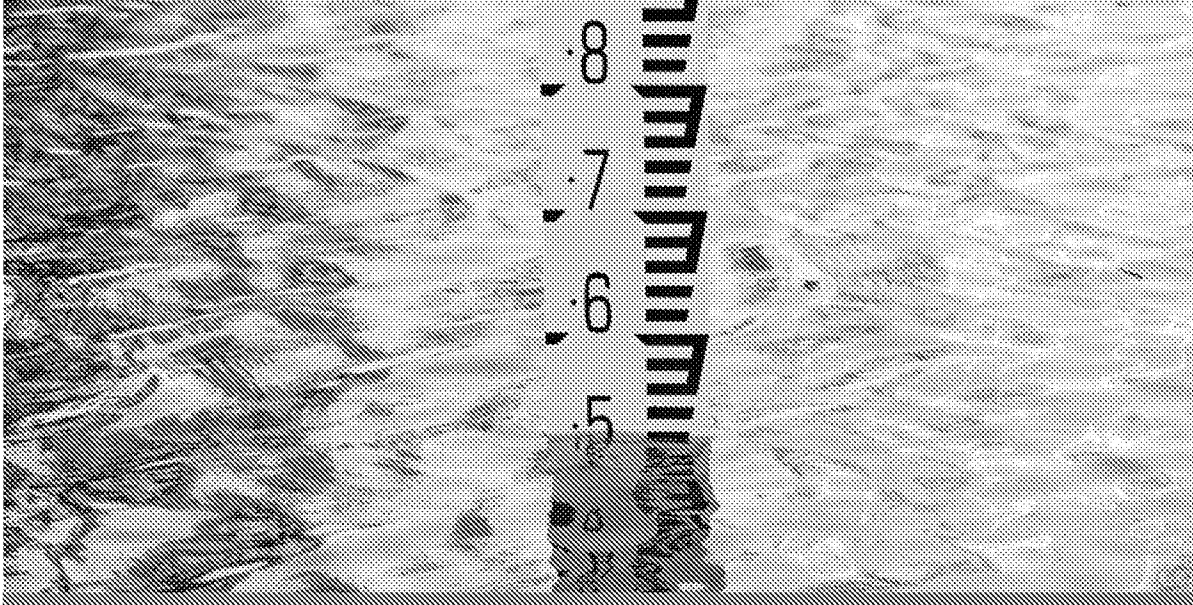




Flood Risk Assessment

Climping Mill, Climping Street, Climping BN17 5RN

Client

Mr. G. Love

15 Ravenscourt Avenue
London W60 5L

Ref: 6923

Date: December 2017

Consulting Engineers

GTA Civils Ltd

Gloucester House
66a Church Walk
Burgess Hill

West Sussex RH15 9AS

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3	Proposed Development & Mitigation	5
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Schedule of Appendices

A	Site Location Map & Aerial Photos
B	Environment Agency Flood Maps
C	Topographic Survey & Proposed Scheme Drawings
D	Flood Warning and Evacuation Plan

Issue	Issue date	Compiled	Checked
Preliminary Issue	01 December 2017	JP	MR

Report by: John Pakenham BSc (Hons)

Checked by: Martin Roberts I Eng, ACIWEM, MCIHT

1 Introduction

- 1.1 This report has been prepared for Mr. G. Love in relation to the proposed development of Climping Mill, Climping Street, Climping, Littlehampton BN17 5RN. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 GTA Civils Ltd. was appointed by the client to provide a Flood Risk Assessment (FRA) as required by the Environment Agency and Arun District Council, in order to support an Application for Planning Permission at said property.
- 1.3 This report will take the form of a formal Flood Risk Assessment in accordance with the 2012 National Planning Policy Framework (NPPF) and the associated Technical Guidance document, both contained within the 2015 Planning Practice Guidance (PPG).
- 1.4 This report covers only the flood risk and drainage issues relating to this site.

2 Existing Site and Current Flood Conditions

- 2.1 The application site lies to the east of the hamlet of Climping, to the west of Littlehampton. This area is administered by Arun District Council (ADC). It comprises what used to be a small private school (6 distinct buildings – see Appendix B) but is now in a dilapidated state. A site location map, block plan and an aerial view of the site are shown in Appendix A.
- 2.2 A topographic survey was undertaken and this is shown in Appendix C. The external levels range between 4.2m AOD 2.99m AOD. The internal levels vary somewhat but one of the main lowest levels in the main building is 4.11m AOD.
- 2.3 The nearest watercourses to this site is a ditch that flows northeast, discharging into the nearby River Arun; it is 175m from the east boundary at its closest. The Ryebank Rife flows in a similar direction but is approximately 400m to the northwest of the site. The English Channel is some 150m due south of the site.
- 2.4 Tidal flooding: the Environment Agency's (EA) Flood Map for Planning (Rivers and Seas) in Appendix B shows the site is liable to flood from the coast in the 0.5% (1 in 200 years) event. This places the site in Flood Zone 3A, High Probability (FZ3A).
- 2.5 Although the site benefits from flood defences, these are limited in effectiveness - and in standard of protection.
- 2.6 The EA's flood data in Appendix B shows the flood level in various scenarios, with the undefended 2115 range being pertinent to this study. The nearest node to the location of the proposed dwelling unit is #7. The 2115 flood level is **4.76m AOD**, but is less where the site levels are lower.
- 2.7 Surface water flooding: occurs when rainwater does not infiltrate into the ground, or is not intercepted by urban drainage systems, and instead flows across the surface. The EA's surface water flood map in the 'low risk' scenario ('1 in 1000 years' storm event) shows the site is all but removed from this source of flooding – refer to Appendix B. Although there is a small area of ponding in the southern part of the site, this is small and shallow. It does not affect neighbouring sites either.
- 2.8 SFRA's Lidsey Drainage Area: this site lies to the southeast of the Lidsey Drainage Area, as set out in ADC's SFRA. This site is not in a critical area, according to the SFRA.
- 2.9 Sewer failure flooding: occurs due to limited capacity or blockage in the sewer system causing backing up of storm water and effluent. The SFRA shows that this area is not in an area susceptible

to this source of flooding.

- 2.10 Groundwater flooding: occurs when water levels in the ground rise above the surface. The SFRA shows this part of the district being at 'medium risk'. As there is no basement level proposed, it is contended that this source/risk of flooding can be considered to be Low.
- 2.11 Artificial sources: flooding from reservoirs canals and docks. The site is removed from the nearest reservoir failure event – see Appendix B. There are no canals or docks in this area.
- 2.12 There is no record of this site having flooded according to the EA or Strategic Flood Risk Assessment (SFRA).
- 2.13 The flood risk profile of this site is High – with coastal flooding being the worst source. The highest predicted flood level is **4.76m AOD**.

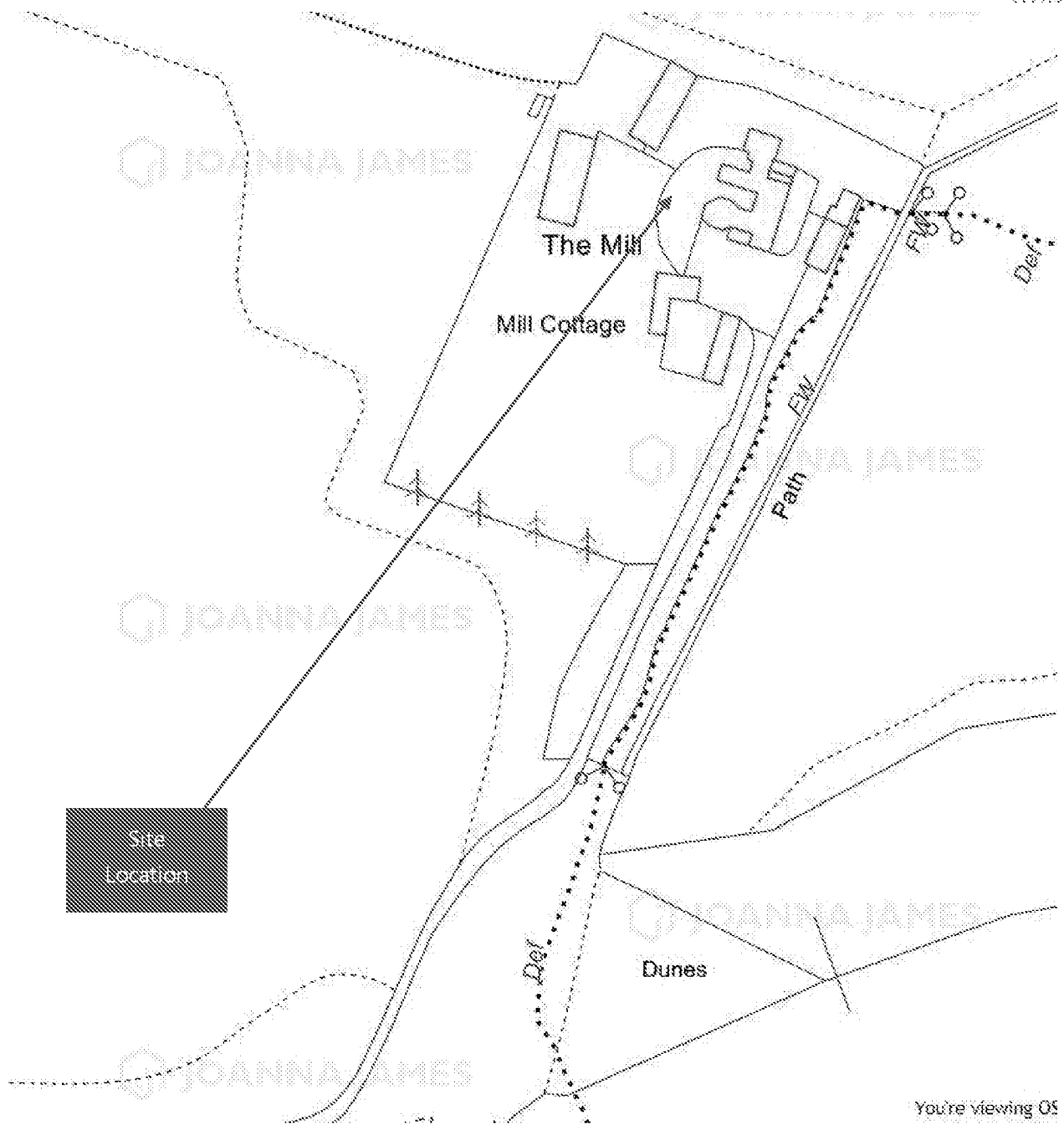
3 Proposed Development, the Sequential Test & Mitigation

