cgs civils

Consulting Civil Engineers



Flood Risk Assessment

18-22 East Street, Littlehampton

For

Lovelong Ltd

Rev **A**

Reference C1063

Date 11th June 2018

65 St Pauls Road, Chichester, West Sussex, PO19 3DD

[redacted]

ARUN DISTRICT

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ARUN DISTRICT COUNCIL LU/357/18/PL

1. Introduction

CGS Civils Ltd have been appointed to provide a Flood Risk Assessment (FRA) for a proposed change of use from an NHS Doctor's surgery to a Private Detox and Rehabilitation Centre (Use Class C2) in Littlehampton, West Sussex.

The site is located at the extent of a Flood Zone 3 triggering a requirement for an FRA.

This Flood Risk Assessment is to be submitted as part of an outline planning application for the development of the site and has been prepared in accordance with the National Planning Policy Framework (NPPF), The associated Technical Guidance document and the 2015 National Planning Practice Guidance (NPPG).

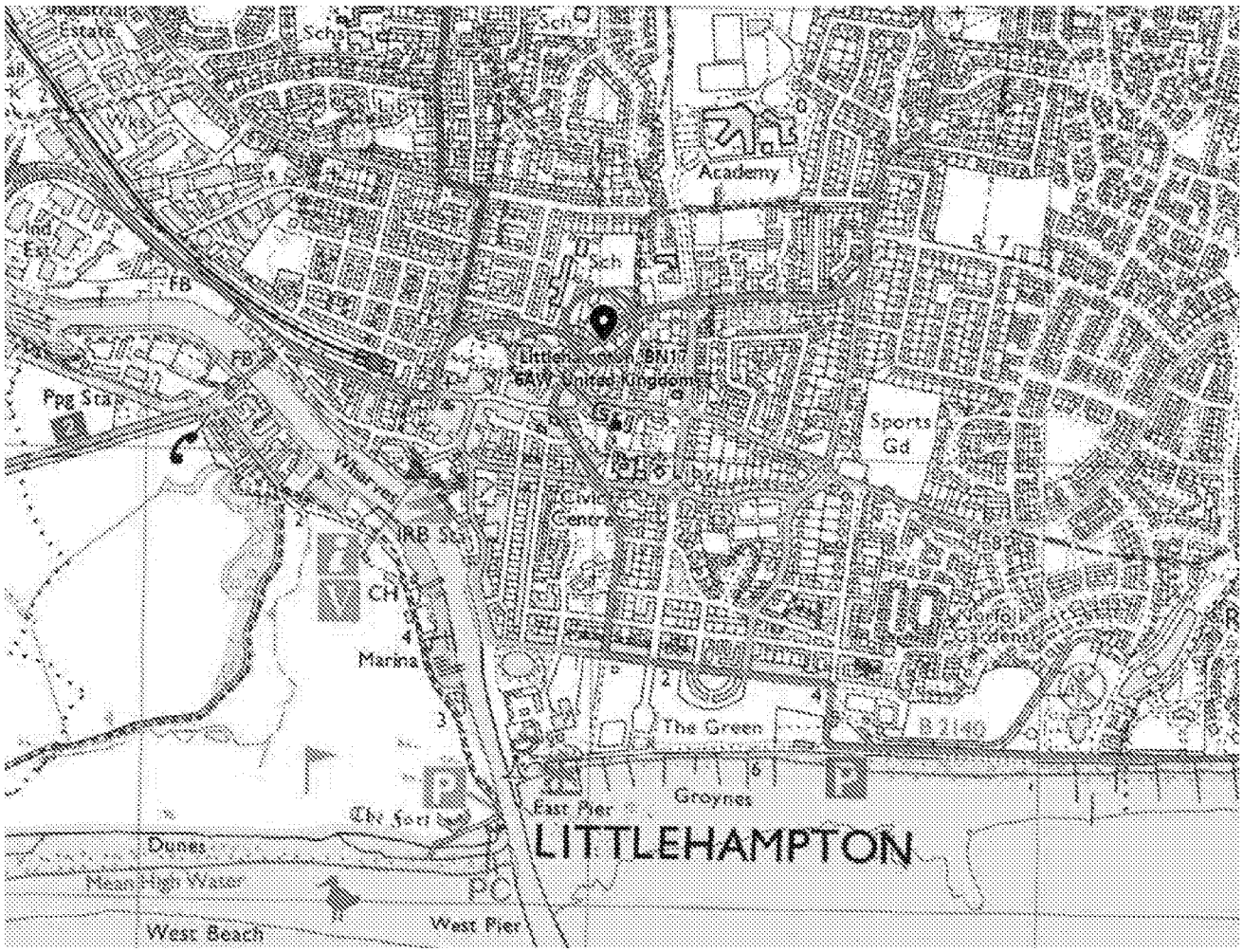
1.1. Existing Site

The current site consists of an existing now unused Doctors Surgery.

1.2. Site Location

The site is in Littlehampton, West Sussex with a grid reference of 503013E and 102253W.

Figure 1 Site Location



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Figure 2 Site Location



Ordnance Survey, (c) Crown Copyright 2018. All rights reserved. Licence number 100022432

