



Richard Jackson
Engineering Consultants



SITE SPECIFIC FLOOD RISK ASSESSMENT

Marketfield Way, Redhill – Mixed Use Development

Client: Reigate & Banstead District Council & Co Plan Estates

April 2016

Project no: 45110 – Rev. B

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Document Status

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FINAL

Revision Status

Issue	Date	Description	Prepared	Checked	Approved
A	Oct. 13	EA Meeting Notes Added	MG		
B	Apr. 16	Revised for Planning Application	MG	LW	MG

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Appendix C	Environment Agency Mapping
Appendix D	Sewer Record
Appendix E	Calculations
Appendix F	Example – Self-Raising Flood Barriers
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1. Introduction

- 1.1. Richard Jackson Ltd have been appointed by Reigate & Banstead District Council and Co Plan Estates to undertake a Flood Risk Assessment to support the redevelopment of part of Redhill town centre.
- 1.2. This assessment follows the checklist published as part of the Planning Practice Guidance (PPG) published by the Department for Communities and Local Government.

2. Development Description & Location

- 2.1. The redevelopment site is located to the west of Marketfield Way, just south west of Redhill rail station. The site is currently occupied by commercial buildings to the west and a car park to the east. The site is a reversed capital "L" shape with Marketfield Road forming the southern boundary and more commercial units which front on to Station Road to the north. To the west lies High Street. A site location plan is provided in Appendix A.
- 2.2. It is proposed to remove the existing commercial units to provide new commercial retail units and a cinema on the ground floor with residential units on floors above. The PPG defines the commercial uses as being "less vulnerable" to flooding and residential units as "more vulnerable" to flooding in Table 2 – Flood Risk Vulnerability Classification of the PPG. Drawings are provided in Appendix B.
- 2.3. This regeneration is proposed by the Local Authority and forms part of its Local Plan.

3. Definition of the Flood Hazard

- 3.1. There are a number of sources of flooding which could impact upon this site, each of which is dealt with in turn below. Where the Environment Agency (EA) mapping is referred to below it can be seen in Appendix C.

Tidal & Fluvial Risk

- 3.2. The site is not at risk from tidal flooding. The EA mapping shows that the site is located in flood zone 2 for fluvial risk, from the Redhill Brook which flows to the west of the site in a culvert. The site falls gently from High Street in the west to a low point adjacent to Marketfield Way to the east which is around 1m or so higher than the site generally. The risk of flooding from the Redhill Brook is shown to be mainly upstream and downstream of this location where areas of flood zone 3 are shown. At this site flood zone 2 is shown. The rail line to the east of the site appears to act as a barrier to flooding although the station underpass does provide a limited capacity route for water to flow over ground from east to west and potentially reach this site. Marketfield Way also could provide a defence to this site by virtue of its height.

- 3.3. Initial discussions with the EA took place in October 2013, during which they provided limited flood data based upon the Redhill Town Area Action Plan which included a level of 75.80m AOD including climate change (see below). Further consultation took place in October 2015, at which time the EA advised that revised modelling of the Redhill Brook to assess the potential for an upstream flood storage scheme was underway. A subsequent meeting in December 2015 however confirmed that the EA would not be progressing with these proposals, but that revised model levels would be available in the very near future. We have since been advised that the issue of these model levels is further delayed from the originally anticipated date of issue in 2016, due to an error in the model. The best available data is therefore the EA flood map and level data provided in 2013. Correspondence for all of the above can be found in Appendix G.
- 3.4. Although the available flood levels include climate change, flood zones are defined without climate change allowances as required by the NPPF. We are therefore able to conclude that the site is in flood zone 2 for flood risk as shown on the EA flood mapping.

Reservoir Flooding

- 3.5. The EA flood map shows the site to be at risk from a failure of the Royal Alexandra and Albert School reservoir to the north of the site. The depth and velocity of a flood is significant at over 2m deep with a velocity of up to 2m/s. This is a worst case assessment with the reservoir being full and a catastrophic failure occurring. As the EA data confirms reservoirs in the UK are monitored by law and the risk of such a failure is very low.

Surface Water Flood Risk

- 3.6. The EA mapping and the strategic flood risk assessment record this area as being at risk from fluvial flooding. It is suggested in this report that this flooding is caused by a lack of capacity in the Redhill Brook culvert which receives the flows from this area. The built up nature of a town centre and its historical sewer system capacity resulting in surface water flooding are not uncommon problems in the UK. An internet search has shown that high intensity rainfall in this area has caused flooding in 1935, for example. Although this event preceded the construction of a number of sewers and Marketfield Way it acts as an illustration of the potential for flooding.
- 3.7. The EA flood mapping shows a range of event scales. In the high chance (1 in 30 event) the low areas of this site are shown to have up to 300mm of flooding. In the medium chance (up to 1 in 100 year) the depth of flooding increases to over 900mm, and in the low chance event (up to 1 in 1,000 year event) the extent of flooding is increased to include most of the town centre. The EA mapping of surface water risk is essentially a topographical exercise and shows areas where water may become trapped by topography. In this case the area of the site would be drained by sewers and the Redhill Brook. The performance of these systems was understood to be part of the EA study and also the subject of a Surface Water Management Plan (prepared by Surrey County Council in their role as Lead Local Flood Authority); unfortunately these studies are not yet available.

- 3.8. The nature of a critical rainfall event in this area is likely to be relatively short in duration (the 1935 event was reported to be 2 hours). A critical event in the Redhill Brook with its much larger catchment will be longer than this. It is reasonable to conclude that although the site is at risk of flooding the depths shown on the EA mapping may be an overestimate of the risk.

Groundwater

- 3.9. A review of the geological mapping and borehole records from the British Geological Survey website shows that the site has made ground with soft clay and granular deposits beneath. Groundwater is recorded as being 6.0m below ground levels. Groundwater flooding is a low risk at this site.

Infrastructure Flooding

- 3.10. Flooding from sewers or water mains is a risk at any site following a failure. In this case sewer flooding would likely be indistinguishable from surface water flooding and hence is not considered as a separate source.
- 3.11. The site is currently drained by a combination of private and adopted sewers. The sewer record is provided in Appendix D. There is no evidence of any onsite attenuation and hence the site has an effective unrestricted runoff whilst capacity in the receiving system exists. As an example, the site would produce a flow rate of 83 l/s if a rainfall event of 50mm/hr intensity were to occur as the site is 100% impermeable currently with an area of 0.6 Ha.

4. Probability

- 4.1. This site is considered to be located in flood zone 2 for fluvial risk and flood zone 3 for surface water risk.

5. Climate Change

- 5.1. Recently climate change advice has changed for rainfall events an increase of up to 40% for a 100 year life. The proposed drainage systems will include this allowance within its calculations. For fluvial risk in this area "less vulnerable" development should use the central allowance of an increase in flow of 35% to assess the flood risk. "More vulnerable" development should consider the higher central assessment of 50% increase.
- 5.2. The level supplied by the EA in 2013 included a 20% uplift for climate change in line with the previous advice for climate change. It is not possible to accurately predict the impact of the above increase to climate change allowances without the results of the ongoing modelling.

6. Detail Development Proposals

- 6.1. The development will provide residential accommodation at first floor level and above, at ground floor level retail space and a cinema. At roof level an extensive system of Green and Brown roofs will be provided to improve water runoff quality, reduce volume and provide green space. A basement car park is also proposed.
- 6.2. The finished floor levels of the ground floor units range between 76.075 and 75.250m AOD. These have been set to meet the legal requirements of Building Regulations. A comparison with 2013 flood level of 75.800m AOD shows that the lower parts of the development would be at risk from fluvial flooding towards the end of the 1 in 100 year life as climate change unfolds. It is clear that with the high floor to floor requirements of commercial space the residential units on the first floor are well above this flood level.
- 6.3. The basement car park will be accessed from Marketfield Road and with a level of 72.475m AOD would be at risk of inundation from flooding if left unprotected.
- 6.4. The development area will effectively remain 100% impermeable although the green/brown roof system will reduce the flow of water and increase the time of concentration for outflow event in larger scale events. The site will be provided with a new drainage system which will outflow at a reduced rate. The LLFA requests that when brownfield sites such as this are redeveloped that the outflow is reduced to the greenfield runoff rate. In this case the 1 in 1 year greenfield runoff rate would be 2.7 l/s (see calculations in Appendix E). It is proposed to collect water from the development and outfall it to the existing surface water sewer outfalls into Marketfield Way. These are shown on the sewer record. All of these appear to originate in the site itself with the sewers serving areas beyond the site passing either north or south of the site. A number of foul water sewers pass through the site and these will be diverted to accommodate the development.
- 6.5. Preliminary calculations show that to reduce the outflow from the development to the greenfield runoff rate would require 604m³ of storage in a design 1 in 100 year plus 40% climate change event. This would need to be stored within the site in an area that is accessible for maintenance. It is proposed to place the storage below the ground floor slab in a crate style tank or oversized pipes, as shown on the preliminary drainage layout included in Appendix B. This will outfall by gravity.
- 6.6. As this is a very complex and expensive site to redevelop, it is proposed to reduce the outflows from the 82 l/s that a 1 in 1 year rainfall event could produce by 50% to 41.5 l/s in total. It is not possible to reduce the outflows further and still outfall by gravity. Preliminary calculations show that a tank of 160m³ below the floor slab will be required to store water. Calculations to support this strategy are in Appendix E.

7. Flood Risk Management Measures

- 7.1. Although the EA has confirmed that modelling of the Redhill Brook is imminent for release to the public it is not yet available. It is clear that with climate change potentials increasing peak flows in the brook and rainfall that the risk to this site will increase over time. It is therefore proposed to provide self-raising flood barriers on all entrances to the buildings and the basement car park. The exact form of these barriers will need to be agreed at the detail design stage however an example is given in Appendix F. These barriers will (until the modelling is released) be proposed to protect the building up to 600mm above the 75.8m AOD flood level, giving a crest of 76.4m AOD.
- 7.2. The basement will also be provided with a monitoring system to restrict access if the barriers have been deployed to avoid the potential for pedestrian access from within the development when there remains a potential for the basement to be inundated.
- 7.3. All the businesses and residents in addition to the site management will be registered for flood warnings with the EA. These warnings will form the triggers for actions within the Flood Warning and Evacuation Plan which will in the case of a flood event of sufficient scale to reach the site result in the planned evacuation of the development as a whole.

8. Off Site Impacts

- 8.1. As the site is currently not considered to be at risk of fluvial flooding (protection from the rail line and Marketfield Way) no flood compensation is proposed. Surface water routes through the development from High Street to Marketfield Way have been maintained as the existing highway network. The risk of surface water flooding has been reduced on and offsite by reducing the runoff rate to the receiving system and storing water on site.

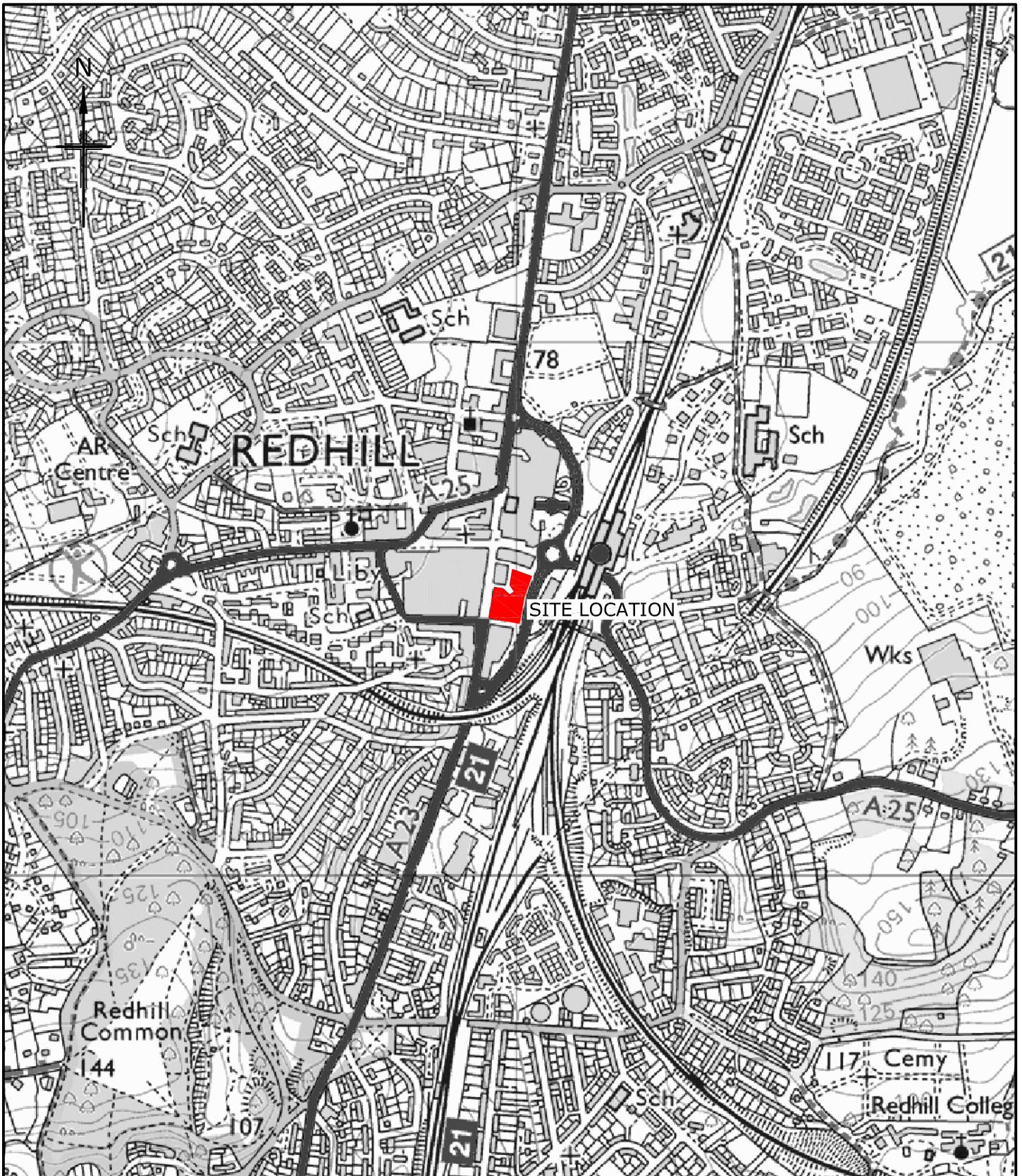
9. Residual Risks

- 9.1. Residual risks include but are not limited to the following:
- A rainfall event that exceeds the capacity of the sewer network and results in flows over the ground surface. The buildings will be protected by self-raising barriers.
 - A fluvial event in the Redhill Brook catchment that exceeds the defences of the rail line and Marketfield Way. The building and car park will be protected by self-raising barriers.
 - A reservoir failure. The self-raising barriers will protect the buildings up to a point in such an event. This risk will be managed by the EA and the reservoir owners. As the EA data confirms reservoirs in the UK are monitored by law and the risk of such a failure is very low.

- A fluvial/surface water event that exceeds the capacity of the self-raising flood barriers. Such an event would lead to internal flooding of the building ground floors and basement. If such an event is predicted the site would be evacuated by the management and authorities.

Appendices

Appendix A



REPRODUCED FROM ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT RICHARD JACKSON LTD - ACC No. 100002572.

REV	DATE	DESCRIPTION	DRAWN	CHKD
REVISIONS				


Project
MARKETFIELD WAY, REDHILL

Title
SITE LOCATION PLAN

Richard Jackson Engineering Consultants

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 York: 409, 3 Station Court, Great Shelford, Cambs CB22 5NE Tel: 01223 314794
 6 The Old Church, St. Matthews Road, Norwich, Norfolk NR1 1SP Tel: 01603 230240
 The Wheelhouse, Bonds Mill, Stonehouse, Gloucestershire GL10 3RF Tel: 01172 020070
 Email Address: mail@rj.co.uk Website: http://www.rj.co.uk

This drawing is to be read in conjunction with all other Engineer's drawings and all other project information. Any discrepancy between the Engineer's drawings and other project information is to be reported to the Engineer immediately.



