Hannah · Reed

Hannah ▪ Reed

HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

The Berkeley Leisure Group
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ace
consultancy engineering business environment

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C-211119/AJB/Dec 2011

Revision: P1

HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

CONTENTS

EXECUTIVE SUMMARY

1. INTRODUCTION

The Flood Risk Assessment (FRA) has been prepared on behalf of The Berkeley Leisure Group as part of a planning application to extend the opening times of the holiday let element of the Halcyon Caravan Park in Hullbridge from 10 months to 12 months including December and January. The original planning application for the site was granted on the basis of Planning Policy Guidance 25 (PPG25) which was replaced in 2006 with Planning Policy Statement 25: Development and Flood Risk (PPS25), therefore the report below has been prepared in accordance with PPS25.

The proposed report has updated the information submitted in our previous FRA prepared in 2003 and the additional supporting information.

2. SITE LOCATION

2.1 Location and existing development

2.1.1 Description of existing site

The site, which covers an area of 3.2ha, is located to the east of Hullbridge, Essex as shown on Location Plan enclosed in **Appendix 1**. The site is bounded by the River Crouch to the North, the Shangri-la Caravan Park to the East, Pooles Lane to the South and West and existing residential development to the West.

The site comprises 38 pitches for permanent residential (privately owned) mobile homes located at the centre of the site and 62 pitches for holiday (short term let) mobile homes as shown on the site layout plan in **Appendix 2**.

2.1.2 Site Topography

The topographical survey of the site is enclosed in **Appendix 3**. The levels on site range between approximately 2.8mAOD (along the southern boundary of the site) and approximately 5.5mAOD (along the western boundary of the site) and will remain unchanged for the proposed development.

2.1.3 Current drainage systems

The site is served by an Anglian Water surface water and foul sewer network, as shown on the plans in **Appendix 4**.

2.1.4 Nearby watercourses, water-bodies and structures

The tidal River Crouch is located immediately to the north of the site, with Kingsmans Farm ditch located immediately to the south and east of the site.

2.1.5 Site Geology and indication of permeability

The BGS map extracts are enclosed in **Appendix 5**, showing the bedrock of the site is London Clay, with superficial Head deposits of gravel, sand, silt and clay.

2.1.6 Existing mitigation measures/defences

An earth flood alleviation embankment constructed by the Environment Agency (EA) is located along the northern boundary of the site. This was constructed to a level of 5.14mAOD, the flood defences continue beyond the site in the form of a sheet piled wall. The defences are maintained by the EA.

2.1.7 Reference to local development documents

This site is located on the north-eastern edge of Hullbridge which is itself close to the north-western boundary of the district of Rochford.

A Strategic Flood Risk Assessment (SFRA) was published by Rochford District Council in February 2011 (and is available on their website at the following address http://www.rochford.gov.uk/planning/policy/local_development_framework/evidence_base.aspx).

2.1.8 Sequential test and Exception test

The sequential test is not applicable to the site and the exception test is considered to have been addressed with our previous FRA for which consent was given for the caravan site.

3. ASSESSMENT OF EXISTING FLOOD HAZARD TO THE SITE

3.1 Environment Agency Flood Zones

See **Appendix 6** for Flood Model information provided by the EA.

This information shows that the majority of the site is located in Flood Zone 3: High Probability.

3.2 Strategic Flood Risk Assessment

See **Appendix 7** for extracts of the SFRA produced by Rochford District Council.

A SFRA was published by Rochford District Council in February 2011. Paragraph 2.4.2 of this document states that, *'the entire northern and north-eastern boundary of the Rochford district is formed by tidally influenced watercourses including the River Crouch, River Roach and the North Sea.'*

Paragraph 3.2.6 states that, *'The River Crouch is not a significant source of fluvial flooding in the study area as the river is tidally influenced along the length adjacent to the Rochford district. However, there are several tributaries of the River Crouch within the western border of Rochford that pose a source of fluvial flood risk. These*

are the Rawreth Brook, Chichester Hall Brook, North Benfleet Brook and Beeches Brook.'

The SFRA also includes the results of hydrodynamic breach modelling undertaken at 7 locations around the tidal frontage of the district. This site is approximately 3.5km to the west of the closest of these locations (ROC07 at South Farmbridge). Although the site is not shown as being directly impacted by flooding from a breach at the modelled location, the areas have similar topography. A breach at a location closer to the site is likely to have a similar impact on the site as the modelled breach was shown to have on sites immediately behind the flood defences. These sites were generally flooded rapidly (between 1 and 4 hours depending on the proximity of the breach) and to a depth of over 3m. However, it should be noted that a breach of these defences is considered very unlikely.

3.3 Potential sources of flooding (Annex C, PPS25) and a description of flooding from potential sources with reference to historical records and any Environment Agency data including any modelling work

3.3.1 Fluvial and tidal flooding from main rivers

The River Crouch passes the northern boundary of the site in an eastward direction. Protection is provided to the site by an embankment (crest level shown by the EA at 5.14mAOD) along the site's northern boundary.

The River Crouch is tidally influenced as it passes the site and the Flood Modelling information provided by the EA states a 0.5% probability (1 in 200 year return period) plus climate change peak water level of 4.947mAOD and a 0.1% probability (1 in 1000 year return period) water level of 4.677mAOD.

Despite the majority of the site being below this level, the embankment along the northern boundary of the site provides protection against the 0.5% probability (1 in 200 year return period) plus climate change flood event with a freeboard of 190mm.

The SFRA for this area states that the River Crouch does not pose a significant source of fluvial flooding as it is tidally influenced along the length adjacent to Rochford district.

3.3.2 Fluvial flooding from minor watercourses

There is a minor watercourse (Kingsman Farm ditch) which flows close to the southern and eastern boundaries of the site before discharging via a sluice gate into the River Crouch. This watercourse is not identified as a potential source of fluvial flooding by the SFRA and is not considered to pose a significant flood risk independently of high levels in the River Crouch.

Essex County Council and Rochford District Council have been approached during the preparation of this FRA in order to identify if any flood level information is available for Kingsman Farm ditch. The Flood Partnership Manager for Essex County Council confirmed that they have no record of any incidents in this area. The Drainage Engineer for Rochford District Council advised that there has been historic

flooding from Kingsman Farm ditch but that they have no record of this having any impact on the site.

3.3.3 Flooding from high groundwater levels and springs

There are no springs in close proximity of the site and groundwater levels on the site are unknown.

3.3.4 Overland Flow

The minor watercourse (Kingsman Farm Ditch) which flows close to the southern and eastern boundaries of the site will intercept the majority of any overland flows which may otherwise have an impact on the site.

Overland flow is therefore not considered to pose a significant risk to the site.

3.3.5 Flooding from sewers

The potential flood risk from sewers is considered to be low. There are foul and surface water sewers accessed by several manholes running across the site, which the existing impermeable areas drain to. However, these sewers discharge away from the site and not directly into the River Crouch.

There is a small risk of flooding due to overloading of the local sewers. This is generally considered to be a normal risk as piped sewers are designed for limited storm events. Any flooding would only be a localised problem.

3.4 Probability

3.4.1 Site specific assessment of the probability of flooding

The topographical levels of the site range from a low of approximately 2.8mAOD to a high of approximately 5.5mAOD. The 0.5% probability (1 in 200 year return period) plus climate change peak water level of the River Crouch as it passes the site is 4.947mAOD. This indicates that the site would be at significant risk of flooding were it not for the protection provided by the embankment along the southern bank of the River Crouch.

There remains a residual risk that this embankment will be overtopped by an extreme event or that a breach will occur. However, this is considered to be very unlikely. The risk of overtopping is considered low, as even the 1 in 1000 year flood level of 4.971mAOD is below the height of the embankment at 5.14mAOD.

The potential failure of the defences in the form of a breach has been considered with a breach analysis carried out in ISIS with the results enclosed in **Appendix 8**. The results generated are based on a 50m wide breach of the defences as these are soft defences based on EA modelling requirements, with the modelled 0.5% probability (1 in 200 year return period) and 0.5% probability plus climate change flood event in the River Crouch of 4.63mAOD and 4.947mAOD respectively used as the peak water level in the stage hydrograph generated. It is not known if the EA data makes allowance for sea level rise, so for completeness a further analysis including sea level

rise for a further 60 year life of development has been also considered with a peak level of 5.014mAOD, to demonstrate that there are factors of safety to the conclusions.

The results of the breach analysis indicate a peak water level of 4.5mAOD across the site and adjacent land resulting from the 1 in 200 year event and a peak water level of 4.937mAOD from the 1 in 200 year plus climate change event based on EA modelled data. A peak water level of 5.0mAOD is assessed, based on 1 in 200 year plus a worst case allowance for a further 60 years of Sea Level Rise.

