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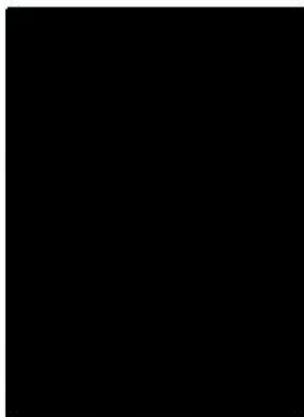
HAVANT BOROUGH
COUNCIL

24 DEC 2012

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FLOOD RISK ASSESSMENT
19-23 & 29-29A Creek Road,
Hayling Island

Prepared By



Reviewed By

Date: 12 December 2012
Reference: 0042 Rev 0

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1 INTRODUCTION

- 1.1 Instructions were received from West End Properties Ltd to undertake a Flood Risk Assessment (FRA) and, where applicable, cover the Code for Sustainable Homes Category 4 SUR2 requirements for a redevelopment of the existing properties at 19-23 & 29-29A Creek Road, Hayling Island, Hants into residential properties.
- 1.2 The assessment is in compliance with National Planning Policy Framework (NPPF): Section 10 as a level 2 assessment.
- 1.3 This assessment has been prepared undertaken by Mark Akmenkalns.
- 1.4 The Client's attention is drawn to the Conditions and Limitations within Appendix C of this report.

2 DEVELOPMENT DESCRIPTION & LOCATION

- 2.1 The 2 No. sites are located at 19-23 & 29-29A Creek Road, Hayling Island, Hants.
- 2.2 It is proposed to redevelop these existing buildings via expansion of residential properties as follows:

Floor	19-23	29-29A
Grd	3 No. 1 bed flats (existing)	Commercial office/shop (existing)
1st	3 No. 1 bed flats (existing)	1 No. 3 bed flat (existing)
2nd	2 No. 1 bed flats (new)	1 No. 3 bed flat (new)

- 2.3 The site is located at the south-east of the existing conurbation of Hayling Island known as Eastoke, off Creek Road at OS Grid Reference SZ739983. Hayling Island is situated on an area of land completely isolated from the mainland by coast. The island is generally low lying with approx 5% of the perimeter attached to the main land via a single public highway (A3023). The island is neighbour to Portsmouth (west coast) and Thorney Island and The Witterings (east coast). The nearest coastal point in relation to the site is Hayling Bay, located less than 1.0km from the south boundary on the south side of Southwood Road.
- 2.4 The land surrounding the site is typically urban with the eastern border forming the bulk of development within Eastoke. The land to the east is a narrow section of land spurring off from the central island piece served by only a single public highway, Southwood Road. The south coast and existing defences are situated less than 200m from the site boundary. The coast to the north is approx 500m from the site boundary and forms St Hermans Drain, a main watercourse which flows into the larger Chichester Harbour to the north east.

- 2.5 The south end of Creek Road (public highway) directly adjacent to the site appears to be a nominally [REDACTED] site at approx 3.95m AOD at the intersection with Southwood [REDACTED] by the north end of Creek Road intersecting with Eastoke Avenue [REDACTED] to be of a similar level slightly above 4.00m AOD which suggests the site is located adjacent a low point within Creek Road.
- 2.6 The topographical survey includes approx. 300m of Southwood Road further westbound for appraisal of means of escape. It is evident the road continues to rise marginally to a level of 4.6m AOD.

3 STRATEGIC FLOOD RISK ASSESSMENT

- 3.1 Flood attributes for the site and immediate environs have been examined from the Portsmouth and Urban South Hampshire (PUSH group) Strategic Flood Risk Assessment (SFRA). Extracts of salient plans are contained in the Appendix.
- 3.2 The SFRA identifies the primary source of flood risk to Hayling Island is from the sea (tidal). Consequently Havant Borough Council is continually reviewing the coastal strategy to offer long term improvements and further protection.