- 3.1 The planning application is for demolishing the 'school dormitory' and 'lodge', which are the 2 buildings at the north end of the cluster of 6 units; refurbishing the original unit, Climping Mill, and erecting a new 'Pond House' on the northwest part of the site. The Mill Building will also be slightly reduced in footprint area – as shown on the 'demolished buildings layout'. The proposed scheme drawings are shown in Appendix C. The cottage and thatch buildings are to remain with some internal alterations and the Store will remain as is.
- 3.2 As concluded in section 2.13, above, the site's flood risk profile is High. The remainder of this section will concentrate on the Pond House, this being the only new-build.
- 3.3 The Pond House will be sitting on concrete blocks in a pond – to give the impression of floating.. The walls and base will be of waterproof concrete, eg Caltite.
- 3.4 For full compliance the floor level shall be set at 0.3m above the nearest node's 2115 flood level of 4.76m ie **5.06m AOD**.
- 3.5 Sequential Test: the scale of development will have been reduced by removing 2 sizeable buildings and erecting only one single dwelling unit. The siting of this has been done with a Sequential Approach, meaning that it is placed as close as is practical to the highest elevation within the site.
- 3.6 Flood mitigation: the FFL is set above the flood level with 0.3m of freeboard so no mitigation measures are needed.
- 3.7 Safe access to dry land: although there is no safe route to dry land that links to the highway network, it is contended that occupants in the Pond House are above the predicted flood level and can reside at high level (first floor) during the limited duration of a tidal flood event.
- 3.8 SuDS: the site's surface water will be routed into the existing network, which discharges directly into the sea. If there is no tide flap (valve) at present one will be installed. This will prevent the site from flooding at high tide.
- 3.9 Foul effluent: there will be a new sewage treatment plant – sized for the complete site's complement of buildings – to be located in the existing septic tank's location. This will be encased in concrete, to ensure there being no hazardous sewer flooding in the event of tidal flooding.

4 Conclusion

With the appropriate measures set out in this Report, this development complies fully with the 2012 NPPF/2015 NPPG.

- End of Report -



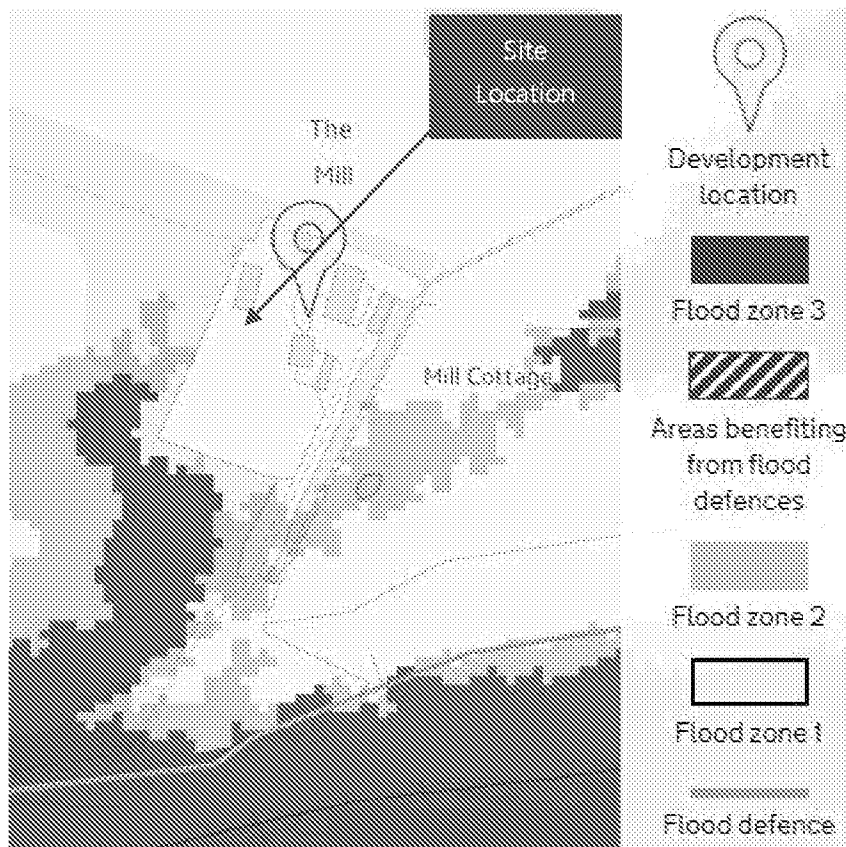
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Appendix B

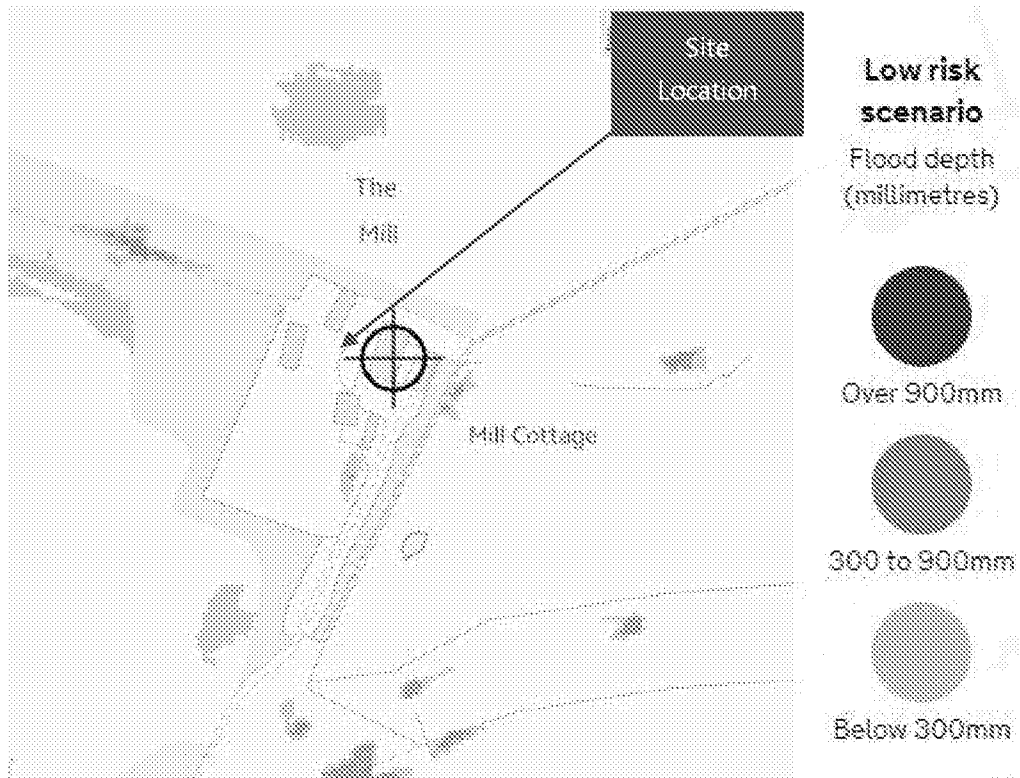
Environment Agency Flood Maps

Site
Location



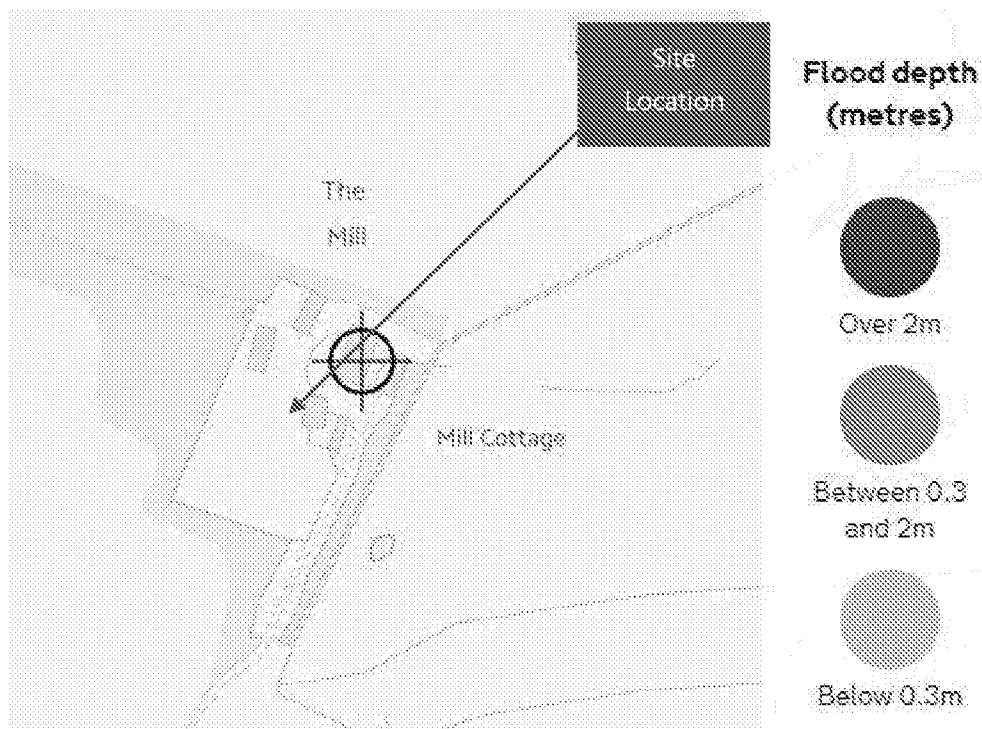
EA's Online Flood Map for Planning (Rivers and Seas)

The coach house is in coastal Flood Zone 3A (FZ3A)



EA's Online Surface Water Flood Depth Map in the 'Low Risk Scenario'
(1 in 1000 years storm event)

Although there is a small area of ponding within the site, this is contained and will have no effect on this or neighbouring sites.