Client
REIGATE & BANSTEAD DISTRICT COUNCIL,
CO PLAN ESTATES

Drawing No. **45110/P/001** Revision

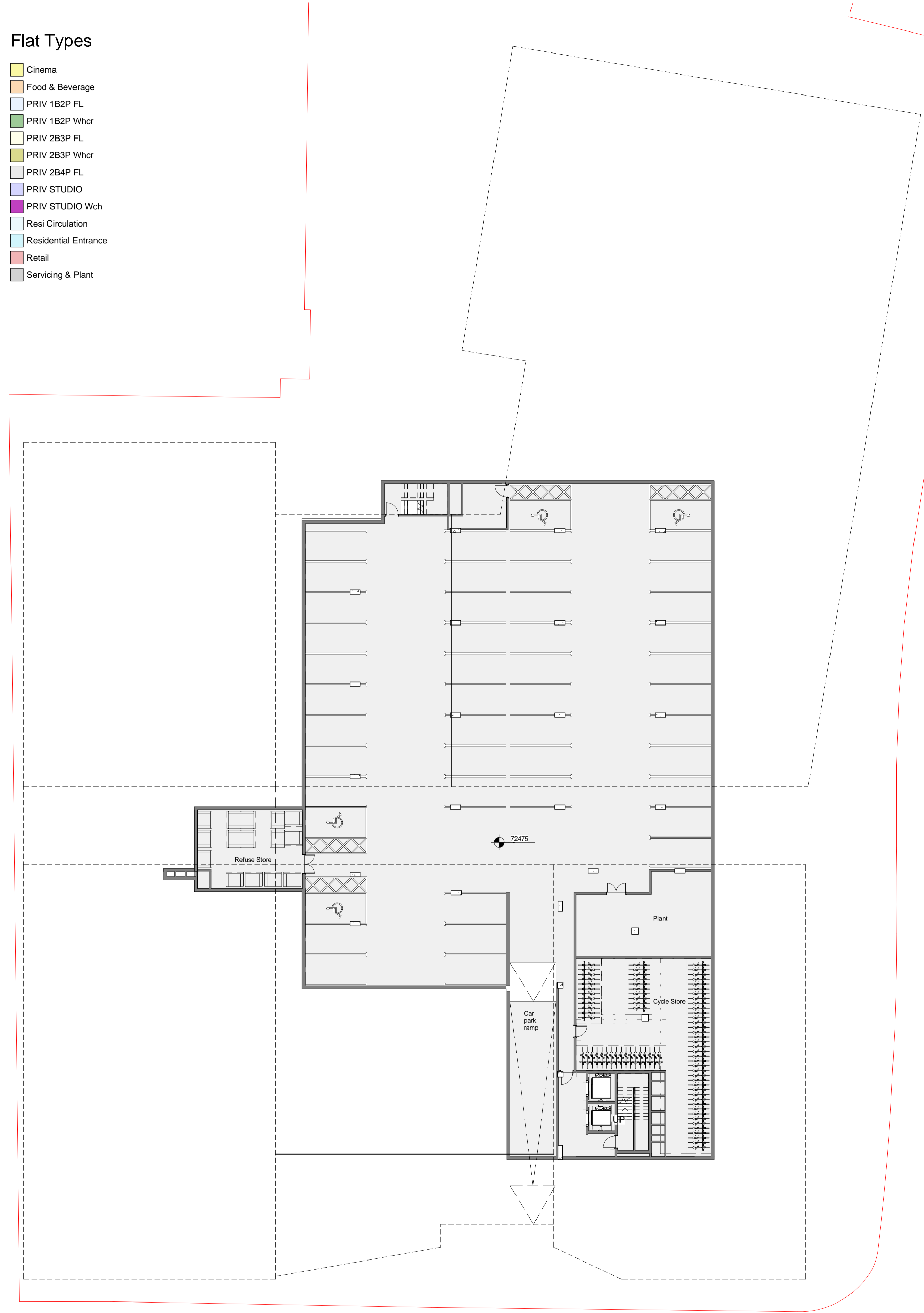
Drawing Status
 INFORMATION APPROVAL COSTING
 TENDER CONSTRUCTION AS CONSTRUCTED

Scale 1:10,000 @ A4 Drawn L.A.W. Date 27.04.2016 Job Manager M.J.G. Checked M.J.G. Approved M.J.G.

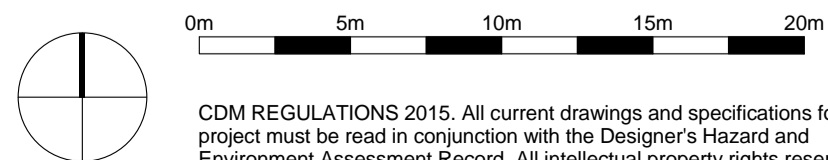
Appendix B

Flat Types

- Cinema
- Food & Beverage
- PRIV 1B2P FL
- PRIV 1B2P Whcr
- PRIV 2B3P FL
- PRIV 2B3P Whcr
- PRIV 2B4P FL
- PRIV STUDIO
- PRIV STUDIO Wch
- Resi Circulation
- Residential Entrance
- Retail
- Servicing & Plant

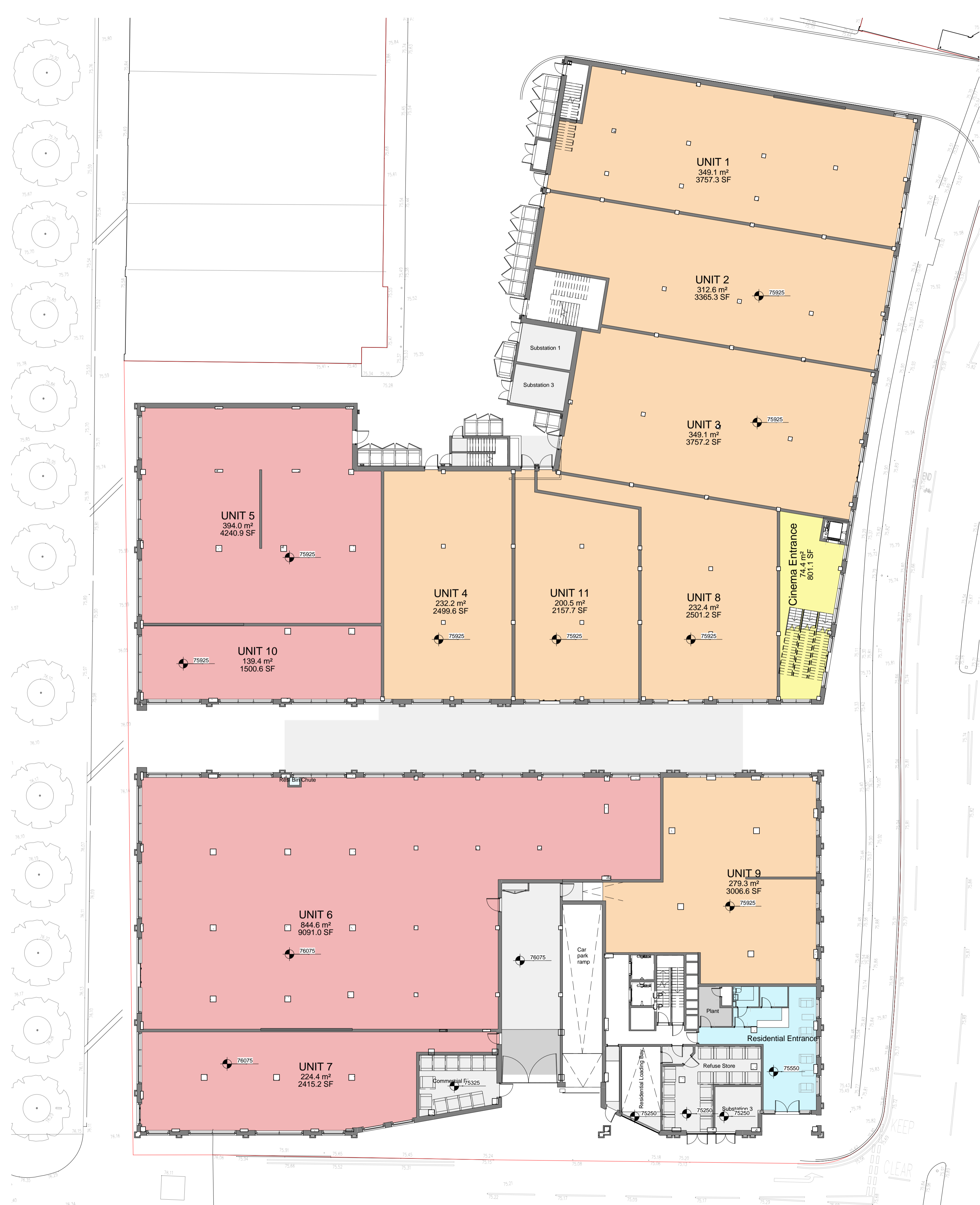


Level -1 Basement GA
1 : 200



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Designed with reference to the surveys, information and reports listed:
XX
XX



Level 0 Ground Floor GA
1 : 200

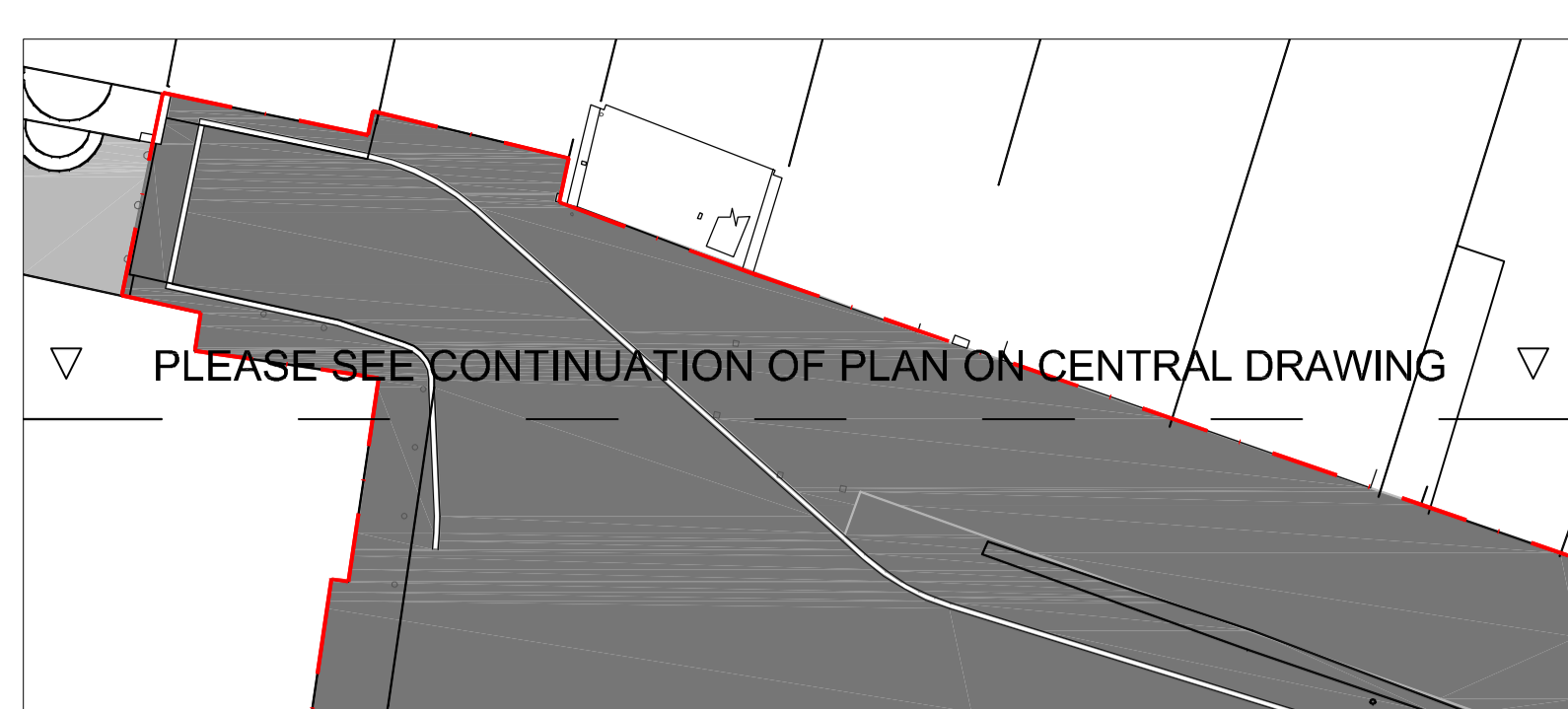
Rev	Date	Description
E	21-03-2016	Unit 3 updated
F	23-03-2016	Car Park Entrance & Basement Updated
G	07-04-2016	Issue to ABC
H	19-04-2016	Draft Planning Issue
I	22-04-2016	Revised Levels

Dwn	Ckd	Drawn	KR
		Checked	CS
		Date	Jan 2016
		Scale	@ A1 1 : 200

Marketfield Way
Basement & Ground Floor Plans

AA3983-1100
REV I

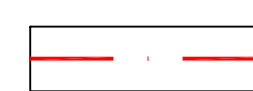
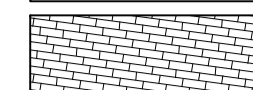
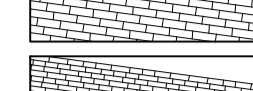
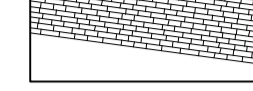

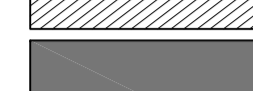






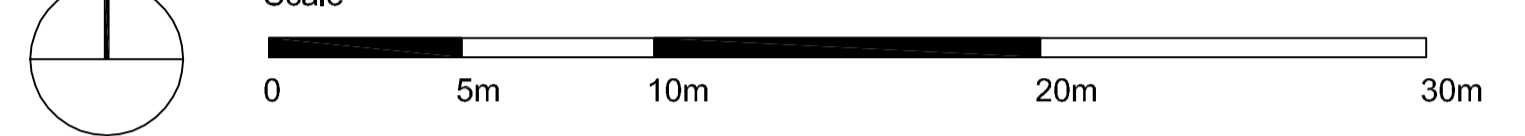
△ PLEASE SEE CONTINUATION OF PLAN IN TOP LEFT HAND CORNER △

▽ PLEASE SEE CONTINUATION OF PLAN ON CENTRAL DRAWING ▽

LEGEND

-  Site Planning boundary
-  Proposed slab paving to compliment existing paving material
-  Proposed block paving to compliment existing paving material
-  Proposed block paving to compliment existing paving material
-  Proposed asphalt surface
-  Existing asphalt surface
-  Proposed kerb
-  Proposed tree

Scale




Notes:

1. Do not scale off this drawing.
2. All setting out and dimensions to be confirmed on site.

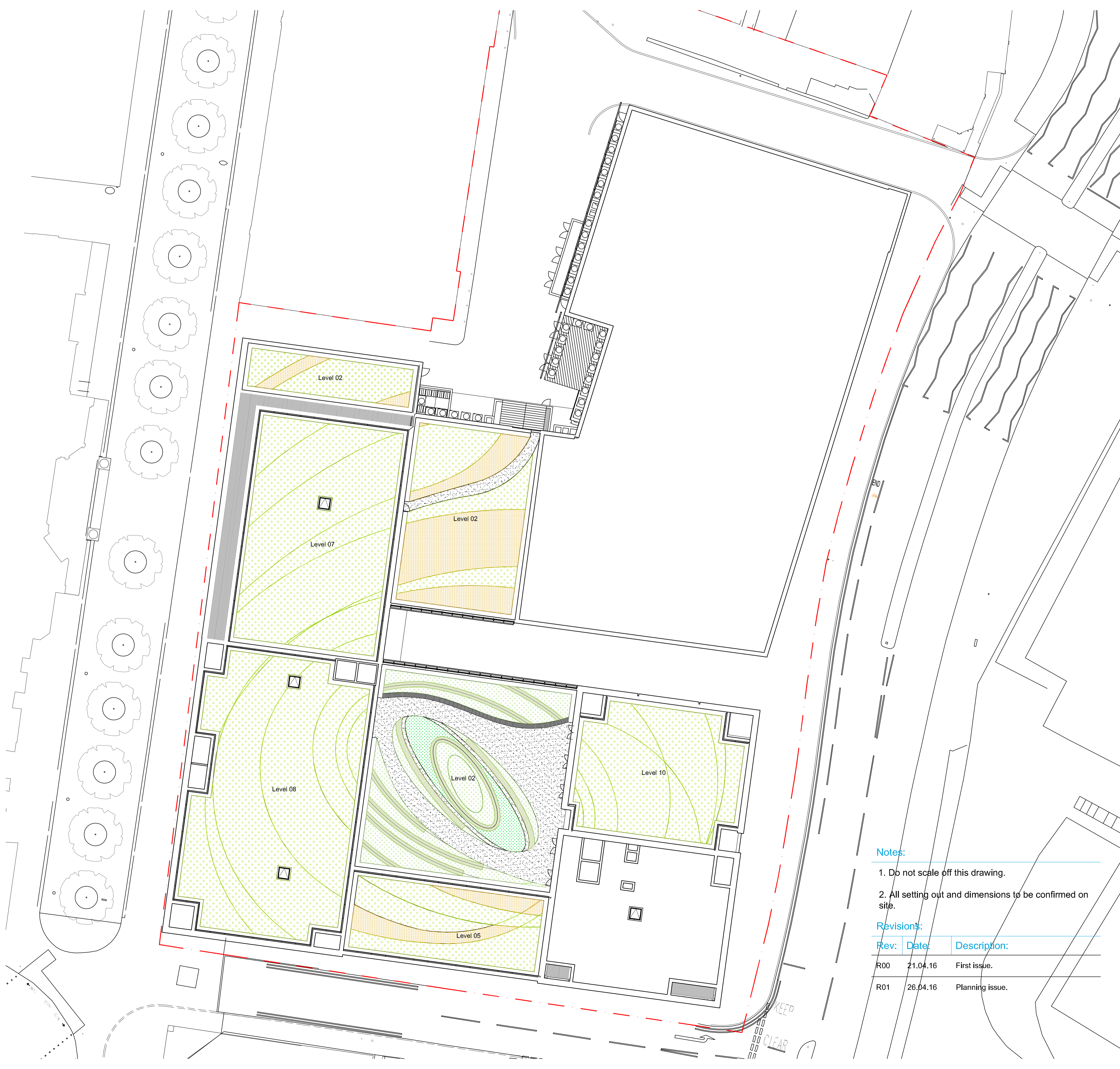
Revisions:

Rev.	Date:	Description:
R00	22.04.16	First issue.
R01	26.04.16	Planning issue.