4 FLOOD MANAGEMENT & SHORELINE MANAGEMENT PLANS

- 4.1 Hayling Island is entirely below approximately 9m AOD, the majority of which is in close proximity to the coast and the influence of tidal flooding. Both redevelopment sites are at an elevation of approximately 3.7m AOD. It is therefore tidal flooding and the Shoreline Management Plans which are applicable to this location.
- 4.2 The southern frontage defences comprise a sea wall and beach replenishment scheme involving the continual process of topping up the beach annually and maintaining the sea walls. This was last undertaken comprehensively in 1985 and HBC are scheduled to undertake further improvements imminently.
- 4.3 The northern frontage defences comprise a partial sea wall defence in vicinity of Eastoke Avenue to protect the Eastoke area for a 1:200yr event. West of Eastoke the sea defence is high ground and therefore no additional defence has been constructed. The furthest point west of Eastoke is an area of low land with minimal defence to the east. It is understood that HBC are scheduled to undertake further improvements imminently.
- 4.4 The PUSH map identifies the southern frontage of Hayling Island has suffered from significant wave overtopping. This extends to Creek Road even though the land is relatively high and shown to be within flood zone 1.

5 SEWERAGE APPARATUS

- 5.1 The sites are located in the main urban area which contains comprehensive foul and storm water sewer networks. The sites are connected to the public sewers (unattenuated). No public sewers cross the site.
- 5.2 The Southern Water sewer map is included in the appendix.
- 5.3 The public highway in vicinity of the site collects surface water with standard road gullies/kerb gullies which discharge into the Southern Water storm public sewer running north up Creek Road.

6 SITE INFORMATION RECEIVED

- 6.1 A series of O'Neill Architectural Services drawings for the sites have been received:

0844/10	19-23 Survey as Existing (Floor Plans)
0844/11	19-23 Survey as Existing (Floor Plans)
0844/12	29-29A Survey as Existing (Floor Plans)
0844/13	29-29A Survey as Existing (Floor Plans)
0844/14	Existing & Proposed Street Scenes
0844/15	Location Plans
- 6.2 For both redevelopment sites, the majority of the external areas are impermeable. It is understood that the proposals will offer a nominal net reduction in impermeable areas by reverting some regions to permeable landscaping. This shall be subject to detailed design and identified via the Code for Sustainable Homes submission.

7 SOURCE-PATHWAY-RECEPTOR ASSESSMENTS

- 7.1 The SFRA mapping indicates the sites are not at risk of tidal flooding but may be at risk of wave overtopping (breach of defences).
- 7.2 Wave overtopping is the historic cause for flooding in this area thus wave increments must be considered. Typically a probability value of 0.3 Hs (m) should be taken into account. Flood water may become tide-locked however a brief study of the Admiralty Tides suggests a maximum duration of 4-5hrs before gravity outfalls will come into full operation again thus allowing the road gullies to remove ponding.
- 7.3 The predicted Extreme Tide Level is presently 3.4m AOD (1:200) rising to 4.7m AOD (2115): This increase in sea level design climate change could have a knock on effect to the severity of wave overtopping.
- 7.4 The SFRA mapping indicates the sites are outside the fluvial flood risk.

- 7.5 The SFRA mapping indicates the sites are not at risk of flooding from groundwater.
- 7.6 The SFRA mapping indicates the sites are not at risk of sewer flooding.
- 7.7 The EA mapping indicates the sites are not at risk of flooding from reservoirs.
- 7.8 Surface water runoff from the site will continue to discharge to the public sewers.
- 7.9 Surface water runoff will be reduced and will therefore accords with Code for Sustainable Home SUR1 standards. There will a nominal reduction surface water runoff from the site and thus a small betterment to the sewer infrastructure.
- 7.10 The existing site use is classified as less vulnerable (commercial) and more vulnerable (residential) to Table 2 of The Technical Guidance to the NPPF. The proposed development is classified as less vulnerable (commercial) and more vulnerable (residential) to Table 2 of The Technical Guidance to the NPPF.
- 7.11 The existing receptors are the 2 No. buildings being retained. The new flood receptors of the development would be:
- Part of the refurbished property, being the 1st & 2nd floor expansion but would not become flood damaged due to elevation. (i.e. increase in population not infrastructure)

8 FLOOD PROBABILITY

- 8.1 The Environment Agency (EA) flood zoning contained in the SFRA mapping represents current best estimates of zone 2 and zone 3 flooding as defined in Table 1 of The Technical Guidance to the NPPF. It does not take account of potential climate change impacts.

Zone 2 Medium Probability of river flooding (0.5%-0.1%)

Zone 3a High Probability of river flooding (>0.5%)

Zone 3b Functional Floodplain (>5% probability of river flooding)

The flood map does not differentiate between zones 3a and 3b.

