South Shields Outline Masterplan Application

Flood Risk Assessment

For

Muse Developments

and

South Tyneside Council

Report ref	Issue	Prepared by	Date	Reviewed by	Date
15504	1	M.Pearse	July 2015	A.Wallace	July 2015

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CONTENTS

Appendices

Executive Summary

Existing Watercourse/ Rivers /Sewers	The River Tyne is located approximately 280 metres west of Area 1. The River Tyne is tidal at this location
Historic Flooding	Flooding occurred in South Shields as recent as June 2012. It is unknown whether the sites were affected during this extreme event. Roads to the north and east of the site were affected by these floods.
Environment Agency	The Environment Agency web site shows the site to be located in Flood Zone 1.
Flood Flow Paths	The primary risk of flooding to the sites is from surface water flooding. Areas 1 and the northern section of Area 3 are shown on the EA surface water flood risk maps to be affected by flood depths of 300-900mm and with velocities of 0.25m/s. These flood areas will be considered during the detailed design of the drainage to reduce the risk in these areas.
Flood flow paths from adjacent land.	The sites are generally surrounded by public highways and as such the risk of flooding to the sites from the public highways is considered to be low. Site levels will need to be configured to try and reduce any potential future risk.
Flood flow paths onto adjacent land.	The sites are generally surrounded by public highways and as such the risk of flooding into adjacent sites is considered to be low. Site levels will need to be configured to try and reduce any potential future risk.
Flood Risk from ground water	It is considered that the risk of flooding to the sites from ground water is low due to the anticipated underlying strata.
Flood Risk Due to infrastructure failure.	Existing public sewers are shown to cross all three development areas. These sewers will be diverted/abandoned during the redevelopment of the sites. Any new sewers will be designed to ensure no flooding during a 1 in 30 year storm event with the 1 in 100 year plus climate change stored at surface. As such any risk of flooding due to infrastructure failure will be reduce due to the redevelopment of the scheme.
Finished Floor Levels	Proposed finished floor levels will be designed to ensure no flooding occurs to the proposed units.
Surface water run off	Infiltration to Ground: Not suitable due to the anticipated nature of the underlying strata. Discharge to Watercourse: Not suitable due to the location of the River. (280m west of Area 1) Discharge to Sewer: Surface water will discharge to the public combined sewers crossing the sites at restricted discharge rates to be agreed with NWL. Surface water attenuation will be provided within the proposed development areas.

1 INTRODUCTION

1.1 3e Consulting Engineers Ltd (3e) were commissioned by Muse Developments and South Tyneside Council to carry out a Flood Risk Assessment for the proposed regeneration of three distinct areas within the town centre of South Shields as indicated on the site location plan in Appendix A. The development areas are explained in more detail in Section 2.

1.2 The objectives of this assessment are to identify any potential risk of flooding to the proposed development and adjacent properties as a result of the proposed development in accordance with the requirements of the National Planning Policy Framework Guidance. It will also assess the proposed surface water and foul water drainage proposals in order that the proposed development does not exacerbate flooding elsewhere.

1.3 This report is based on information received from Northumbrian Water together with the review of the online South Tyneside Strategic Flood Risk Assessment, Surface Water Management Plan and the Environment Agency flood maps. A Desktop Study Report has been undertaken by 3e Consulting which has been reviewed to determine potential ground conditions.

1.4 A site visit has been undertaken to determine the potential risks associated with the development.

1.5 This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the scope of works.

1.6 This report has been prepared for the sole use of Muse Developments and South Tyneside Council. No other third party may rely upon or reproduce the contents of this report without the written approval of 3e. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and 3E do not owe them any Duty of Care or Skill.

2 THE SITE

Location and Description

2.1 The sites are located within South Shields town centre, the extents of which are highlighted in Appendix B. For the purposes of this assessment the sites have been split into 3 areas. Area 3 is split into two with a northern area and a southern area. The northern area is to be a Detailed Planning Application with the southern area as an Outline Planning Application along with Areas 1 and 2.

