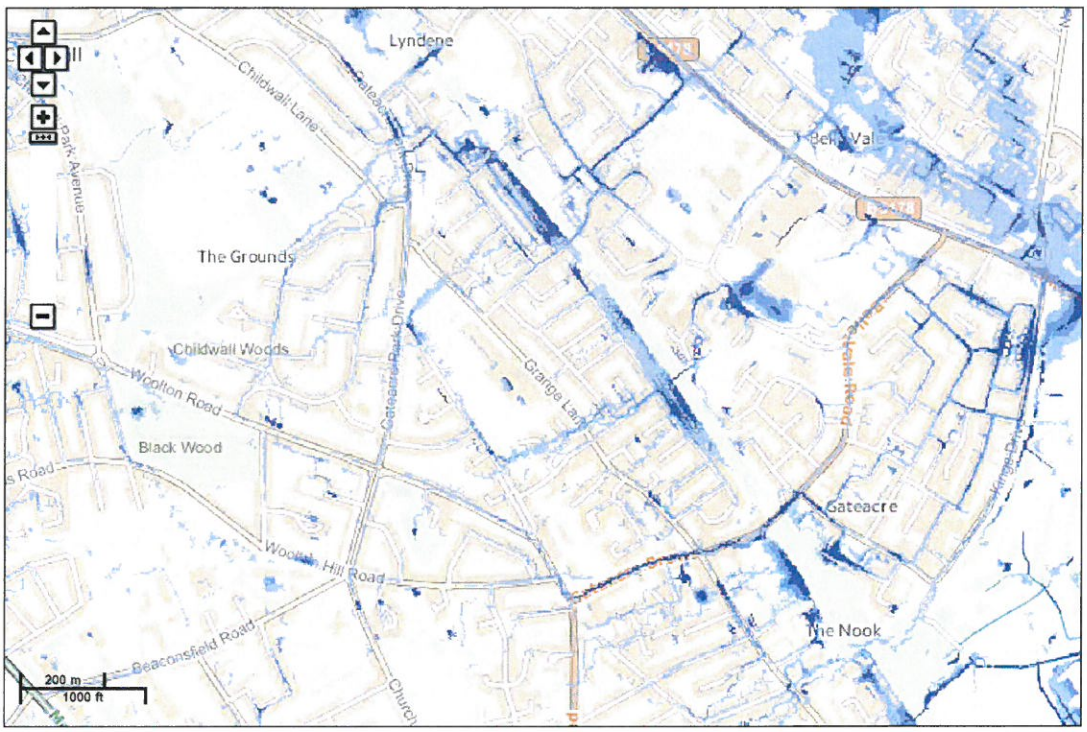
Click on the map for a more detailed explanation.

Map legend

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

Map of X: 342,379; Y: 388,188 at scale 1:10,000

Data search



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Author: The Environment Agency | enquiries@environment-agency.gov.uk

Last updated: 29 October 2014

Environment Agency

Interactive Maps

Risk of Flooding from Surface Water for X:342291, Y:388126

The location you have selected is in an area that has a very low chance of flooding from surface water.

What does 'very low' mean?

Very low means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

This is based on the best information we have available, such as ground levels and drainage.

Floods Destroy. Be prepared

Don't wait until it's too late. Prepare for flooding by taking some simple steps to reduce the impact on your home or business.

- Complete a flood plan
- Find out how to prepare your property for flooding
- Check the three-day flood risk forecast

Further Information

The map has been produced by the Environment Agency, using information from Lead Local Flood Authorities where it is available. Lead Local Flood Authorities are responsible for managing the risk from surface water flooding.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

If you would like more information on how surface water is being managed in this area, you can speak to Liverpool City Council.

You can use the information in this area to see which areas are more likely to flood first, deepest, or most often.

The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).

This area may be at risk from other types of flooding.

- Check your risk of flooding from rivers and sea.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map.