Zone 2 is only considered appropriate for water-compatible development

Zone 3a is additionally considered appropriate for less vulnerable uses.

Zone 3b is additionally considered appropriate for more vulnerable uses.

- 8.2 [REDACTED] at present' located in flood zone 1 (Low risk).

- 8.3 Section 7 indicates the sites are not at risk of tidal flooding but may be at risk of wave overtopping (breach of defences).

9 CLIMATE CHANGE

- 9.1 Table 5 of The Technical Guidance to the NPPF prescribes the precautionary sensitivity ranges for peak rainfall intensity due to climate change. In meeting Code for Sustainable Homes SUR1 standard the design of the surface water drainage system will accommodate climate change effects.
- 9.2 A review of the future Climate change mapping concludes the sites as follows:
- | | |
|--------------------|--------|
| 2055 _{AD} | Zone 1 |
| 2085 _{AD} | Zone 2 |
| 2115 _{AD} | Zone 2 |
- 9.3 The existing sea defences of Hayling Island are, at present, considered adequate to protect against the 1:200 event. It is anticipated that the Havant Borough Council SMP strategy of 'hold the line' will continue to afford protection to Hayling Island and will be upgraded to account for anticipated wave height and tide height levels until 2115.

10 DETAILED DEVELOPMENT PROPOSALS

- 10.1 It is intended to redevelop the existing 2 No. buildings into refurbished commercial/residential dwellings as aforementioned in section 2.
- 10.2 The proposals are considered 'Minor developments' (Section 10 of The Technical Guidance to the NPPF.) and are unlikely to raise significant flood risk issues as there is a nominal reduction in impermeable catchment or building size i.e. no or low impact to local flood storage capacity or flood flows.

11 SEQUENTIAL & EXCEPTIONS TESTS

- 11.1 The site is 'at present' in flood zone 1 (low risk), for 2115_{AD} the site is 'predicted' to be in flood zone 2 (medium risk). The site already has permission for commercial and residential use. The less vulnerable (commercial) and more vulnerable (residential) usages are suited to a flood zone 1 & zone 2 locations (Table 3 of The Technical Guidance to the NPPF.). The site therefore meets the requirements of the sequential test.
- 11.2 Application of the Exceptions Test is not required.

12 FLOOD RISK MANAGEMENT MEASURES

12.1 Figure 2.1 of the Practice Guide to PPS25 defines the hierarchy of flood risk management measures:

- i) Avoidance/Prevention
- ii) Substitution
- iii) Control
- iv) Mitigation

12.2 This development is considered have class (i) flood risk management measures. It is anticipated that the SMP strategy of 'hold the line' will continue to afford protection to Hayling Island and will be upgraded to account for anticipated wave height and tide height levels until 2115. Subject to this being implemented the sites are suited to class (i).

12.3 In order to address the wave overtopping risk the development must also consider class (iv) flood risk management measures:

- (*) Mitigate life risk by evacuation, the proposed new dwellings are well above flood level (1st & 2nd floors) and will avoid damage.
- Potential flood damage to the ground floor dwellings can be mitigated by adoption of compliance with construction recommendations and strategies given in Department of Communities and Local government (DCLG) publication '*Improving Flood performance of New Buildings*'. It is recommended that the client review this at detailed design stage.
- Ensure that the development accommodates the Hayling Island flood warning and escape plan (FWEP). This plan should be prepared at detailed design stage and be aligned to the Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA). This plan will also be aligned with the Havant Borough Council (HBC) Major Incident Plan (MIP). It is recommended that the client provides this to the tenants.

12.4 (*) Means of Escape

It is required to maintain a dry escape route during a flood event. This must be a route to services and facilities exist without passage through flood water.

In the occurrence of a tidal overtopping (wave) event that breaches the confines of the site there are two options: 1) Remain within the dwelling. 2) Evacuate to a safe check point. Option 1 may well be most desirable under most circumstances given that the tidal cycle is of the order of 4-5hrs in which standing water would most likely disperse quickly within a few hours.

- 12.5 Overall the 2 No. redevelopment sites are considered to, at present, have at low flood risk; maintaining a low risk long term is wholly dependent on Havant Borough Council SMP's.

13 OFF SITE IMPACTS

- 13.1 There is no off site impact as a result of the development as surface water runoff from the site will continue to be discharge to the public sewers at a nominal reduction thus no impact on water flows.