EA's Online Risk of Flooding from Reservoirs' Map

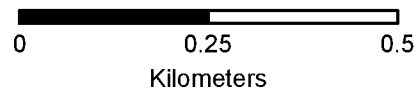
The site is removed from this source of flooding.

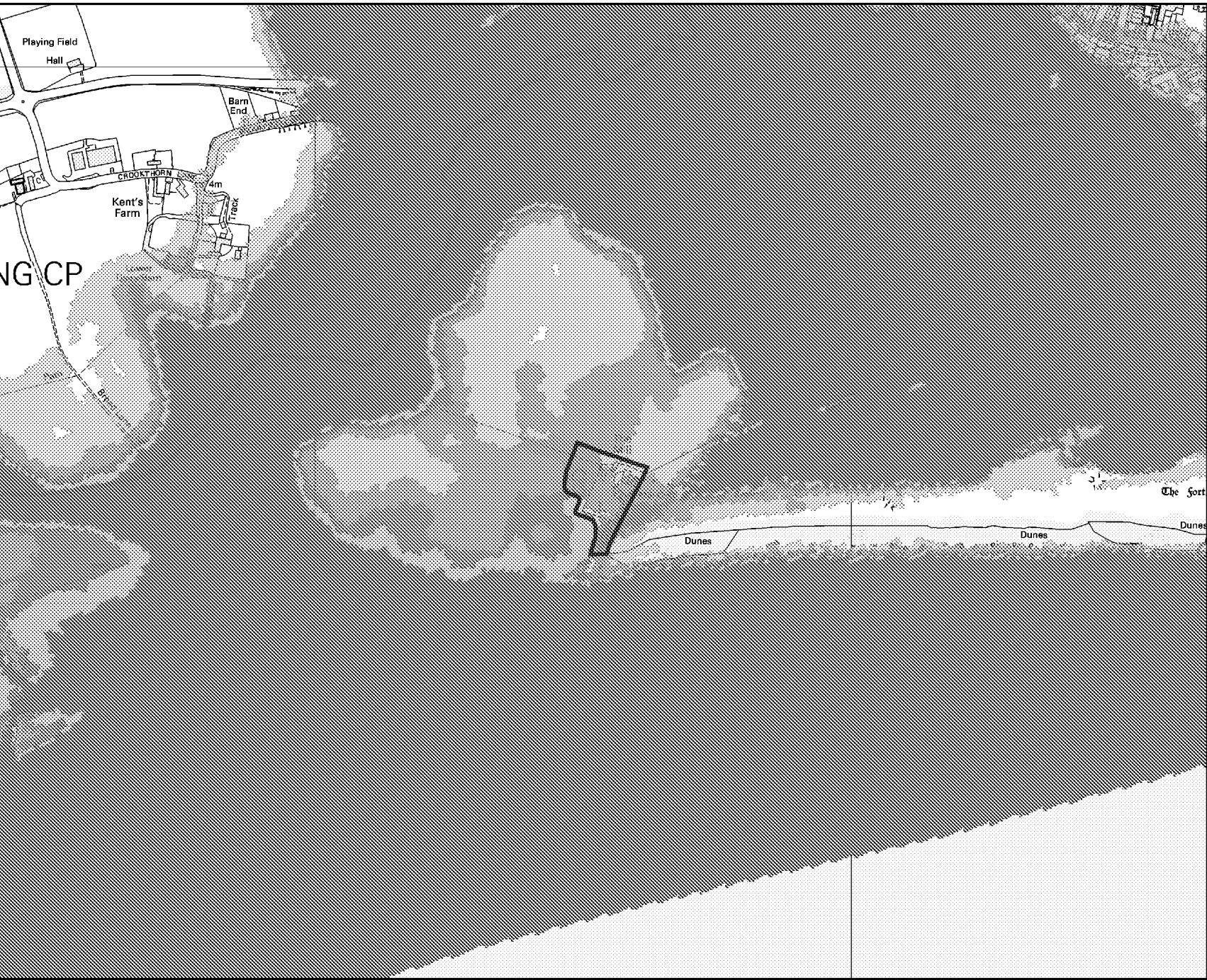


- Legend**
- Site Boundary
 - Main River
 - 5% AEP (Defended Tidal)
 - 0.5% AEP (Defended Tidal)
 - 0.5% AEP (2070) NPPF (Defended Tidal)
 - 0.5% AEP (2115) NPPF (Defended Tidal)
 - 0.1% AEP (Defended Tidal)

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

Scale: 1:10,000







Environment
Agency

N


Legend

- Site Boundary
- Main River
- 5% AEP (Un defended Tidal)
- 0.5% AEP (Un defended Tidal)
- 0.5% AEP (2070) NPPF (Un defended Tidal)
- 0.5% AEP (2115) NPPF (Un defended Tidal)
- 0.1% AEP (Un defended Tidal)

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

Scale: 1:10,000



00.250.5
Kilometers



Environment
Agency

N



Legend

-  Site Nodes
-  Site Boundary
-  Main River

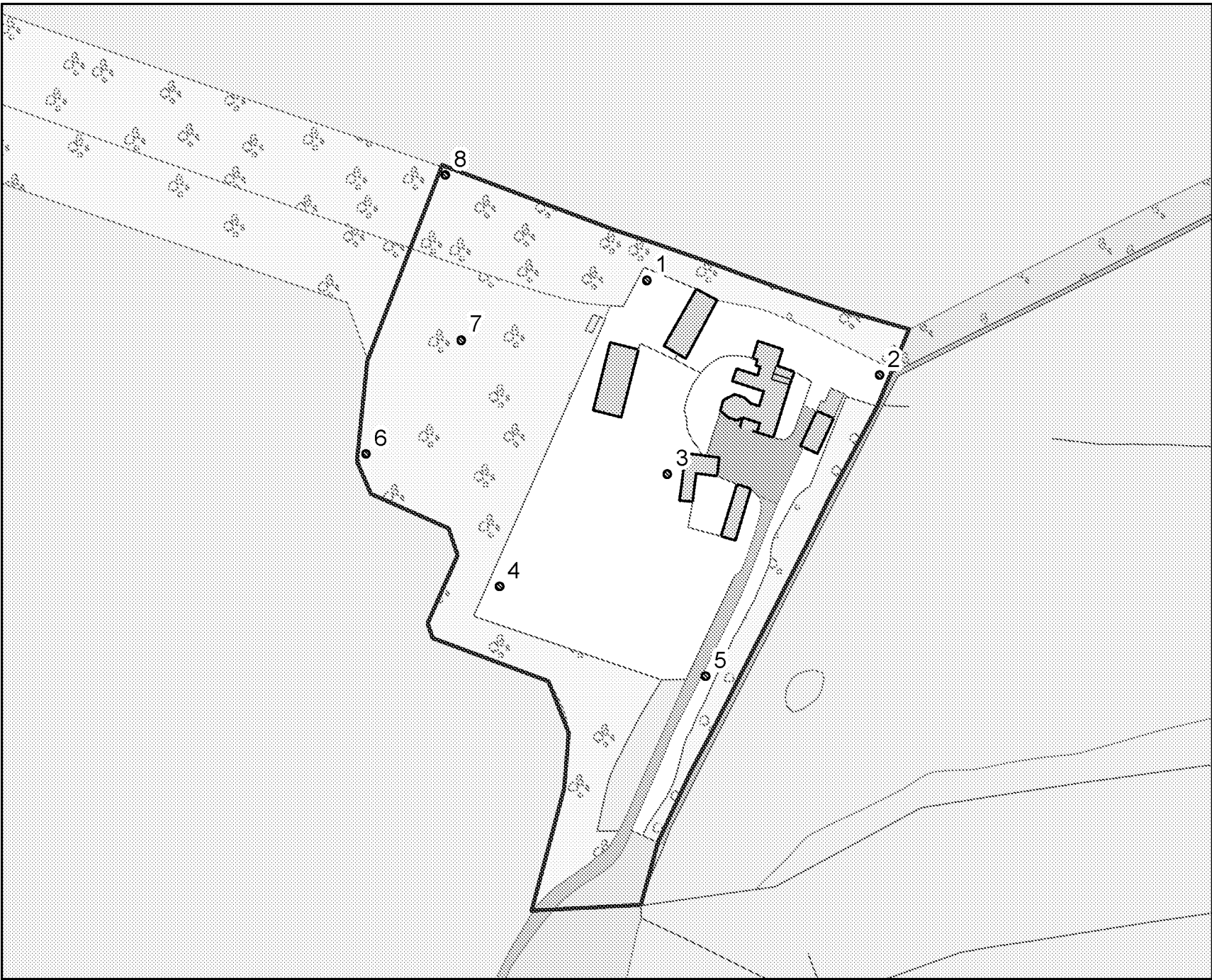
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0

0.0375

0.075

Kilometers



Product 4 Flood Risk Data Requested by: John Pakenham

Site: The Mill, Climping Street, Climping, BN17 5RN.