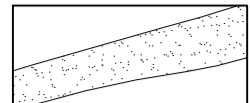

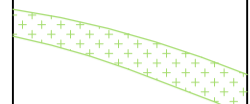
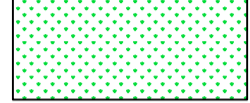

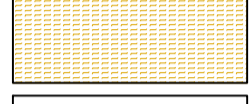
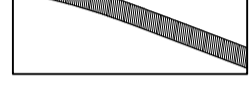
FOR PLANNING

Charnwood Landscape Design Limited
 Charnwood House □ 41 Green Lane □ Blackwater □ Camberley □ Surrey □ GU17 9DG
 Tel : 01276 31180 Email : info @cldl.co.uk

Job	MARKETFIELD WAY, REDHILL	Scale	1:200 @ A1	Date	APR 2016
Drawing Name	GROUND FLOOR SURFACE FINISHES PLAN	Dwg no.	CLDL 2320 01 01	Rev.	R01
Status	DRAFT FOR COMMENT	Drawn by.	JS	Checked by.	EL

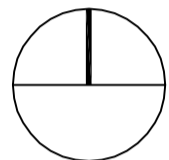


LEGEND

-  Site Planning boundary
-  Proposed resin bound gravel footpath
-  Proposed hedge
-  Proposed shrub and perennial planting
-  Proposed grass lawn
-  Proposed biodiverse roof terrace wildflower planting
-  Proposed biodiverse roof terrace sedum planting
-  Proposed seating

Scale

0 5m 10m 20m 30m



Notes:

1. Do not scale off this drawing.
2. All setting out and dimensions to be confirmed on site.

Revisions:

Rev.	Date	Description
R00	21.04.16	First issue.
R01	26.04.16	Planning issue.

FOR PLANNING

Charnwood Landscape Design Limited
 Charnwood House □ 41 Green Lane □ Blackwater □ Camberley □ Surrey □ GU17 9DC
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Job	MARKETFIELD WAY, REDHILL	Scale	1:200 @ A1	Date	APR 2016
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Status	DRAFT FOR COMMENT	Drawn by.	JS	Checked by.	EL

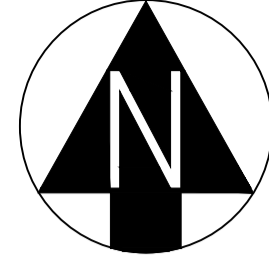
CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015

DESIGNERS HAZARD INFORMATION FOR CONSTRUCTION

- IF YOU DO NOT FULLY UNDERSTAND THE RISKS INVOLVED DURING THE CONSTRUCTION OF THE ITEMS INDICATED ON THIS DRAWING ASK YOUR MANAGER, HEALTH & SAFETY ADVISOR OR A MEMBER OF THE DESIGN TEAM BEFORE PROCEEDING.
- SERVICES TO BE LOCATED
- MANUAL LIFTING/ HANDLING
- HOT MATERIAL WORKING
- CUTTING/ DUST
- LIVE SEWER FLOWS/ LEPTOSPIROSIS
- DEEP EXCAVATIONS, COLLAPSE/ FALLING
- LIVE TRAFFIC FLOWS

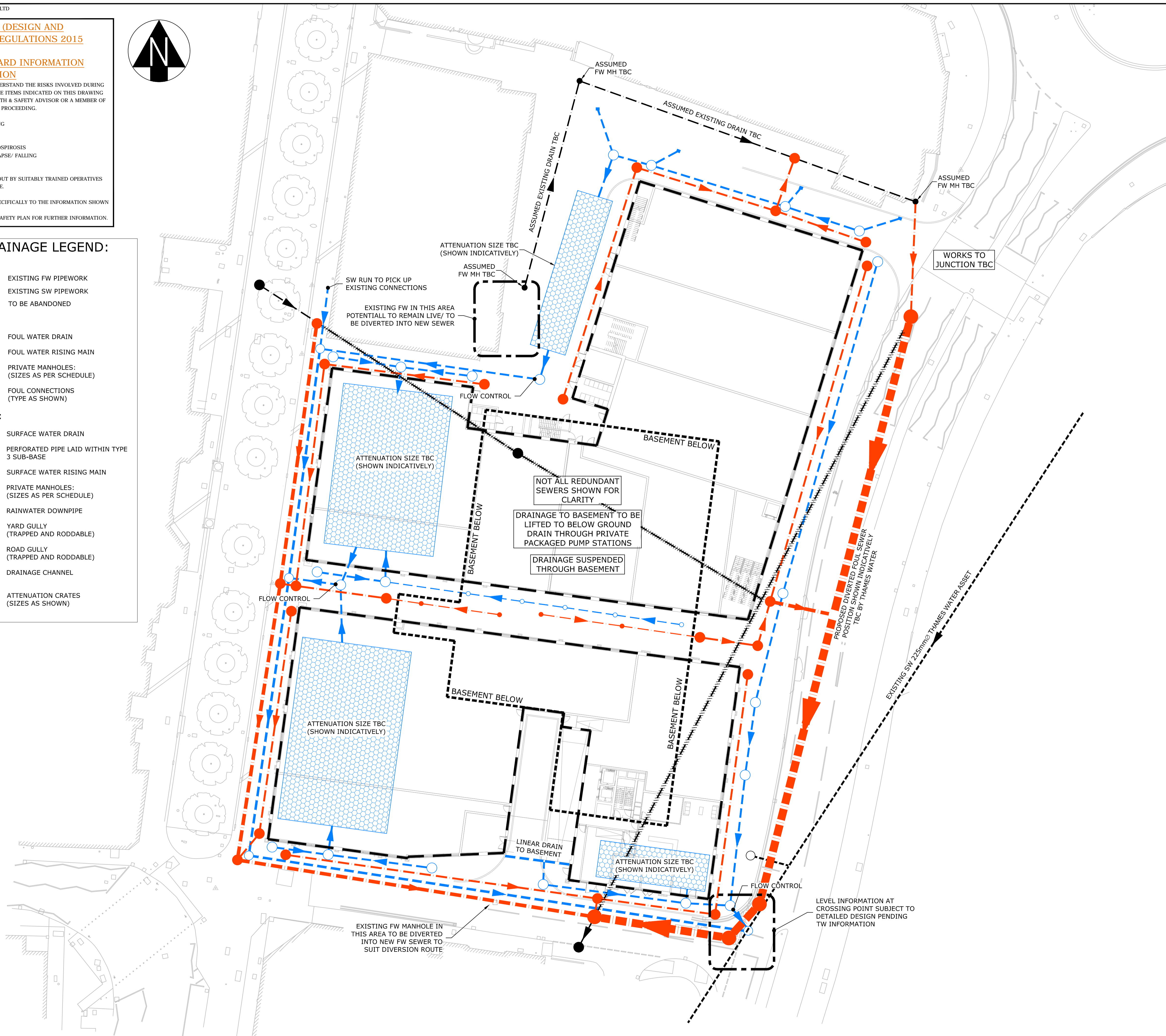
ALL WORKS TO BE CARRIED OUT BY SUITABLY TRAINED OPERATIVES PROVIDED WITH CORRECT PPE.

THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING. REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.



PRIVATE DRAINAGE LEGEND:

- EXISTING:**
- ▶--- EXISTING FW PIPEWORK
 - ▶--- EXISTING SW PIPEWORK
 - ▶--- TO BE ABANDONED
- FOUL WATER:**
- - - - - FOUL WATER DRAIN
 - - - - - FOUL WATER RISING MAIN
 - PRIVATE MANHOLES: (SIZES AS PER SCHEDULE)
 - FOUL CONNECTIONS (TYPE AS SHOWN)
- SURFACE WATER:**
- - - - - SURFACE WATER DRAIN
 - - - - - PERFORATED PIPE LAID WITHIN TYPE 3 SUB-BASE
 - - - - - SURFACE WATER RISING MAIN
 - PRIVATE MANHOLES: (SIZES AS PER SCHEDULE)
 - RWP RAINWATER DOWNPIPE
 - YG YARD GULLY (TRAPPED AND RODDABLE)
 - RG ROAD GULLY (TRAPPED AND RODDABLE)
 - - - - - DRAINAGE CHANNEL
 - ATTENUATION CRATES (SIZES AS SHOWN)



GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S, ARCHITECT'S AND SPECIALIST'S DRAWINGS AND THE SPECIFICATION.
2. DO NOT SCALE FROM THIS DRAWING MANUALLY OR ELECTRONICALLY. WRITTEN PERMISSION MUST BE OBTAINED FROM MLM PRIOR TO SCALING ELECTRONICALLY OR USING THIS ELECTRONIC FILE.

PROJECT STRATEGY:

EXISTING SEWERS & SERVICES
 A NUMBER OF EXISTING SEWERS AND SERVICES ARE LOCATED CROSSING THE PROPOSED DEVELOPMENT SITE. DURING THE ENABLING WORKS FOR THE DEVELOPMENT, THESE WILL BE DIVERTED.
 THE EXISTING SEWERS ARE THAMES WATER ASSETS AND WILL BE DIVERTED UNDER THAMES WATER AGREEMENT AND DESIGN. OUTLINE PROPOSALS FOR THE DIVERSION OF THESE SEWERS IS ALREADY PROPOSED BY THAMES WATER AND IS PRESENTED DIAGRAMMATICALLY ON THIS DRAWING. FURTHER DETAIL, INCLUDING EXACT LOCATION OF THE DIVERTED SEWERS WILL BE UNDERTAKEN IN CONJUNCTION BETWEEN THE DEVELOPMENT DESIGN AND THAMES WATER. OTHER SERVICES CROSSING THE SITE INCLUDING ELECTRICAL AND COMMUNICATIONS UTILITIES ARE SUBJECT TO SEPARATE DIVERSION AGREEMENTS AND ARE NOT SHOWN ON THIS DRAINAGE DRAWING FOR CLARITY.

PROPOSED FOUL DRAINAGE
 A NETWORK OF GRAVITY FOUL DRAINS ARE INDICATED TO THE PERIMETER OF THE PROPOSED BUILDINGS. SPUR CONNECTIONS (CURRENTLY NOT SHOWN) WILL RUN FROM STACK LOCATIONS (TBC) WITHIN THE BUILDING FOOTPRINTS BELOW SLAB TO THESE PERIMETER DRAINS. IT IS INTENDED DURING DETAILED DESIGN THAT THESE PERIMETER DRAINS WILL THEN CONNECT AT LOCATIONS TO BE AGREED WITH THAMES WATER INTO THE DIVERTED FOUL SEWERS AROUND THE SITE.
 IT SHOULD BE NOTED THAT SOME OF THE PROPOSED FOUL DRAINS WILL BE SUSPENDED PIPEWORK BELOW THE SOFFIT OF THE PROPOSED BASEMENT AND WILL THEN CONNECT TO THE PROPOSED BELOW GROUND DRAINS THROUGH THE BASEMENT WALLS.

PROPOSED STORM DRAINAGE
 A NETWORK OF GRAVITY STORM DRAINS ARE INDICATED TO THE PERIMETER OF THE PROPOSED BUILDINGS. COLLECTING RUNOFF FROM THE ROOFS AND EXTERNAL SURFACING VIA RWPS AND GULLIES/LINEAR CHANNELS RESPECTIVELY THE BELOW GROUND NETWORK OF STORM DRAINS ARE INTENDED TO DISCHARGE VIA ATTENUATION AND FLOW CONTROL INTO THE PROPOSED DIVERTED STORM SEWERS AROUND THE SITE. CURRENTLY THE BELOW GROUND ATTENUATION IS PROPOSED TO BE PLACED BELOW THE GROUND FLOOR SLABS OF THE PROPOSED BUILDINGS. THIS WILL BE REVIEWED AND DEVELOPED FURTHER DURING DETAILED DESIGN, BUT IT IS INTENDED TO BE PLACED IN THESE LOCATIONS TO MINIMISE THE EXTENT OF PUMPING REQUIRED ON THE STORM NETWORK. SUBJECT TO CONFIRMED OUTLET LEVELS AT CONNECTIONS TO THE SEWER WITH THAMES WATER, MAINTENANCE ACCESS WILL BE CONSIDERED FOR THE PROPOSED ATTENUATION.

BUILD-OVER/CLOSE TO PUBLIC SEWER
 THE PROPOSED DEVELOPMENT WILL RESULT IN CONSTRUCTION CLOSE-TO EXISTING OR NEWLY DIVERTED THAMES WATER ASSETS. IT IS INTENDED THAT AS PART OF THE THAMES WATER DEVELOPMENT OF THE DIVERTED SEWERS DESIGN, IN CONJUNCTION WITH THE DESIGN TEAM THAT ANY REQUIRED BUILD-OVER/CLOSE-TO AGREEMENTS WILL BE CONSIDERED.

P1	29/04/2016	FOR PLANNING	CC	BF
Issue	Date	Description	Made	Checked

Drawing Status: **PRELIMINARY**

MLM
 Multidisciplinary Consulting
 3rd Floor Eldon House, 2 Eldon Street, London EC2M 7LS
 Tel: 020 7422 7800 Fax: 020 7426 2095
 Website: www.mlm.uk.com

Client: **REIGATE & BANSTEAD BOROUGH COUNCIL**

Project: **MARKETFIELD WAY**

Drawing Title: **PROPOSED BELOW GROUND DRAINAGE LAYOUT OVERVIEW**

Drawn/Design	CC	Date	APRIL 2016	Scales	1:250 @ A1
Checked	BF	Approved	BF		1:500 @ A3

Drawing No. **581203-DWG-SBU-C-100** Rev **P 1**

Appendix C



Enter a postcode or place name:

Redhill, Surrey



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 River Line

Main River Line

Other national environmental organisations

Natural Resources Wales Area of responsibility

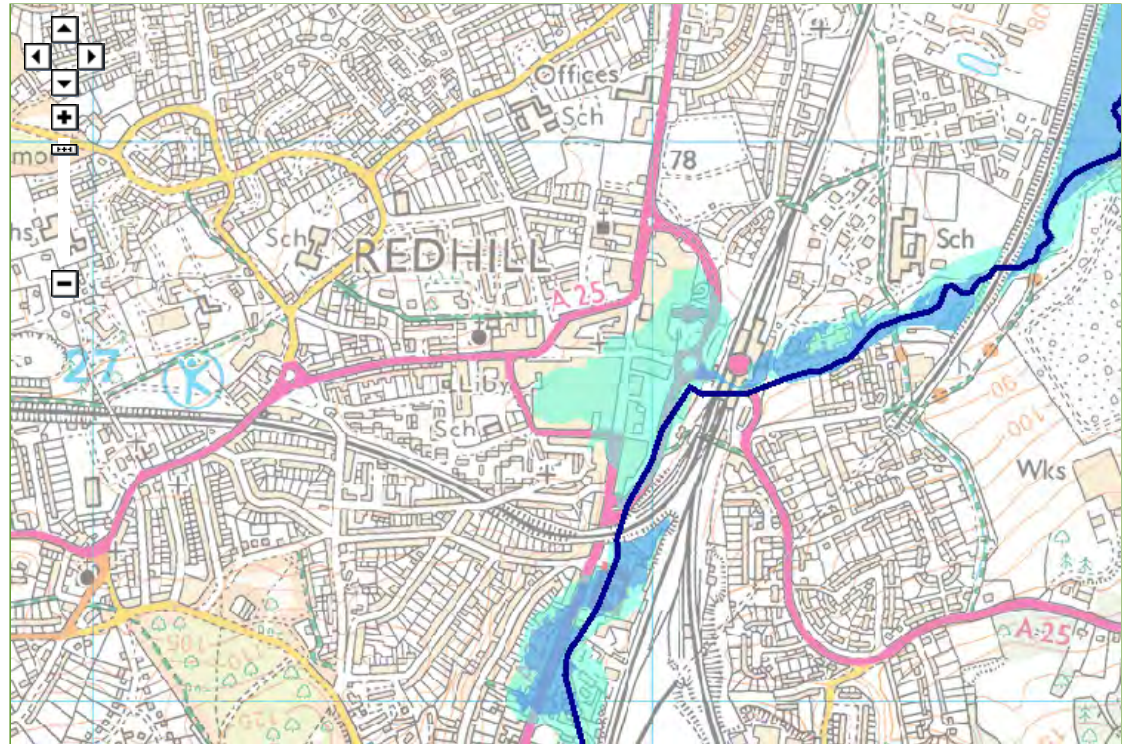
Scottish Environment Protection Agency Area of responsibility

Redhill, Surrey 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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Other topics for this area...