14 RESIDUAL RISKS

- 14.1 Flood events in excess of 1:200 extreme sea level year 2115_{AD}.
- 14.2 It is anticipated that the SMP strategy of 'hold the line' will continue to afford protection to Hayling Island and will be upgraded to account for anticipated wave height and tide height levels until 2115.

15 CODE FOR SUSTAINABLE HOMES

15.1 SUR1 - Surface Water Runoff

The management of surface water runoff from developments should aim to avoid, reduce and delay the discharge of rainfall to public sewers and watercourses to protect nearby watercourses and reduce the risk of localised flooding, pollution and other environmental damage.

Up to 2 credits are available for suitable management of rainfall runoff. This will need to be finalised at the design stage as follows:

- (1) There is no discharge to a watercourse for rainfall depths up to 5mm; or
- (2) Rain water is treated using SUDS to improve its quality before discharge, and establish agreements for the ownership, long term operation and maintenance of all the sustainable drainage elements.

Conclusion

Based on the information provided (as outlined in section 6) given that the sites is already developed and fully serviced it becomes impractical to implement the above two criterion. Whilst this can be re-evaluated at detailed design stage it is likely that no credits can be awarded.

The mandatory part of SUR1 is met by default due to a reduction in the impermeable.

15.2 SUR2 - Flood Risk

The CSH aims to encourage housing development in low flood risk areas, or to take measures to reduce the impact of flooding in areas with a medium or high risk of flooding.

Up to 2 credits are awarded where the [REDACTED] is located in an area with a low annual probability of flooding, or where [REDACTED] that appropriate measures have been taken to ensure safe access and escape routes and flood resilient and resistant construction methods will be adopted. This will need to be finalised at the design stage as follows:

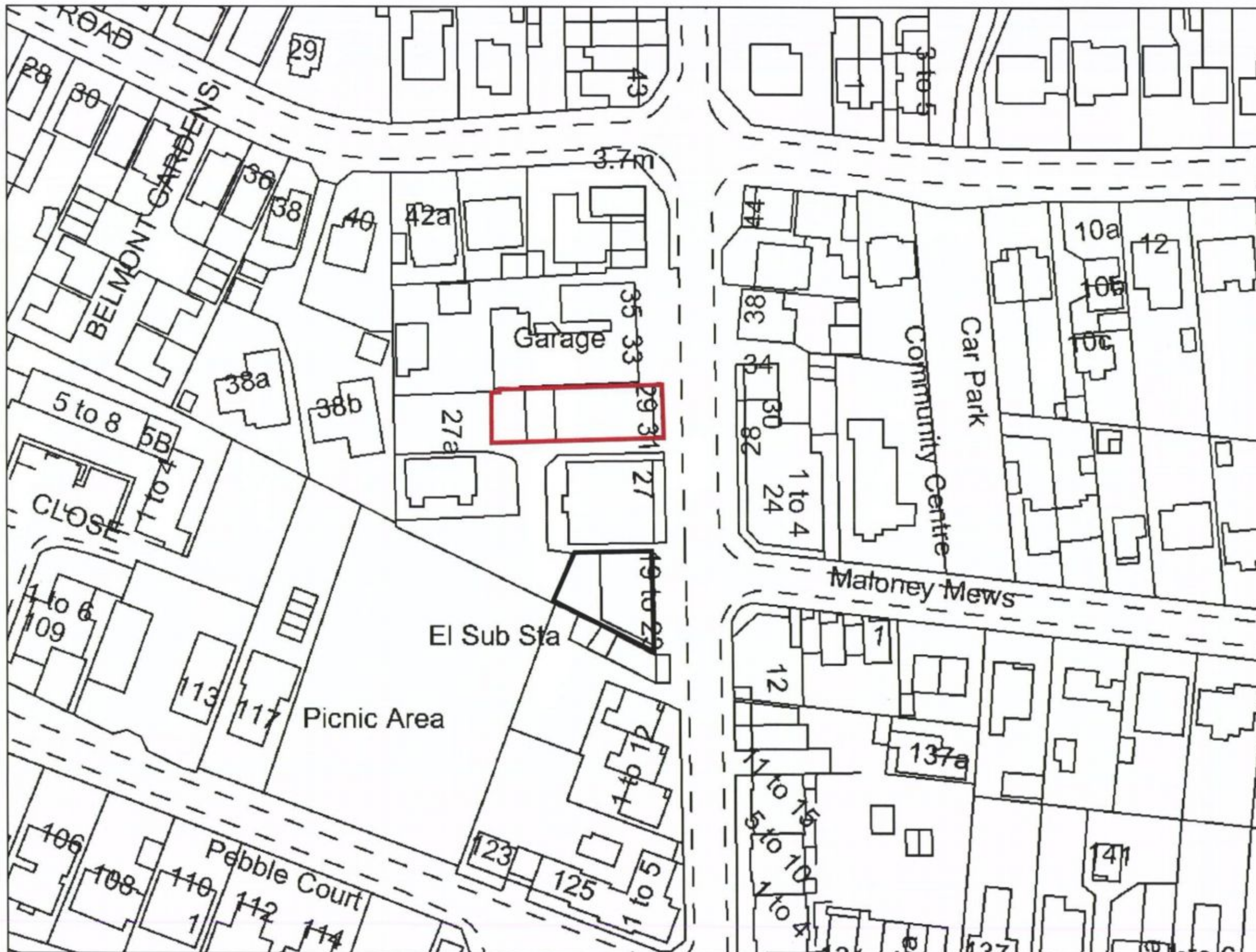
- (1) That the FRA demonstrates to the LPA that all sources of flooding are of a low risk.
- (2) If the development is in Zone 1 and the FRA shows low risk overall, 2 credits can be awarded.
- (3) If the development is in Zone 2 or 3 that the FRA demonstrates that the development is appropriately designed and that finished floor levels and access routes comply with the criteria and that any residual risks can be safely managed.