Table 1: Water Levels: Tidal Undefended

Node Reference	NGR		Modelled Flood Levels in Metres				
	Easting	Northing	Undefended Annual Exceedance Probability				
			5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	501546	101266	-	-	-	4.63	-
2	501611	101240	-	-	-	4.5	-
3	501552	101212	-	-	4.3	4.68	-
4	501563	101155	-	-	4.34	4.78	-
5	501505	101181	-	-	4.06	4.65	-
6	501468	101218	-	-	4.42	4.89	-
7	501494	101249	-	-	4.34	4.76	-
8	501490	101296	-	-	4.23	4.64	-

Table 2: Water Levels: Tidal Defended

Node Reference	NGR		Modelled Flood Levels in Metres				
	Easting	Northing	Defended Annual Exceedance Probability				
			5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	501546	101266	-	-	-	-	-
2	501611	101240	-	-	-	-	-
3	501552	101212	-	-	-	4.25	-
4	501563	101155	-	-	-	4.28	-
5	501505	101181	-	-	3.88	4.11	-
6	501468	101218	-	-	-	4.35	-
7	501494	101249	-	-	-	4.27	-
8	501490	101296	-	-	-	4.13	-

Table 3: Water Depth: Tidal Undefended

Node Reference	NGR		Modelled Flood Depth in Metres				
	Eastings	Northings	Undefended Annual Exceedance Probability				
			5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	501546	101266	-	-	-	0.31	-
2	501611	101240	-	-	-	0.32	-
3	501552	101212	-	-	0.24	0.6	-
4	501563	101155	-	-	0.08	0.39	-
5	501505	101181	-	-	0.22	0.8	-
6	501468	101218	-	-	0.15	0.62	-
7	501494	101249	-	-	0.16	0.58	-
8	501490	101296	-	-	0.09	0.41	-

Table 4: Water Depth: Tidal Defended

Node Reference	NGR		Modelled Flood Depth in Metres				
	Eastings	Northings	Defended Annual Exceedance Probability				
			5%	0.5%	0.5% (2070)	0.5% (2115)	0.1%
1	501546	101266	-	-	-	-	-
2	501611	101240	-	-	-	-	-
3	501552	101212	-	-	-	0.19	-
4	501563	101155	-	-	-	0.06	-
5	501505	101181	-	-	0.11	0.26	-
6	501468	101218	-	-	-	0.08	-
7	501494	101249	-	-	-	0.10	-
8	501490	101296	-	-	-	0.14	-

All levels taken from: River Arun to East Head 2016, completed in 2016 by JBA Consulting using TUFLOW 2D software.

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

Produced on 21/08/2017

Office Address: Guildbourne House, Chatsworth Road, Worthing BN11 1LD.
Customer services line: 03708 506 506. Email: enquiries@environment-agency.gov.uk
www.gov.uk/government/organisations/environment-agency

Flood Defence Locations. Centred BN17 5RN. Created 21/08/2017.

Legend

-  Statutory 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



Historical Flood Extents. Centred BN17 5RN. Created 21/08/2017.

Legend

-  Statutory Main Rivers
-  All recorded flood outlines



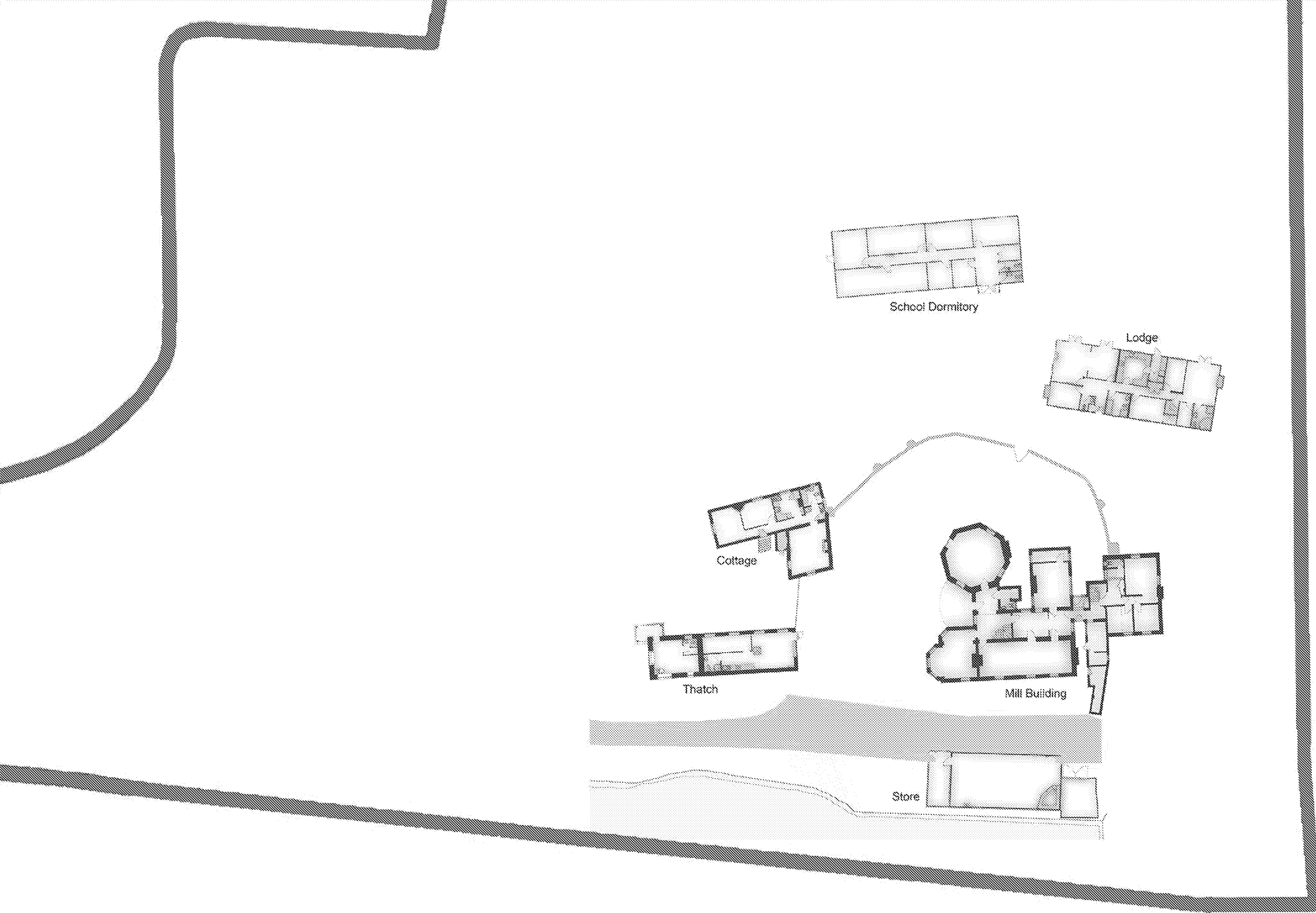
0 100 200 300
Metres



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Appendix C

Topographic Survey, Existing Site Layout & Proposed Scheme Drawings



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Check all dimensions prior to commencement of the work