1.3. Site Topography

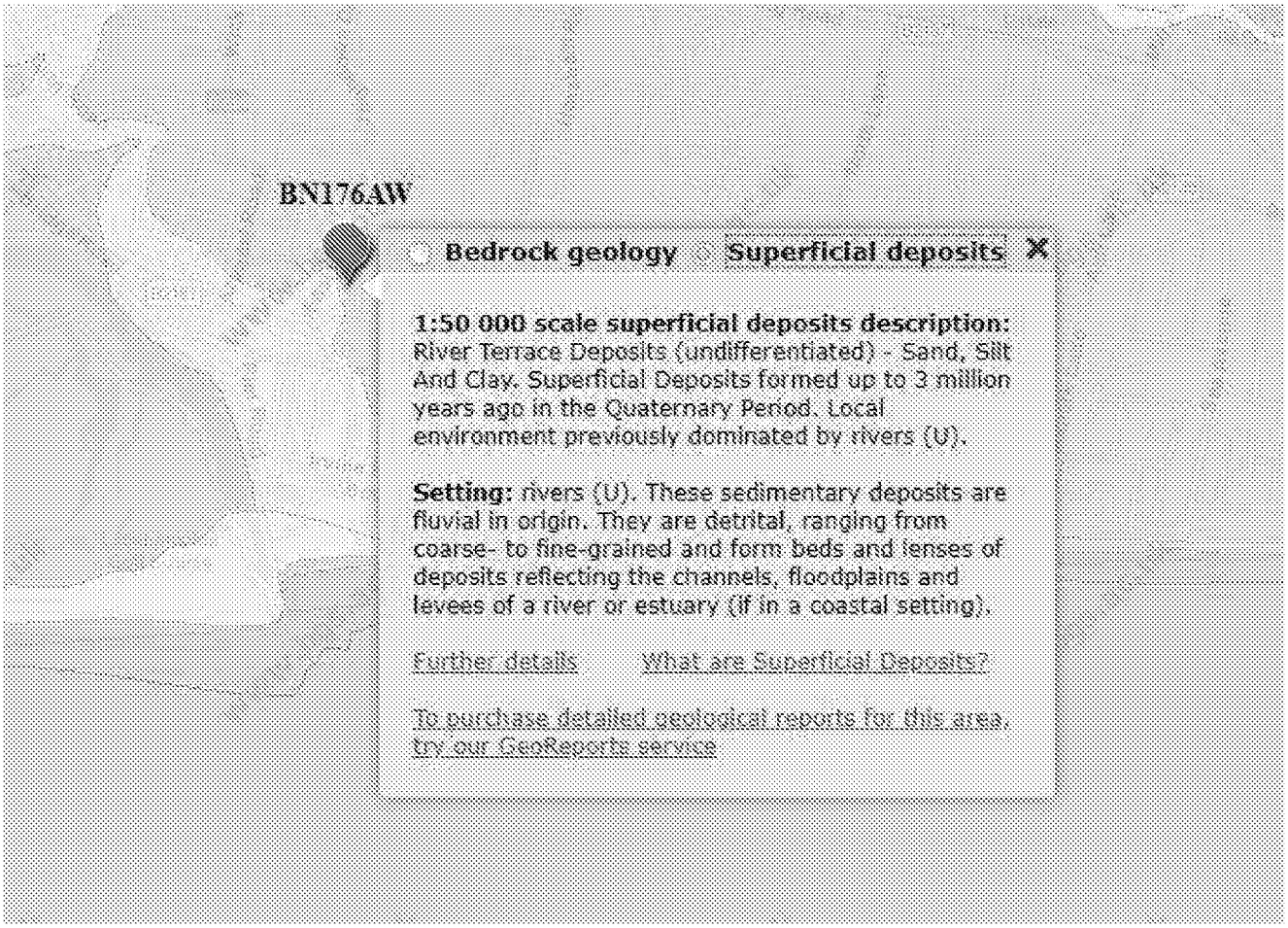
The site has a steady fall from south east to north west. The highest point on the site is 5.07m AOD and the lowest is 3.40m AOD. The FFL of the existing building itself is generally at 4.32 with some minor variation between rooms.

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1.4. Site Geology

The British Geological Survey (BGS) confirms the site to be underlain by the Lambeth Group with clays, silts and sands.

Figure 2 BGS Geology Map



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2. Flooding Mechanisms

The EA Flood Map for Planning confirms that the application site is partially situated within a Flood Zone 3 (FZ3) which is land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Figure 3 EA Flood Map for Planning



The list below sets out the potential sources of flood risk to the site and how the site is affected by each.

2.1. Tidal Flooding

The site is located 0.9 km north of the English Channel and is not shown to be at any direct risk of tidal flooding, however the site is located adjacent to the River Arun that discharges to the sea and the water levels are influenced by tidal variations. The risk of flooding from the sea directly however is negligible.

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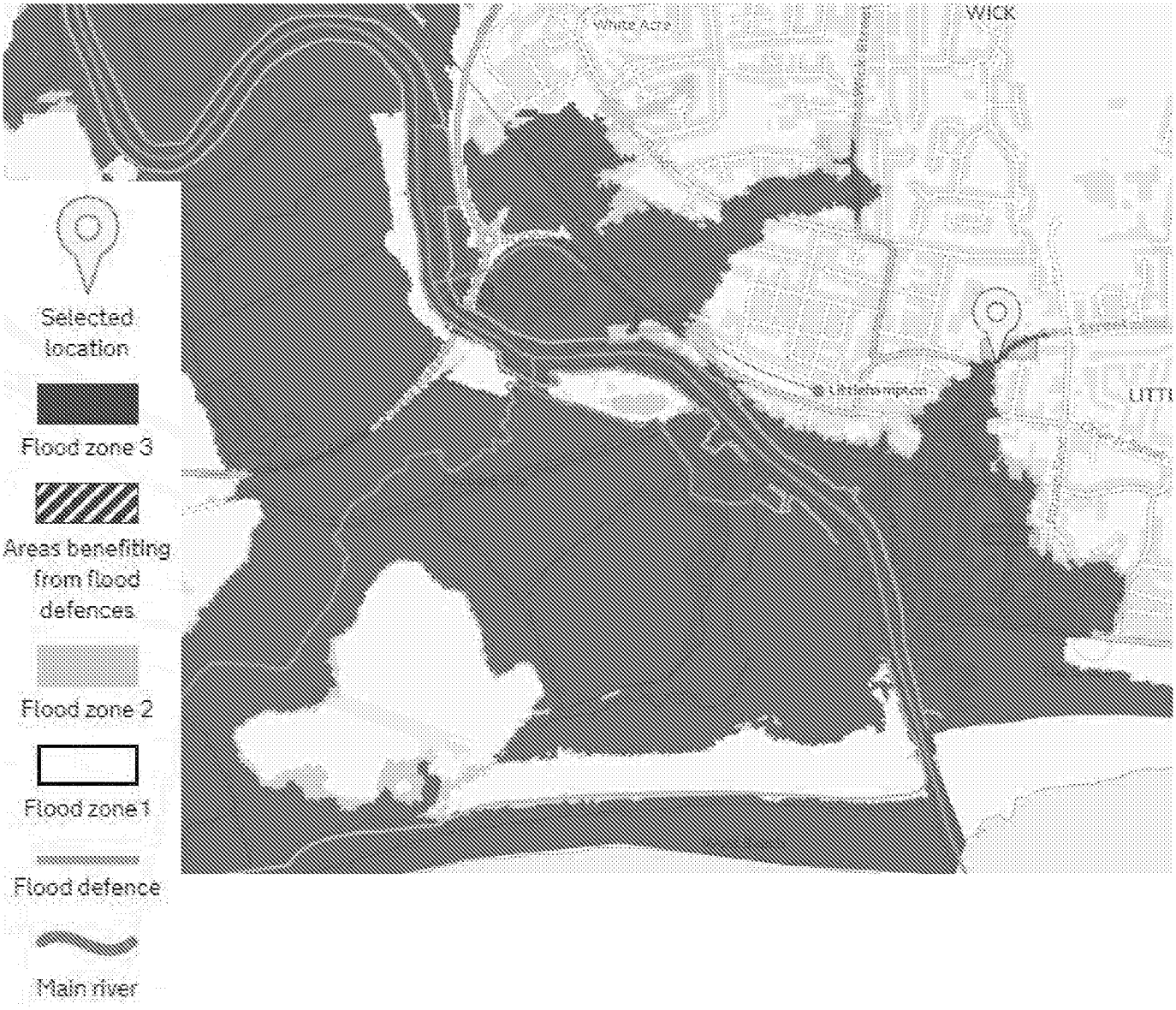
2.2. Fluvial Flooding (Rivers)

The site is located 500m east of the River Arun which feeds into the English channel.

The Environment Agency confirmed within their Product 4 package that the site is subject to flooding via this source as per Figure 3 above. This map however is based on no defences (undefended) where defences do in fact exist. These defences consist of a sea wall with an upstream crest level of 3.94m AOD and a downstream of 3.39m AOD. The condition is regarded as excellent with a standard of protection of 1 in 300 years (0.3% AEP (Annual Exceedance Probability)). Works to improve the defences were completed also in recent years. The site can therefore be considered to be located in an area with a similar level of flood risk as Zone 1 but with a residual risk of flooding from a breach of the flood defence, due to climate change.