- Area 1 – Barrington Street, St Hilda's Square and King Street
- Area 2 – Oyston Street Car Park
- Area 3 – Fowler Street West

Application site areas shown magenta and red

Area 1 – Barrington Street/ St Hilda's Square/King Street

2.2 Area 1 is located within the northern extent of South Shields town centre, and is centred on a National Grid Reference (NGR) of 436170, 567100. This area includes a number of buildings, roadways, parking and landscaped areas, situated adjacent to and around Barrington Street, St. Hilda's Square, Chapter Row, Cornwallis Street and East Street, before connecting to the pedestrianised shopping parade of King Street to the north.

2.3 Buildings occupying the site were noted to comprise predominantly mixed commercial properties, including a Job Centre, public housing and numerous shops along King Street to the north. Various roadways also bisect the site, with car parking and a bus stop present across the central site area, including the location of the former General Havestock public house. The area to the north-east of the Job Centre was noted as being undeveloped. An overhead metro line was noted at the eastern end of King Street, whilst an Electricity Sub-Station is situated to the east of St. Hilda's Square.

Area 2 – Oyston Street Car Park

2.4 Area 2 is located within the centre of South Shields town centre, and is centred on a NGR 436260, 567020. This area encompasses an existing car park, with associated hard-standing (tarmac and paving) and surrounding areas of informal soft landscaping.

2.5 The site was noted to be generally level with a slight fall in gradient noted to the north-east. A drop in gradient was also noted along the northern boundary between the existing car park and adjacent Coronation Street.

Area 3 – Fowler Street West

2.6 Area 3 is located within the eastern extent of South Shields town centre, and is centred on a NGR 436460, 566900. This area comprises a number of car parking areas, various commercial properties and a petrol filling station, situated adjacent to and around Charlotte Street, Franklin Street, Thomas Street, Mount Terrace and St. Hilda Street, Albemarie Street, Burrow Street, William Street, including a railway underpass linking the site to the adjacent Garden Lane.

2.7 The north-eastern and eastern extents of the site comprised hard-standing (i.e. asphalt) associated with existing public car parking areas, with a large area of undeveloped land located on the corner of Charlotte Street and St. Hilda Street. The building/s on the

corner of Thomas Street and William Street were no longer present with this area now utilised for the storage of building supplies.

2.8 Numerous commercial properties were located along the length of Franklin Street, including a club, car body repair centre, vehicle maintenance garage and an MOT centre. A Petrol Filling Station is also located to the south of St. Hilda Street, whilst a Timber Merchant occupies the large commercial building situated to Garden Lane.

2.9 It is proposed to redevelop the 3 areas as follows:

- Area 1 – Provision of new retail units (including cinema) and cafes (Outline Application)
- Area 2 – New car park in place of the existing car park.(Outline Application)
- Area 3 – North – New bus interchange. (Detailed Application)
  South – New food store and associated car park. (Outline Application)

2.10 Copies of the existing site layouts are attached in Appendix B

2.11 Copies of the proposed development layouts are attached in Appendix C

3 EXISTING WATERCOURSES AND DRAINAGE

3.1 The nearest named River to the sites is The River Tyne which is located approximately 280m west of Area 1 and 470m west of Area 3. The River Tyne is a tidal at this location and flows into the north sea approximately 1.6 km downstream of the site to the north.

3.2 Northumbrian Water have been consulted and a copy of their sewer records have been obtained. Existing public sewers are shown crossing the various development areas.

Area 1 – Barrington Street/ St Hilda's Square/King Street

3.3 A 525mm diameter interceptor sewer is shown located in Barrington Road and Cornwall Street flows in a westerly direction which then discharges into a pumping station in Coronation Street, to the south west of the site. The interceptor sewer is approximately 6 to 7 metres in depth.

3.4 There are numerous 225mm diameter public combined sewers crossing the site at varying depths which all flow in a southerly direction towards Coronation Street. A 975mm

diameter public combined sewer is shown located in Coronation Street to the south of the site.

Area 2 – Oyston Street Car Park

3.5 A 300mm diameter public combined sewer is shown located in Garden Lane to the east. This sewer is approximately 2-3.75m in depth and flows in a northerly direction where it connects into the 975mm diameter public combined sewer located in Coronation street to the north.

Area 3 – Fowler Street West

3.6 Numerous public combined sewers are shown to be located within the site. These are shown to flow in a northerly direction through the site where they discharge into a 825mm diameter public combined sewer in Keppel Street to the north west of the site.

3.7 A 450mm diameter public combined sewer is shown located in Fowler Street to the east. This drains in a northerly direction where it discharge into the public combined sewer in Keppel Street to the North.