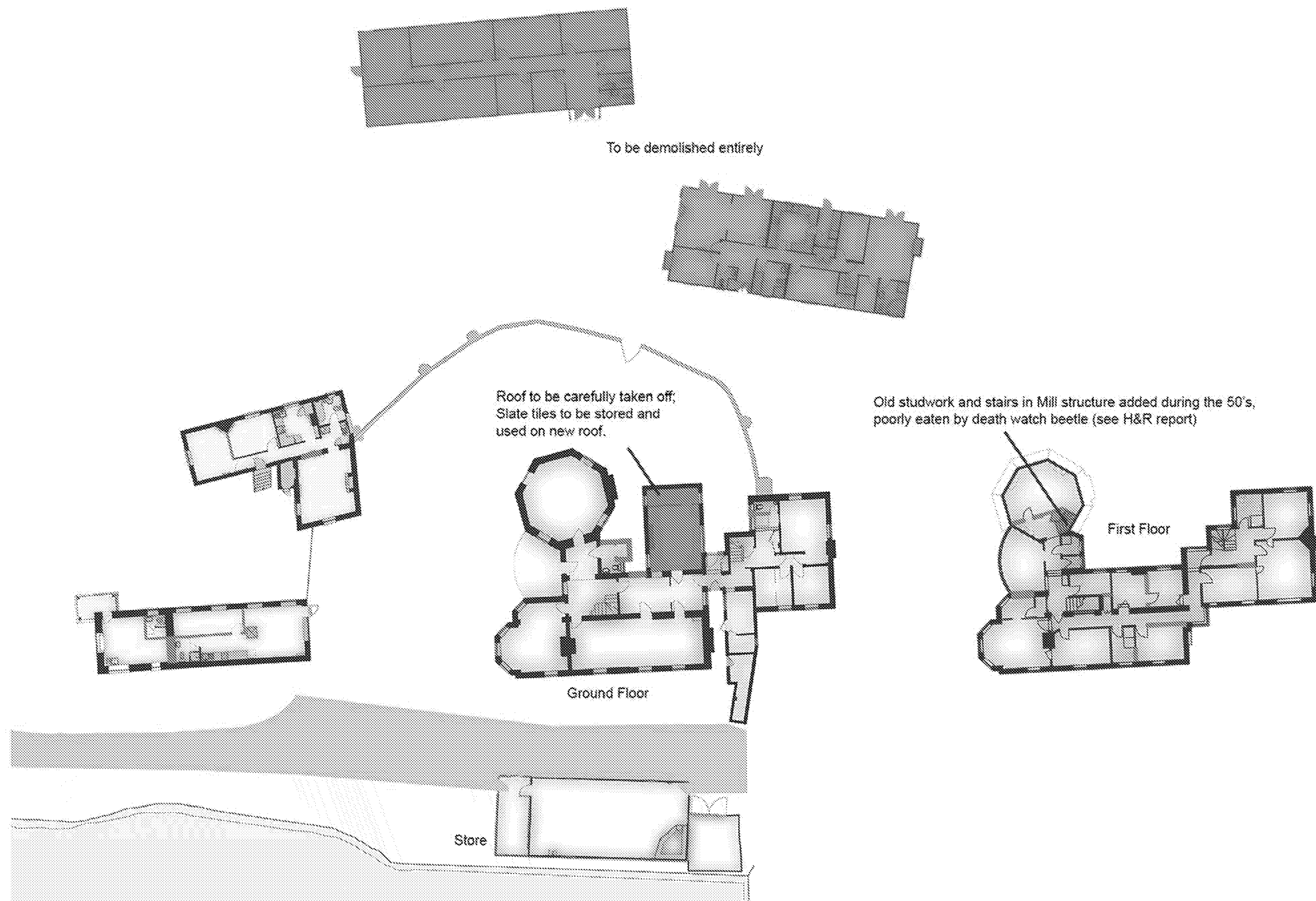
If the drawing exceeds the quantity in any way the architects are to be informed before work is commenced

Drawings are to be read in conjunction with structural engineers drawings and specification



Design & Build with Love
askabout@garylove.com

Project Name: The Mill Buildings Climping	
Drawing No. 2	Drawing Title: Site Plan
Date: 24/11/2017	
Scale: 1:200 @A1	



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specification



Take down nominal areas of 50's/70's
poorly thought through stud-work
revealing badly executed (causes of
damp) 50/70's architecture



Design & Build with Love
stonerand@garylove.com

Project Name:
The Mill Buildings Climping

Drawing No. 8	Drawing Title: Demolition Plan
------------------	-----------------------------------

Date: 24/11/2017

Scale: 1:150 @A1

North Elevation

South Elevation

East Elevation

West Elevation

South Elevation

North Elevation

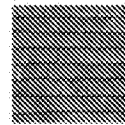
North Elevation

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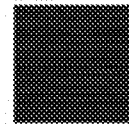
Check all dimensions prior to commencement of the work

If the drawing exceeds the quantity in any way the architects are to be informed before work is commenced

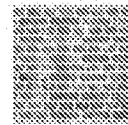
Drawings are to be read in conjunction with structural engineers drawings and specification



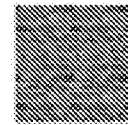
Clay Peg Tiles



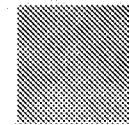
Tarred Weatherboard



17th Century Brickwork



20th Century Brickwork



Copper



Traditional Flint Stone Wall



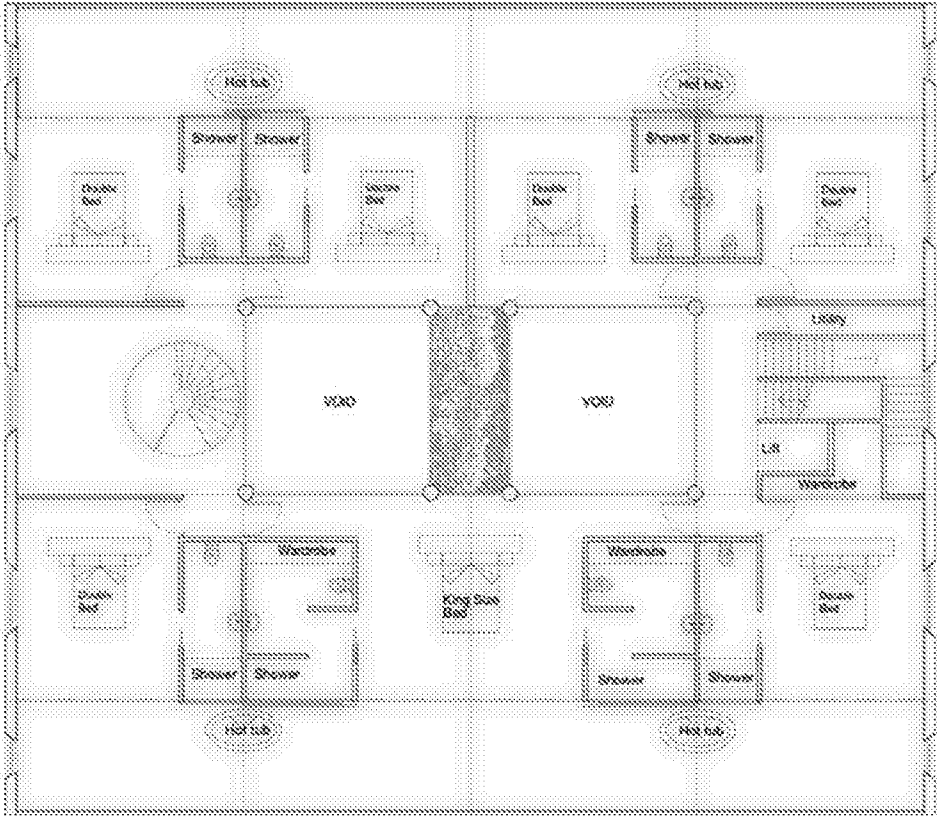
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Project Name:
The Mill Buildings Climping

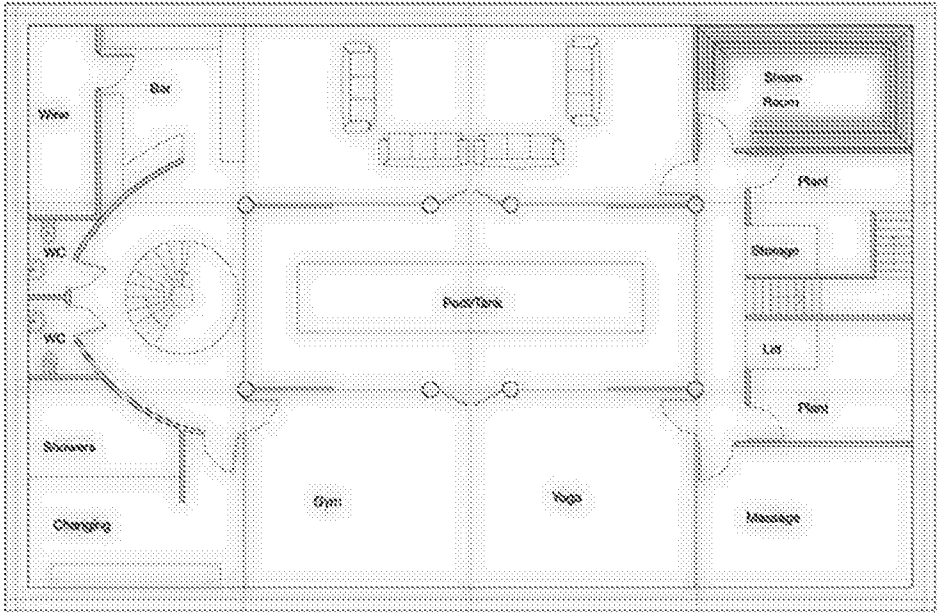
Drawing No. 9	Drawing Title: Proposed Mill Building Exterior
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Date: 24/11/2017