In terms of the extent of the rapid inundation zone, EA guidance states that, 'The general rule of thumb to determine the rapid inundation zone of fast flowing water caused by a breach in a raised defence is: for every 1m above ground level of the raised defence the rapid inundation zone extends 50m.' The crest level of the flood defence at this site is 5.14mAOD, which is 1.84m above the lowest ground level immediately behind the defences of 3.3mAOD. This means that the rapid inundation zone reaches approximately 92m from the location of the breach.

A plan showing the extent of flooding from these events is enclosed in **Appendix 8** for reference.

3.4.2 Description of any structures in proximity of the site that may influence flooding

Information provided by the EA shows that the embankment along the southern bank of the River Crouch has a crest level of 5.14mAOD and therefore provides protection up to the 0.1% probability (1 in 1000 year return period) event with a freeboard of 463mm. Details of the flood embankment are enclosed in **Appendix 9** for reference.

3.5 Climate Change

3.5.1 Estimated effects of climate change on the site

The impacts of climate change are considered in terms of increased rainfall intensity and increase peak river flows. The recommended precautionary sensitivity ranges for increases in peak rainfall intensity are to increase by 5% between 1990-2025, up to 10% between 2025-2055, up to 20% between 2055-2085 and up to 30% between 2085-2115. The peak river flow is estimated to increase by 10% between 1990-2025, up to 20% between 2025 and 2115. These will be taken into account in the design of the surface water system and appraisal of flood risk.

In addition the site needs to consider the risk of sea level rise and extreme wave heights as the River Crouch is subject to tidal influences. The increases in net sea level rise as outlined in Table B1 in PPS25 are a net 4mm increase between 1990-2025, increasing to 8.5mm between 2025-2055, up to 12.0mm between 2055-2085 and 15mm between 2085 and 2115. The recommended allowances for extreme wave heights outlined in Table B.2 in PPS25 are an increase of 5% between 1990-2055 and increase of up to 10% between 2055- 2115.

Appendix 6 includes modelled flood water levels provided by the EA for the River Crouch as it passes the site which show the 0.5% probability (1 in 200 year return

period) peak water level rising from the current level of 4.631mAOD to 4.947mAOD as a result of climate change.

The breach analysis has been simulated for two climate change scenarios firstly based on the 1 in 200 year plus climate change flood level and then using influence of sea level rise for a further 60 year life of the development.

4. DEVELOPMENT PROPOSAL

4.1 Description of proposed development

There are no proposed changes to the physical layout or use of the site. The proposal is purely that the site be allowed to remain open for its current use as a short term holiday letting for a full 12 months of the year, including December and January rather than being limited to 10 months of the year as is presently the case.

The flood risk assessment is not required due to a change of use on the site, only to demonstrate why the site can be used for short term holiday lets for 12 months of the year. Therefore the development will remain as shown on the plan in **Appendix 2**.

4.2 Vulnerability classification of site

The proposed site use for this planning application is short term let for holidays, therefore in accordance with PPS25 is classified as More Vulnerable.

The classification of the site has been investigated and the legal decision confirms the classification of the site as More Vulnerable.

4.3 Proposed location plans highlighting areas of concern and any flood protection measures planned (Byelaw Distance from Main River)

The site is located in Flood Zone 3, with a Flood Evacuation Plan (FEP) prepared to address how the site will respond to flood risk on the site in terms of the response to EA flood warnings and the proposed site evacuation procedure.

The purpose of this FRA is to update the previous submission in 2003 which included a Breach Analysis and flood evacuation plan. Since 2003 the EA guidance for these has been updated and hence an updated breach analysis has been completed as outlined above, as well as provision of an updated FEP (that will be submitted as a stand alone document).

4.4 Cross sections of site showing post development site levels, Finished Floor Levels and other relevant levels relative to the source of flooding

See **Appendix 9** for details of the flood embankment along the southern bank of the River Crouch provided by the EA for the previous submission in 2003.

As there are no changes proposed to the physical layout of the site, there will be no change to the existing finished floor levels or other relevant levels.

4.5 Proposed site drainage and its capacity during flood events

As there are no changes proposed to the physical layout of the site, there will be no change to the existing site drainage.

4.6 Post development surface water runoff

As there are no changes proposed to the physical layout of the site, as there will be no change to the surface water runoff.

5. IMPACTS & MITIGATION

5.1 Impacts elsewhere

As there are no changes proposed to the physical layout of the site, there will be no physical impacts of these proposals.

The potential impact which has been outlined by the EA is the principle that an increased time of occupancy results in an increase in the perceived risk. In reality the risk of opening during these two months is the same as that experienced for the existing 10 months. There is no evidence to support an increased risk of flooding from the tidal River Crouch in December and January with seasonal high tides experienced in July and late September/early October. The other cause of high tides are storm surges resulting from areas of low pressure which can effect coastal areas, however despite the site being tidally influenced it is not considered a coastal location. Therefore the impact of a storm surge is unlikely to impact this far upstream of the estuary and unlikely to coincide with a high tide. The site is therefore already open at the times when the greatest risk from a breach is experienced.

5.2 Mitigation measures

As there are no changes proposed to the physical layout of the site, there will be no need for on-site or off-site mitigation measures.

The FEP has outlined measures which could be incorporated on site to mitigate the impact of flooding on the site, this includes anchoring the caravans and the potential installation of floatation devices. These measures are intended to mitigate the impact of flooding in terms of damage limitation to property on site. Anchoring the caravans, prevents them being moved around the site by the flood water. Floatation devices allow the caravans to remain buoyant and float above the flood water, rising and falling as the flood event occurs. The minimum requirement identified by the Emergency Planners will be to anchor the caravans at two points.

The FEP can be implemented well in advance of a potential flood event, as a flood warning is issued between 6 and 12 hours ahead of a predicted flood event.

5.3 Impact of flooding on the site

5.3.1 Likely rate/speed of surface water runoff with which flooding may occur

There is potential that the site could experience flooding due to overtopping of the embankment due to high water levels in the River Crouch or from a breach of its defences (these causes are described in section 6.2 of the SFRA as shown below).

Overtopping of the defences would occur as a result of extremely high water levels in the River Crouch and would most likely be due to a combination of high tides and high fluvial flows. As such it should be possible to provide reasonable notice of the potential overtopping of defences and to evacuate the site, with a lead time of 6-12 hours. In addition, if the defences are overtopped it is likely to occur in predictable locations and to result in relatively slow moving surface water run-off as water would pond in the low lying land immediately behind the embankment.

Paragraph 6.2.5 of the SFRA states that, *'breaches are more likely to occur during high water level events including extreme tides when loads on the defence will be greater'*, section 6.2.7 then goes on to state that, *'Floodwater flowing through a breach in the defences will generally be of high velocity and volume, dissipating rapidly across large low lying areas. Flooding as a result of a breach in defences from tidal sources such as this can be life threatening with far reaching consequences. Breaching of the flood defences has the potential to generate considerable flood hazard and damage to homes and infrastructure.'*

As the consequences of a breach occurring during high water levels in the River Crouch are severe, flooding from a breach in the embankment, however unlikely one might be, is considered to be the most significant risk to the site. However, a breach is most likely to occur, and to have significant consequences, if there are elevated water levels in the River Crouch and these elevated levels are most likely to occur as a result of tidal influences. These tidal influences are no more likely to occur in winter when the site is currently closed than the summer when the site is open as discussed in section 5.1.

In the event of high river levels or high tides, an EA flood warning would be issued. Warnings issued by the EA for this site would be based on the tide level forecast for their gauge at Clacton. The trigger levels are 2.87mAOD for a Flood Alert, 3.77mAOD for a Flood Warning and 3.97mAOD for a Severe Flood Warning.

5.3.2 Predicted order of flooding to locations on the site

The effect of flooding due to overtopping at the embankment would not be severe as water would pond in the low lying land immediately behind the embankment edge. However, repeated abrasive wave action on the embankment could cause saturation and landslip, with the potential for a breach of the embankment to occur. Any flooding due to breach would be rapid and potentially damaging to mobile homes and vehicles on the site, with predicted peak water levels of approximately 4.5mAOD, if a breach occurs during a 0.5% probability (1 in 200 year return period) event and a rapid inundation zone reaching up to 92m from the location of the breach.

It is therefore recommended to include the site on the EA early warning register to enable appropriate action to be taken between 6-12 hours in advance of the flood peak or adverse weather conditions. The FEP outlines the procedure from receipt of a flood warning from the EA to evacuation of the site.

5.3.3 Likely duration of flood events

The probable source of flooding to the site is most likely to be tidal, as such the duration of flood events is likely to coincide with the tidal cycle, it would therefore be approximately 12 hours.