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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.

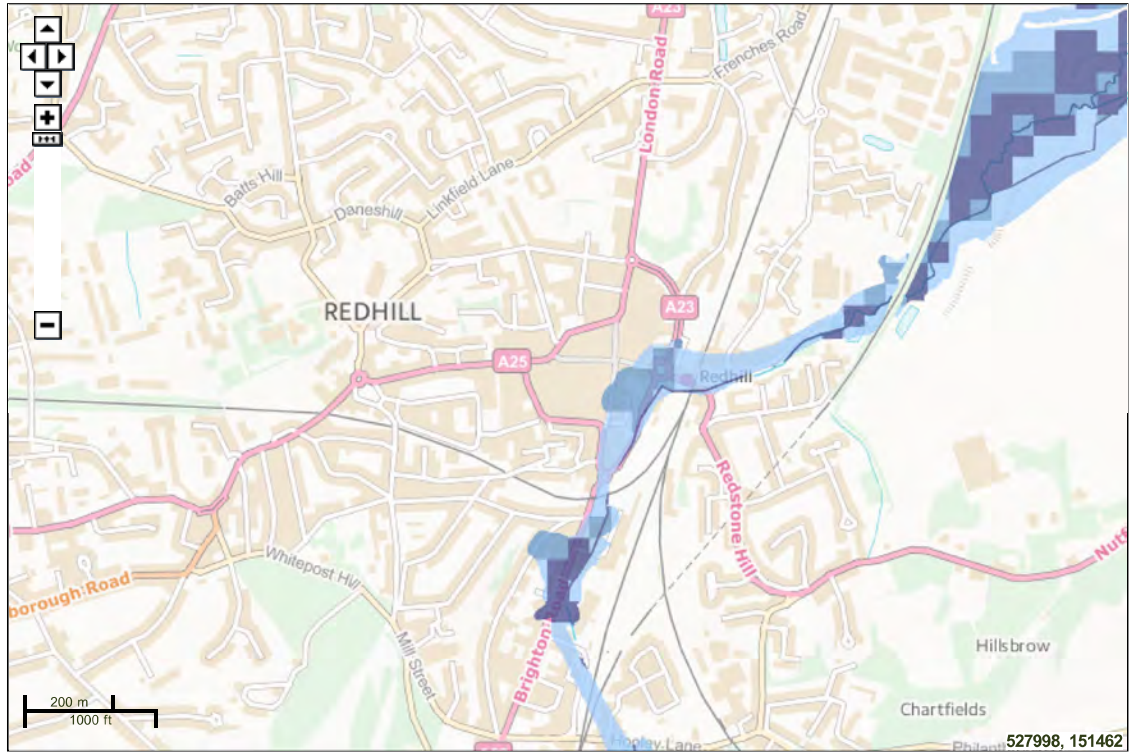
Click on the map for a more detailed explanation.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

- Risk of Flooding from Rivers and Sea
 - High
 - Medium
 - Low
 - Very Low
- Other national environmental organisations
 - Natural Resources Wales Area of responsibility
 - Scottish Environment Protection Agency Area of responsibility



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Other topics for this area...



Risk of Flooding from Reservoirs

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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.

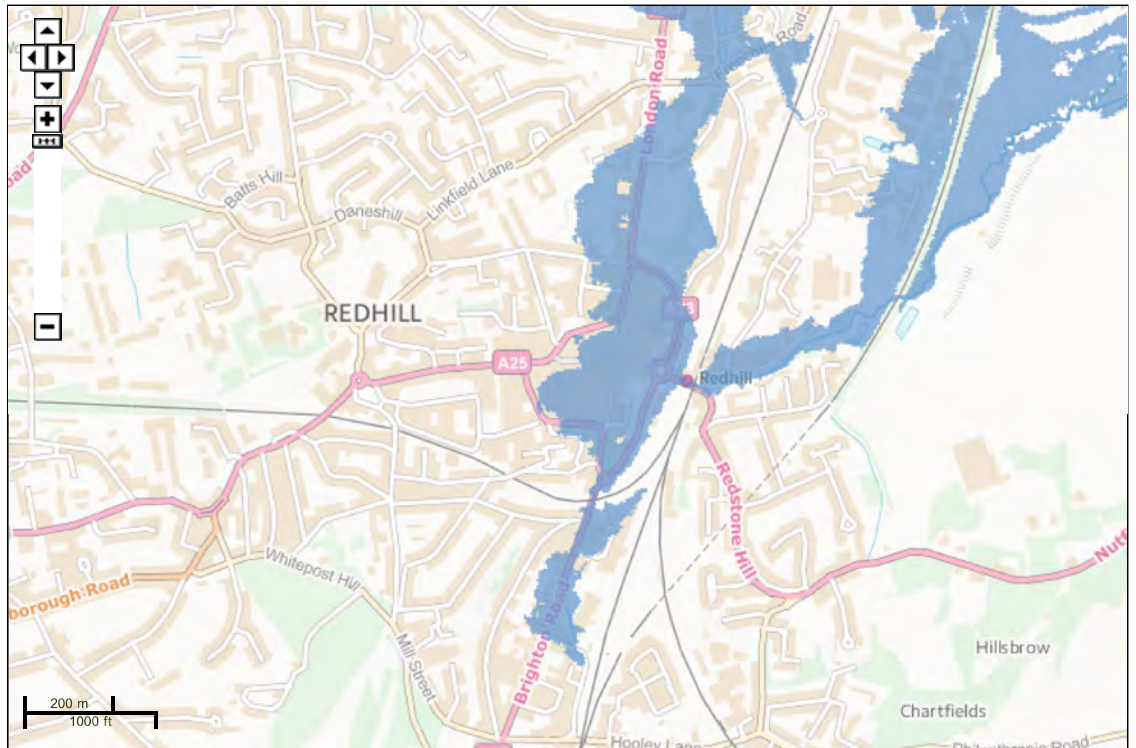
Click on the shading to see details of reservoirs that could cause flooding in this area.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

- Risk of Flooding from Reservoirs
- Maximum extent of flooding
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility



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Interactive Maps

Risk of Flooding from Reservoirs for X:527980, Y:150496

Below are the reservoirs that could affect this area.

Gatton Park Lake				
Risk Designation: To be determined We define a reservoir as high risk, if peoples' lives would be in danger as a result of an uncontrolled release of water from the reservoir.				
Reservoir Owner: The Royal Alexandra & Albert School				
Reservoir location (grid reference): 527779, 152175	Area: Environment Agency - Kent and South London	Local Authority: Surrey	Additional Comments: If you have questions about local emergency plans for this reservoir you should contact the named Local Authority	View map

Further information

Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, we ensure that reservoirs are inspected regularly and essential safety work is carried out.

However, in the unlikely event that a reservoir dam failed, a large volume of water would escape at once and flooding could happen with little or no warning. If you live or work in an area that could be affected, you should plan in advance what you would do in an emergency. You may need to evacuate immediately. Consider where you would go to safety, and be ready to follow the advice of emergency services.

To find out about local emergency plans, contact the local authority listed above. Be aware that they may not be able to give you any specific information immediately as developing reservoir emergency plans is a new responsibility.

If you would like to see information on how deep the water could get or how fast it could flow

[View the estimates of the depth of flooding from reservoirs](#) for this area.

[View the estimates of the speed of flooding from reservoirs](#) for this area.

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 [surface water](#).

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Other topics for this area...



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Depth of flooding from reservoirs

Flooding from reservoirs is extremely unlikely to happen.

The shading on the map shows the estimated depth flood water could reach 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 the flooding shown is a worst case scenario, it's unlikely that any actual flood would be this large or this deep.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

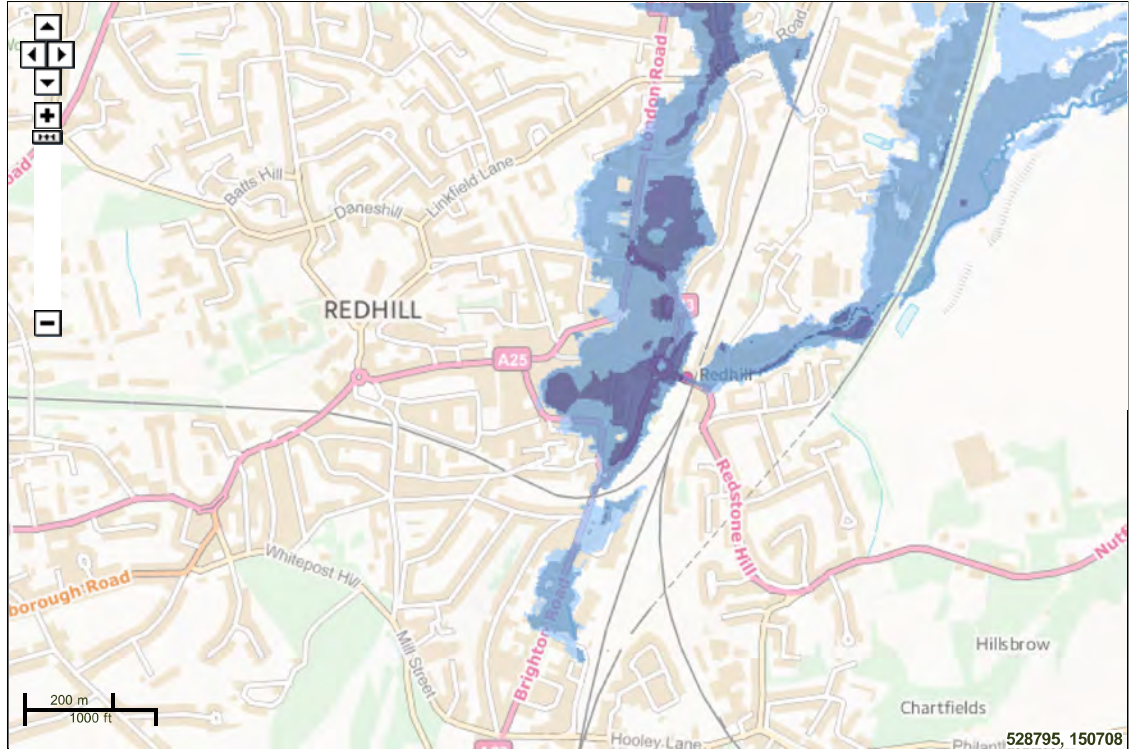
[Data search](#)

Map legend

- Depth of flooding from reservoirs
 - Over 2 metres
 - Between 0.3 and 2 metres
 - Below 0.3 metres
- Other national environmental organisations
 - Natural Resources Wales Area of responsibility
 - Scottish Environment Protection Agency Area of responsibility

Other layers

- Switch to layer:
- Reservoir extent
 - Speed of flooding from reservoirs



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Information warning

We are aware of missing depth of flooding from reservoirs and speed of flooding information for Lamaload reservoir in Cheshire. We are working to resolve this as soon as possible.

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Other topics for this area...



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Speed of flooding from reservoirs

Flooding from reservoirs is extremely unlikely to happen.

The shading on the map shows the estimated speed at which flood water could flow if a large reservoir was 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 the flooding shown is a worst case scenario, it's unlikely that any actual flood would be this large or this fast.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

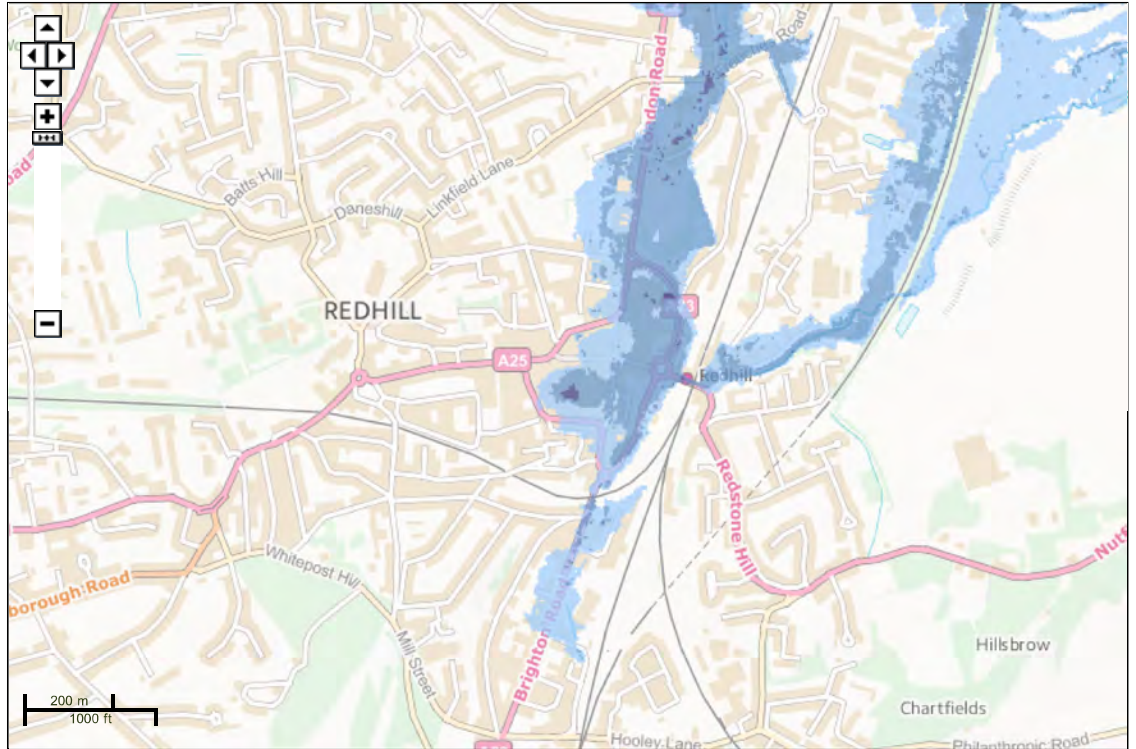
Map legend

<input checked="" type="checkbox"/>	Speed of flooding from reservoirs
<input type="checkbox"/>	Other national environmental organisations
<input type="checkbox"/>	Natural Resources Wales Area of responsibility
<input type="checkbox"/>	Scottish Environment Protection Agency Area of responsibility

Other layers

Switch to layer:

- Reservoir extent
- Depth of flooding from reservoirs



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Information warning

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Other topics for this area...



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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.