3.8 Copies of the Northumbrian Water Sewer records are attached in Appendix D

4 FLOOD FLOW PATHS AND FLOOD ZONES

4.1 The development sites have been assessed for flood risk based on Environment Agency Flood Maps and the South Tyneside Council Strategic Flood Risk Assessment, British Geological Surveys online information and a site walk over. All sources of flooding have been reviewed including fluvial, pluvial, tidal, ground water and land run off.

4.2 An Extract of the Online Environmental Agency Flood Map is shown in Appendix E**.** This shows the sites to be located in Flood 1 'Low probability' of flooding from Rivers.

4.3 The proposed developments are classified as 'Less Vulnerable' Developments in accordance with Table 2 of the NPPF Technical Guidance document and as such these developments will be permitted within Flood Zone 1 in accordance with Table 3 of the above guidance.

4.4 Online flood maps have also been assessed in relation to Flooding from Reservoirs. These show that the sites are not at risk of flooding from Reservoirs.

4.5 A further source of flooding to be assessed is from surface water which cannot enter the ground or sewer system but flows over the surface. The EA have online flood maps to enable the risk from surface water flooding to be assessed.

4.6 These show that Area 2 has a medium risk of surface water flooding. The flood depths could be in the order of 300-900mm with velocities up to 0.25m/s

4.7 A medium surface water flood risk is also shown to the north of Area 3 within Fowler Street. The flood water is shown to be 300-900mm in depth with velocities less than 0.25m/s. Surface water flooding is also shown to the north of Albemarie Street within Area 3. Again depths could be 300-900mm with flow velocities less than 0.25 m/s.

4.8 These flood depths and velocities could provide a danger to the general public. It is considered however that should this flooding occur and due to the nature of the sites that the general public could find a location away from the flooded areas as this type of flooding would not be considered as a flash flood and would occur over a period of time. This would enable these areas to be avoided.

4.9 The proposed developments will need to take account of these current areas of surface flooding to try and reduce this risk. It is considered that the majority of this flooding could be as a result of surface water not being able to enter the public sewers. The proposed developments will affect the public sewer which will result in works being undertaken to divert/abandon the public sewers. Any new sewers provided will be designed and constructed in line with current standards. This flood risk could therefore be reduce/removed during the detailed design of the drainage system.

4.10 The new surface water drainage system for these development areas will reduce the surface water discharging to the public sewer network which will also assist in reducing the risk of this surface water flooding.

4.11 A further source of flooding to assess is as a result of excessive run off from the development or over land run off from adjacent land. It is important that the proposed ground levels are configured such that any flooding on site is directed away from the

proposed units and towards the surface water drainage facilities. It should also ensure that any overland flows resulting from run off from the new development are retained on site within the development area up to the 100 year plus climate change event.

4.12 Another potential source of flooding to assess is the risk of rising groundwater which could impact the proposed development. A Ground investigation has not yet being undertaken and will be reviewed during the development. There are no records of any flooding from groundwater in the vicinity of the site.

4.13 From a Desk Study Report undertaken by 3e Consulting engineers it is anticipated that ground conditions will vary across the 3 sites. Area 1 is anticipated to be made ground overlying natural glacial Till (Boulder Clay) drift deposits. Area 2 is anticipated to be variable thicknesses of made ground overlying variable strength Alluvium deposits. Area 3 is anticipated to made ground overlying Glacial sands and gravel deposits across the southern area with laminated clays in the northern area. It is considered that due to the anticipated ground conditions that the risk of flooding from groundwater is considered to be low.

4.14 Copies of the Environment Agency Flood maps are attached in Appendix E

5 SURFACE WATER AND FOUL DRAINAGE

Surface Water Drainage

5.1 The proposed surface water drainage scheme should seek to meet the requirements of the National Planning Policy Framework (NPPF). Additionally the selection hierarchy for disposal of storm water within the Building Regulations Part H should also be met. Consideration should be given firstly to infiltration techniques (to ground), to watercourse and then to sewer. Sustainable Urban Drainage Systems (SUDS) should also be used wherever possible to mimic as far as practicable the natural run-off regime, improve water quality and attenuate peak flows.

5.2 No detailed site investigation has yet been undertaken, however based on the anticipated ground conditions obtained from the 3e Consulting Engineers Desktop Study Report it is unlikely that infiltration techniques will be suitable for the disposal of surface water.