5.3.4 Economic, social and environmental consequences of flooding to the site

The site is used as a location for mobile holiday homes. As such the consequences of flooding to the site are severe and include potential loss of life as well as damage to the mobile homes and interruption to potential holidaymakers and the business of the caravan park. The risk is not significantly altered by these proposals, as damage to the mobile homes would occur whether or not the site is open for business, and a breach of the embankment is as likely to occur in the summer when the site is currently open as in the winter. As outlined previously mitigation measures are proposed to reduce the economic impact of flooding on the site, with flood warnings received with 6-12 hours before a potential flood event, therefore providing time to safely evacuate the site.

5.3.5 Past flooding information including extent, depth and location of previous events

The information provided by the EA (**Appendix 6**) includes information of flooding events in 1953 and 1968 which impacted the site. However, no information is available with regard to flood levels.

Furthermore, Rochford District Council and Essex County Council have both been contacted with regard to potential flooding from Kingsman Farm ditch, with only the Drainage Engineer at Rochford District Council having any additional information. He confirmed there is no record of this watercourse flooding the site, noting out of bank flooding downstream of the site onto Kingsman Farm Road.

5.3.6 Identification of any structures which may influence local hydraulics.

The EA maintained flood embankment on the northern boundary of the site provides protection from elevated water levels in the River Crouch.

5.4 Likely impact of any displaced water on third parties caused by alterations

The site use proposals include no physical alterations to the site and as such there will be no impact of displaced water on third parties.

6 RESIDUAL RISKS

6.1 Remaining risks after mitigation measures are in place

There remains a risk that the site will experience flooding as a result of overtopping or breach of the embankment on the site's northern boundary. Any flooding due to a breach would be rapid and could potentially lead to loss of life as well as damage to mobile homes, although the probability of a breach occurring is very low.

As outlined previously the site should be included on the EA early warning register enabling action to be taken well in advance of the flood peak or adverse weather conditions. In response to a flood warning the FEP would be implemented.

6.2 Ongoing maintenance

The site currently benefits from the protection provided by the flood embankment along the northern boundary. This embankment is maintained by the EA.

These proposals will have no impact on the maintenance regime which is currently undertaken with regard to this embankment.

7 SUMMARY & CONCLUSION

The embankment on the northern boundary of this site provides protection to beyond the 0.1% probability (1 in 1000 year return period) event and safely within the 1 in 200 year plus climate change standard. However, there remains a residual risk that this embankment may be overtopped or that the embankment could suffer a breach. In the event of a breach it is likely, due to the ground levels on the site that the majority of the site will be inundated relatively rapidly.

Although it is considered unlikely that a breach will occur, it is recommended to include the site on the EA early warning register. This is to enable appropriate action to be taken well in advance of the flood peak or adverse weather conditions, by implementation of the FEP.

The proposed application is limited to an extension of time the site can remain open from 10 to 12 months each year, to include December and January.

The main risk of flooding to the site comes from a potential breach of the embankment. This would most likely occur as a result of elevated water levels in the River Crouch, which itself would most likely occur as a result of tidal influences for which a flood warning would likely be issued. There is therefore no increased risk in the site being open in the winter months, compared with the current opening times. In accordance with the mitigation proposals presented in this report and the FEP the proposals are considered appropriate.

For a glossary of terms used in the report see **Appendix 10**.

HALCYON PARK, HULLBRIDGE

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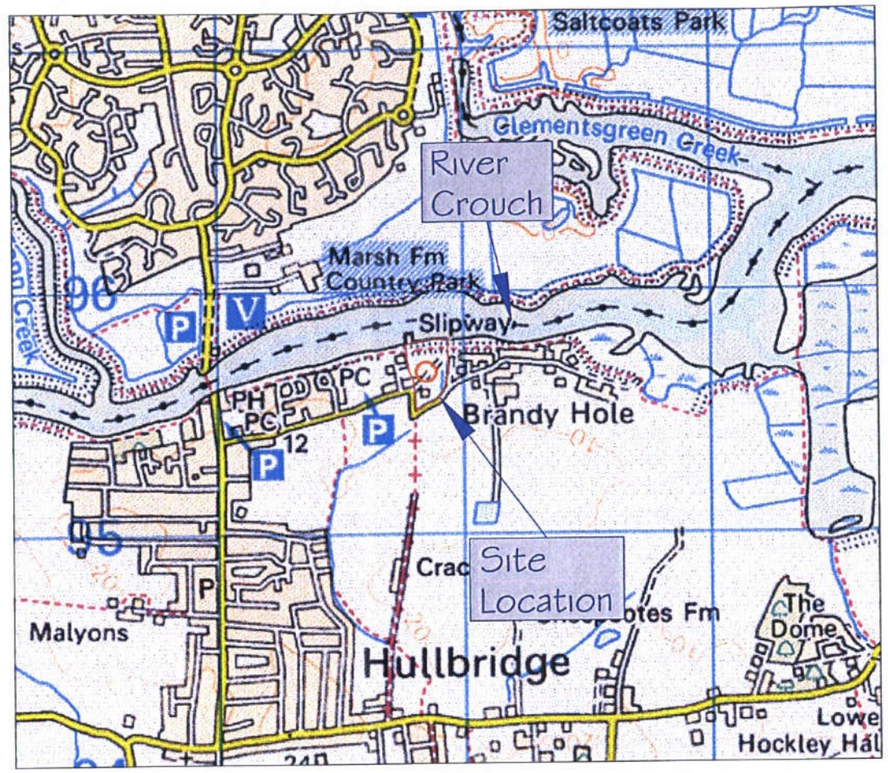
APPENDIX 1

Location plan showing proposed development area
(Hannah-Reed drawing C-211119/101)

Scale 1:2,500



Scale 1:25,000

Rev	Description	Dr	Ch	Date
P1	Initial Issue	WO		8.9.2011

Client: Berkeley Leisure Group

Project: Halcyon Park, Hockley
Flood Risk Assessment

Title: Appendix 1
Location Plan

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Sheet Size	A3
Drawn	WO
Checked	
Approved	
Scale	As Shown
Drawing Number	C-211119/101
Rev	P1

REPORT DRAWING

LAST PLOT DATE: 8/9/2011 2:51 PM

CAD FILENAME: P:\2011 Projects\C-211119-Hayclon Park FRA and Evac Plan\DRAWINGS\Others\C-211119 Location Plan.dwg

HALCYON PARK, HULLBRIDGE

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APPENDIX 2

Site Plan
(Berkeley Leisure Group drawing number 6800-67C)

ELECTRICITY
(Installed and maintained in accordance with IEE Regulations (latest edition) and to the satisfaction of the Area Electricity Board and/or Berkeley Group Electrician. All work in connection with new or existing electric supplies / installation shall be only carried out by a Qualified Electrician.

PRIVATE STREET LIGHTS
Supply and lay cable as per plan to each street light column

4.0m high lamp columns basic mild steel ST44 traffic pole ref 2028 grey pvc coated c/w base plate. Shaft dia 76mm, base dia 140mm, 600mm root. To be positioned as per drawings 1.250m from road edge and erected with suitable slow bend duct through lower cable entry and secured using semi dry mix concrete (class II BRE 363). Column erected so that low inspection plare is located to allow maintenance electrician to face the oncoming traffic. Gamma Basique with reeded bowl and small canopy Lamp fitting manufactured by Thorn Light supplied and fitted by contractor. 70 watt son with photocell.

Holiday — 62 No. Holiday Mobile Homes with storage shed and parking bay allocation sited in accordance with the Site Licence.

Plot 61 — 25 No. vacant pitches for Permanent Residential Mobile Homes with storage shed and parking bay allocation sited in accordance with the Site Licence.and approved under Planning Permission F.0113.96 ROC.

Plot 48 — 10 No. sited Permanent Residential Mobile Homes with storage shed and parking bay allocation sited in accordance and approved under Planning Permission F.0113.96 ROC.

Plot 38 — 3 No. Permanent Residential Mobile Homes with storage shed and parking bay allocation sited outside the Planning Approved Site but in accordance with the Site Licence and 106 agreement restricting occupation period to the life time of the occupants. After this date the pitches will return to holiday status.

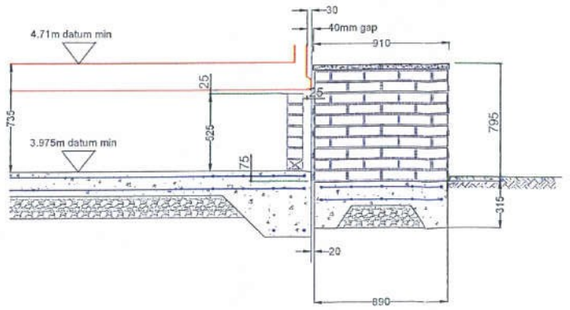
New Fire Point positions consisting of two 9 litre water fire extinguishers located within an easily accessible and clearly and conspicuously marked (red), siren operated weatherproof cabinet. No mobile Home or site building shall be more than 30m from a fire point.