Conclusion

In conclusion the proposed redevelopment is in Flood Zone 1, with a low annual probability of tidal flooding. The above appraisal concludes there is low risk of flooding from all other sources and thus two credits can be awarded.

APPENDIX A:

SITE PLANS



Notes:

1. This drawing is to be read in conjunction with all other i-Civil drawings, and with all relevant Architect's and Engineer's drawings and specifications.
2. No dimensions are to be scaled from this drawing, unless noted otherwise all dimensions are in millimeters and all levels are in metres from the site datum.
3. All dimensions to be checked on site. all details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
4. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. figured dimensions must be used for setting out and detailing. i-Civil logos and company information must be removed from copies if information is re-used.

Revision	Date	Description
1		

Preliminary

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Client: **West End Properties Ltd**

Project: **Creek Road Hayling Island**

Drawing Title: **Site Location Plan**

Drawn By: MJA	Date: Dec 2012	Scale @ A4: 1:1250
Project No: 00042	Drawing No: 501	Revision: -

APPENDIX B:

SFRA Data

- 1 =Route to recreational ground.
- 2 =Route to on site high level balcony.
- 3 =Route to Creek Road northside. (No historic flooding)
- 4 =Route to West Haye Road/Southwood Road.



Notes:

1. This drawing is to be read in conjunction with all other i-Civil drawings, and with all relevant Architect's and Engineer's drawings and specifications.
2. No dimensions are to be scaled from this drawing, unless noted otherwise all dimensions are in millimeters and all levels are in metres from the site datum.
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Revision	Date	Description

Preliminary

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Client: West End Properties Ltd

Creek Road
Hayling Island

Means of Escape

Drawn By: MJA	Date: Dec 2012	Scale: 1:1250
Project No: 00042	Drawing No: 503	Revision: 1