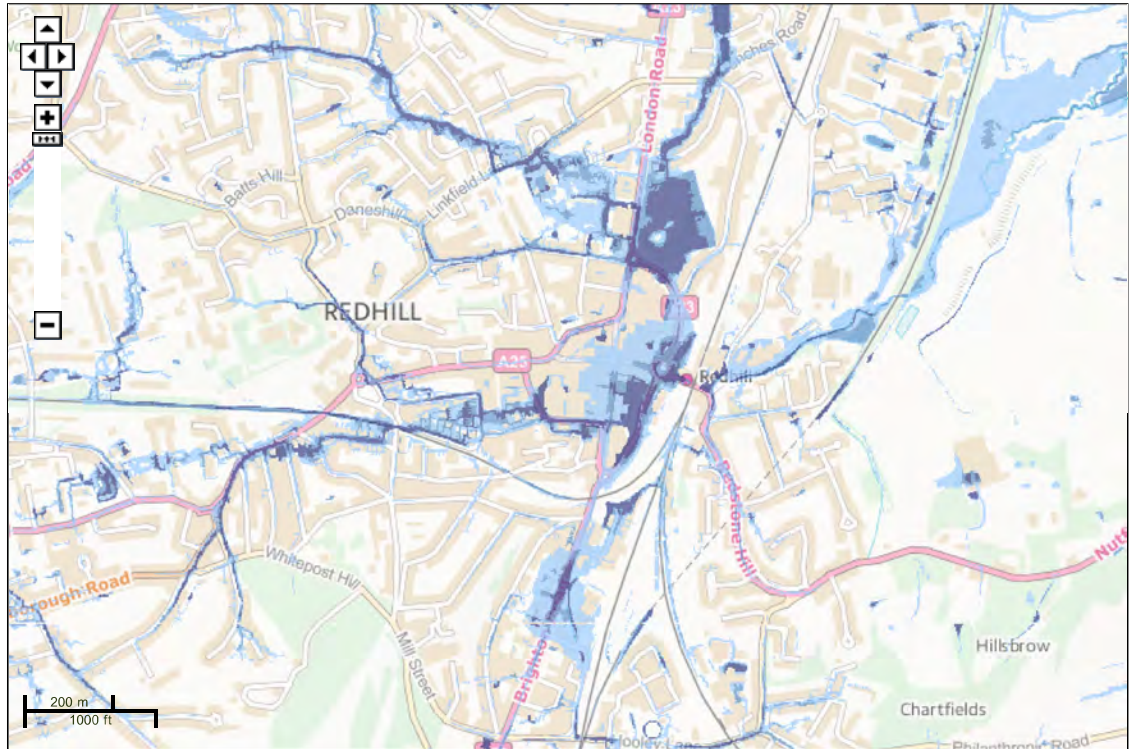
Click on the map for a more detailed explanation.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

- Risk of Flooding from Surface Water
- High
- Medium
- Low
- Very Low
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility



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Other topics for this area...



Risk of Flooding from Surface Water

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Surface Water Depth - High Chance of Occurring

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 estimated water depth when there is a high chance of flooding.

Click in the legend to see estimated water depths for medium and low chances of flooding, and for estimated velocity (speed and direction of the water).

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

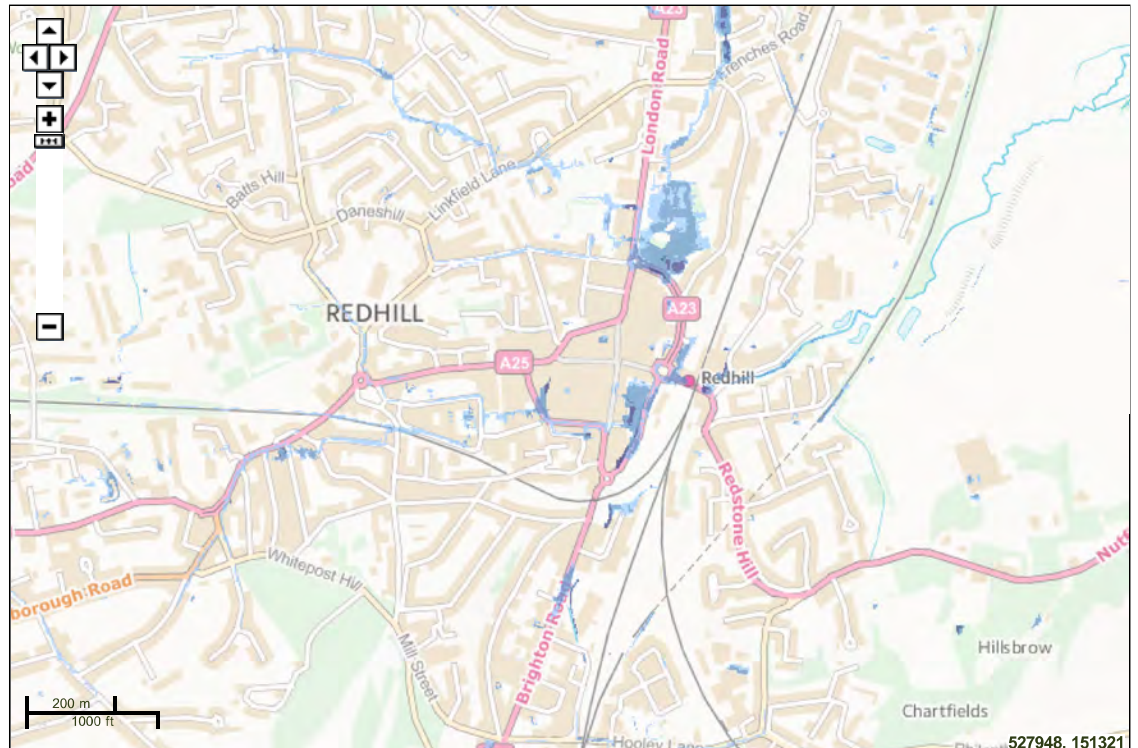
- Surface Water Depth - High Chance of Occurring
- Over 900mm
- 300-900mm
- Below 300mm
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- Surface water extent
 - Surface water velocity



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Other topics for this area...



[View other Interactive Maps](#)

Surface Water Depth - Medium Chance of Occurring

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 estimated water depth when there is a medium chance of flooding.

Click in the legend to see estimated water depths for high and low chances of flooding, and for estimated velocity (speed and direction of the water).

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

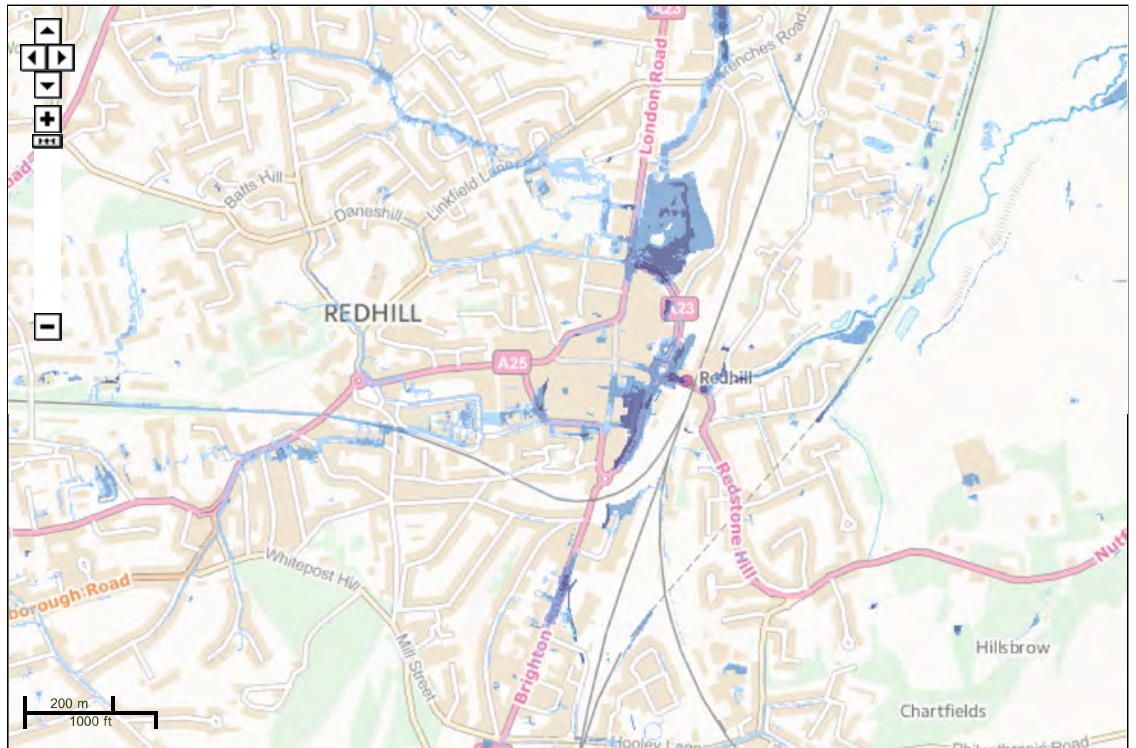
- Surface Water Depth - Medium Chance of Occurring
 - Over 900mm
 - 300-900mm
 - Below 300mm
- Other national environmental organisations
 - Natural Resources Wales Area of responsibility
 - Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- [Surface water extent](#)
 - [Surface water velocity](#)



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Other topics for this area...



Risk of Flooding from Surface Water

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Surface Water Depth - Low Chance of Occurring

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 estimated water depth when there is a low chance of flooding.

Click in the legend to see estimated water depths for high and medium chances of flooding, and for estimated velocity (speed and direction of the water).

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

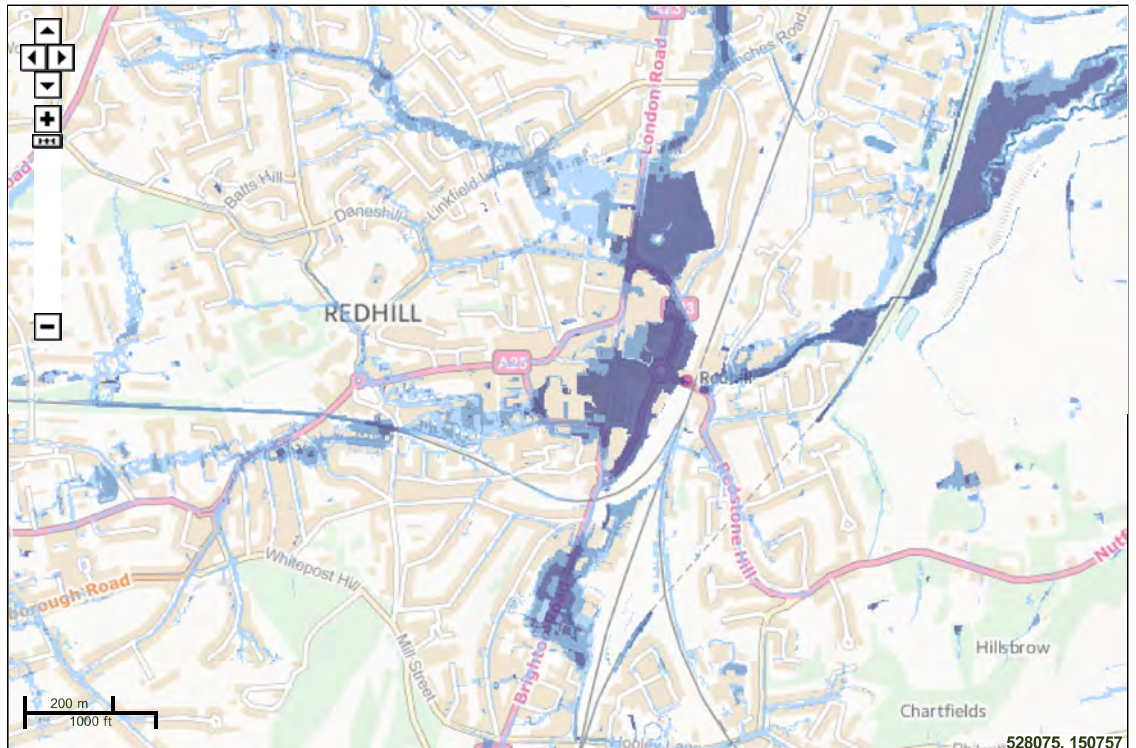
- Surface Water Depth - Low Chance of Occurring
 - Over 900mm
 - 300-900mm
 - Below 300mm
- Other national environmental organisations
 - Natural Resources Wales Area of responsibility
 - Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- [Surface water extent](#)
 - [Surface water velocity](#)



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Other topics for this area...



Risk of Flooding from Surface Water

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Surface Water Velocity - High Chance of Occurring

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 estimated water speed when there is a high chance of flooding. The estimated direction of the water is shown when you zoom in.

Click in the legend to see estimated water velocities for medium and low chances of flooding, and for estimated water depth.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

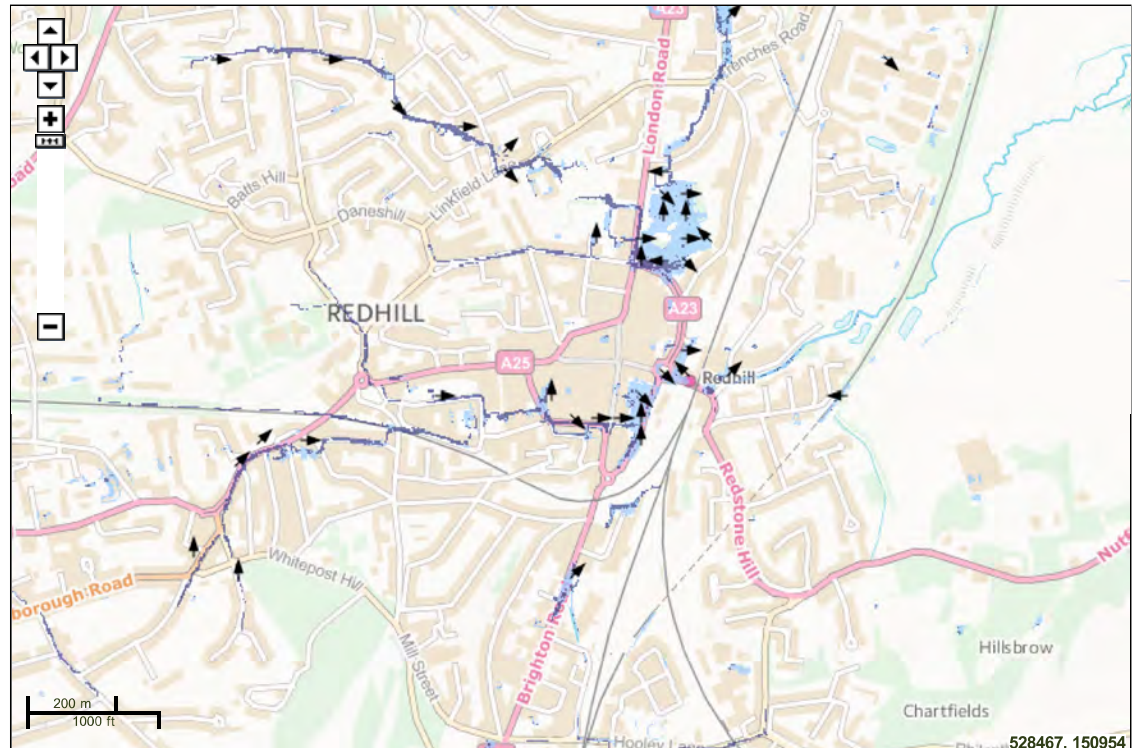
- Surface Water Velocity - High Chance of Occurring
- Over 0.25 m/s
- Less than 0.25 m/s
- Direction of water
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- [Surface water extent](#)
 - [Surface water depth](#)



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Other topics for this area...



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Surface Water Velocity - Medium Chance of Occurring

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 estimated water speed when there is a medium chance of flooding. The estimated direction of the water is shown when you zoom in.

Click in the legend to see estimated water velocities for high and low chances of flooding, and for estimated water depth.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

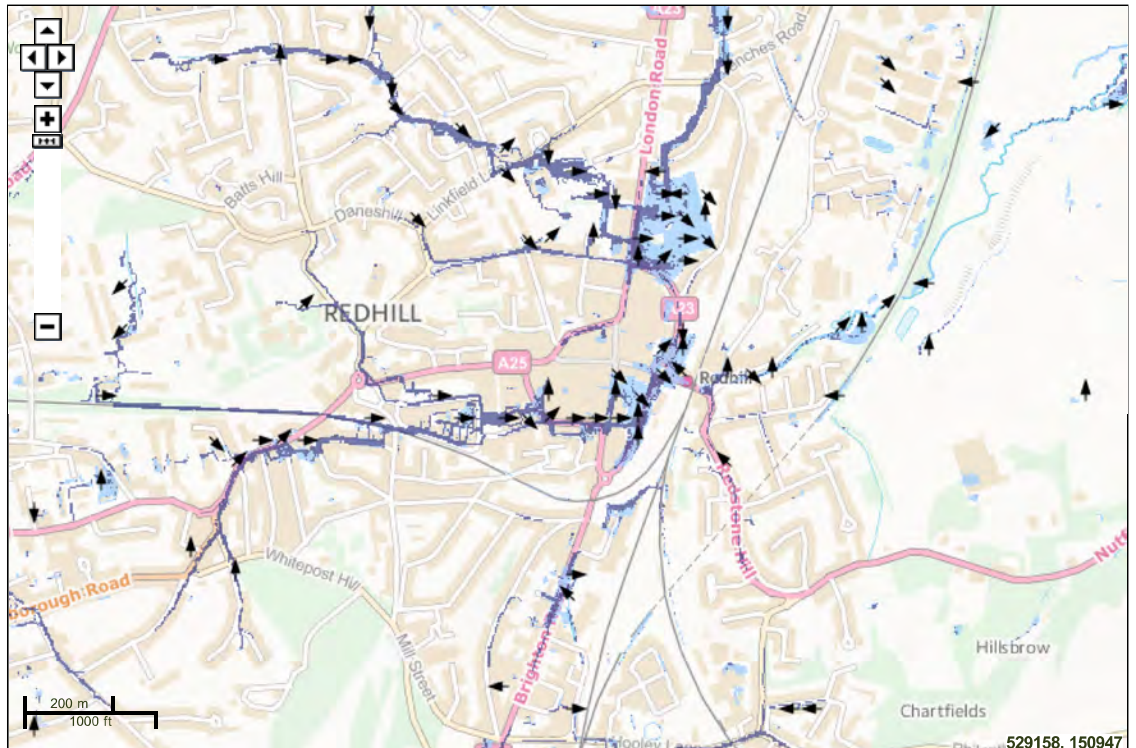
- Surface Water Velocity - Medium Chance of Occurring
- Over 0.25 m/s
- Less than 0.25 m/s
- Direction of water
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- [Surface water extent](#)
 - [Surface water depth](#)



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Other topics for this area...