The below figure 4 indicates the location of the defences in relation to the site.

Figure 4 EA Flood Map for Planning Indicating Flood Defences



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Flood level data from the EA confirms that the 1 in 200 year (0.5% AEP) flood level will be 3.74m AOD at node 1 which is 0.58m below the existing and proposed finished floor level of 4.32m AOD.

The 1 in 1000 year (0.1% AEP) is confirmed as being 4.06m AOD i.e. 0.26m below the existing and proposed finished floor level.

Should the proposed facility operate into the decade of the 2080's and beyond, then the flood model indicates that the 1 in 200 year (0.5% AEP) flood levels would rise to 4.35m AOD in 2070 and 4.94 in 2115. This would flood the building to 0.13m and 0.62m respectively.

Figure 5 EA Flood Level Data and Map

Table 1: Water Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres Undefended Annual Exceedance Probability				
Node Ref	Eastings	Northings	5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	503009	102262	N/A	3.74	4.35	4.94	4.06
2	503019	102248	N/A	N/A	4.35	4.94	4.06
3	503027	102238	N/A	N/A	N/A	4.94	N/A

Table 2: Water Depth: Tidal Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability				
Node Ref	Eastings	Northings	5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	503009	102262	N/A	0.44	1.05	1.63	0.75
2	503019	102248	N/A	N/A	0.31	0.90	0.02
3	503027	102238	N/A	N/A	N/A	0.43	N/A

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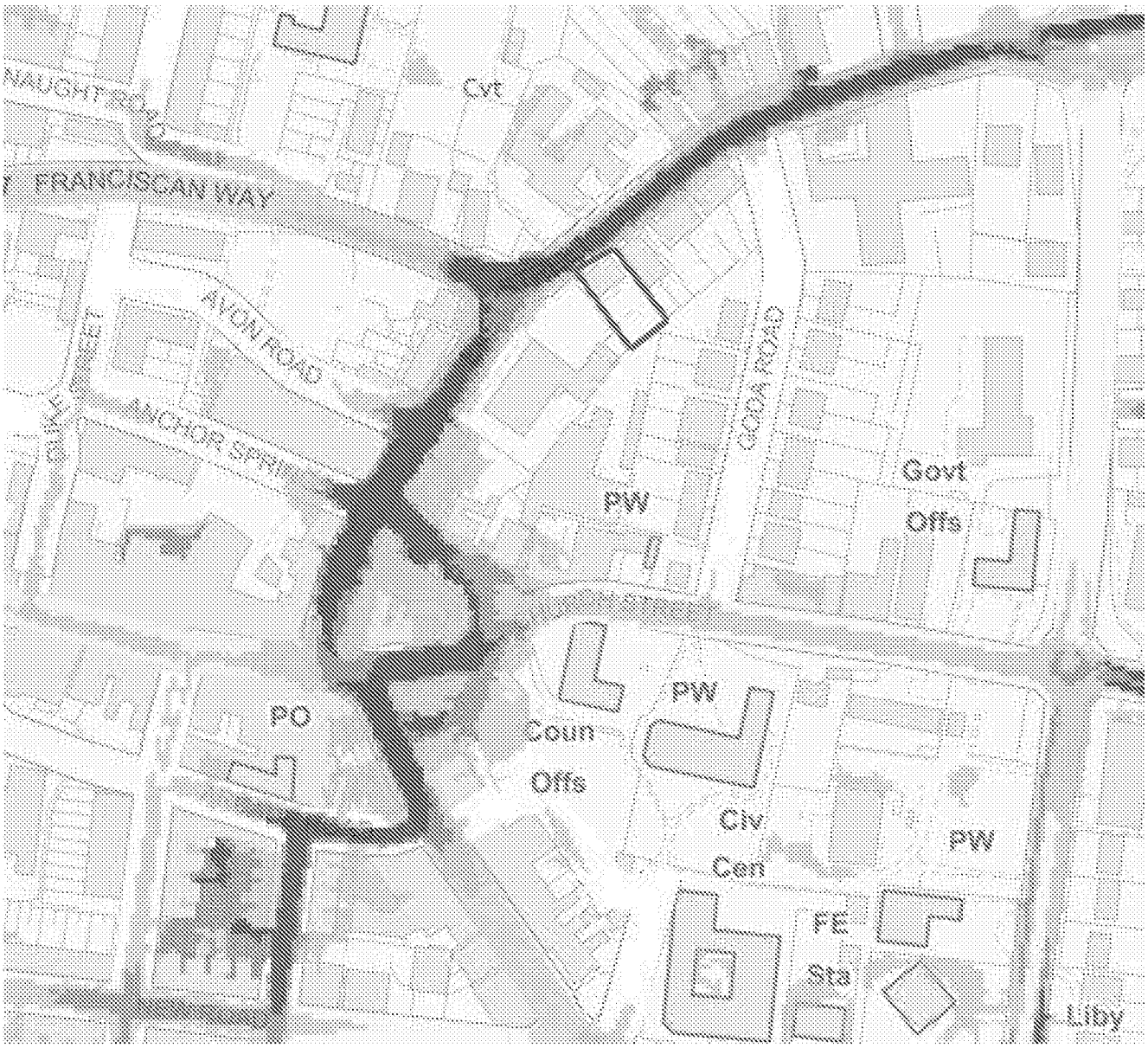


2.3. Pluvial Flooding (Surface Water)

The Surface Water Flood Map for the site confirms that the site is just outside of the surface water flooding extents. This is likely due to the building being set some 1.2m above the channel level of East Street. The site is therefore at negligible risk from this source.

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Figure 6 Surface Water Flooding Map



2.4. Foul/Surface Water Sewer Flooding

The Arun District SFRA sets out area based on postcodes and Southern Water DG5 register where there have been recorded flood incidents. Within the postcode area of the site BN17 6, there were 3 recorded flood incidents based on 25th February 2016 shown in figure 6 below.

Should any flooding take place then the buildings elevation again would provide protection from tis source of flooding.

Figure 7 Excerpt from SFRA – Southern Water DG5 register sewer flooding incidents

Table 5-2: SIRF database for the Arun District

Post Code	Recorded Flood Incidents	Post Code	Recorded Flood Incidents
BN12 5	10	PO20 3	11
BN12 6	1	PO21 1	2
BN16 1	14	PO21 2	8
BN16 2	13	PO21 3	30
BN16 3	4	PO21 4	20
BN16 4	2	PO21 5	22
BN17 5	22	PO22 0	15
BN17 6	3	PO22 6	27
BN17 7	7	PO22 7	36
BN18 0	20	PO22 8	12
BN18 9	8	PO22 9	28
Total: 315			
Note: Based on information exported on 25/02/16			

2.5. Groundwater Flooding

The site is not located within a Groundwater Source Protection Zone as indicated by Environment Agency Mapping. There is no reference to recorded areas of groundwater flooding and therefore it is considered the site is at low risk of groundwater flooding.

2.6. Reservoir Flooding

The site is not near any reservoirs and is therefore at no risk of flooding from this source.