Scale: 1:100 @A1



First floor plan



Basement plan

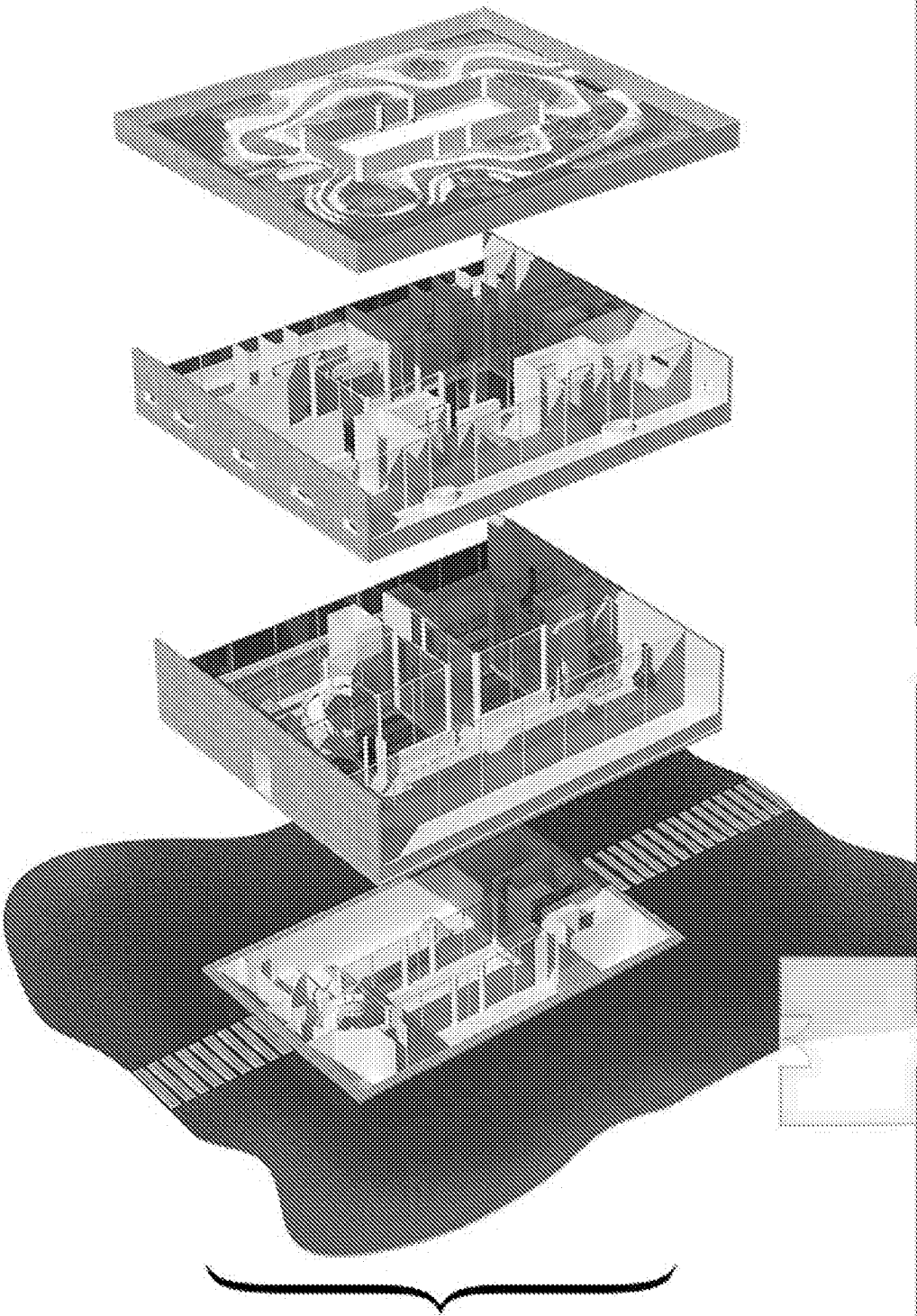
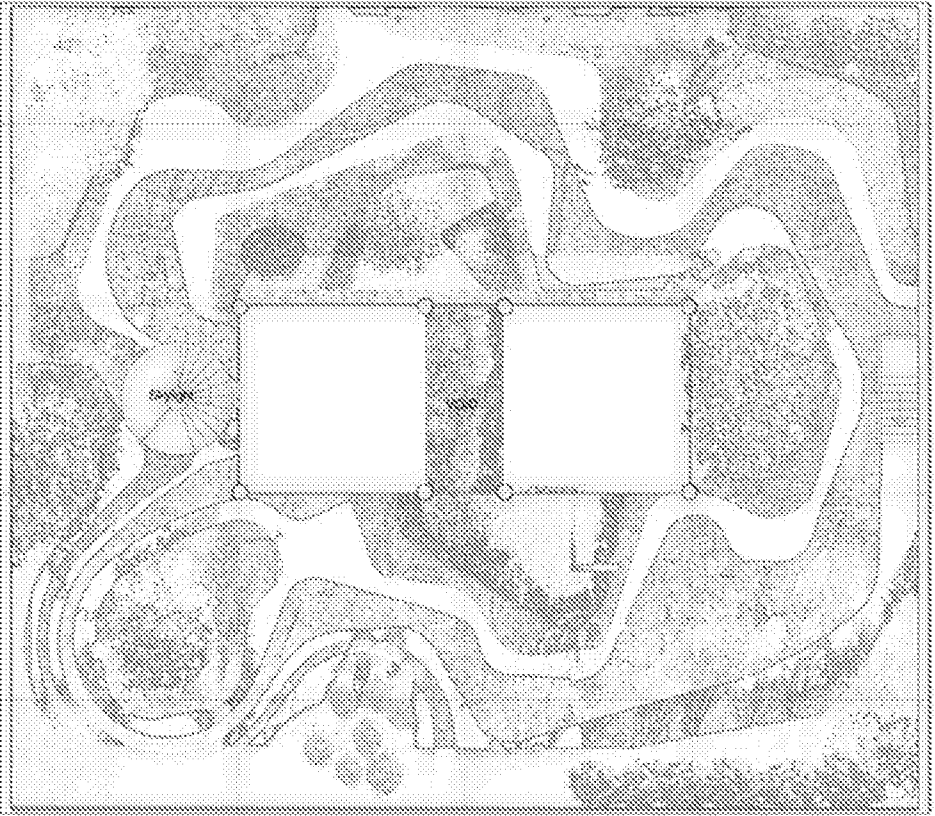
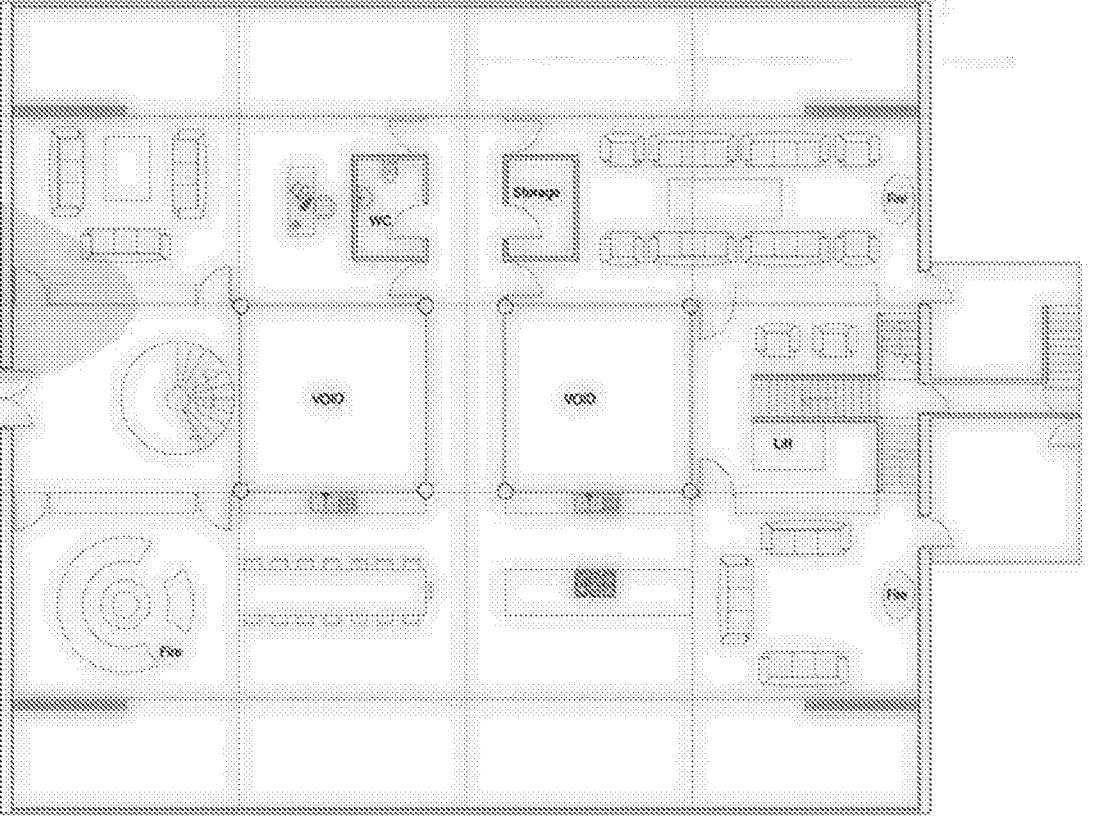


Illustration only, not to scale

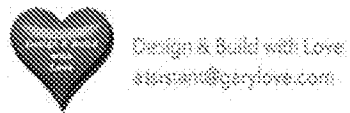
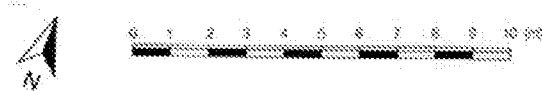


Roof plan

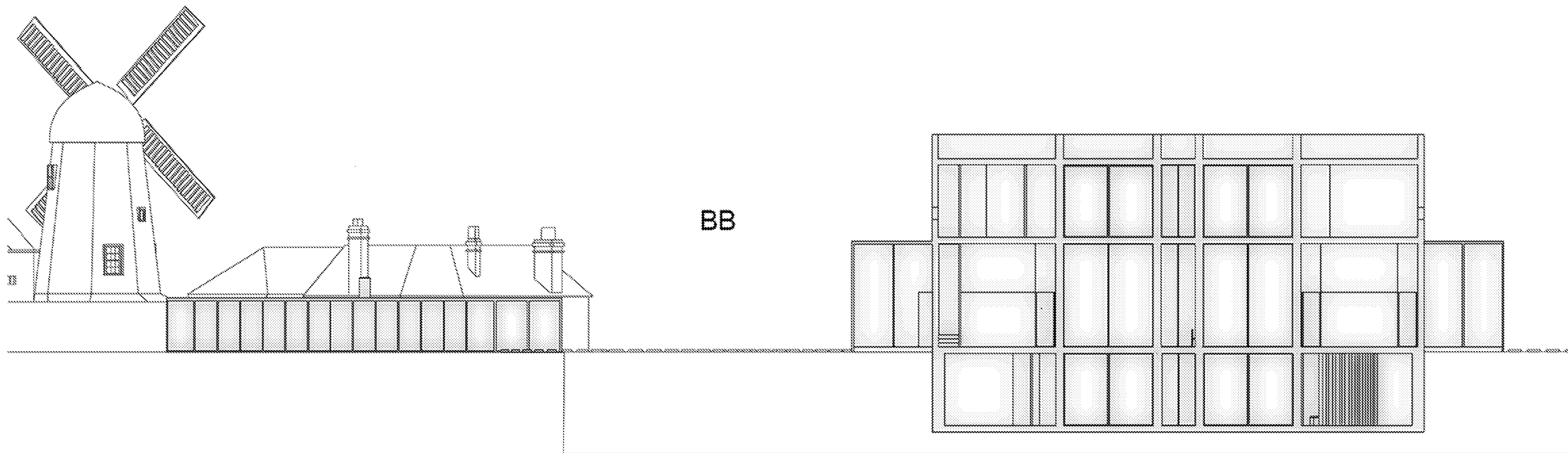


Ground floor plan

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Project Name: The Mill Buildings Climping	
Drawing No. 12	Drawing Title: Proposed Pond House
Date: 24/11/2017	
Scale: 1:100 @A1	