Risk of Flooding from Surface Water

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Surface Water Velocity - Low Chance of Occurring

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 estimated water speed when there is a low chance of flooding. The estimated direction of the water is shown when you zoom in.

Click in the legend to see estimated water velocities for high and medium chances of flooding, and for estimated water depth.

Map of X: 527,849; Y: 150,582 at scale 1:10,000

[Data search](#)

Map legend

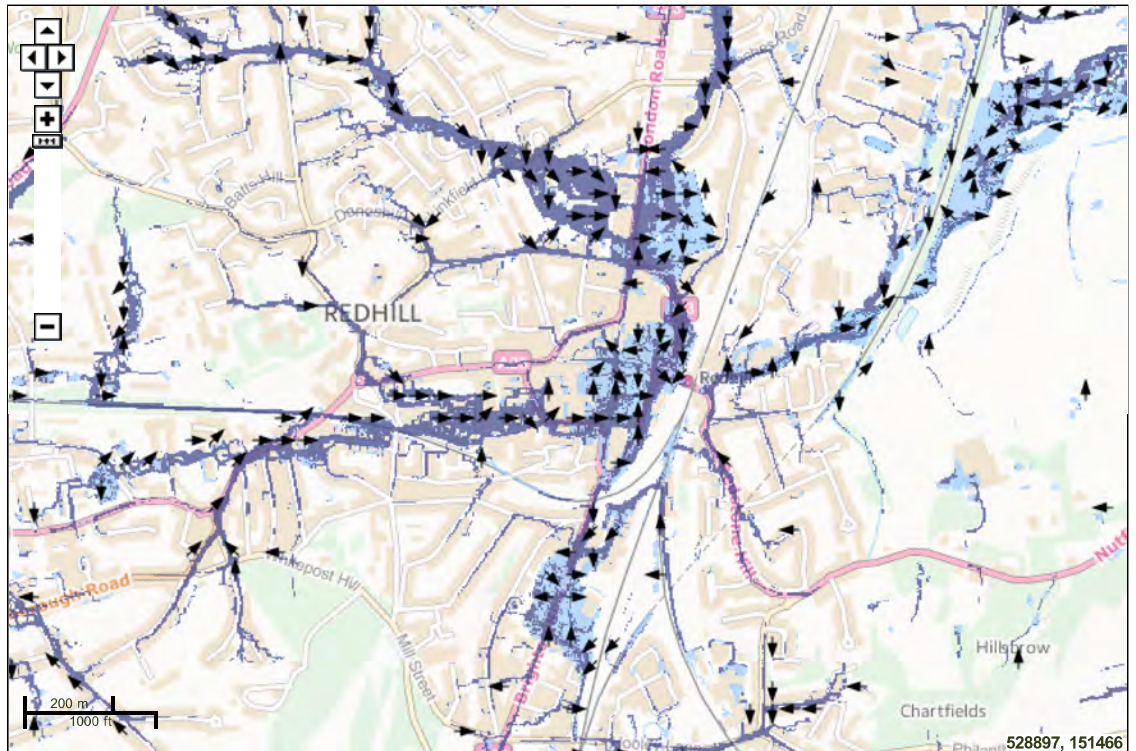
- Surface Water Velocity - Low Chance of Occurring
- Over 0.25 m/s
- Less than 0.25 m/s
- Direction of water
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Chance of occurring

- Low
- Medium
- High

Other layers

- Switch to layer:
- Surface water extent
 - Surface water depth



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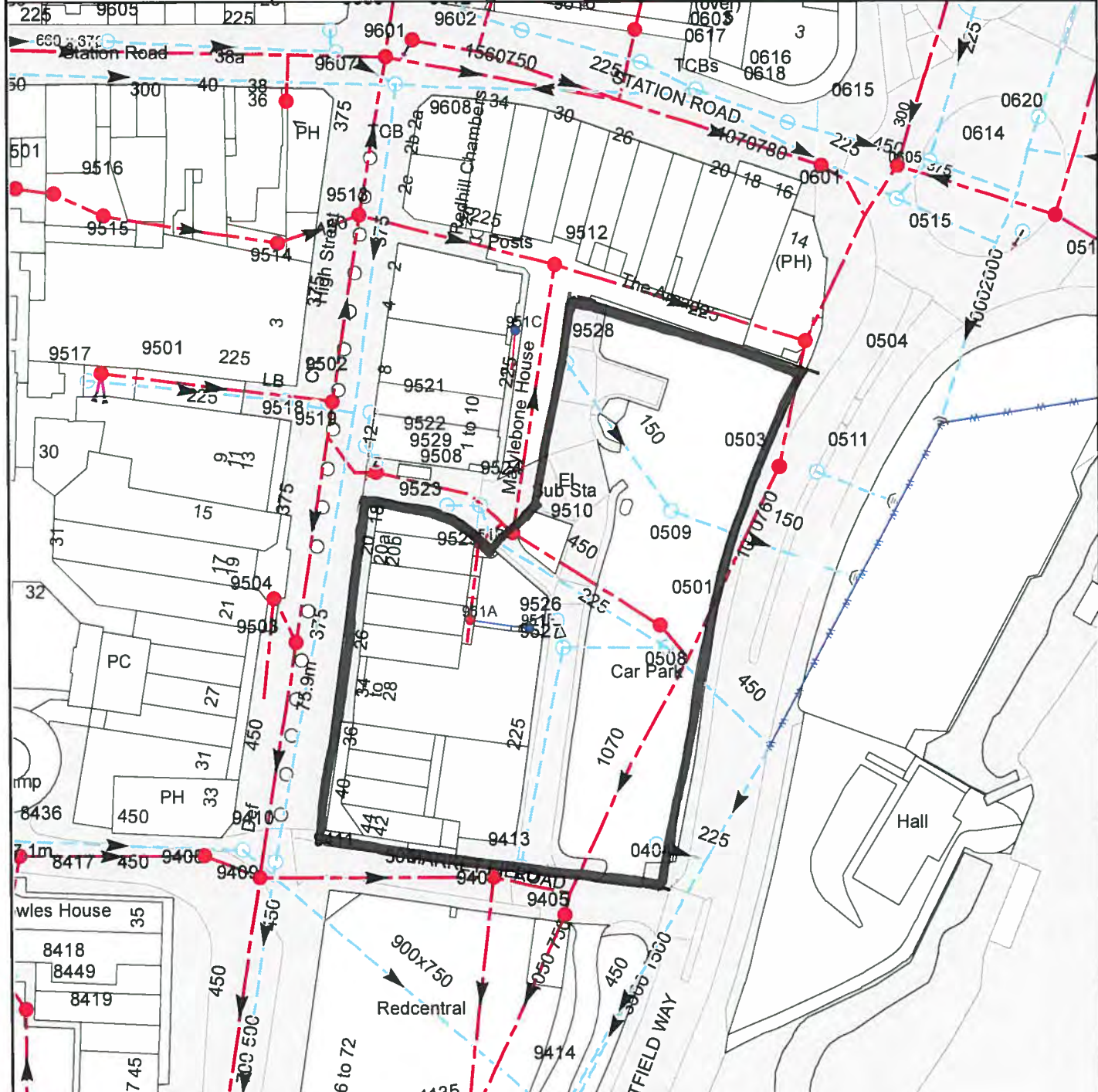
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Appendix D

Asset Location Search Sewer Map - ALS/ALS Standard/2016 3234558




The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 527992.150531

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

Appendix E

Richard Jackson Plc		Page 1
26 HIGH ST. HADLEIGH IPSWICH SUFFOLK IP7 5AP	Marketfield Way Redhill 45110	
Date 26/04/2016 10:31 File	Designed by MJG Checked by	
Micro Drainage	Source Control 2015.1	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	0.600	Urban	0.000
SAAR (mm)	811	Region Number	Region 6

Results 1/s

QBAR Rural	3.1
QBAR Urban	3.1
Q100 years	10.0
Q1 year	2.7
Q30 years	7.1
Q100 years	10.0

Cascade Summary of Results for green roof and tank.srcx

Upstream Structures	Outflow To	Overflow To
hard roof and external.srcx	(None)	(None)


Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	71.228	0.178	41.5	88.8	O K
30 min Summer	71.284	0.234	41.5	117.0	O K
60 min Summer	71.316	0.266	41.5	132.9	O K
120 min Summer	71.317	0.267	41.5	133.3	O K
180 min Summer	71.295	0.245	41.5	122.3	O K
240 min Summer	71.264	0.214	41.5	107.1	O K
360 min Summer	71.208	0.158	41.5	79.0	O K
480 min Summer	71.161	0.111	41.5	55.4	O K
600 min Summer	71.125	0.075	41.5	37.7	O K
720 min Summer	71.103	0.053	41.5	26.4	O K
960 min Summer	71.085	0.035	35.4	17.7	O K
1440 min Summer	71.065	0.015	27.1	7.7	O K
2160 min Summer	71.050	0.000	20.7	0.0	O K
2880 min Summer	71.050	0.000	16.7	0.0	O K
4320 min Summer	71.050	0.000	12.1	0.0	O K
5760 min Summer	71.050	0.000	9.6	0.0	O K
7200 min Summer	71.050	0.000	8.1	0.0	O K
8640 min Summer	71.050	0.000	7.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	131.851	0.0	154.1	18
30 min Summer	88.566	0.0	211.0	32
60 min Summer	56.713	0.0	272.6	56
120 min Summer	35.004	0.0	338.2	88
180 min Summer	25.973	0.0	378.0	120
240 min Summer	20.877	0.0	406.2	154
360 min Summer	15.365	0.0	449.3	216
480 min Summer	12.341	0.0	481.2	274
600 min Summer	10.402	0.0	507.2	328
720 min Summer	9.042	0.0	529.0	382
960 min Summer	7.241	0.0	565.1	500
1440 min Summer	5.284	0.0	617.6	738
2160 min Summer	3.848	0.0	673.4	0
2880 min Summer	3.068	0.0	714.2	0
4320 min Summer	2.226	0.0	773.1	0
5760 min Summer	1.771	0.0	815.5	0
7200 min Summer	1.483	0.0	849.5	0
8640 min Summer	1.284	0.0	878.0	0

Cascade Summary of Results for green roof and tank.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
10080 min Summer	71.050	0.000	6.3	0.0	O K
15 min Winter	71.259	0.209	41.5	104.4	O K
30 min Winter	71.328	0.278	41.5	138.9	O K
60 min Winter	71.371	0.321	41.5	160.6	O K
120 min Winter	71.361	0.311	41.5	155.3	O K
180 min Winter	71.322	0.272	41.5	136.0	O K
240 min Winter	71.272	0.222	41.5	111.2	O K
360 min Winter	71.182	0.132	41.5	66.2	O K
480 min Winter	71.118	0.068	41.5	34.0	O K
600 min Winter	71.093	0.043	38.7	21.6	O K
720 min Winter	71.082	0.032	34.1	16.1	O K
960 min Winter	71.067	0.017	27.7	8.4	O K
1440 min Winter	71.050	0.000	20.7	0.0	O K
2160 min Winter	71.050	0.000	15.2	0.0	O K
2880 min Winter	71.050	0.000	12.0	0.0	O K
4320 min Winter	71.050	0.000	8.8	0.0	O K
5760 min Winter	71.050	0.000	7.0	0.0	O K
7200 min Winter	71.050	0.000	5.9	0.0	O K
8640 min Winter	71.050	0.000	5.2	0.0	O K
10080 min Winter	71.050	0.000	4.5	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
10080 min Summer	1.137	0.0	902.2	0
15 min Winter	131.851	0.0	174.1	18
30 min Winter	88.566	0.0	237.3	32
60 min Winter	56.713	0.0	306.4	60
120 min Winter	35.004	0.0	382.1	94
180 min Winter	25.973	0.0	424.7	130
240 min Winter	20.877	0.0	456.8	164
360 min Winter	15.365	0.0	504.4	226
480 min Winter	12.341	0.0	540.2	276
600 min Winter	10.402	0.0	569.7	324
720 min Winter	9.042	0.0	594.5	384
960 min Winter	7.241	0.0	634.4	502
1440 min Winter	5.284	0.0	694.2	0
2160 min Winter	3.848	0.0	756.8	0
2880 min Winter	3.068	0.0	802.8	0
4320 min Winter	2.226	0.0	869.5	0
5760 min Winter	1.771	0.0	917.9	0
7200 min Winter	1.483	0.0	956.8	0
8640 min Winter	1.284	0.0	989.6	0
10080 min Winter	1.137	0.0	1017.7	0

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26 HIGH ST. HADLEIGH IPSWICH SUFFOLK IP7 5AP		
Date 27/04/2016 16:40 File cascade.casx	Designed by markgeddes Checked by	
Micro Drainage		Source Control 2015.1


Cascade Rainfall Details for green roof and tank.srcx

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Green Roof

Area (m ²)	2063	Evaporation (mm/day)	3
Depression Storage (mm)	5	Decay Coefficient	0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:	From:	To:	From:	To:
0	4	32	36	64	68	96	100
	0.037489		0.007569		0.001528		0.000309
4	8	36	40	68	72	100	104
	0.030693		0.006197		0.001251		0.000253
8	12	40	44	72	76	104	108
	0.025129		0.005074		0.001024		0.000207
12	16	44	48	76	80	108	112
	0.020574		0.004154		0.000839		0.000169
16	20	48	52	80	84	112	116
	0.016845		0.003401		0.000687		0.000139
20	24	52	56	84	88	116	120
	0.013791		0.002784		0.000562		0.000113
24	28	56	60	88	92		
	0.011291		0.002280		0.000460		
28	32	60	64	92	96		
	0.009245		0.001866		0.000377		

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Micro Drainage		Source Control 2015.1

Cascade Model Details for green roof and tank.srcx

Storage is Online Cover Level (m) 72.475

Tank or Pond Structure

Invert Level (m) 71.050

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	500.0	0.700	500.0	1.400	2.0	2.100	2.0
0.100	500.0	0.800	500.0	1.500	2.0	2.200	2.0
0.200	500.0	0.900	500.0	1.600	2.0	2.300	2.0
0.300	500.0	1.000	500.0	1.700	2.0	2.400	2.0
0.400	500.0	1.100	2.0	1.800	2.0	2.500	2.0
0.500	500.0	1.200	2.0	1.900	2.0		
0.600	500.0	1.300	2.0	2.000	2.0		

Pump Outflow Control

Invert Level (m) 71.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	41.5000	0.900	41.5000	1.700	41.5000	2.500	41.5000
0.200	41.5000	1.000	41.5000	1.800	41.5000	2.600	41.5000
0.300	41.5000	1.100	41.5000	1.900	41.5000	2.700	41.5000
0.400	41.5000	1.200	41.5000	2.000	41.5000	2.800	41.5000
0.500	41.5000	1.300	41.5000	2.100	41.5000	2.900	41.5000
0.600	41.5000	1.400	41.5000	2.200	41.5000	3.000	41.5000
0.700	41.5000	1.500	41.5000	2.300	41.5000		
0.800	41.5000	1.600	41.5000	2.400	41.5000		

Cascade Summary of Results for green roof and tank.srcx

Upstream Structures	Outflow To	Overflow To
hard roof and external.srcx	(None)	(None)


Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	71.228	0.178	41.5	88.8	O K
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120 min Summer	71.317	0.267	41.5	133.3	O K
180 min Summer	71.295	0.245	41.5	122.3	O K
240 min Summer	71.264	0.214	41.5	107.1	O K
360 min Summer	71.208	0.158	41.5	79.0	O K
480 min Summer	71.161	0.111	41.5	55.4	O K
600 min Summer	71.125	0.075	41.5	37.7	O K
720 min Summer	71.103	0.053	41.5	26.4	O K
960 min Summer	71.085	0.035	35.4	17.7	O K
1440 min Summer	71.065	0.015	27.1	7.7	O K
2160 min Summer	71.050	0.000	20.7	0.0	O K
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7200 min Summer	71.050	0.000	8.1	0.0	O K
8640 min Summer	71.050	0.000	7.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	131.851	0.0	154.1	18
30 min Summer	88.566	0.0	211.0	32
60 min Summer	56.713	0.0	272.6	56
120 min Summer	35.004	0.0	338.2	88
180 min Summer	25.973	0.0	378.0	120
240 min Summer	20.877	0.0	406.2	154
360 min Summer	15.365	0.0	449.3	216
480 min Summer	12.341	0.0	481.2	274
600 min Summer	10.402	0.0	507.2	328
720 min Summer	9.042	0.0	529.0	382
960 min Summer	7.241	0.0	565.1	500
1440 min Summer	5.284	0.0	617.6	738
2160 min Summer	3.848	0.0	673.4	0
2880 min Summer	3.068	0.0	714.2	0
4320 min Summer	2.226	0.0	773.1	0
5760 min Summer	1.771	0.0	815.5	0
7200 min Summer	1.483	0.0	849.5	0
8640 min Summer	1.284	0.0	878.0	0

Cascade Summary of Results for green roof and tank.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
10080 min Summer	71.050	0.000	6.3	0.0	O K
15 min Winter	71.259	0.209	41.5	104.4	O K
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60 min Winter	71.371	0.321	41.5	160.6	O K
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360 min Winter	71.182	0.132	41.5	66.2	O K
480 min Winter	71.118	0.068	41.5	34.0	O K
600 min Winter	71.093	0.043	38.7	21.6	O K
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2160 min Winter	71.050	0.000	15.2	0.0	O K
2880 min Winter	71.050	0.000	12.0	0.0	O K
4320 min Winter	71.050	0.000	8.8	0.0	O K
5760 min Winter	71.050	0.000	7.0	0.0	O K
7200 min Winter	71.050	0.000	5.9	0.0	O K
8640 min Winter	71.050	0.000	5.2	0.0	O K
10080 min Winter	71.050	0.000	4.5	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
10080 min Summer	1.137	0.0	902.2	0
15 min Winter	131.851	0.0	174.1	18
30 min Winter	88.566	0.0	237.3	32
60 min Winter	56.713	0.0	306.4	60
120 min Winter	35.004	0.0	382.1	94
180 min Winter	25.973	0.0	424.7	130
240 min Winter	20.877	0.0	456.8	164
360 min Winter	15.365	0.0	504.4	226
480 min Winter	12.341	0.0	540.2	276
600 min Winter	10.402	0.0	569.7	324
720 min Winter	9.042	0.0	594.5	384
960 min Winter	7.241	0.0	634.4	502
1440 min Winter	5.284	0.0	694.2	0
2160 min Winter	3.848	0.0	756.8	0
2880 min Winter	3.068	0.0	802.8	0
4320 min Winter	2.226	0.0	869.5	0
5760 min Winter	1.771	0.0	917.9	0
7200 min Winter	1.483	0.0	956.8	0
8640 min Winter	1.284	0.0	989.6	0
10080 min Winter	1.137	0.0	1017.7	0

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Micro Drainage		Source Control 2015.1


Cascade Rainfall Details for green roof and tank.srcx

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Green Roof

Area (m ²)	2063	Evaporation (mm/day)	3
Depression Storage (mm)	5	Decay Coefficient	0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:	From:	To:	From:	To:
0	4	32	36	64	68	96	100
	0.037489		0.007569		0.001528		0.000309
4	8	36	40	68	72	100	104
	0.030693		0.006197		0.001251		0.000253
8	12	40	44	72	76	104	108
	0.025129		0.005074		0.001024		0.000207
12	16	44	48	76	80	108	112
	0.020574		0.004154		0.000839		0.000169
16	20	48	52	80	84	112	116
	0.016845		0.003401		0.000687		0.000139
20	24	52	56	84	88	116	120
	0.013791		0.002784		0.000562		0.000113
24	28	56	60	88	92		
	0.011291		0.002280		0.000460		
28	32	60	64	92	96		
	0.009245		0.001866		0.000377		

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Date 27/04/2016 16:40 File cascade.casx	Designed by markgeddes Checked by	
Micro Drainage		Source Control 2015.1

Cascade Model Details for green roof and tank.srcx

Storage is Online Cover Level (m) 72.475

Tank or Pond Structure

Invert Level (m) 71.050

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	500.0	0.700	500.0	1.400	2.0	2.100	2.0
0.100	500.0	0.800	500.0	1.500	2.0	2.200	2.0
0.200	500.0	0.900	500.0	1.600	2.0	2.300	2.0
0.300	500.0	1.000	500.0	1.700	2.0	2.400	2.0
0.400	500.0	1.100	2.0	1.800	2.0	2.500	2.0
0.500	500.0	1.200	2.0	1.900	2.0		
0.600	500.0	1.300	2.0	2.000	2.0		

Pump Outflow Control

Invert Level (m) 71.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	41.5000	0.900	41.5000	1.700	41.5000	2.500	41.5000
0.200	41.5000	1.000	41.5000	1.800	41.5000	2.600	41.5000
0.300	41.5000	1.100	41.5000	1.900	41.5000	2.700	41.5000
0.400	41.5000	1.200	41.5000	2.000	41.5000	2.800	41.5000
0.500	41.5000	1.300	41.5000	2.100	41.5000	2.900	41.5000
0.600	41.5000	1.400	41.5000	2.200	41.5000	3.000	41.5000
0.700	41.5000	1.500	41.5000	2.300	41.5000		
0.800	41.5000	1.600	41.5000	2.400	41.5000		

Appendix F

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Uses Power of Flood Water to Rise

SELF-CLOSING FLOOD BARRIERS

GALLERY

The Self Closing Flood Barrier is a carefully designed self-rising floodgate that has been in use globally since 1998. Its design uses the approaching floodwaters to automatically raise the barrier. The automatic operation, along with its minimal footprint with no need for steps or ramps makes this type of defence ideal for unmanned sites, for where aesthetic considerations mean that a permanent barrier is not acceptable, or where there would be insufficient warning and manpower to use manually installed barriers.

Single barriers are available up to 10m in length and 2.5m in height. Multiple units can be linked together to create long runs where required, with permanent or removable intermediate posts.

Operation Overview

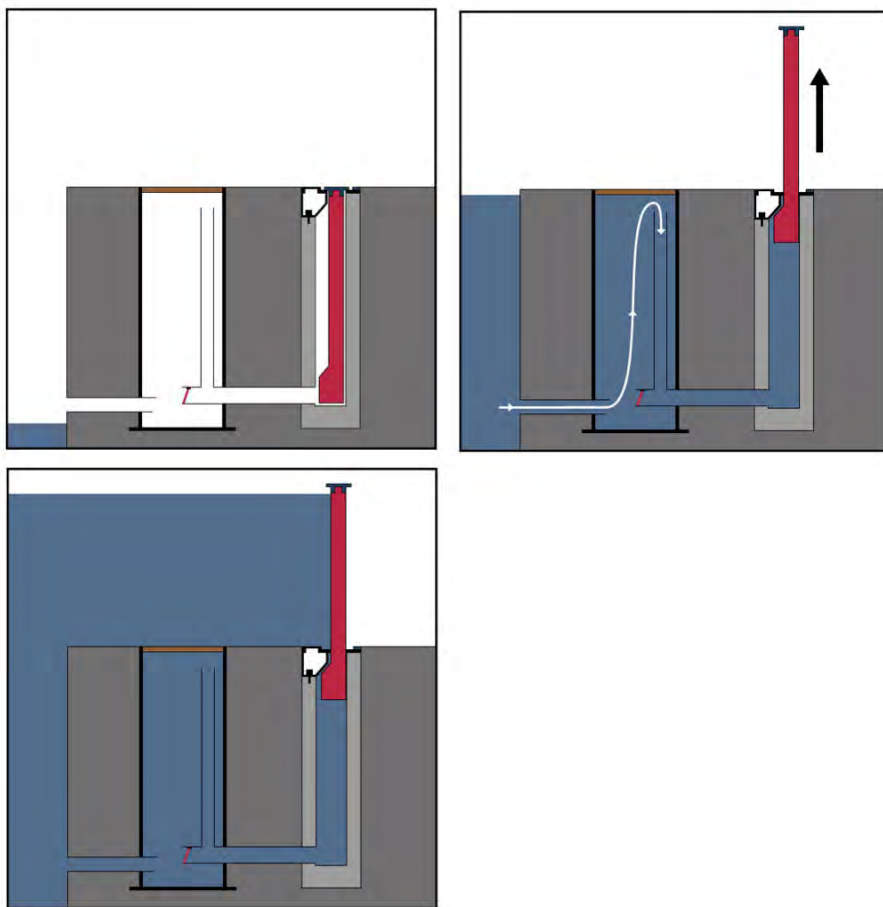
The barrier usually resides below ground in a vertical position within a steel or concrete trough. The barrier consists of a rigid foam core and a GRP outerlayer. When floodwater rises to a pre-determined level, the water spills into service pit and then through

a pipe into the trough and causes the barrier to float and raise fully. When the trough is filled, an angled support block locks the barrier into place, sealing it and making it watertight. The barrier is now fully effective and watertight to its full height.

As the floodwater recedes, the barrier lowers to its resting position again. The trough can be pumped out' also to lower the barrier before the adjacent groundwater levels recede fully.

Configurations

The Self Closing Flood Barrier configuration is in straight lengths from 1m with the overall flood barrier wall designed into suitable section lengths of up to 10m each as standard. Sections can be linked together using angled guide-posts for changes in direction.



[Download Data Sheet \(p](#)

BENEFITS

- Uses the floodwater itself to operate the barrier - no manual intervention required.
- No storage required - the barriers recesses fully into the ground

USES

The Self Closing Flood Barrier can be used to protect areas such as:

- Underground garages
- Riverside defences
- Coastal defences

- when not in use.
- Fast action - with a fast flood the barrier will close within a minute.
- Easy to test - the pit can be filled with water which automatically lifts the barrier ready for inspection.
- Unlimited lengths - from 1m to 1km or more.
- Railway defences
- Unmanned sites, such as utility stations
- Building openings such as roller shutter doors.

THE WATER STOPS HERE®

GO RIGHT TO IT

FLOOD BARRIERS
GLASS FLOODWALLS
FLOOD GATES
FLOOD DOORS
CASE STUDIES

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CONTACT US



UK Head Office:

+44 (0)1822 619730

enquiries@floodcontrolint.com



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Appendix G



Barry Goode
Coplanestates
5 Conduit Street
London
W1S 2XD

Our ref: KSL/MSL/13/009

Your ref:

Date: 23rd October 2013

Dear Mr Goode

Re: Marketfield Way site, Redhill

Further to our meeting on 11th October 2013, I can confirm that the Jacobs Report from October 2010, which was written as part of the Redhill Town Area Action Plan, is still the most up to date information available regarding flood levels for the Site. Therefore, flood risk at the Marketfield Way site should be assessed against a flood level of 75.80m AOD, which includes for the impacts of climate change, as stated in the documents dated 26th January 2011.

However the Environment Agency are in the process of looking to re-model the Redhill Brook to confirm the findings of the Jacobs report and to assess the feasibility for a flood storage scheme upstream of Redhill to provide improved protection to the town centre. The anticipation is that we hope to receive this completed modelling by June 2014.

If the proposal is put forward before any upstream storage is in place (see above) the proposed development should be assessed against the existing flood modelled information (Jacobs Report) showing the current situation.

Indeed whichever data is used there should be no decrease in floodplain storage as a result of the development.

In addition to the points listed: The underside of the finished floor level should be no lower than 300mm above the 1% annual probability flood water level with 20% allowance for climate change. This is to ensure the building is above the design flood water level and that there is sufficient space for water to be stored.

It would be beneficial to reduce the run off rates and volumes of surface water draining from the site. It was discussed that this could be obtained with a green/brown roof and tanked storage beneath the building, not to discount alternative sustainable urban drainage systems.

When thinking about raised access routes in the floodplain don't forget to consider what impact these might have on floodplain storage/flows/drainage. This should be taken into account and mitigation provided where necessary.

Yours sincerely

Nick Philpott

Flood Risk Management Technical Adviser
Environment Agency – South East Region

nick.philpott@environment-agency.gov.uk

Mr John Reed
Reigate and Banstead Borough Council
Town Hall
Castlefield Road
Reigate
RH2 0SH

Date: 09 October 2015

Our ref: PAC/KNTSLN/00270

Dear Mr Reed

Re: Redevelopment at Marketfield Way, Redhill, RH1 1NY.

I am pleased to confirm that we can provide you with our planning advice on this development.

We will give you advice in meetings and/or in writing on documents that you provide to us as set out in the attached Programme. Please note that this programme incorporates aspects of work to be submitted prior to the issue of any decision notice. This does not cover any post-permission enquiries.

We will provide our advice under our standard terms and conditions which are attached. We will charge for our technical advice based on a standard hourly rate that enables us to recover our costs - £84 per hour for planning technical advice and, where required, we will charge £125 per hour for legal staff time. We expect that the overall cost of the advice set out in the attached Programme will be approximately £1512. We will advise you as soon as practicable if our costs are likely to exceed this figure.

Our terms and conditions allow this work to be varied provided that first we agree any changes in writing, which includes by e-mail.

Before we provide you with this advice, we require you to accept these terms and conditions in writing. In so doing you:

- acknowledge that you understand the basis upon which advice is given; and
- warrant that the person signing is authorised to enter into this agreement and has obtained all necessary approvals to do so.

If you make any changes to the terms and conditions or the Programme when accepting, this offer will lapse and no contract will be formed. We may at our discretion issue a new offer letter.

Our project manager will be Carly Cudmore who can be contacted on 0203 263 8084 and e-mail carly.cudmore@environment-agency.gov.uk.

Yours sincerely



Richard Penn
Environment Planning and Engagement Manager (Kent and South London)

Att: Programme

Environment Agency
Ergon House, Horseferry Road, London, SW1P 2AL
Telephone: 03708 506 506
Email: kslplanning@environment-agency.gov.uk
Website: www.gov.uk/environment-agency



Standard Terms and Conditions

Planning Advice

Interpretation

The following terms have the following meanings:

“advice” means the provision by Us of chargeable advice to You related to Your planning application prior to it being formally submitted to the relevant authority and/or after such submission and/or after the grant of Your planning application, such advice may include but not be limited to: flood and coastal risk management; surface water management; pollution prevention; impacts on water bodies in a River Basin Management Plan; impacts on wetland biodiversity and fisheries; waste management; and climate change adaptation

“contract duration” means the period specified in the programme

“Party” “Parties” means You and Us

“planning application” means an application for planning permission or development consent order

“programme” means the schedule of work to provide the advice that You want Us to provide for You

“We” “Us” “Our” means the Environment Agency (and includes our officers, employees, contractors and agents)

“working day” means the hours between 9.30am and 5pm on any day other than a Saturday, Sunday or public holiday in England

“You” “Your” means the applicant named or proposed to be named in the planning application or grant of your planning application, as applicable (and includes your employees, contractors and agents)

Work we will do

- 1.1 We will provide You with Our advice as set out in the programme and as permitted under these terms & conditions.
- 1.2 We may consult other regulators and government bodies or other relevant authorities where we consider they are relevant.

Programme

- 2.1 We will agree with You a programme that sets out the advice You want from Us and when You want it. We will use reasonable endeavours to give You Our advice as set out in the programme (or in the absence of a specified programme within a reasonable time) but We don't guarantee to meet these timescales.
- 2.2 You and We may at any time agree changes to the programme. Such changes will be agreed in writing.

Work you will do

Environment Agency
Ergon House, Horseferry Road, London, SW1P 2AL
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk



- 3.1 You will request Our advice in accordance with the programme.
- 3.2 You will make available to Us such information (including maps, reports, plans and drawings as relevant) and provide such support as We may reasonably require in relation to Your requests for Our advice.
- 3.3 You will discuss with Us when You have any change in or additional requests for Our advice however we are under no obligation in relation to such changes unless and until they have been agreed in writing as set out in Condition 2.2.

Commencement and term

- 4.1 We will start to give You advice from the commencement date that We will agree with You and We will stop giving You advice on the last day of the contract duration. We will agree these dates with You and set these dates out in the programme.
- 4.2 The Parties may agree in writing to extend the contract duration.