3. Proposed Development

It is proposed to change use form an existing NHS surgery (D1 Use Class) to a Private Detox and Rehabilitation Centre (Use Class C2) with the intention on providing temporary accommodation for individuals requiring assistance with rehabilitation. Nos 18-20 will provide temporary accommodation throughout whilst no 22 to the east will provide offices on the ground floor and accommodation on the second floor.

3.1. Proposed Surface Water Drainage Regime

As the proposals are internal only, there will be no change to the existing drainage regime. It is advised however that a CCTV survey is undertaken during the works to confirm that the system is functioning satisfactorily.

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4. Flood Risk Management Measures

The existing building falls within Flood Zone 3, and whilst the site is within a defended area and very unlikely to flood, a breach of the defences may occur, therefore it is sensible that mitigation measures are to be put into place to reduce the risk to persons living/staying at the dwelling and to the dwelling itself, where reasonably practical.

4.1. Finished Floor Levels

As the proposals are for a change of use only there will be no scope to raise the finished floor level of the building. It will be important therefore to consider the following to safeguard the property where reasonably practical.

4.2. Flood Resistant Construction

As the building currently exists, the methods used to safe guard it and its occupants are more limited than a new build. There are however several options that can and should be considered to provide extra resilience should flood waters ever rise.

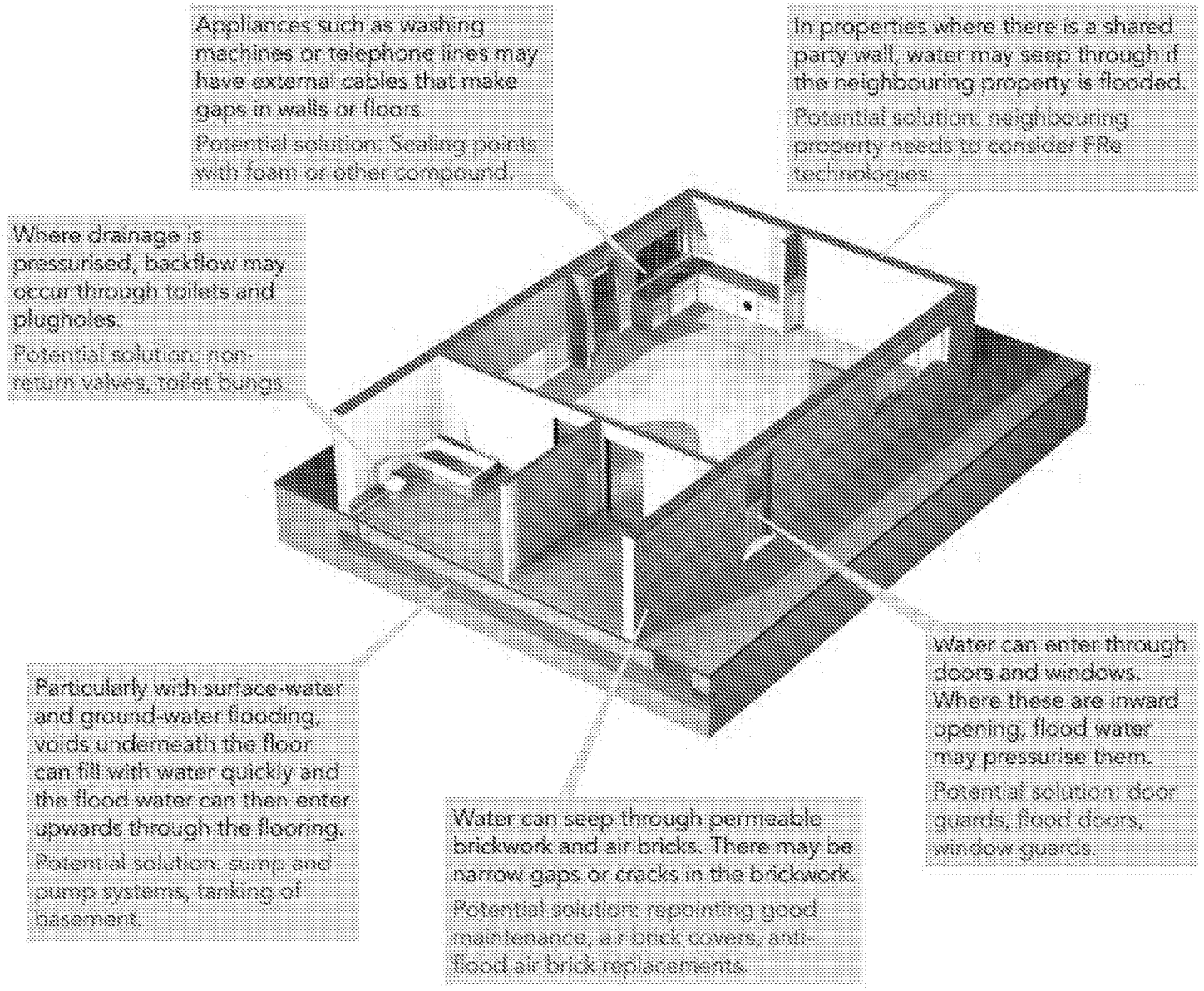
The following diagram in Figure 7 below is an excerpt from Ciria and details the flood entry routes into a building and methods used to stem the flow of flood waters.

For this particular site however, the following should be employed:

1. **Air Bricks** – Each air brick should be replaced by a SMART AirBrick or similar
2. **Demountable Flood Barriers to external doors** – These are to be erected upon flood warning
3. **Repointing existing brickwork –** This will slow the ingress of water through brickwork

ARUN DISTRICT COUNCIL LU/357/18/PL

Figure 7 Ciria Potential Routes for Entry of Flood Water into A Dwelling



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4.3. Flood Warning System & Access & Egress

Should flooding occur to the extent as estimated, then there would be no immediate safe refuge area for the occupants. It would therefore be appropriate to have an evacuation plan in place should the risk of flooding become identified. A suitable plan is included in Appendix A.

The flood management and evacuation plan should be reviewed regularly and updated accordingly i.e. every 3-5 years. The plan will be on display with other general warning signs associated with the facility and all managers and staff will need to be made aware of it should it need to be implemented.

The warning from the EA will be made in good time allowing for a calm evacuation and subsequent closure of the facility until the warning has been withdrawn.

4.4. Maintenance

The drainage system will remain wholly unchanged however it will be necessary to maintain this system to ensure effective operation and reduce the likelihood of a flood event.

The existing pipework, manholes, gullies, and catch pits and will be maintained regularly to ensure effective operation. It is recommended that they are inspected every 3 months and after every severe storm event. The maintenance will include the clearing and cleansing of gully pots and catch pits. Any blockages are to be rodded through and removed from the following downstream manhole.

5. Conclusions

The Environment Agency Flood Map for Planning confirms that the site is in a Flood Zone 3 (FZ3) which is land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

The only significant risk of flooding would be via the River Arun however the risk would only be applicable some 50 years from now with the impact from climate change. The building itself is currently protected for up to the 1 in 1000-year flood. Littlehampton is also currently defended by recently constructed flood defences generating a protection of up to the 1 in 300 year flood event.