Flood Risk Assessment 19-23 & 29-29A Creek Rd, Hayling Island



FZ3



FZ2

Flood Risk Assessment 19-23 & 29-29A Creek Rd, Hayling Island

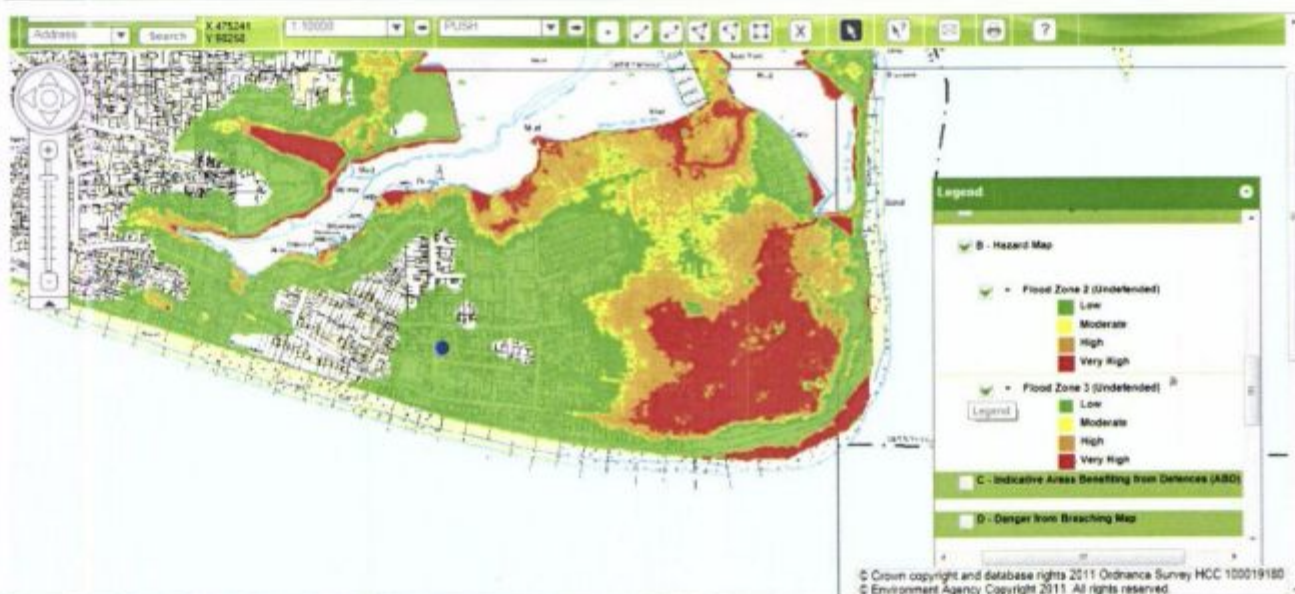


Pluvial



Surface water

Flood Risk Assessment