Costs of our advice

- 5.1 You will pay Us all of the reasonable costs and expenses We incur in giving You Our advice.
- 5.2 We will charge You £84 for each hour of staff time (other than any legal staff time which will be charged at £125) required in giving You Our advice from the commencement date. In addition We will charge You for any other reasonable costs We incur (including the costs of advice from external consultants if we consider such advice necessary) and provide You with evidence of them.
- 5.3 Before We start work We will give You a costs estimate in writing. This will include a breakdown showing what work the costs are for, and approximately when the costs will occur. We will tell You if the costs estimate may change when We receive more information from You and from others, and when We agree with You in writing any changes to the programme under Condition 2.2.
- 5.4 You will tell us if You disagree with the costs estimate given under Condition 5.3 and why as soon as possible after You receive it, and not later than 2 weeks after You receive it.
- 5.5 You may terminate this agreement on the basis that the costs estimate is not acceptable at any time before We start work.
- 5.6 We will send You invoices quarterly. Charges invoiced will be exclusive of VAT or any other relevant taxes. Invoices are payable within 30 days of the date of issue.

Acknowledgement

- 6.1 You acknowledge and agree that when We give You Our advice it places Us under no obligation to You:
 - (i) to make any favourable recommendation to a local planning authority or the Planning Inspectorate in relation to Your planning application; or
 - (ii) to grant any related consents or permits which We are responsible for determining.
- 6.2 We will use reasonable skill, care and diligence when We provide You with advice, which will be based on the information available to us at the time and the laws policy and guidance in place at the time. You must ensure that the advice and information

We give You meets Your needs and You are responsible for the consequences of any use to which You put it.

Confidential information

- 7.1 Subject to Condition 1.2, we will only disclose confidential information You send us to any third party where it must be disclosed by operation of law, statute or regulation or the order of any competent authority. You should note that We are subject to the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 and We may be required to disclose certain information upon request.
- 7.2 Condition 7.1 will not apply where We have obtained information separately without confidentiality obligations or where it becomes publicly available otherwise than by a breach of obligation or confidentiality.
- 7.3 Condition 7.2 doesn't prevent Us providing a copy of any advice provided under this Agreement in relation to a formal application for the planning application or discharge of conditions.

Termination

- 8.1 Either Party may terminate this agreement between us by:
- (a) at any time by giving the other Party not less than 14 calendar days' notice in writing of its intention to terminate on that date. We will not unreasonably terminate this agreement.
 - (b) by giving the other Party notice in writing with immediate effect if the other Party (the Defaulting Party) commits a material breach of this agreement and if:
 - (i) the Defaulting Party has not remedied, or commenced and is diligently proceeding to remedy, the breach to the reasonable satisfaction of the other Party within 14 calendar days after service of a notice in writing specifying the breach and requesting it to be remedied; or
 - (ii) the breach is not capable of remedy; or
 - (iii) the breach is a fundamental breach of this agreement; or
 - (iv) the other Party becomes insolvent, is declared bankrupt, has a receiver appointed, enters into an arrangement with its creditors, or an order is made or a resolution passed for its winding up except where it is for the purpose of restructuring and the resulting institution agrees to be bound by this agreement.
- 8.2 If at the time that an agreement is terminated We have any outstanding costs which would otherwise have been payable by You under Conditions 5.1 to 5.2, or in relation to contracts or arrangements with third parties which cannot be immediately terminated You shall pay any such costs.
- 8.3 All provisions which would be required to survive the Agreement in order to have their intended effect will be deemed to survive termination.

Disclaimer

- 9.1 Neither Party excludes or limits liability to the other for death or personal injury caused by its negligence or for any breach of any obligations which it is not permissible to exclude by law.

9.2 Subject to Condition 9.1 We shall not be held liable in contract, negligence or otherwise for the consequences of You following or relying upon comments or views given to You by Us or any act, omission, event or circumstance or series of acts events or circumstances relating to this Agreement or with respect to the matters contemplated herein.

General

- 10.1 Any variation of these terms and conditions will only be valid if it is in writing and signed by both Parties.
- 10.2 Our obligations to You under these terms and conditions may be suspended because of any event which is beyond Our reasonable control and which means We can't carry out the work.
- 10.3 The use of these terms and conditions is subject to the law of England and Wales.
- 10.4 This agreement consists of (in order of precedence in case of conflict between them): Our offer letter to You, any variation in accordance with condition 2.2, 4.2 and 10.1, these terms and conditions, any estimate We provide, the programme and your acceptance of these terms and conditions. This is the whole agreement and excludes any representations whether oral or in writing.

Dispute resolution

11.1 Any dispute between the Parties arising out of this agreement will be referred first to Your project manager and Our senior manager for resolution before any formal action or proceedings are taken by either Party.

Signature:.....

Print Name:.....

Company:.....

Date:.....

Environment Agency
 Ergon House, Horseferry Road, London, SW1P 2AL
 Customer services line: 08708 506 506
 Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

Programme of Works

Agreement Number: PAC/KNTSLN/00270

Proposed development: Marketfield Way, Redhill

Applicant's project manager: John Reed

Environment Agency project manager: Carly Cudmore

Commencement date: 9 October 2015

Expected completion: 9 October 2016

(NOTE: See clause 2.2 of the Terms and Conditions: programme may be revised as agreed in writing)

Order of Cost and Breakdown of Costs

Programme	Estimated Time (hrs)	Estimated Cost (£)
Review of FRA/ submitted plans	4	336
Prepare and issue written comment	2	168
2 hour meeting (TBC) to discuss proposal (3 EA staff)	6	504
Post meeting actions/review minutes	6	504
Total	18	1512

Marketfield Way Development, Redhill**45110****Meeting Notes****7 December 2015**

Meeting held on the 7 December 2015 at EA offices, Westminster

Present: Barry Goode	Coplan Estates
Carly Cudmore	EA
Paul Stewart	EA
Robert High	DRP Architects
Mark Geddes	Richard Jackson Limited

The meeting opened with a description of the proposed development. Commercial space is proposed on the ground floor with residential space on upper floors.

The EA confirmed that their flood mapping is about to change. The new mapping is expected to be released in the New Year. If an application for flood data is made in the interim, the EA will supply the updated data on release.

The EA also explained the recent changes in the regime following the introduction of the Lead Local Flood Authority (LLFA) who are responsible for surface water flooding (EA retaining fluvial and tidal). The LLFA of Surrey County Council is being dealt with by Reigate and Banstead as agents. EA suggest early contact with them.

The site is at risk from surface water and fluvial flood risk which may be concurrent or separate events.

A discussion followed on the location of the Brook culvert and the risk from flooding that this may pose and the potential for the adjacent road to act as a defence. The potential for a flood mitigation scheme within the locality was discussed. The current situation is that no scheme appears to be viable on the upstream catchment. Further work may be carried out in the future but EA advises that the likelihood of any scheme coming forward in time for these proposals to take benefit is slim.

The proposals include a below ground car park. This is a potential risk area as it could become inundated during a flood event. The entry area will need to be designed to remove the risk of low depth flooding entering the basement with further measures protecting the entry from large scale events.

The entries to the retail and commercial space on the ground floor will need to be treated in a similar way. This could include the use of self-raising barriers to protect from water entry.

Flood plain compensation will need to be considered to ensure that any water displaced by the development does not cause any increase in risk off site. (The site has a high density of occupation currently which can be considered.

The recommended actions for the Development Team are as follows:

- Request flood data from EA;
- Request flood data from LLFA;
- Produce concept scheme for EA review (EA will charge for input preplanning);
- Contact Southern Water for records of any flood events and also for predevelopment view on potential sewer impacts.

Mark Geddes
on behalf of Richard Jackson Ltd

Lee Wynd

From: KSL Enquiries <KSLE@environment-agency.gov.uk>
Sent: 22 March 2016 14:07
To: Lee Wynd
Subject: RE: Further Update KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Categories: RJSave

Dear Lee,

I spoke with the mapping team at the end of last week and also yesterday, Monday 21 March.

They are still waiting to receive the updated model from the consultants and are chasing up the issue to get the model back as soon as possible.

The reason for the delay is that there was an error in the model we had. This particular model is rarely use and therefore we were unaware of the issue until very recently. We do not know what the exact problem with the model was which could be why there has been a long wait for the corrected model.

We understand this will be frustrating for you and as soon as I get the data sent to me I will send it across to you.

Kind regards,

Toby

Toby Mortby | Customers and Engagement Officer | Kent and South London
Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH
Internal: 723-3115 External: 01732 223115
Email: KSLEnquiries@environment-agency.gov.uk

We would be really grateful if you could spare five minutes to help us improve our service. Please click on the link below and fill in our survey – we use every piece of feedback we receive:

<http://www.smartsurvey.co.uk/s/EnvironmentAgencyCustomerSurvey/?a=KSL>

www.gov.uk/floodsdestroy

DO YOU KNOW WHAT TO DO?



From: Lee Wynd [mailto:LeeWynd@rj.uk.com]

Sent: 22 March 2016 10:36

To: KSL Enquiries

Cc: BarryGoode@coplanestates.com; steve.bainbridge@cuddbentley.co.uk; Robert.High@prparchitects.co.uk; Craig.Sheach@prparchitects.co.uk; helen.shreeve@abc-consult.co.uk; nickdoyle@coplanestates.com; giuseppe.cifaldi@wyg.com; andrew.bish@abc-consult.co.uk; Mark Geddes

Subject: RE: Further Update KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Toby,

Has there been any change in the status of this enquiry in the last week?

Regards

Lee Wynd

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Registration No. 2744316 England, 26 High Street, Hadleigh, Suffolk, IP7 5AP

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Please consider the environment before printing this e-mail.

From: KSL Enquiries [<mailto:KSLE@environment-agency.gov.uk>]

Sent: 14 March 2016 16:55

To: Lee Wynd

Subject: Further Update KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Lee,

I went to speak to the relevant team today to get an update on your enquiry.

They are still waiting for the changes to be made to their model and are chasing this up as well.

Please be re assured that as soon as the model has been corrected I will get the Product 4 sent over to you as soon as possible.

Once again please accept our apologies for this delay.

If you have any further questions, please contact us and we will be happy to help.

Kind regards,

Toby

Toby Mortby | Customers and Engagement Officer | Kent and South London
Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH
Internal: 723-3115 External: 01732 223115
Email: KSLenquiries@environment-agency.gov.uk

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www.gov.uk/floodsdestroy

DO YOU KNOW WHAT TO DO?



From: KSL Enquiries
Sent: 07 March 2016 08:32
To: Lee Wynd
Subject: Update KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Lee,

I would like to provide you with an update on the status of your enquiry.

I was not in work on Friday and so have looked first thing today to see if your data was provided on Friday for us to send out to you. Having just spoken with my colleague who you have previously spoken on the phone with, it would seem that we could not obtain the data for you from the relevant team.

After your phone call last week we sent several reminders to the team to make sure we had the data for you as soon as possible. The latest update I can give you is from correspondence we received in the afternoon on Tuesday 1 March. This explained that there was a problem with the model and it was being put right by the consultants. If we had provided a Product 4 to you before erasing the problems then the levels within the Product 4 would be wrong.

Please take note that I will continue to investigate and chase this up today and will provide a further update for you before the end of the day.

Once again please accept our apologies in the delay providing your requested data.

Kind regards,

Toby

Toby Mortby | Customers and Engagement Officer | Kent and South London
Environment Agency | Orchard House | Endeavour Park | London Road | West Malling | Kent | ME19 5SH
Internal: 723-3115 External: 01732 223115
Email: KSLenquiries@environment-agency.gov.uk

We would be really grateful if you could spare five minutes to help us improve our service. Please click on the link below and fill in our survey – we use every piece of feedback we receive:

<http://www.smartsurvey.co.uk/s/EnvironmentAgencyCustomerSurvey/?a=KSL>

www.gov.uk/floodsdestroy

DO YOU KNOW WHAT TO DO?



From: Lee Wynd [<mailto:LeeWynd@rj.uk.com>]

Sent: 04 March 2016 11:51

To: KSL Enquiries

Cc: BarryGoode@coplanestates.com; steve.bainbridge@cuddbentley.co.uk; Robert.High@prparchitects.co.uk; Craig.Sheach@prparchitects.co.uk; helen.shreeve@abc-consult.co.uk; nickdoyle@coplanestates.com; giuseppe.cifaldi@wyg.com; andrew.bish@abc-consult.co.uk; Mark Geddes

Subject: RE: KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Toby,

Further to the below email and our previous correspondence, we should be pleased if you would be able to confirm that you and your colleagues are still in a position to deliver the requested data to us today. We look forward to hearing from you.

Regards

Lee Wynd

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Please consider the environment before printing this e-mail.

From: Lee Wynd
Sent: 01 March 2016 12:23
To: EA - Kent and South London
Cc: 'BarryGoode@coplanestates.com'; 'steve.bainbridge@cuddbentley.co.uk'; 'Robert.High@prparchitects.co.uk'; 'Craig.Sheach@prparchitects.co.uk'; 'helen.shreeve@abc-consult.co.uk'; 'nickdoyle@coplanestates.com'; 'giuseppe.cifaldi@wyg.com'; 'andrew.bish@abc-consult.co.uk'; Mark Geddes
Subject: FW: KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Toby,

Further to your correspondence below dated 29/01/2016, which explained that there would be a delay in providing us with the required model data which we had requested 13/01/2016, we subsequently followed this up by telephone with you on 18/02/2016 and you informed us that the data would be ready that same week.

We have again followed up by telephone today 01/03/2016 and spoken to one of your colleagues who was unable to ascertain why the delay has been so lengthy. We are now almost five weeks removed from being informed of the delay, for a total of seven weeks from the initial application, which is significantly beyond the four weeks you commit to responding by. This is the case even if the date of payment, 18/01/2016, is used. Furthermore, no attempts were made to keep us informed of progress beyond the initial update, nor has any explanation been given as to why the delay has occurred. This has now caused an unacceptable delay in our Client's project.

Your colleague this morning has confirmed that the data will be provided to us by the end of this week 04/03/2016; we look forward to receiving your response.

Regards

From: KSL Enquiries [<mailto:KSLE@environment-agency.gov.uk>]
Sent: 29 January 2016 16:08
To: Lee Wynd
Subject: KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Lee,

RE: KSL160118 TM74 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Please be aware there will be a slight delay in the Product 4 for Marketfield Way, Redhill RH1 1RH you requested.

The latest model which we need to use to produce the Product 4 for your site needs to be re evaluated. This is so we can provide the most accurate modelled levels for your request.

We will endeavour to send the Product 4 to you as soon as we can. We will keep you updated with any changes to the situation.

We apologise for the delay in providing the data you requested.

If you have any further questions, please contact us and we will be happy to help.

Kind regards,

Toby

Toby Mortby | Customers and Engagement Officer | Kent and South London

We would be really grateful if you could spare five minutes to help us improve our service. Please click on the link below and fill in our survey – we use every piece of feedback we receive:
<http://www.smartsurvey.co.uk/s/EnvironmentAgencyCustomerSurvey/?a=KSL>

www.gov.uk/floodsdestroy

DO YOU KNOW WHAT TO DO?



From: Lee Wynd [<mailto:LeeWynd@rj.uk.com>]
Sent: 13 January 2016 15:52
To: KSL Enquiries
Subject: 45110 - Marketfield Way, Redhill RH1 1RH - Flood Risk Assessment

Dear Sir/Madam,

We wish to obtain the latest flood data available for the above site location, for the undertaking of a Flood Risk Assessment. Attached is a site location plan. We require:

- 1 in 20, 1 in 100, and 1 in 1000 year flood levels, including climate change, for Redhill Brook.
- Historic flood mapping.
- Flood mapping.
- Flood Warning trigger levels and area code.
- Flood defence crest levels, if any.
- Any associated information with regard to undertaking a Flood Risk Assessment.

We should be grateful if you would provide us with the cost for the above data so that we can organise payment to you. If you should have any questions in the interim, please do not hesitate to contact us.

Regards

Lee Wynd



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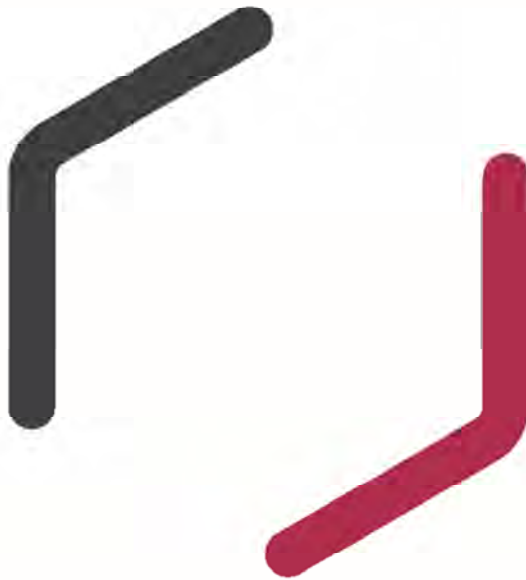
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