Whilst there is risk to the occupants should flood waters pose a risk to the building, it is deemed as being mitigated by the fact that the users of the facility may reside in a more dangerous and unprotected situation should the facility not be made available to them.

By employing the flood evacuation plan, the occupants will have sufficient time to evacuate the facility to a pre-agreed safe location from flood waters. There will also be time for the facility manager to mount the flood barriers and ensure that the building is protected as far as reasonably practical to permit the occupants back into the facility as soon as possible once the flood waters have receded and the facility be deemed as safe. The facility will be staffed 24 hours a day.

Based on the above, the proposals to convert the existing doctor's surgery to a Private Detox and Rehabilitation Centre (Use Class C2) is appropriate for the location.

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Appendix A

Flood Management and Evacuation Plan

1. The building is most at risk of flooding from the River Arun however flood defences are in place.

2. This plan, which explains that this building is primarily at risk from river flooding, shall be part of the Manager's operational documents. It shall be reviewed on a regular basis, e.g. every 3 years until 2024 and then possibly extended to 5-6 year spans, depending on how much change is needed within the first 6 years.

3. The main threat of flooding is from the River Arun however there should be sufficient warning time given by the Environment Agency via the Flood Warning System.

4. The manager shall sign up to the flood warning system via the Environment Agency website. This automated service will ring the building via the telephone and inform the occupants whether to evacuate or be on alert.

5. The manager should keep up to date with broadcast information during inclement weather. The internet, TV news channels and local radio stations will provide sufficient detail.

6. The establishment should only be evacuated if the warnings given clearly indicate that this action is necessary. It is possible that flooding occurs on other streets in Littlehampton, leaving this area unaffected so undue panic should be avoided. If, however the threat of flooding is likely to reach this end of East Street then the following evacuation procedure must be carried out as quickly as practicably possible.

Evacuation Procedure

7. All members of staff must be instructed clearly as to how they are to respond to a flood warning and/or event during their induction. They should also be provided with a copy of this plan for future reference. This plan along with the contact information below should be displayed in the communal area.

8. If the manager is aware that there is a flood warning in place before working day commences, the staff should be contacted as early as possible to prevent unnecessary and potentially hazardous trips.

9. The manager should have an agreement with an alternative facility to temporarily accommodate current occupants until it is safe to return. Transport is to be provided at any point in a 24 hour period.

10. After the building has been successfully evacuated then the manager will lock the building, close all openings and erect the flood barriers before evacuating. He or she will then ensure that all staff are accounted for.

11. If for whatever reason, there is insufficient time to evacuate as per point 9, then room will be made available on the first floor where flood waters will not reach. Food and water will be made available and a phone for contacting emergency services who will advise on the next steps.

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Useful Contact Details

Agency	Contact Details	Responsibilities
Environment Agency (Flood Warnings)	Tel: 0345 9881188	• Issuing flood warnings; • Recording details of floods; • Monitoring the situation and advising the emergency services; • Advising and assisting on pollution and waste disposal.
West Sussex Police Service	Tel: 999 or 112	• Co-ordinating the different emergency services; and • Taking a lead in the implementation of the flood event procedures.
Fire Brigade	Tel: 999 or 112	• Rescue; • Responding quickly to incidents; and • Assisting the populace wherever a need is identified using Fire Service equipment.
Ambulance Service	Tel: 999 or 112	• Communication with other emergency services to provide mass healthcare (if needed); and • To ensure they have a plan for the illnesses and health implications of a flood.
Southern Water	Tel: 0330 303 0368	• Clearing blocked sewers after the event; • Protection of property from flooding in the mains/sewers; and • Clearing up of and assistance in dealing with flood water (storm and foul).
Resilience & Emergency team (WSCC)	Tel: 033 022 22400 (contingency planning unit)	• Sharing information between different agencies and services; • Planning for civil and business continuity in the event of a flood; and • Getting the roads cleared after a flood.
Utility Providers		• Ensure the key utilities (gas, electricity etc.) are still running in the aftermath of a flood; • Ensure in the event of a flood any key infrastructure is still properly operational; and • Ensure that any damaged wiring etc. is repaired quickly.

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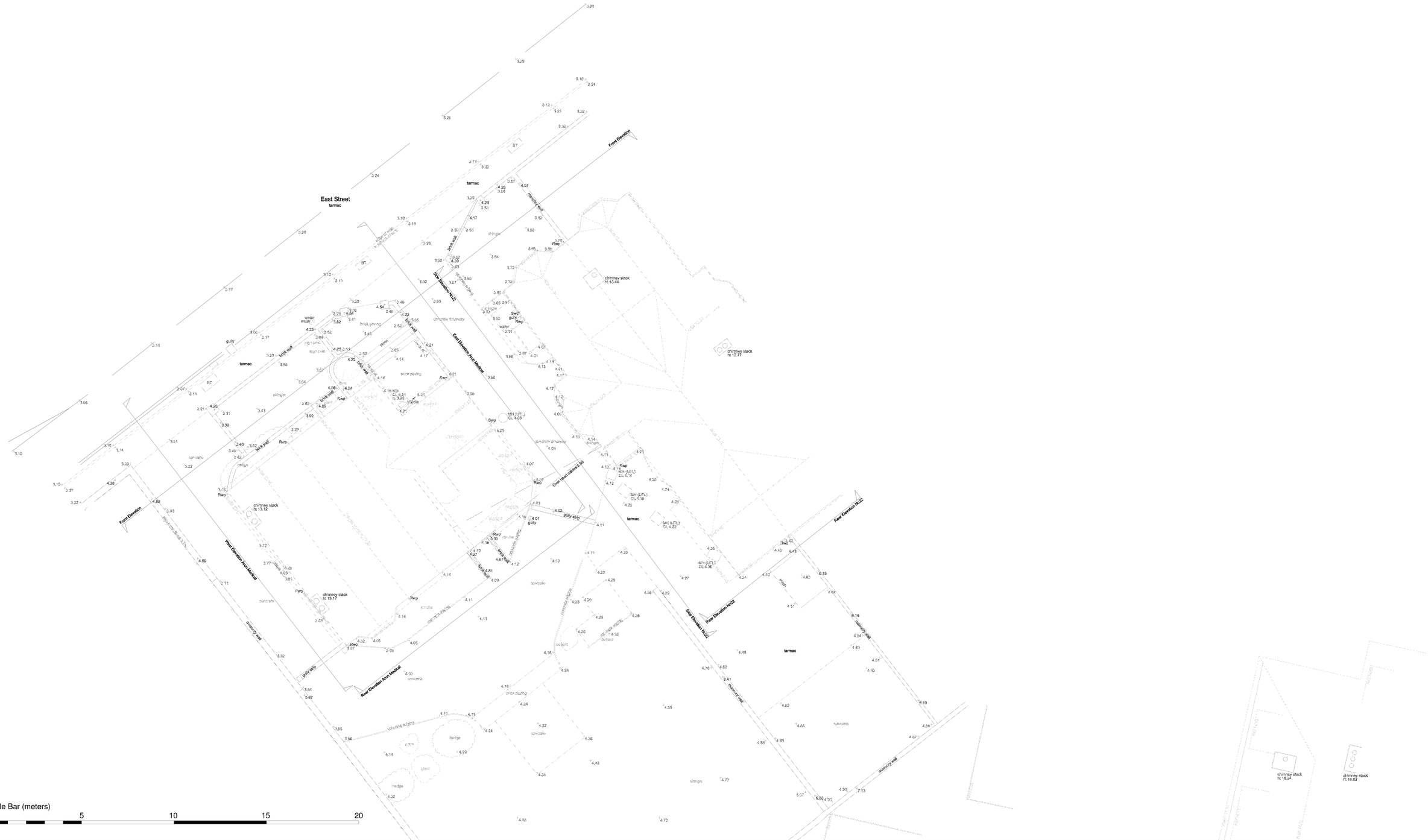
Appendix B