H — Fire Hydrant location. Hydrants (screw down type) and surface boxes must conform to BS750:1984. Installation in accordance with BS 5306:pt1, Indicator plates conforming to BS 3251:1796 to mark each hydrant.
As the water supply is metered the meter must be on a by-pass around a normally closed meter by-pass valve on the main which can be opened in the event of the hydrant being used.

N

Boundary of Planning Permission F.0113.96.ROC dated 31st October 1996 for unrestricted residential occupation of and including caravans within the area **edged in blue**
Area 1.162 Hectares

Majority of Trees on the site are subject to Tree Preservation Order 28 97 issued by The Rochford District Council.
Trees formally depicted as Group G3 and G8 will be replanted in the locations shown.



Floor / Concrete Raft Level Relationship
(Applicable to Permanent Residential Plots only)

Shed positions shown are for indication purposes only. Sheds can be moved to suit the mobile home selected.

Mobile homes to be sited in strict accordance with The Model Standards 1989.

Park Manager to ensure Risk Assessments and Method Statements are completed, submitted to, and approved by Head Office prior to the commencement of work.

Contractor to provide as built drawings on completion of the project.

Prior to the commencement of work check service plans and thoroughly scan working area with a CAT and Genny. Clearly mark location of all services found. Mechanical excavators, breakers and / or power tools must not be used within 500mm of any live service, here hand excavation must be carried out using none pointed tools.

Dimensions indicated relate to the stucco finish of the Mobile Home. ADD 30mm to each face for base dimension in the case of a concrete raft. ADD 75mm to each face in the case of a garage raft. DEDUCT 25mm from each face in the case of a strip foundation.

Manufactured Mobile Homes must not exceed the metric sizes indicated. Imperial dimensions are shown for guidance only.

Concrete base to be laid level and square and in accordance with Current Standard Details, Construction Notes and Safe Working Practice Reports.
Any untoward on site conditions to be reported to Head Office immediately.

Rev	Date	Description
C	Apr 2011	Plot 109 Car Parking Adj - Res Plot sizes added
B	Mar 2010	Res Area revised to suit agreed 35 homes
A	Oct 09	Amendments for JRB.

project:
Permanent Residential / Holiday Homes
Halcyon Park
Pooles Lane
Hullbridge
Essex
SS5 6QA

drawn by:	date:	scale:
BRK	Sept 09	1:500

title:
Site Licence Application Drawing

drawing no.
6800-67C

The Berkeley Leisure Group Limited
West Coker House, West Coker, Yeovil, Somerset, BA22 9RG
Tel: (01935) 862079 Fax: (01935) 863554

HALCYON PARK, HULLBRIDGE

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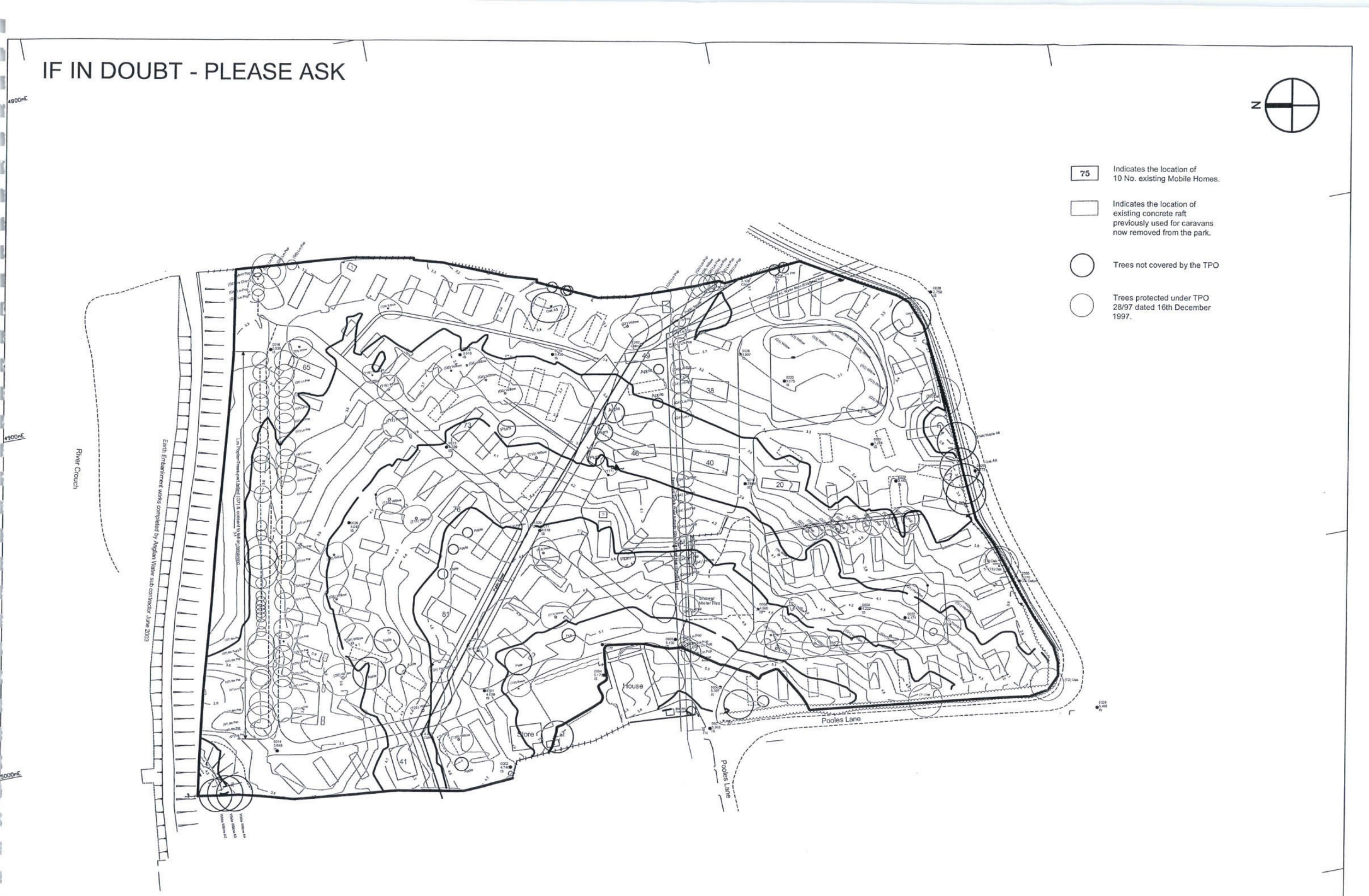
APPENDIX 3

Topographical survey

IF IN DOUBT - PLEASE ASK



Origin 5044.855 E 4844.930 N
Scale 1:500 Rotation 79°

Halcyon Park Pooles Lane Hullbridge Essex

Reference U:\Planning\ACAD\Halcyon\Survey Drawing 6800-22G
Description Survey Drawing No. 6800-22G Date : 11/06/03

HALCYON PARK, HULLBRIDGE

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APPENDIX 4

Site sewer record drawing, provided by Anglian Water

Origin			Downstream sewer			
Manhole Number	Cover Level (m AOD)	Depth to Invert (m)	Upstream Invert Level (m AOD)	Length (m)	Downstream Invert Level (m AOD)	Downstream Manhol Number
0600	-99	-99	-99.00	18.55	-99.00	0603
0601	-99	-99	-99.00	12.77	-99.00	
0602	-99	-99	-99.00	35.25	-99.00	0601
0603	-99	-99	-99.00	4.01	-99.00	
0700	-99	-99	-99.00	33.52	-99.00	0601
1700	-99	-99	-99.00	63.48	-99.00	0602
2700	-99	-99	-99.00	84.42	-99.00	1700
3500	-99	1.9	-99.00	61.64	-99.00	3503
3501	-99	2.5	-99.00	10.95	-99.00	3500
3502	-99	2	-99.00	12.37	-99.00	3501
3503	-99	1.95	-99.00	18.31	-99.00	3502
3551	-99	1.8	-99.00	138.89	-99.00	
3552	-99	1.95	-99.00	8.33	-99.00	3551
3553	-99	1.8	-99.00	14.29	-99.00	3552
3602	-99	-99	-99.00	12.15	-99.00	3603
3603	-99	-99	-99.00	59.58	-99.00	3501
4501	-99	-99	-99.00	37.18	-99.00	4502
4502	-99	-99	-99.00	25.15	-99.00	4501
4503	-99	-99	-99.00	9.03	-99.00	4502
4504	-99	-99	-99.00	7.19	-99.00	4503
4601	-99	-99	-99.00	41.95	-99.00	3602
4602	-99	-99	-99.00	26.84	-99.00	4601
6601	-99	-99	-99.00	41.52	-99.00	7602
7601	-99	-99	-99.00	83.35	-99.00	7604
7602	-99	-99	-99.00	47.49	-99.00	7601
7603	-99	-99	-99.00	29.00	-99.00	7602
7604	-99	-99	-99.00	81.09	-99.00	8601
7651	-99	-99	-99.00	81.47	-99.00	7652
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8601	-99	-99	-99.00	83.80	-99.00	8602
8651	-99	-99	-99.00	82.98	-99.00	8651
9501	2.78	2.9	-0.11	21.48	-0.48	9502
9502	2.7	3.19	-0.48	33.99	-99.00	9603
9551	-99	-99	-99.00	83.67	-99.00	9652
9602	-99	-99	-99.00	55.42	-2.09	9501
9603	-99	-99	-99.00	59.28	-1.08	3600
9651	-99	-99	-99.00	54.89	-99.00	8651
9652	-99	-99	-99.00	14.10	-99.00	