19-23 & 29-29A Creek Rd, Hayling Island



Hazard map

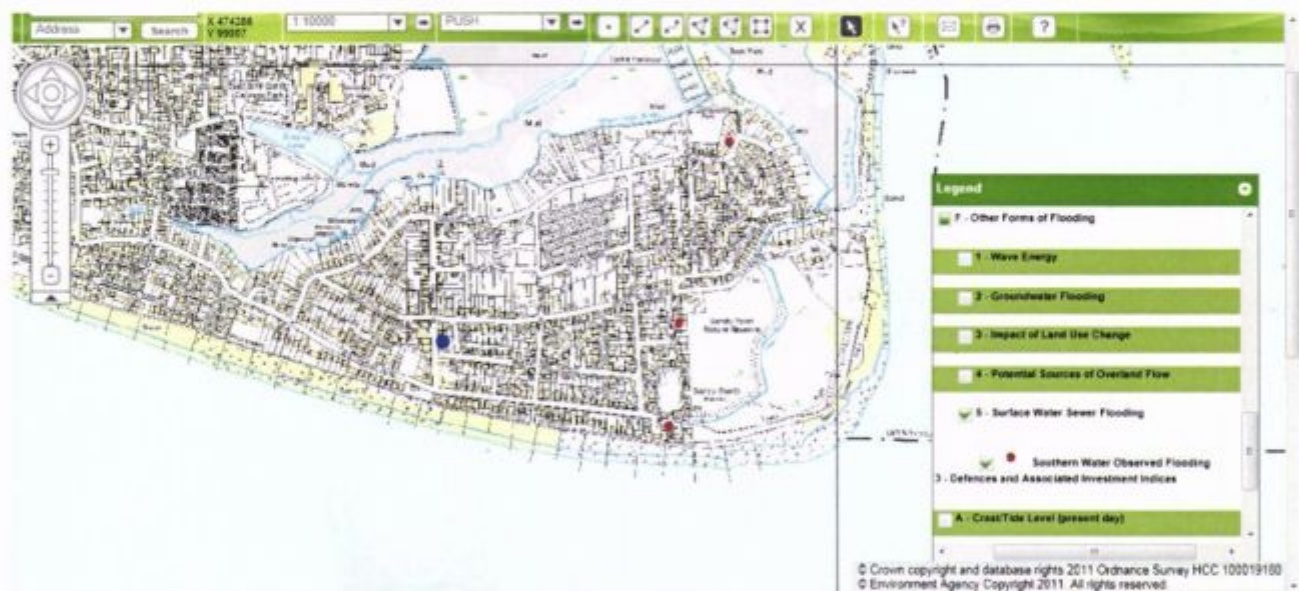


Climate change

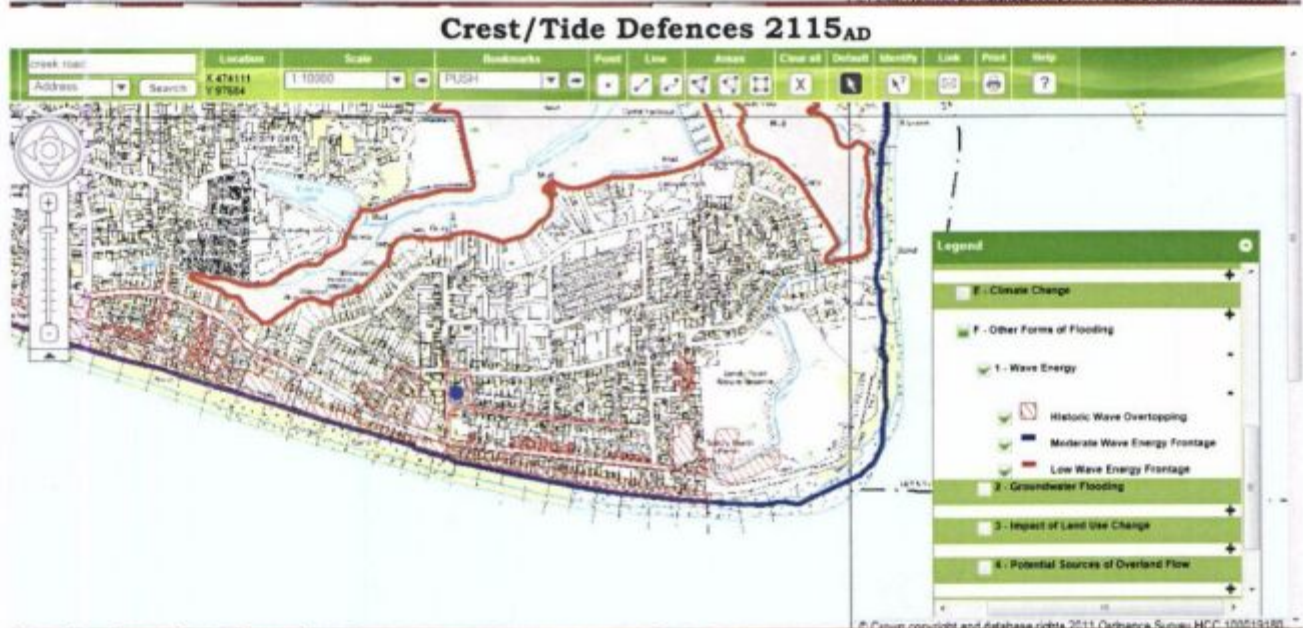
Flood Risk Assessment 19-23 & 29-29A Creek Rd, Hayling Island