Topographical Survey

ARUN DISTRICT COUNCIL LU/357/18/PL

001


East Street
Scrub
Hedge
Gully
100.19
SWP
RWP
dia:90
MH
IL 100.40
IL 99.40
dia:100
100.40
Gate
Gate
Gate



NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 502656.482, N 102253.806, RL 4.210

LAYER INFORMATION

A	Chart(s)
Bank	Diversion (wire or mac)
Bollard	Electricity (cable or mac)
BT	Telephone box and boxmarker
Building(s)	Electricity pole
Edge of Concrete	Edge of concrete surface
Edge of Road	Edge of road surface
External Steps	External Steps
Fence(s)	Handrail, Scrape and boundary lines
Flood	Flood Levels
Footpath	Edge of footpath or Path changes
Gardening	Edge of grass, flower beds and garden surface changes
Gate	Gate opening lines
Gully	Gully
Hedgerow	Edge of wood, bush hedges
Kerb line	Road kerb line
Lamp Post	Lamp pole and lighting
Overhead Cables	Overhead cables and wires
Overhead Cables	Overhead cables and utility poles
Paint	Significant road markings and arrows/ pole
Road Markings	Significant road markings
Roofline(s)	Ridges, eaves, hips and valleys lines
Spot Level	Spot levels and Engineered Surface
Spot Level	Lamp posts and Lamp Light
Tarmac(s)	Paint annotations
Boundaries text	Paint annotations text
Survey Stations	APP, reference survey stations
Top of Bank	Top of Bank
Top and Back of Kerb	Top and back line of kerb
Top of Slope	Top line of slope
Tree	Tree icon and spread
Unidentified Structure	Other structures
Wall	Walls

Line types and Symbols

Building Lines	Garden Line	Road Markings	
Rooflines	Scrub Line	Hedge Line	Hedge
Top & Back of Kerb	Gullies	Walls	100.40
Edge of Surface / Footpath	Man holes & Flow	Steps	100.40 100.40 100.40
Edge of Road			
Edge of Concrete		Plant	Plant
Top of bank	Trees		
Bottom of bank		Gates	Gate:1.90
Fence / Handrail	Spot Levels		
Overhead Cables			

Scrub
Gully 100.19
SWP
RWP
dia:190
MH CL:100.40 S:99.90
dia:100
100.40

Control Stations

Co-ordinates in OSGB

Point Number	Easting	Northing	Elevation	Description
Sta1	502656.482	102253.806	4.210	Hillfort
Sta2	502618.645	102214.287	4.154	Hillfort
Sta3	502617.106	102211.143	3.264	Hillfort

Orientation

North

Rev.	Date	Description

Client
OM Architectural Design

SeSurveying

Drawing Title
Topographical Survey P1

Job Title
East Street, Littlehamptom

Scale	Date	Drawn	Job No.	Drawing No.	Rev.
1/100 @ A1	02/02/17	DM/JO	019 01 17	001	
	Surveyed by UG/CH	Checked CH			

ARUN DISTRICT COUNCIL LUS01/16/PL



NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 503626.452, N 102253.506, RL 4.210

LAYER INFORMATION

0	(NOT)
Bank	Drawn to centre line
Bottom of Bank	Bottom of bank (Other)
BT	Buildings (Roofs and Overhangs)
Building(Lines)	Building Lines
Edge of Concrete	Edge of concrete surface
Edge of Road	Edge of road surface
Edge of Scrub	Edge of scrub line
Fence/Line	Hedge/Tree, Scrub and Boundary lines
Flow	Watercourse flow
Kerblines	Edge of Kerb/kerb or surface changes
Gardenline	Edge of paving, flower beds and garden surface changes
Gullies	Gully and drainage lines
Mark	Written Markings
Hedgeline	Edge of significant hedges
Kerblines	Kerb lines
Level Text	Surface point and spot levels
Overhead Cables	Overhead cables and utility poles
Overhead Cables	Overhead cables and utility poles
Plants	Significant trees/hedges and ornamental plants
Road Markings	Significant road markings
Roadlines	Bridges, culverts, kerbs and railway lines
Scrub Line	Edge of scrub, hedges and trees/hedges
Spot Text	Light poles and point height
Spotheights	Point elevations
Boundary(Line)	Property boundary lines
Survey Stations	GPS reference survey stations
Text	Text Labels
Top and Back of Kerb	Top and back line of kerb
Top of Bank	Top line of bank
Tree	Tree trunk centre point
Unidentified Structure	Other structures
Wall	Walls

Line types and Symbols

Building Lines	Garden Line	Road Markings	
Rooflines	Scrub Line	Hedge Line	Hedge
Top & Back of Kerb	Gullies	Walls	100.40
Edge of Surface / Footpath	Man holes & Flow	Steps	100.40 100.40 100.40
Edge of Road			
Edge of Concrete			
Top of bank	Trees	Plant	Plant
Bottom of bank		Gates	Gate:1.90
Fence / Handrail	Spot Levels		
Overhead Cables			

Scrub
Gully 100.19
SWP
RWP
dia:90
MH
CL:100.40
R.99.40
dia:100
100.40

Control Stations

Co-ordinates in OSGB

Point Number	Easting	Northing	Elevation	Description
Stn1	503626.452	102253.506	4.210	Hilti nail
Stn2	503618.645	102244.287	4.154	Hilti nail
Stn3	503617.106	102271.143	3.954	Hilti nail

Orientation

North

Rev.	Date	Description

Client
OM Architectural Design

SeSurveying

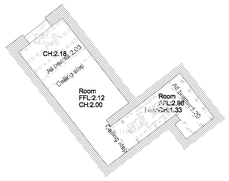
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Topographical Survey P2

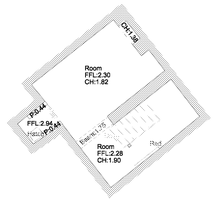
Job Title
East Street, Littlehamptom

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	Surveyed by UG/CH	Checked CH			