5.3 The nearest watercourse to the sites to be considered for disposal of surface water is the River Tyne which is located approx 280 metres west of Area 1. Due to the built up nature of the route to the River it is considered that the disposal of surface water to the River will not be feasible.

5.4 It is therefore considered to discharge the surface water to the public combined sewer in the vicinity of the sites.

Area 1 – Barrington Street/ St Hilda's Square/King Street

5.5 It is proposed to discharge surface water flows to the existing public combined sewers crossing/adjacent to the site. In line with NWL's current policy the proposed discharge of surface water from the development will need to be reduced by approximately 50% below pre development flow rates to the public combined sewer. This will result in surface water attenuation being required within the site. This will be in the form of oversized pipes or cellular storage within the development area.

5.6 Abandonment/diversion of the existing public sewers will be required which will be subject to a detailed CCTV survey to ensure all incoming pipes are accommodated and redirected as required.

5.7 Development in the vicinity of the existing interceptor sewer crossing the site will need to be discussed further with NWL as the site progresses.

5.8 All proposed public surface water systems should be designed to accommodate a 1 in 30 year storm event without flooding and the 1 in 100 year storm plus climate change event should be retained within the site in an area which will not affect the proposed units.

Area 2 – Oyston Street Car Park

5.9 It is proposed to discharge surface water flows to the existing public combined sewers adjacent to the site utilising existing connections where possible. In line with NWL's current policy the proposed discharge of surface water from the development will need to be reduced by approximately 50% below pre development flow rates to the public combined sewer. This will result in surface water attenuation being required within the site. This will be in the form of oversized pipes or cellular storage within the development area.

5.10 A detailed CCTV survey will need to be undertaken to confirm the existing drainage currently draining the site.

5.11 All proposed public surface water systems should be designed to accommodate a 1 in 30 year storm event without flooding and the 1 in 100 year storm plus climate change event should be retained within the site in an area which will not affect the proposed units.

Area 3 – Fowler Street West

5.12 It is proposed to discharge surface water flows to the existing public combined sewers crossing/adjacent to the site. In line with NWL's current policy the proposed discharge of surface water from the development will need to be reduced by approximately 50% below pre development flow rates to the public combined sewer. This will result in surface water attenuation being required within the site. This will be in the form of oversized pipes or cellular storage within the development area.

5.13 Abandonment/diversion of existing public sewers will be required which will be subject to a detailed CCTV survey to ensure all incoming pipes are accommodated and redirected as required.

5.14 All proposed public surface water systems should be designed to accommodate a 1 in 30 year storm event without flooding and the 1 in 100 year storm plus climate change event should be retained within the site in an area which will not affect the proposed units.

5.15 A Section 185 Agreement will be required with NWL for any diversions of the public sewers crossing the site.

5.16 A Section 116 Agreement will be required for any Abandonments of the Public sewer network required.

5.17 All public surface water drainage should be designed in accordance with the current Sewers for Adoption and will be offered for adoption under a Section 104 Agreement.

5.18 All private surface water drainage should be designed in accordance with the current Building Regulation.

Foul Water Drainage

5.19 Foul drainage from the proposed developments will be minimal due to the nature of the end uses of the site.

5.20 It is considered that foul water flows will be directed to the public combined sewers located adjacent/within the three site areas.

5.21 Abandonment/diversion of existing public sewers will be required which will be subject to a detailed CCTV survey to ensure all incoming pipes are accommodated and redirected as required.

5.22 A Section 185 Agreement will be required with NWL for any diversions of the public sewers crossing the site

5.23 A Section 116 Agreement will be required for any Abandonments of the Public sewer network required.

5.24 All public foul water drainage should be designed in accordance with the current Sewers for Adoption and will be offered for adoption under a Section 104 Agreement with NWL

5.25 All private foul water drainage should be designed in accordance with the current Building Regulation.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Based on the EA Flood zone maps the sites are classified as Flood Zone 1 'low probability' The proposed development is classified as a 'Less Vulnerable' Development in accordance with Table 2 of the NPPF Technical Guidance document and as such this development will be permitted in accordance with Table 3 of the above guidance.