Map Centre 581800, 195600 Scale: 1250 Date: 02/08/2011 13:21 Data updated: May 2011

Geodesys
PO Box 485
Huntingdon
PE29 6YN

SEWER ASSET LEGEND

Surface Sewer
Foul Sewer
Combined Sewer
Storm/Private Sewer
Decommissioned Sewer
Rising Main
Gravity Sewer
Vent Column
Manhole (Combined)
Manhole (Foul Water)
Manhole (Surface Water)

Property Address: HALCYON CARAVAN PARK, POOLES LANE, HOCKLEY, SS5 6QA

Customer: Hannah Reed

Title: A831416(1) (Caroline Jefferies)

HALCYON PARK, HULLBRIDGE

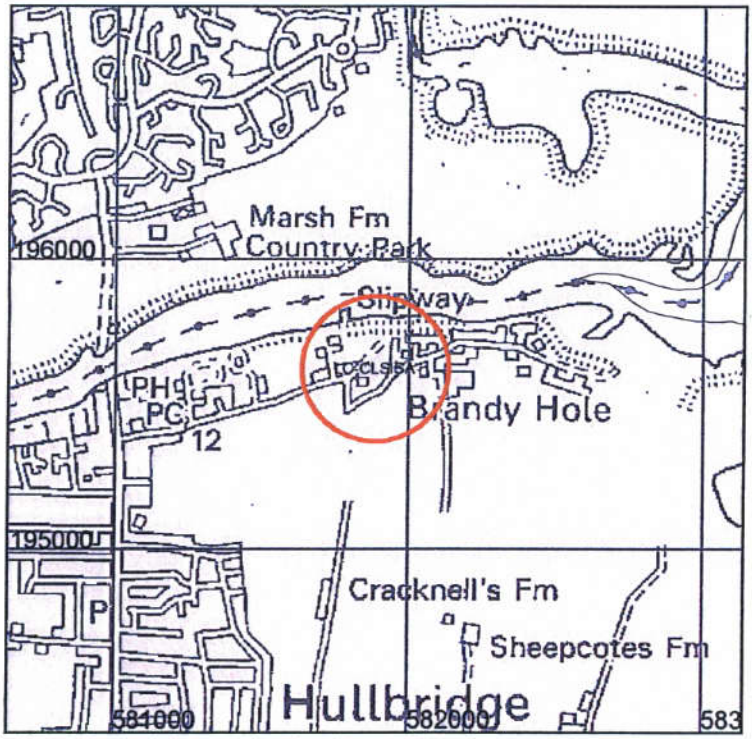
FLOOD RISK ASSESSMENT

APPENDIX 5

Geology map of site area, provided by the British Geological Survey

Bedrock

Bedrock forms the ground underlying the whole of an area, commonly overlain by superficial deposits, landslide deposits or artificial deposits, in any combination. The bedrock formations were formerly known as the 'Solid Geology'.



Search area indicated in red

Fault

Coal, ironstone or mineral vein

Note: Faults are shown for illustration and to aid interpretation of the map. Because these maps are generalised from more detailed versions not all such features are shown and their absence on the map face does not necessarily mean that none are present. Coals, ironstone beds and mineral veins occur only in certain rock types and regions of the UK.

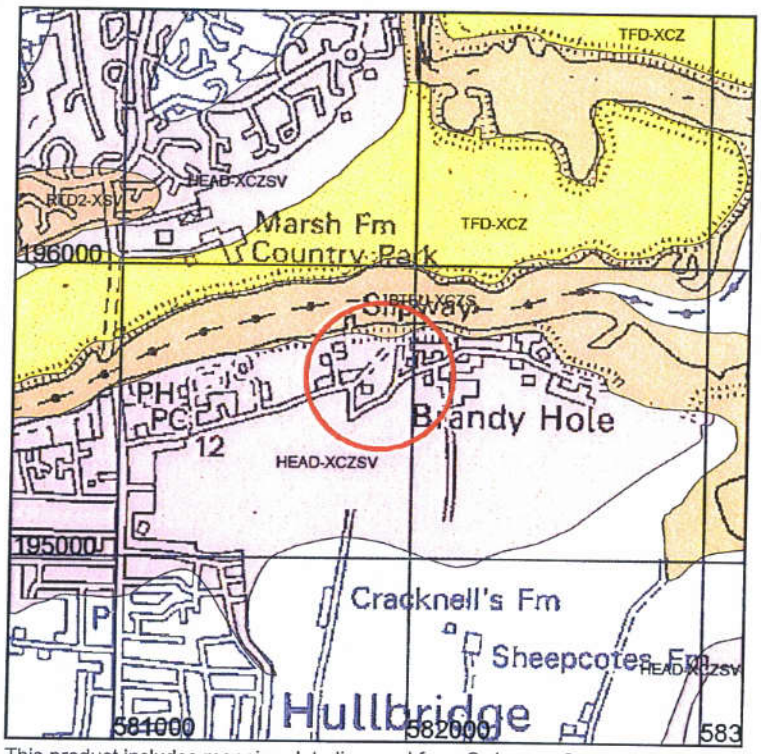
Scale: 1:25 000 (1cm = 250 m)

Key to Bedrock geology:

Map colour	Computer Code	Name of geological unit	Rock type
	LC-CLSISA	LONDON CLAY FORMATION	CLAY, SILT AND SAND

Superficial deposits

These are relatively young geological deposits formerly known as 'Drift', which lie on the bedrock in many areas. They include deposits such as unconsolidated sands and gravels formed by rivers and clayey tills formed by glacial action. They may be overlain by landslide deposits or by artificial deposits, or both.



Scale: 1:25 000 (1cm = 250 m)

Search area indicated in red

Key to Superficial deposits:

Map colour	Computer Code	Name of geological unit	Composition
	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
	BTFU-XCZS	BEACH AND TIDAL FLAT DEPOSITS (UNDIFFERENTIATED)	CLAY, SILT AND SAND
	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL

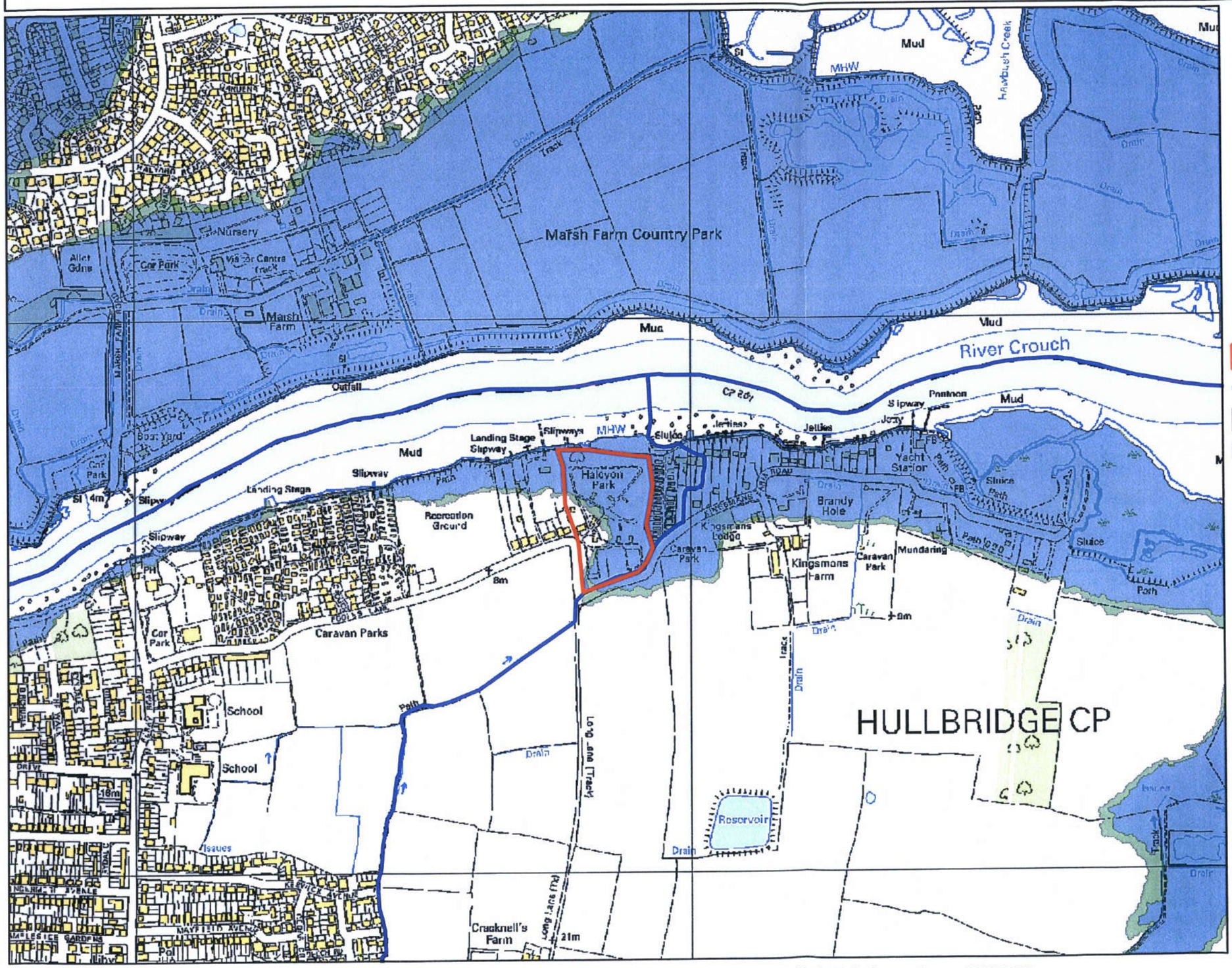
HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