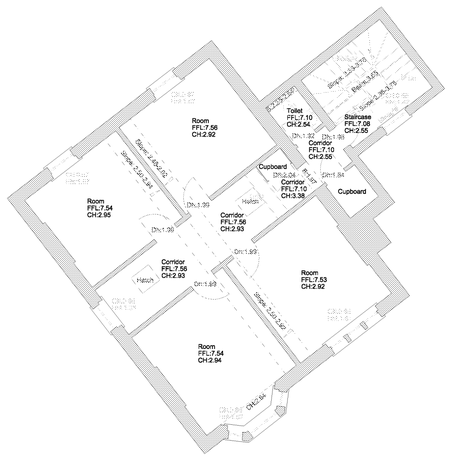
ARUN DISTRICT COUNCIL LIG3017/EPL

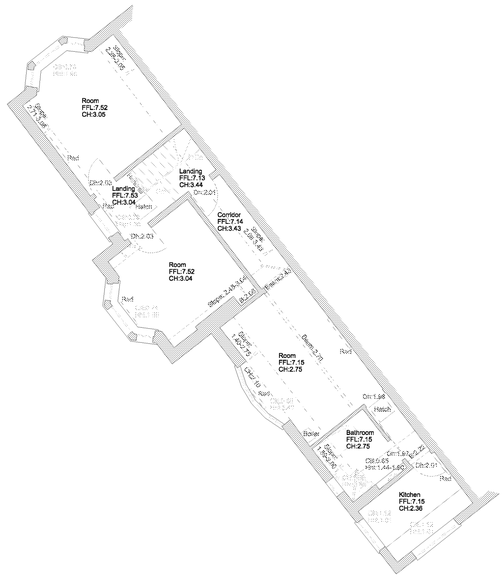
Basement Floor Plan Survey





First Floor Plan Survey





Ground Floor Plan Survey





Scale Bar (meters)

0 5 10 15 20

NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 503626.462, N 102253.806, RL 4.210

LAYER INFORMATION

0	Ceiling
Beam	Chamfered beams, posts, roof elements etc
BrickEdge	External Building Outline
Fixtures	Kitchen units etc
Furniture	Movable, loose and laundry item
Furniture	Fixed furnishings
Kerb	Drainage and waste water gullies
Match	Dining or Drawn matches
Pattern	Floor Finishes, Tiles and Patterns
Radiator	Metal Radiators
Rails	Sign/Door ventilation and glass separations
Ballustre	Fixed standard or ornate handrails
Roofline	Ridges, eaves, hips and valley lines
Services	Sprinkler and fire systems
Services	Sprinkler and fire systems
Sign Post	Sign/Door signage
Soil	Roof Lantern
Stair Levels	Tumbling pitch line, floor and level
Stairs	Stairs, risers and changes in floor levels
Tiled	Ceramic
Wall Matching	Wall match to plan view
Wall Section	Wall match only
Windows	Fixed windows in wall section

Line types and Symbols

Building Lines	Metal	Soffit	
Rooflines	Spotlevel	Beams	
Wall Lines	Windows	Skylights	Skylight
Wall Matching			
Furniture	Doors	Ceiling Slope	Slope: 1.90 - 2.10
Kitchen Fixtures			
Plant	Radiator	Plinths / Platforms	Plinth: 0.50
Gully			
Fence / Handrail	Sanitary	Stairs	
Steps			

Control Stations

Orientation

North

Rev.	Date	Description

Client
OM Architectural Design

SeSurveying

Drawing Title
Basement, Ground & First Floor Plans

Job Title
East Street, Littlehamptom

Scale	Date	Drawn	Job No.	Drawing No.	Rev.
1/100 @ A1	02/02/17	DM/JO	019 01 17	003	
	Surveyed by UG/CH	Checked CH			

ARUN DISTRICT COUNCIL LICENSING



Front Elevation



East Elevation Arun Medical



Rear Elevation Arun Medical



West Elevation Arun Medical



Side Elevation No22



Rear Elevation No22

Scale Bar (meters)

0 5 10 15 20

NOTES
SURVEY IS BASED ON OS GRID SYSTEM
ORIGINATING FROM STATION 1
@ E 503928.482, N 102253.806, RL 4.210

LAYER INFORMATION

B	Chattels
Beam	Chimneys (stacks, pots), roof elements nec
Bridge/Span	External Building Outline
Perim	Gates and railings
Perspective	Kerblines, fences, and boundary lines
Porch/Canopy	Lamps, signs, and bollards
Pyrite	Drainage and waste pipework
Match	Ceiling or other hatching
Rooflight	Kitchen suite furniture and fixtures
Ridge	Metal doors nec
Stairs	Other doors, shutters and pass imposters
Ballustrade	Panel pumped or weighty partitions
Roofline	Ridges, valves, hips and valley lines
Sanitary	Purpose ordinary fixtures
Services	Significant detail symbols
SLOPE	Slopes and gradients
Spot Levels	Steel partitions
Step	Building external face, post, level
Wall	Tactile panels or devices to floor levels
Wall Shading	Text
wall Section	Wall noted in plan view
Windows	Wall noted in line
	Glazed windows in wall section

Line types and Symbols

Building Lines		Metal		Soffit	
Rooflines	Ridge Tile	Spotlevel		Beams	
Wall Lines		Windows	Cill Level 450 above FFL	Skylights	
Wall Hatching			DH=1.20	Ceiling Slope	Slope: 1.90 - 2.10
Furniture		Doors			
Kitchen Fixtures					
Plant		Radiator	Rad.	Plinths / Platforms	Plinth: 0.50
Gully					
Fence / Handrail		Sanitary		Stairs	
Steps					

Control Stations

Orientation

North

Rev.	Date	Description

Client

OM Architectural Design

SeSurveying

Drawing Title

Elevations

Job Title

East Street, Littlehamptom

Scale	Date	Drawn	Job No.	Drawing No.	Rev.
1/100 @ A1	02/02/17	DM/JO	019 01 17	004	
	Surveyed by UG/CH	Checked CH			

ARUN DISTRICT COUNCIL LICENSING

Appendix C

Environment Agency Product 4 Data

ARUN DISTRICT COUNCIL LU/357/18/PL

Chris Slade
CGS Civils Ltd
65 St Paul's Road
Chichester
West Sussex
PO19 3DD

Our ref: SSD82909

Date: 04/05/2018

Dear Chris Slade,

Enquiry Regarding Product 4 for Flood Risk Assessment for 18-20 East Street, Littlehampton, BN17 6AW

Thank you for your enquiry which was received on 12 April 2018.

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

The information on Flood Zones in the area relating to this address is as follows:

The site is in an area located within Flood Zone 3 as shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named property is in and is not specific to the property itself as it is influenced by factors such as the height of door steps, air bricks or the height of surrounding walls. We do not have access to this information and is not currently used in our flood modelling.

Flood Zone definitions can be found at www.gov.uk/guidance/flood-risk-and-coastal-change#Table-1-Flood-Zones

Flood Defences
There are flood defences in the form of a wall. The Asset ID is 483081. The upstream crest level is 3.94 and the downstream is 3.39. The estimated standard of protection is 1 in 300 years (0.3% AEP). The estimated condition grade is excellent. The asset is maintained by privately.

Model Information
The model used was the Arun to Adur Coastal TUFLOW Model which was completed by JBA Consulting in 2012. The Littlehampton scheme was incorporated into the modelling in a 2017 update, the defended scenario shows no risk to the site and has not been included.

Flood History
We hold no record of previous flooding events affecting this site.

Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flooding Authority, **West Sussex County**

ARUN DISTRICT COUN[redacted]

Council or the Local Authority, **Arun District Council** for a more comprehensive flood history check.