GW flooding



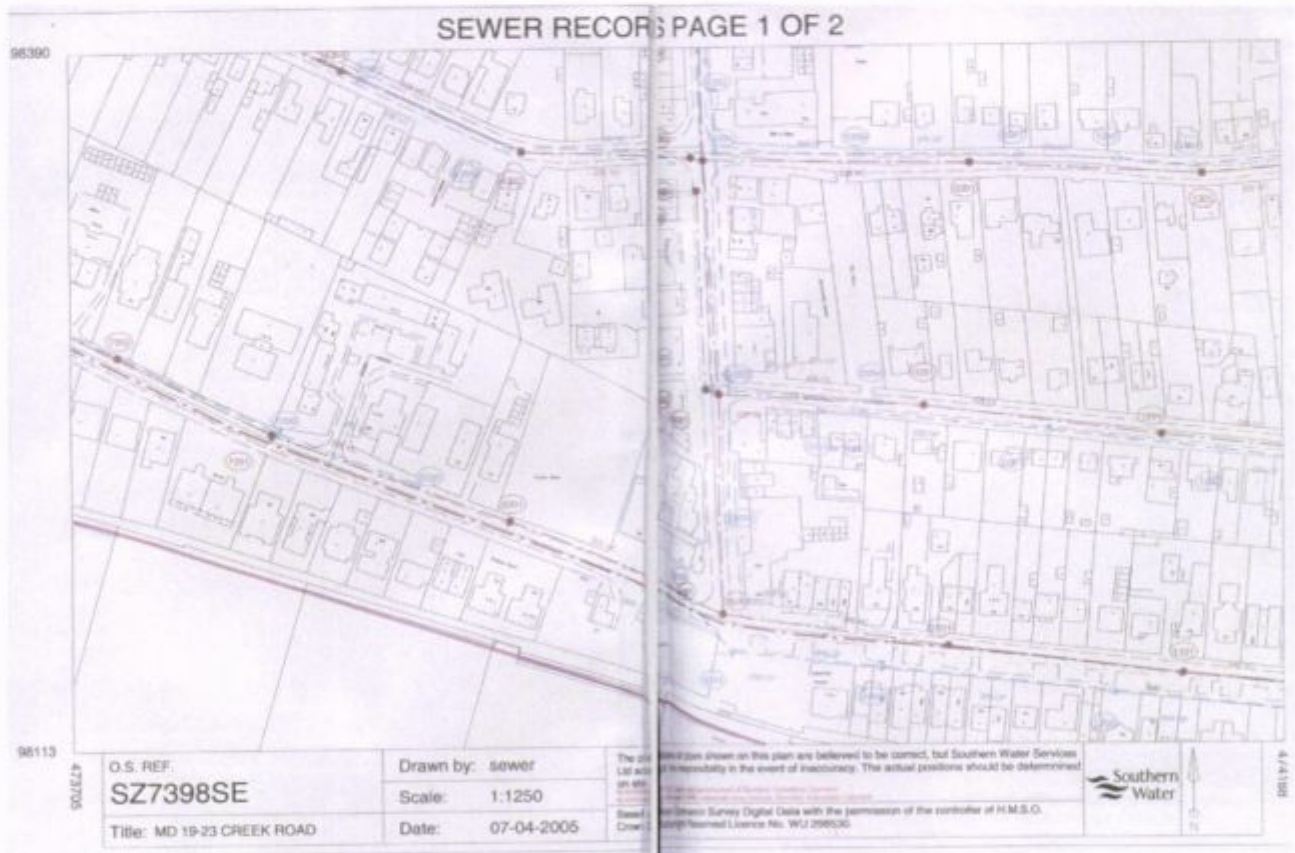
Sewer flooding



Flood Risk Assessment 19-23 & 29-29A Creek Rd, Hayling Island



Climate change 2115_{AD}



Sewer Records

APPENDIX C:
CONDITIONS AND LIMITATIONS

CONDITIONS AND LIMITATIONS

1. The report is a record of a visual inspection carried out by, or under the direction of the writer and must not be misinterpreted as a Structural/topographical Survey such as would be carried out by a Chartered Surveyor. The report is not a Valuation Survey.
2. The inspection is strictly limited to the items requested and these will be detailed in Clause 1 of the report. No consideration will be given to any other aspects or parts of the site.
3. The report is confidential to the Client(s) stated in Clause 1 and has been prepared to their instructions for their own purposes only and it is not permitted to disclose this report to any other parties (except the Clients own Solicitors, Surveyors, Building Societies or Estate Agents) without the prior consent of the writer.
4. The copyright of this report remains the property of the writer.
5. No liability for the contents of this report is accepted to any parties other than the Client(s) stated in Clause 1.1. No parties other than the client stated in Clause 1.1 should rely upon this report.
6. Unless specifically stated otherwise:-
 - a) All external observations will be carried out by eye from the ground level only.
 - b) It should not be construed that any parts of the construction comply with the requirements of the Building Regulations Act or standard practice either current or as current at the time of original construction. No enquiries to any Authorities will be made.
 - c) No testing or enquiries into the presence of or susceptibility to pollution, contamination, radiation, methane, radon or other gases or hazardous substances has been carried out.
7. Unless specifically stated otherwise in the report, any recommendations for works given in the report are outline only and are to be confirmed or modified as appropriate at detailed design stage.
9. Under the Construction (Design & Management) Regulations latest edition, the Client has obligations for ensuring Health and Safety arising from any construction work. If it is proposed to proceed with construction work based upon information or recommendations contained in this report, these regulations probably apply. Further details of any issues arising from our report or the Clients obligations generally are available on request.