APPENDIX 6

Modelled Flood Level Data provided by the
Environment Agency and associated guidance notes

Detailed Flood Map centred on Hullbridge - Created 3rd August 2011.
Ref:CCE/2011/45998



Environment Agency

Scale 1:10,000

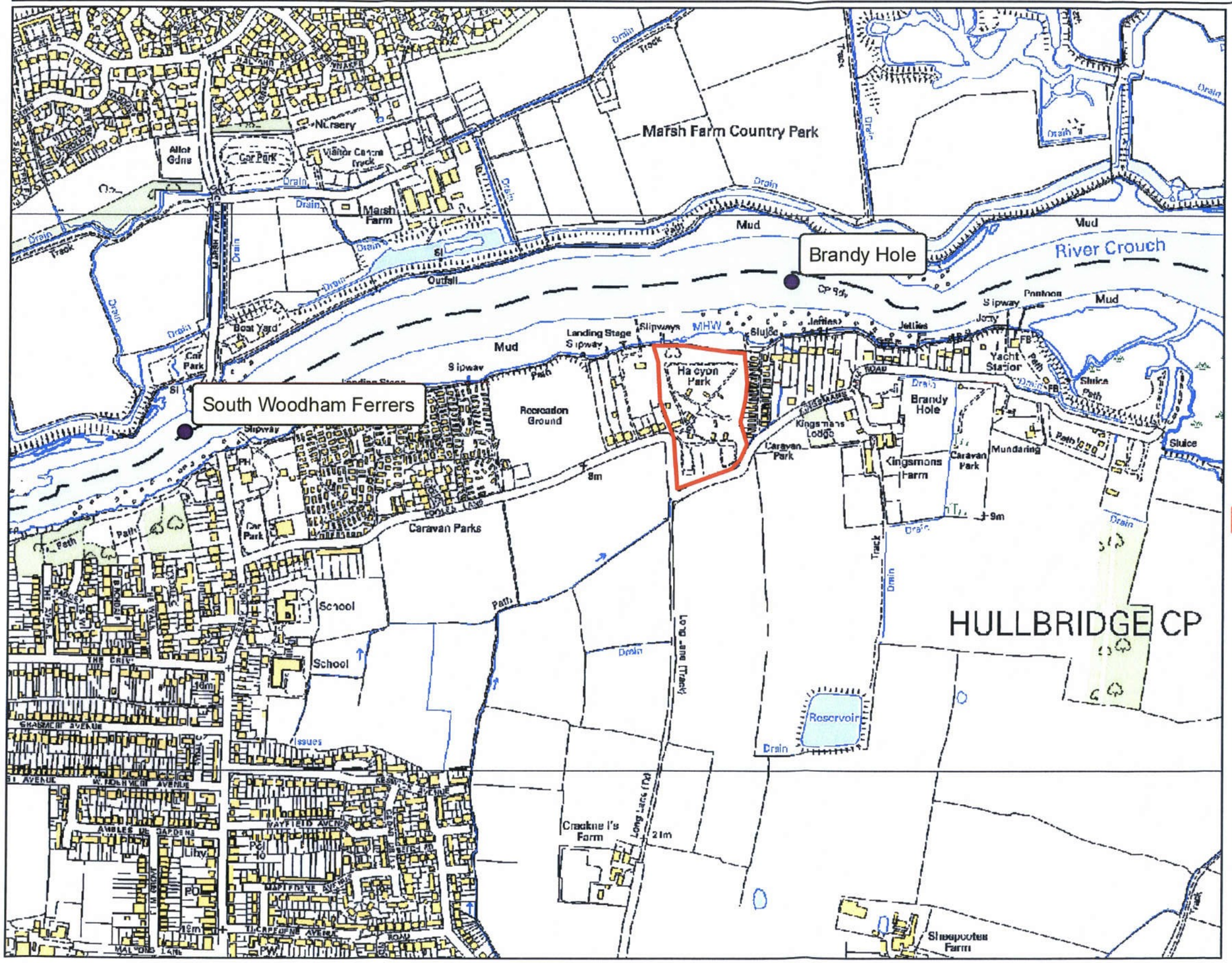
Legend

- Site Area
- Main River
- Areas Benefit Flood Defence
- Flood Storage Area
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

N

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Modelled Flood Level Location Map centred on Hullbridge - Created 3rd August 2011. Ref:CCE/2011/45998