FRA advisory iext

Name	Product 4
Description	Detailed Flood Risk Assessment Map for **18-20 East Street, Littlehampton, BN17 6AW.**
Licence	Open Government Licence
Information Warnings	No warnings.
Information Warning - OS background mapping	*The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.*
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning (Flood Zone 2, Flood Zone 3 ,Flood Storage Areas, Flood Defences, Areas Benefiting from Defences)
- Risk of Flooding from Rivers and Sea
- Historic Flood Map
- Current Flood Warnings

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

Yours sincerely,

Leanne Prentice

FCRM Officer - PSO West Sussex

ARUN DISTRICT COUNCI

Flood Map for Planning (Rivers and Sea). Centred on BN17 6AW. Created 30/4/18.



Environment Agency

Scale 1: 10,000

Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occuring each year.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Flood Defence Locations. Centred BN17 6AW. Created 30/4/18.

Environment Agency

Legend

- Sealed Main Rivers

Defences

- Embankment
- Wall
- Flood Gate
- Demountable Defence
- Bridge Abutment
- High Ground
- Beach
- Barrier Beach
- Promenade
- Quay
- Cliff
- Dunes
- Culvert



0 100 200 300

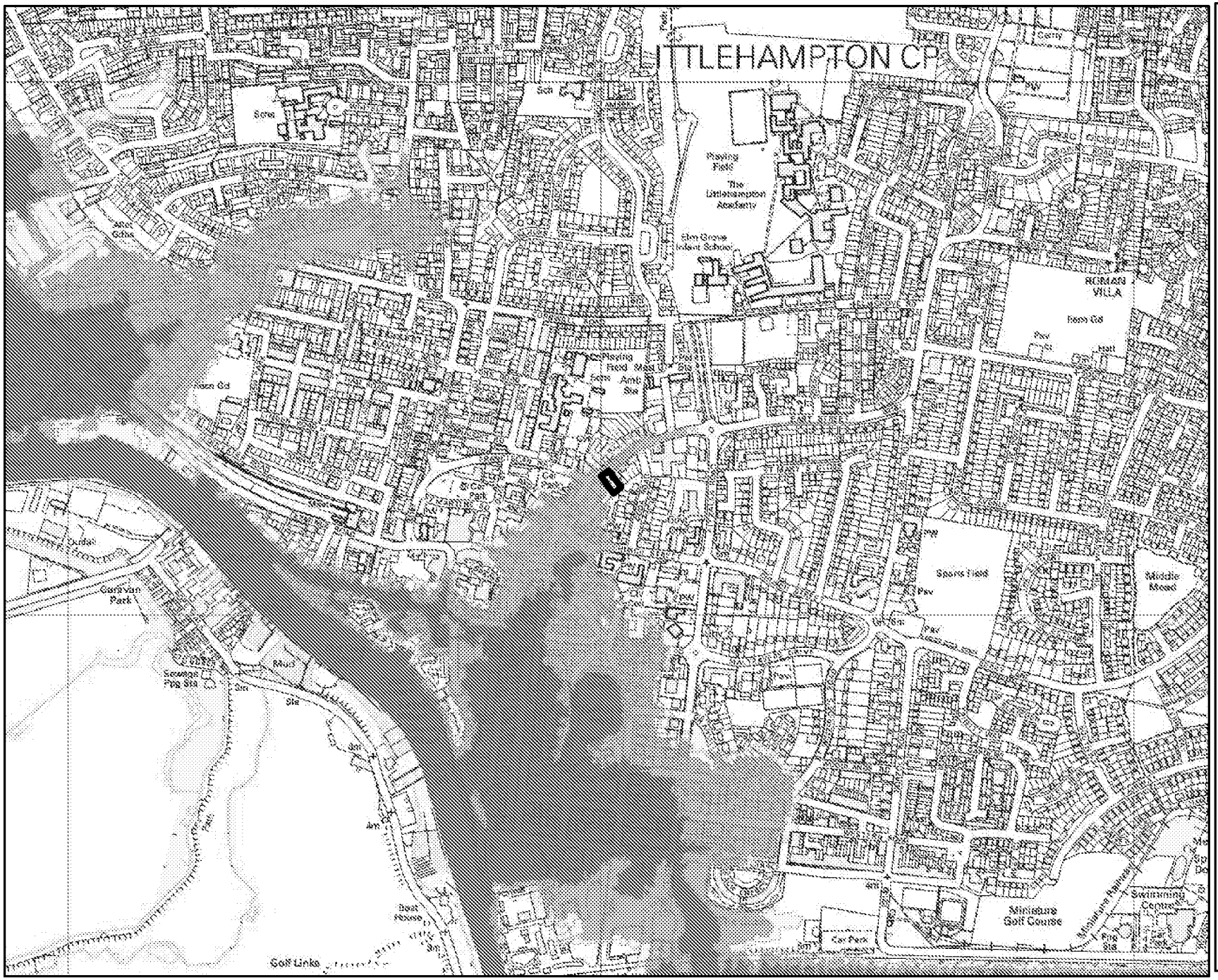
Metres

N W E S

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ARUN DISTRICT COUNCIL LU/357/18/PL

Modelled Flood Outlines (Undefended Tidal) Map 1. Centred BN17 6AW. Created 4/5/18.



N

Environment Agency

Legend

- Site Boundary
- 5% AEP (2012) (Undefended)
- 0.5% AEP (2012) (Undefended)
- 0.1% AEP (2012) (Undefended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

ARUN DISTRICT COUNCIL LU/357/18/PL

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Modelled Flood Outlines (Undefended Tidal) Map 2. Centred BN17 6AW. Created 4/5/18.



Environment Agency

N

Legend

- Site Boundary
- 0.5% AEP (2070) (Undefended)
- 0.5% AEP (2115) (Undefended)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

Scale: 1:10,000

0 0.225 0.45

Kilometers

ARUN DISTRICT COUNCIL LU/357/18/PL

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Product 4 Flood Risk Data Requested by: CGS Civils Ltd

Site: 18-20 East Street, Littlehampton, BN17 6AW

Table 1: Water Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres Undefended Annual Exceedance Probability				
Node Ref	Eastings	Northings	5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	503009	102262	N/A	3.74	4.35	4.94	4.06
2	503019	102248	N/A	N/A	4.35	4.94	4.06
3	503027	102238	N/A	N/A	N/A	4.94	N/A

Table 2: Water Depth: Tidal Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability				
Node Ref	Eastings	Northings	5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	503009	102262	N/A	0.44	1.05	1.63	0.75
2	503019	102248	N/A	N/A	0.31	0.90	0.02
3	503027	102238	N/A	N/A	N/A	0.43	N/A

All levels taken from: Arun to Adur Coastal TUFLOW Model (2012)

Produced on: 04/05/2018

There is no additional information or health warnings for these levels/depths or the model from which they have been produced.

Office Address: Guildbourne House, Chatsworth Road, Worthing BN11 1LD.

[redacted]

Site Boundary & Node Point Map. Centred BN17 6AW. Created 4/5/18.



Environment Agency

N

Legend

- Site Nodes
- Site Boundary

Scale: 1:750

0 20 40

Meters

ARUN DISTRICT COUNCIL LU/357/18/PL

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