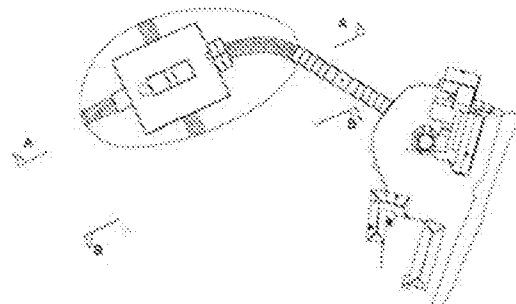


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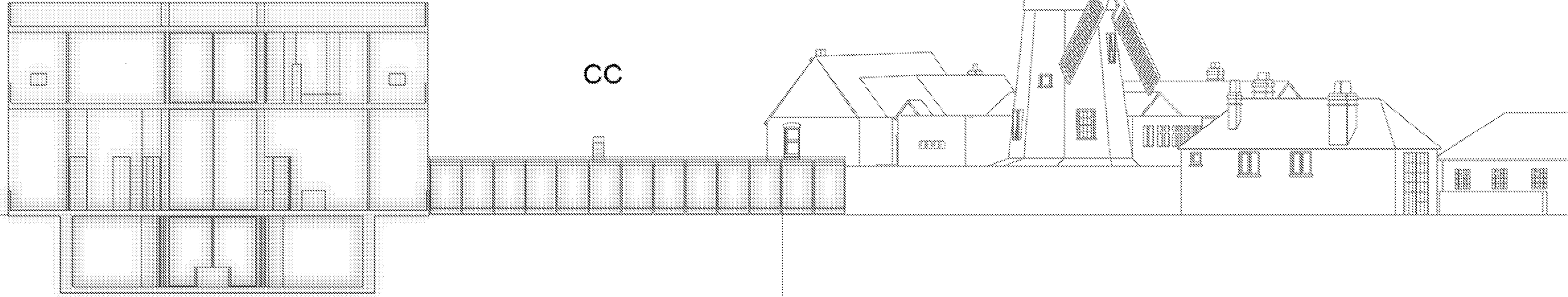
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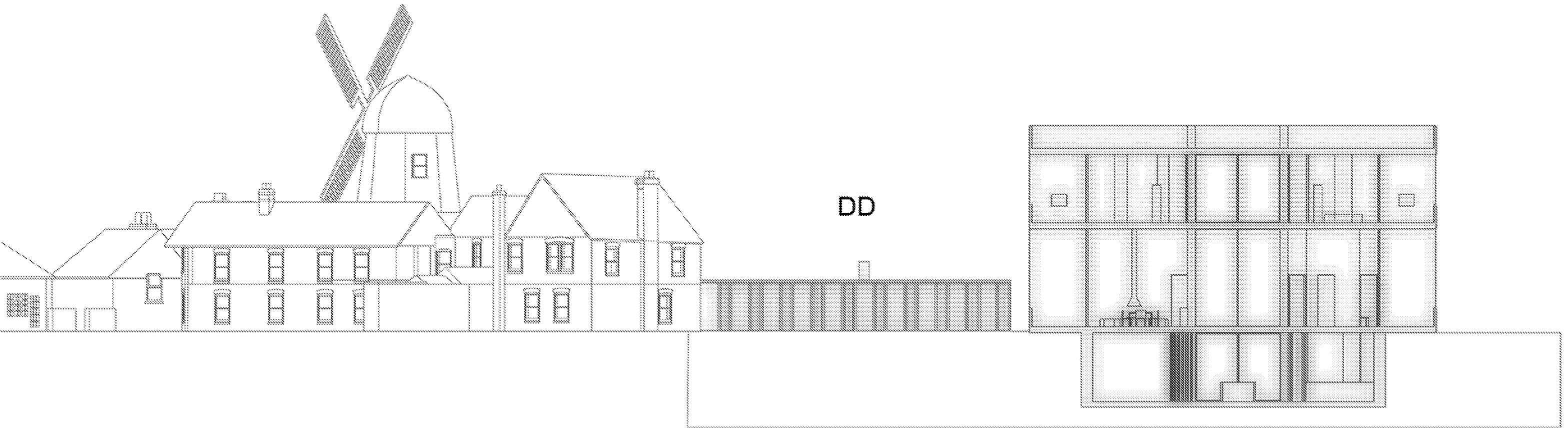


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Project Name: The Mill Buildings Climping	
Drawing No. 14	Drawing Title: Pond House Sections AA & BB
Date: 24/11/2017	
Scale: 1:100 @A1	