Environment Agency

Scale 1:10,000

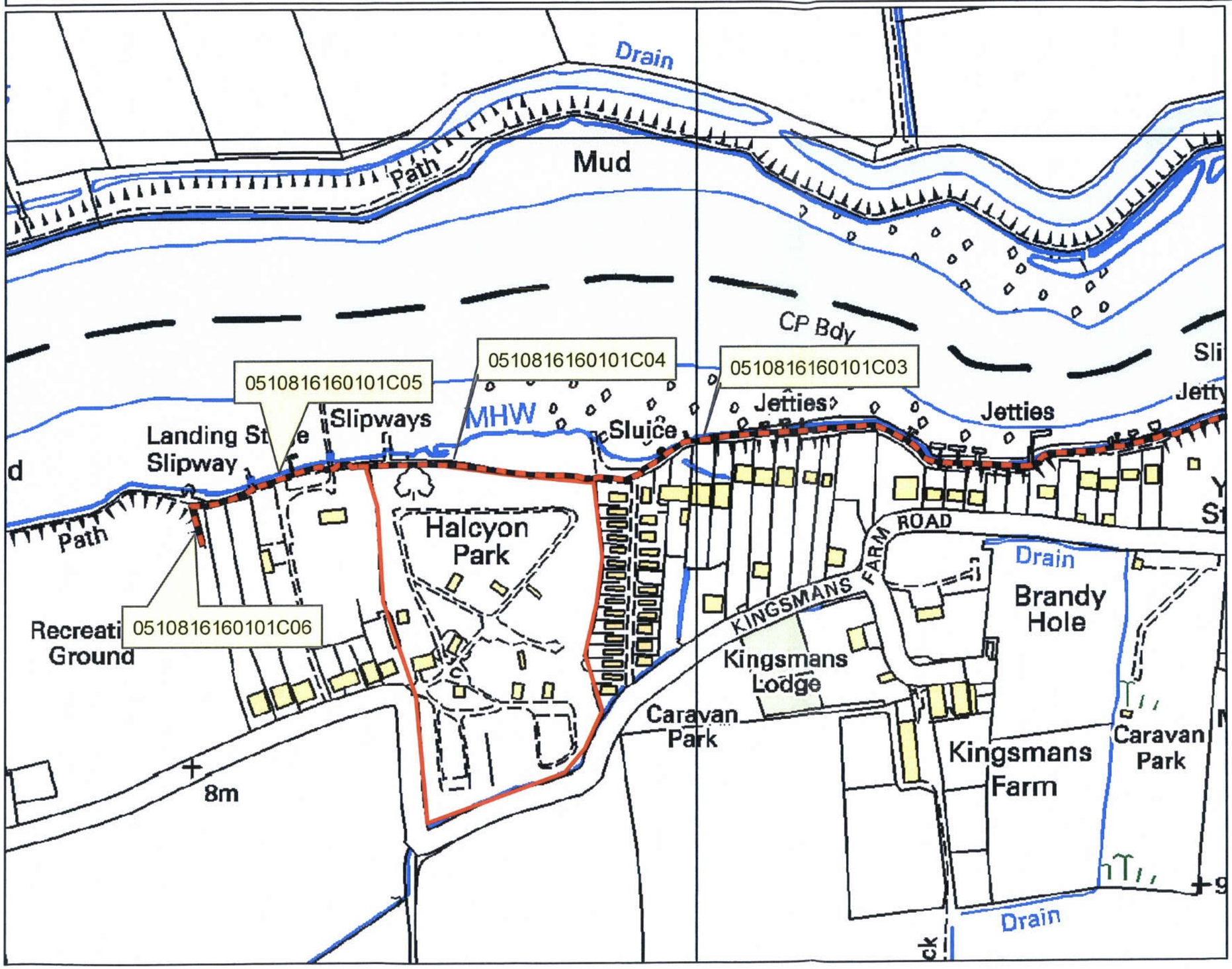
Legend

- Modelled Flood Level Node Point
- Site Area

N

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Flood Defence Location Map centred on Hullbridge - Created 3rd August 2011.
Ref:CCE/2011/45998



Environment Agency

Scale 1:4,000

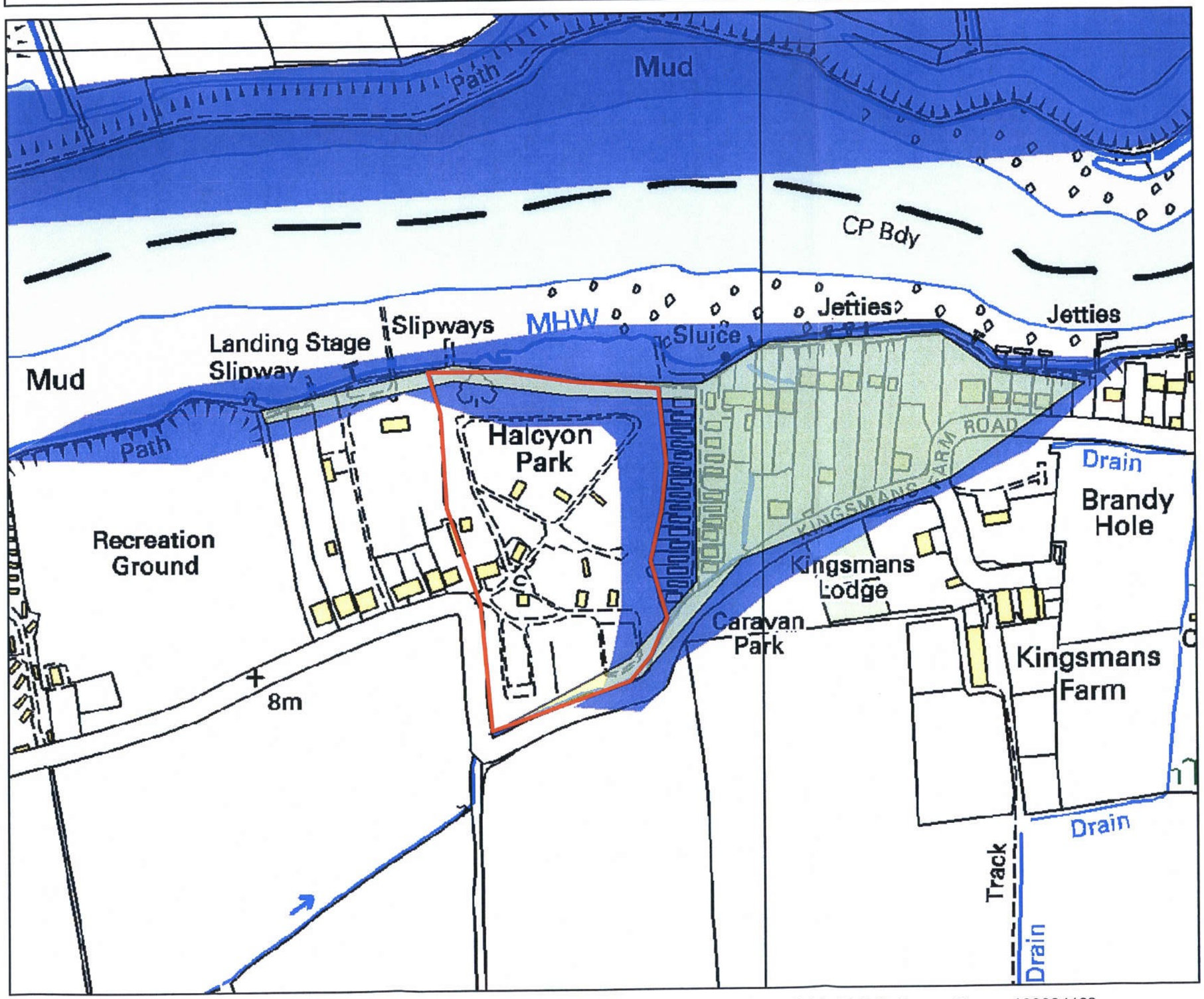
Legend

- Defence Line
- Site Area

N

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Historic flood outlines centred on Hullbridge - Created 3rd August 2011.
Ref: CCE/2011/45998



Environment Agency

Scale 1:4,000

Legend

- Site Area
- 1968 Flood Outline
- 1953 Flood Outline

Please note these outlines have been produced using the best information available and should be used as a guide only, not as a definitive record of flooding.

N

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Datasheet Reference CCE/2010/45998

Environment Agency

Tidal flood levels (mAODN)

Node	50% (1:2)	20% (1:5)	10% (1:10)	5% (1:20)	5% (1:20) +CC	2% (1:50)	1.3% (1:75)	1% (1:100)
Brandy Hole	4.036	4.194	4.320	4.436	4.877	4.538	4.570	4.590
South Woodham Ferrers	4.054	4.212	4.337	4.448	4.886	4.542	4.571	4.589

Node	1% (1:100)+CC	0.75% (1:150)	0.5% (1:200)	0.5% (1:200)+CC	0.33% (1:300)	0.1% (1:1000)	0.01% (1:10000)
Brandy Hole	4.931	4.616	4.631	4.947	4.644	4.677	4.971
South Woodham Ferrers	4.938	4.612	4.625	4.953	4.637	4.680	4.968

Source Of Information:Roach and Crouch Strategy Study By JBA 2011

Defence Line Information

Asset Reference	Bank	Asset Type	Asset Description	Standard Of Protection	Overall Condition Grade	Crest Level (m)
0510816160101C04	coastal	sea defence (man-made)	Clay seawall	1-40 (2.5)	2	5.14
0510816160101C05	coastal	sea defence (man-made)	Steel sheet pile crest wall essex blockwork revetment (grouted ragstone patch)	1-40 (2.5)	2	4.21
0510816160101C06	coastal	sea defence (man-made)	Clay seawall - Essex blockwork revetment (gabion patch)	1-40 (2.5)	2	4.47
0510816160101C03	coastal	sea defence (man-made)	Clay seawall - Steel Sheet Pile crest wall - Canewdon slab/essex revetment OSA/Grouted ragstone in palces	1-40 (2.5)	2	4.30