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)

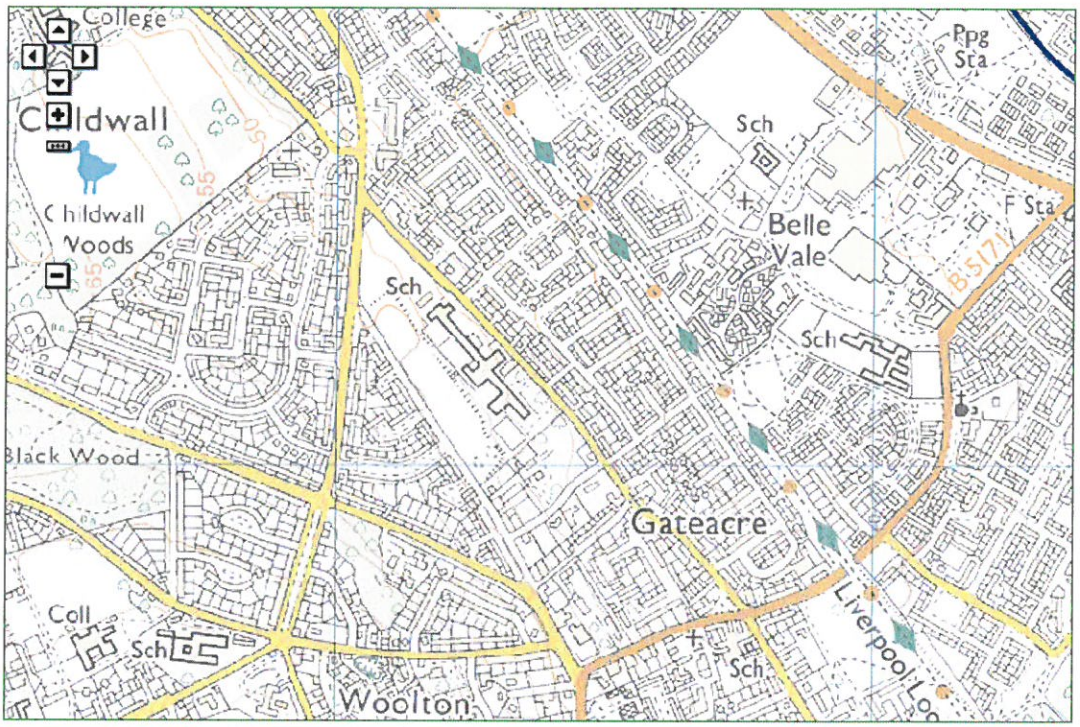
Map legend

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

Map of X: 342,379; Y: 388,188 at scale 1:10,000

Other maps | Data search | Text only version



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: 14th August 2014

Environment Agency

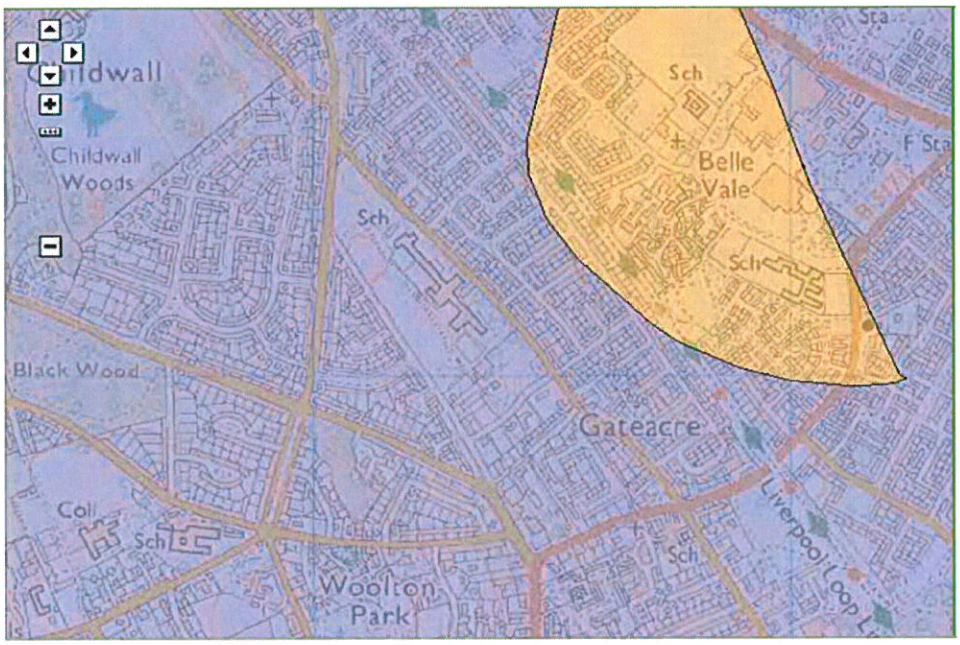
Enter a postcode or place name: Go

Other topics for this area... Groundwater

Groundwater

Map legend

Map of X: 342,350.51; Y: 388,111.19 at scale 1:10,000 Other maps Data search Text only version



- 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

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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