CC



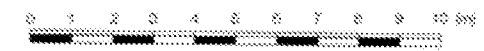
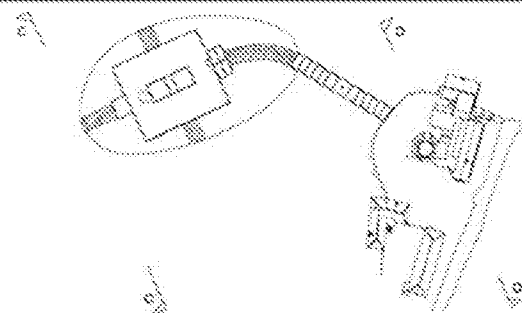
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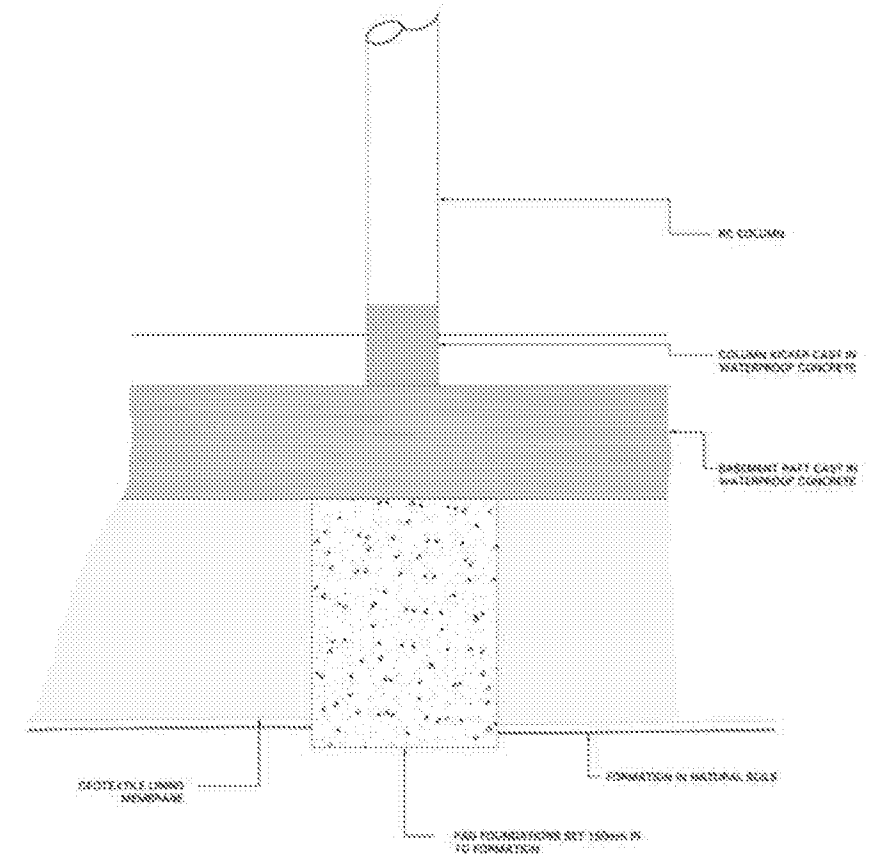
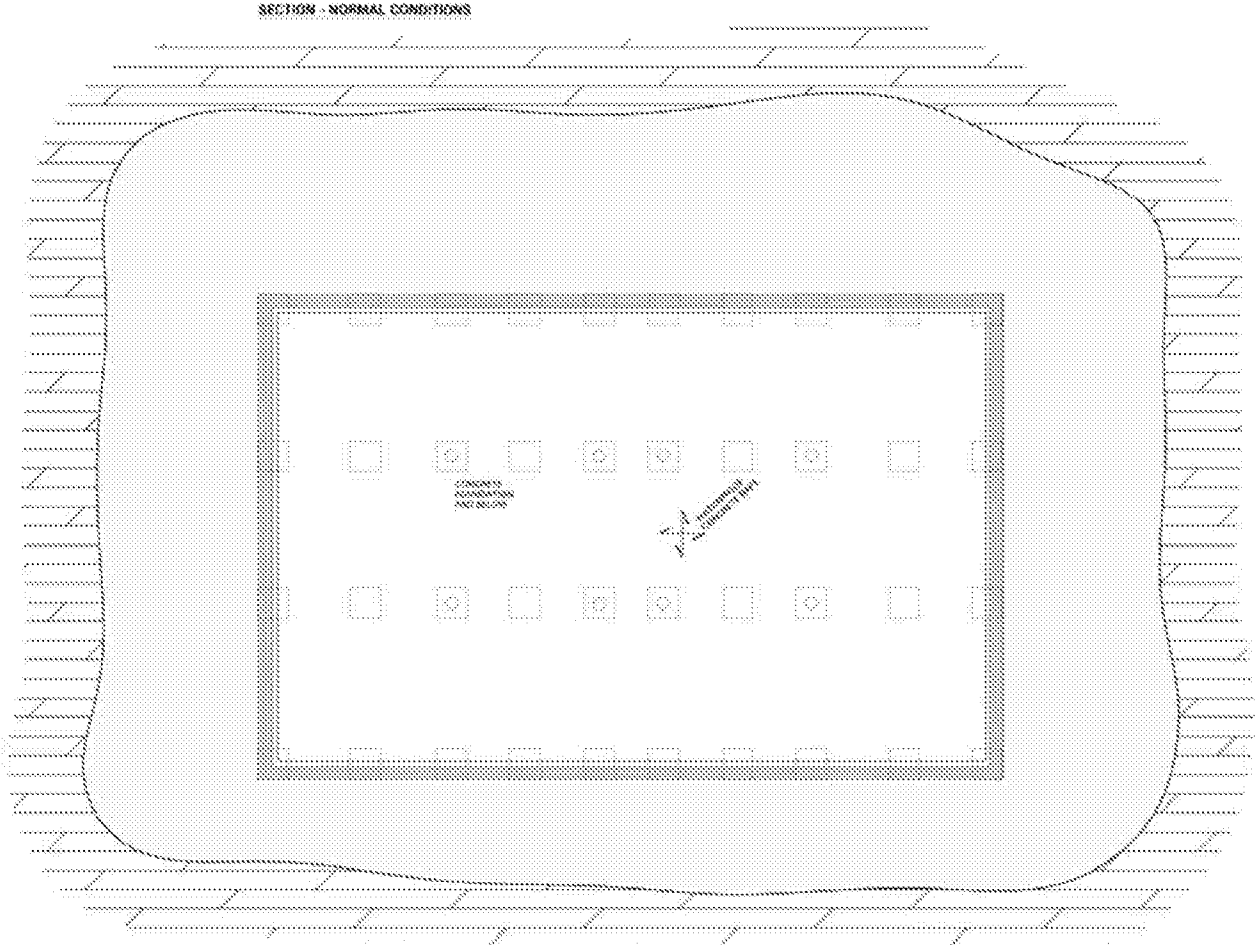
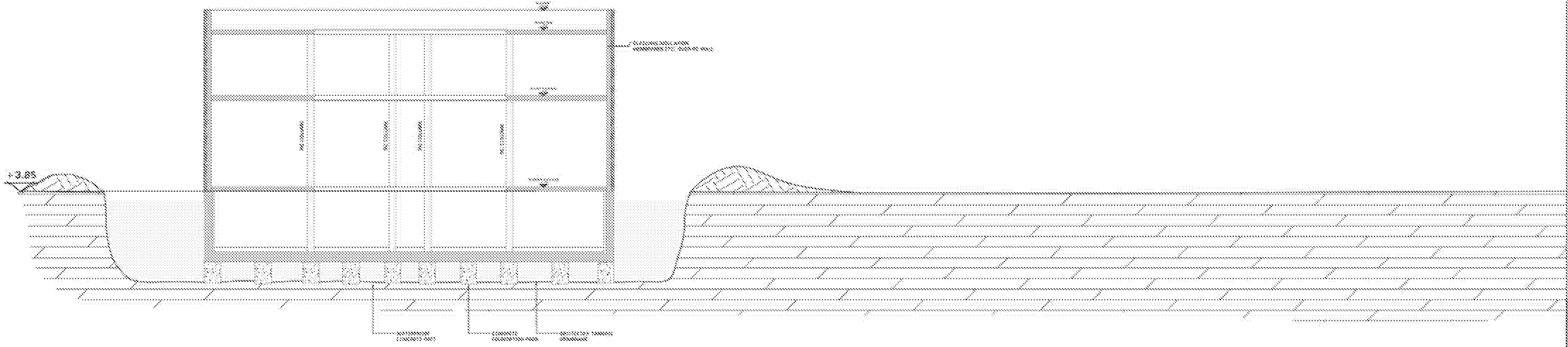
Project Name:
The Mill Buildings Climping

Drawing No.
14

Drawing Title:
Pond House
Section CC & DD

Date: 24/11/2017

Scale: 1:100 @A1



NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

THE MILL BUILDINGS CLYMPING	STRUCTURAL SECTION & BASEMENT PLAN		P1
	Scale: 1:125	Drawn: Oct 17	Checked: n/a
7249 / 140		P1	

Michael Kirby Partnership

Structural Engineers

100 York Road

London W12 8AA

T 020 226 1141 F 020 226 1142

E info@mkp.co.uk

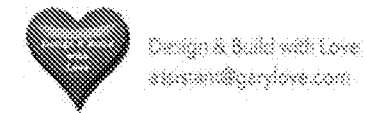
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Project Name: The Mill Buildings Clymping	
Drawing No. 15	Drawing Title: Structural Section & Basement Plan
Date: 24/11/2017	
Scale: 1:125 @A1	

Clymping: Flood Defences

Extracts from British Museum archives: The western part of the ancient parish, including the settlements of Clymping, Ilsham, and Atherington lies on brickearth, of which Clymping windmill occupies an outlier further east.

In the north-eastern part of the parish reclamation from the estuary was apparently going on by the 13th century, when the rectory estate included land east of the village (*villa*) of Clymping bounded on three sides by ditches and bunds. By the mid 16th century there were defences in that area against the river. Early in the 16th century Atherington manor, where a defensive wall, presumably meaning an earth bank, was mentioned in 1511; may have followed the line of the surviving track running north-east from Clymping Mill which existed in 1606. By 1540 there were at least 110 a. of demesne marshland pasture at Atherington. The river defences continued to be kept up in the early 18th century; by 1731 Christ's Hospital (sometime owners of Clymping Mill) as landowner had constructed Groynes alongside its lands in the north-east, though because of the hindrance to navigation the Littlehampton harbour commissioners ordered them to be abandoned in 1761. Land between the various defences and the river was saltmarsh pasture, known as slipes, which in 1792 were flooded at every spring tide.

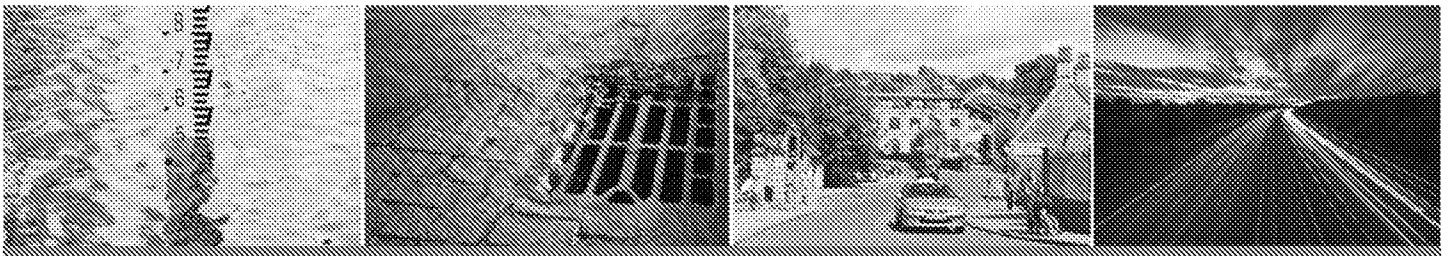
The port which existed there in the 13th and 14th centuries has not been located, but in the 16th century the estuary was said to have two 'havens', Littlehampton and Cudlow, the second of which may have lain in the putative former channel of the river west of Clymping Mill.

By the 1360s the lord's income from agistment in the Cudlow demesne brooks had been reduced by flooding, which together with erosion continued later to such a degree as to render the living by 1511 a sinecure. By the late 15th century Atherington manor was suffering a decrease in rent income through the incursions of the sea and in the early 17th strips in the common fields along the coast there were being gradually eaten away. Erosion continued at Atherington in the 18th century.

In 1606 '*the sea was daily making fresh encroachments*' c. 1790 the cost of maintaining the defences was greater than the income from the land.

Erosion continued in the 19th century. There were Groynes on the coast at five places in the western and central parts of the parish in 1843. The defences themselves were badly damaged in a gale in 1875, and c. 1897 Christ's Hospital acquired the south-west corner of the parish as the only way of protecting its adjacent lands. In 1901 the hospital took a 21-year lease from the Crown of the foreshore of that part of the parish, the sewers commissioners being responsible in 1914 for the rest. New Groynes were constructed c. 1906. Sea defence at that period was said to be a heavy expense on owners of neighbouring land. In 1991, however, the coast in the centre of the parish was protected by a concrete wall.





Drainage - Flood Risk - Highways - Transport

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