6.2 The EA surface water flood maps show that there is a medium risk of surface water flooding adjacent/within Area 2 and within/adjacent to the northern extent of Area 3. Flood flows in the areas could be 300-900mm in depth with velocities in the order of 0.25m/s which could provide a danger to the general public due to the depth and anticipated velocities. This risk of flooding could be reduce/removed during the design of the new drainage systems.

6.3 All potential risks of flooding have been considered and all three sites are deemed as low risk.

6.4 All three sites are unlikely to be suitable for the use of infiltration techniques for the disposal of surface water to ground and it is considered that surface water flows will be directed to the public sewer network within/adjacent to the sites with flows to be agreed with NWL.

6.5 Foul water flows will be directed to the public combined sewers with/adjacent to the sites.

6.6 Public combined sewers will require diverting/abandoning during the redevelopment of the three sites. This will need to undertaken under a Section 185/116 Agreement with NWL.

6.7 All new surface water drainage systems will be designed to ensure no flooding occurs during a 1 in 30 year flood event. Any flooding shown to occur in excess of this event upto a 1 in 100 year plus climate change event will be stored within the site with no flooding to properties.

Appendix A

Site Location Plan

Date	Revision	Checked	Rev.

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Project	South Shields 365 Regeneration Muse Developments		
Title	Site Location Plan		
Scale 1:25,000 at A4	Drawn NW	Checked AC	Date Mar '15
Job No. 15504	Drawing No. Figure 1		Rev 0

Appendix B

Existing Areas Plans

B.	10.06.15	Areas amended		HP	CB
A.	07.04.15	Red Line updated		HP	CB
Rev	Date	Description		Rev By	Chk'd By
Project Title	South Shields 365 Regeneration MASTERPLAN South Shields Town Centre				
Client	Muse Developments				
Status	PLANNING				
Scale	1:1250		Drawing Size	A1	
Drawn By	CAB	Checked By	HSP	Date	11.2014
Drawing Title	Ouline Masterplan Application Boundary				
Job-Dwg No	12569M_1005			Rev	B

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CAD file reference J:12569/outline application/drawings

J	30.06.15	Red Line note included as per Planner's comments	HP	CB
H	26.06.15	Red Line amended as per Planner's comments	HP	CB
G	10.06.15	Area included	CB	HP
F	18.05.15	Boundary lines amended	CB	HP
E	05.01.14	Proposed building line removed	CB	HP
D	11.12.14	Harton Quays removed. Detailed App Boundary adjusted	HP	CB
C	27.11.14	Drawing rescaled as per client request	HP	CB
B	14.11.14	Amendments to boundary areas	CB	HP
A	11.11.14	Amendments to boundary areas	HP	CB
Rev	Date	Description	Rev By	Chk'd By

Project Title	South Shields 365 Regeneration Application Boundary South Shields Town Centre					
Client	Muse Developments					
Status	DESIGN / PLANNING					
Scale	1:1250		Drawing Size	A1		
Drawn By	CAB	Checked By	HSP	Date	11.2014	
Drawing Title	Application Boundary					
Job+Dwg No	12569B_1000				Rev	J

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CAD file reference J:12569/12569B/drawings

Appendix C

Proposed Development layout

ACCOMMODATION SCHEDULE			
01	Digital Media Centre	50000sqft GIA	approx. over 3 floors
02	Market Place		
03	Transport Interchange (New Building)	18000sqft GIA	over 3 floors
04	Foodstore	40000sqft NIA 65000sqft GIA	300 parking spaces
05	Car Park	300 spaces	over 4 floors
06	Leisure Site Cinema 5 Screens, approx. 890 seats Restaurants	6150sqft GIA 23400sqft GIA 17250sqft GIA	at ground at 1st floor at ground
07	Retail	43950sqft GIA	over 2 floors
08	Retail	11650sqft GIA	over 2 floors
09	Retail	10450sqft GIA	over 2 floors
10a	Retail	3950sqft GIA	Single Storey
10b	Retail	5650sqft GIA	Single Storey
11	Café	2000sqft GIA	Single Storey
12	Café	1500sqft GIA	over 2 floors
13	Retail Office	3900sqft 7800sqft GIA	at ground over 2 floors
14	Café	1450sqft GIA	Single Storey
	Existing Buildings:		
A	16 Barrington Street	13024sqft GIA	
B	19 Barrington Street	4413sqft GIA	

NOTE:

ALL WORKS TO BE IN ACCORDANCE WITH THE SPECIFIED MANUFACTURERS INSTALLATION REQUIREMENTS AND CURRENT BRITISH STANDARDS

THE DRAWING IS DESIGNED ON TOPOGRAPHICAL SURVEY INFORMATION. THE SURROUNDING CONTEXTUAL BUILDINGS AND INFORMATION ARE BASED ON RECEIVED ORDNANCE SURVEY DRAWINGS AND ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ASSUMED SITE BOUNDARY IS SUBJECT TO CONFIRMATION.

NORTH

Rev	Date	Description	Rev By	Chk'd By
N.	09.06.15	Kerb alignment amended in accordance with JMP comments	HP	CB
M.	01.06.15	Highways update (JMP Masterplan v10) included	HP	CB
L.	18.05.15	Updated Barrington Street & Interchange areas and schedule	HP	CB
K.	12.05.15	Amended Highways according to Client comments	HP	CB
J.	12.05.15	Highways information revised from JMP & amended Interchange GA plan RevV	CB	HP
H.	22.04.15	Highways information revised	CB	HP
G.	21.04.15	Highways information included for review	CB	HP
F.	31.03.15	Highways overlay information from JMP	CB	HP
D.	05.03.15	Red line amended	CB	HP
C.	23.02.15	Amended Interchange GA Plan RevB inserted	HP	CB
B.	10.02.15	Amended GA plans inserted	HP	CB
A.	20.01.15	Amended GA plans inserted	HP	CB

Project Title	South Shields 365 Regeneration South Shields
Client	Muse Developments
Status	PLANNING
Scale	1:1000
Drawing Size	A1
Drawn By	HSP
Checked By	CAB
Date	01/15
Drawing Title	Illustrative Masterplan
Job-Dwg No	12569M_1002
Rev	N

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Crossgate Roundabout Improvements

CAD file reference J:12569/OUTLINE APPLICATION/DRAWINGS

Appendix D

Northumbrian Water

Sewer Records

Combined
Foul
Surface Water
Watercourse
Pr Private
Hd Highway Drain
Rising Main
Backdrop
Abandoned
Manhole
Pumping Stn
S104 Adoption Agreement

Your Reference: 0000
Our Reference: 1065965

Author : THRAG
Date : 06-03-2013
Title : Sewerage
Sheet: NZ3667SW
Centre Point : 436262,567138
Scale : 1:2000

NORTHUMBRIAN WATER

Appendix E

Environment Agency

online flood maps

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.

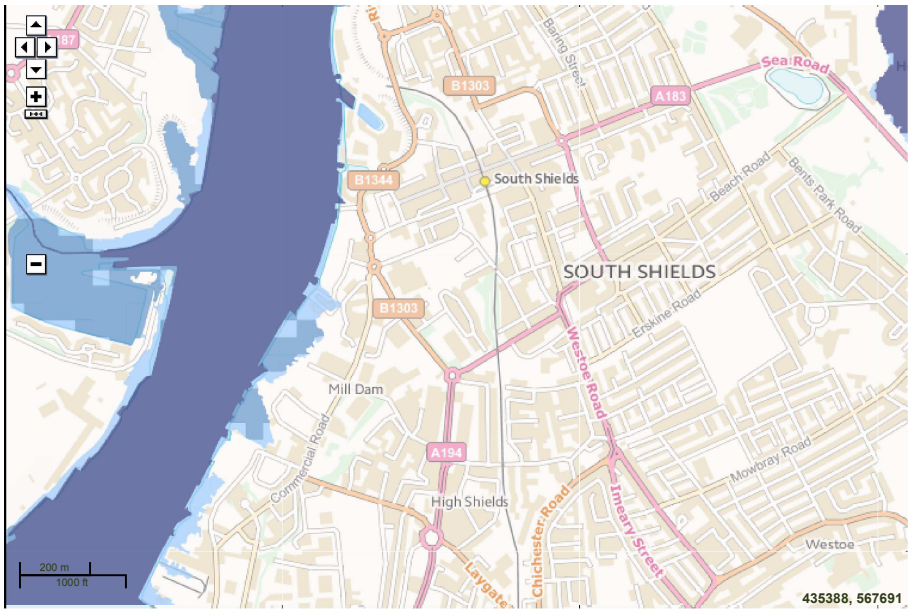
The shading on the map shows the risk of flooding from rivers and the sea in this particular area.

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: 436,263; Y: 566,844 at scale 1:10,000 **Data search**



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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 25 March 2015

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.

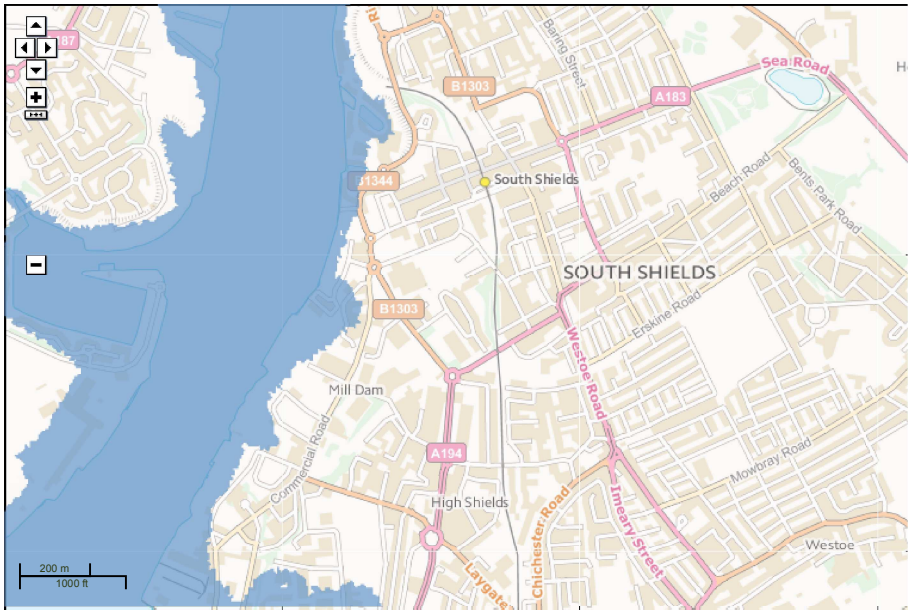
The shading on the map shows the area that could be flooded if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely 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: 436,263; Y: 566,844 at scale 1:10,000 **Data search**



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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 25 March 2015

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.

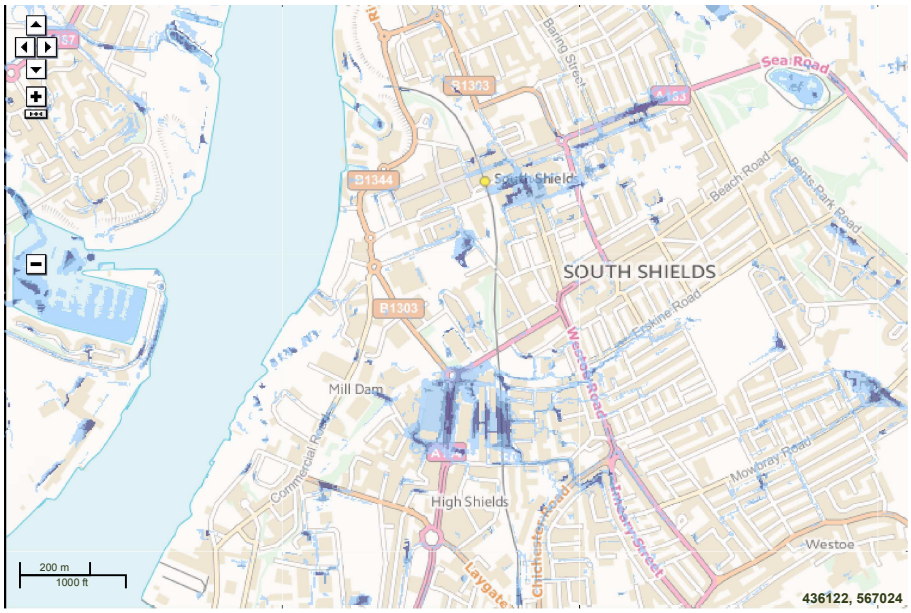
The shading on the map shows the risk of flooding from surface water in this particular area.

Click on the map for a more detailed explanation.

Map of X: 436,263; Y: 566,844 at scale 1:10,000 **Data search**

Map legend

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



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