Key to Overall Condition Grades

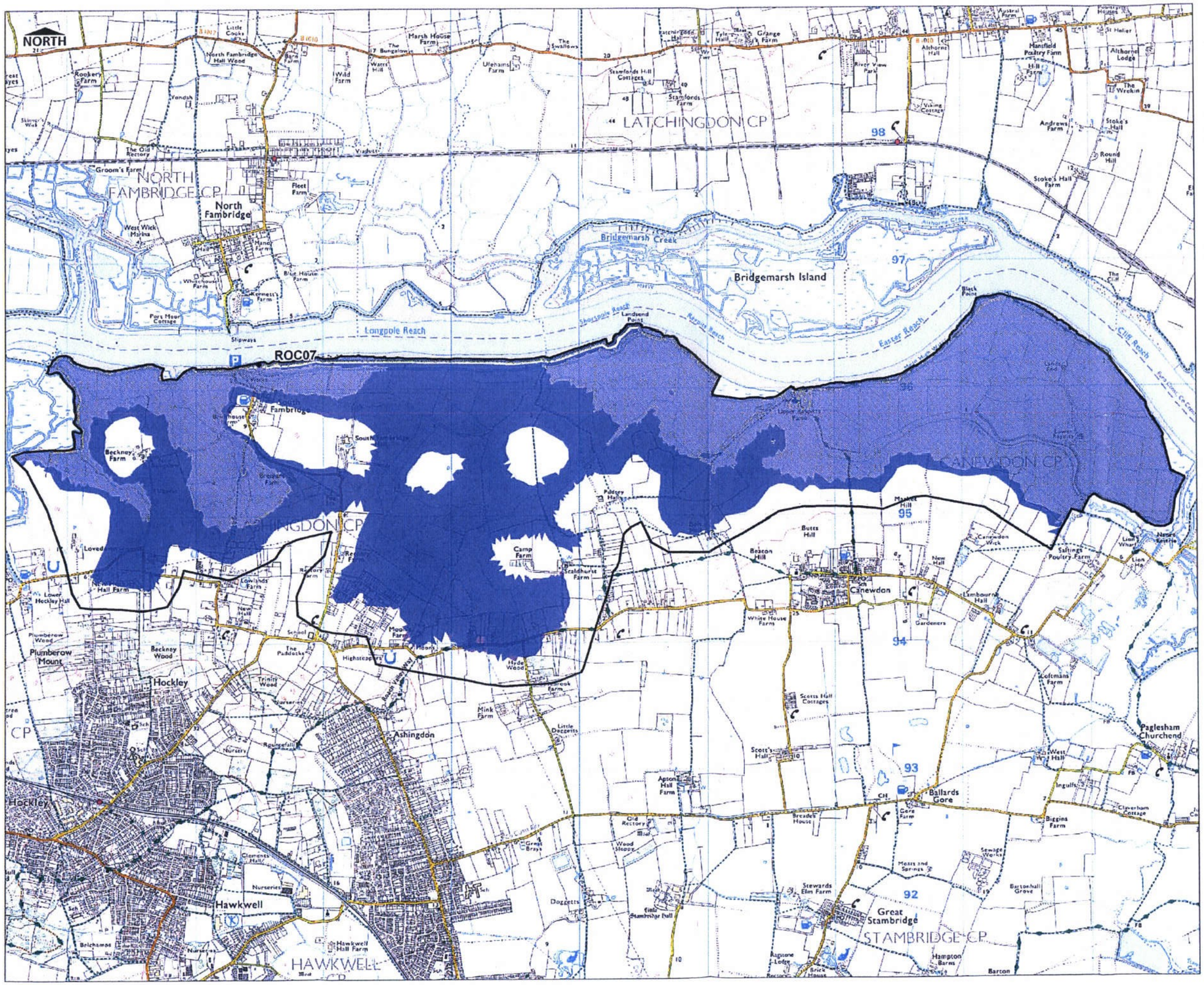
Grade	Rating	Description
1	Very Good	Cosmetic Defects that will have no effect on performance.
2	Good	Minor defects that will not reduce the overall performance of the asset.
3	Fair	Defects that could reduce performance of the asset
4	Poor	Defects that would significantly reduce the performance of the asset. Further investigation.
5	Very Poor	Severe defects resulting in complete performance failure.

HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

APPENDIX 7

Extracts from the Rochford District Council
Strategic Flood Risk Assessment



KEY

- Flood Cell
- Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours
- Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side.
Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.
In order to map Time to Inundation, time 0 (zero) is designated as the time when tidal water enters the breach. The <1 hour band encompasses all areas that are inundated within the first hour of water passing through the breach and into the flood cell.
Subsequent bands have been produced to show inundated cells for each 4 hour interval up to 20 hours. Areas that experience flooding as a result of overtopping of the defences prior to the breach event, are shown as hatched areas.
Time to inundation maps represent the onset of flooding from 1 specified breach. The rate will vary spatially if the breach locations are in different local areas. Changes in inundation extent or rate of onset of flooding are non-linear to changes in breach location.
It should be noted that the breach width and depth, though based on EA guidance, are arbitrary and do not necessarily represent the actual dimensions of a potential breach at a given location.

USER NOTE

This plan has been produced in accordance with Planning Policy Statement 25 - Development and Flood Risk. Because the information is indicative rather than specific, local planning authorities will nevertheless need to consult the Environment Agency on individual applications.

FLOODABLE AREAS NOT SHOWN

Land adjacent to watercourses not included within this study. Areas susceptible to drainage system inadequacies or localised ponding. Areas flooded due to debris blockage unless shown for specific structures. Areas flooded from breaches not included in this study.

DRAWN BY	CHECKED BY	DATE
SL	EG	OCT 2010

SCALE @ A3	ISSUING OFFICE
1 : 28,000	London

THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION 0200YR + CC (2110)

BREACH ROC07

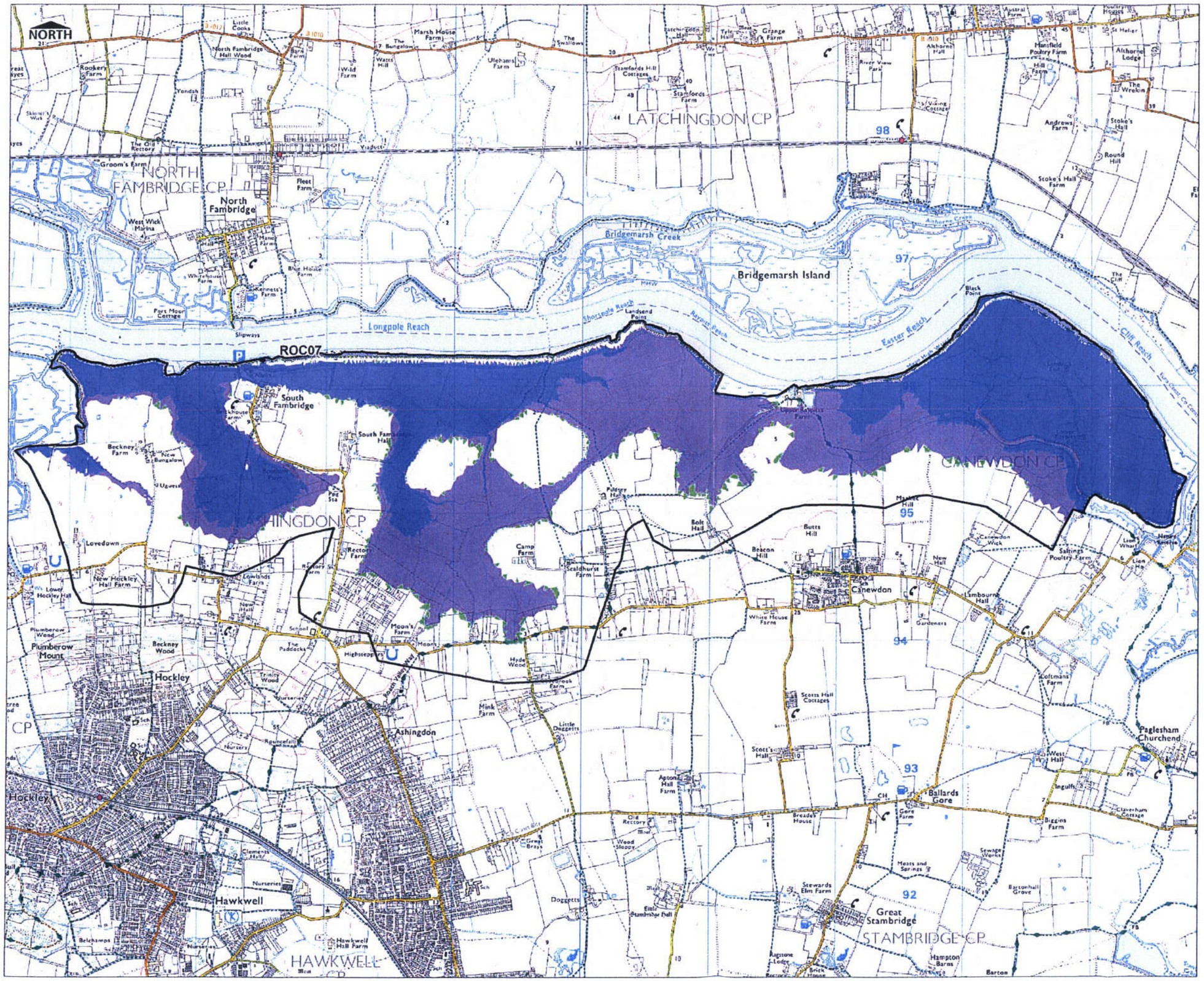
Basildon Council · castlepoint · Rochford District Council

Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER

FIGURE D-14

REV 02



KEY

Flood Cell

Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours
- Inundation from overtopping prior to breach

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DISCLAIMER

COPYRIGHT

DRAWN BY	CHECKED BY	DATE
SL	EC	JAN 2011

SCALE @ A3	ISSUING OFFICE
1 : 28,000	London

THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION
1000YR (2010)
BREACH ROC07

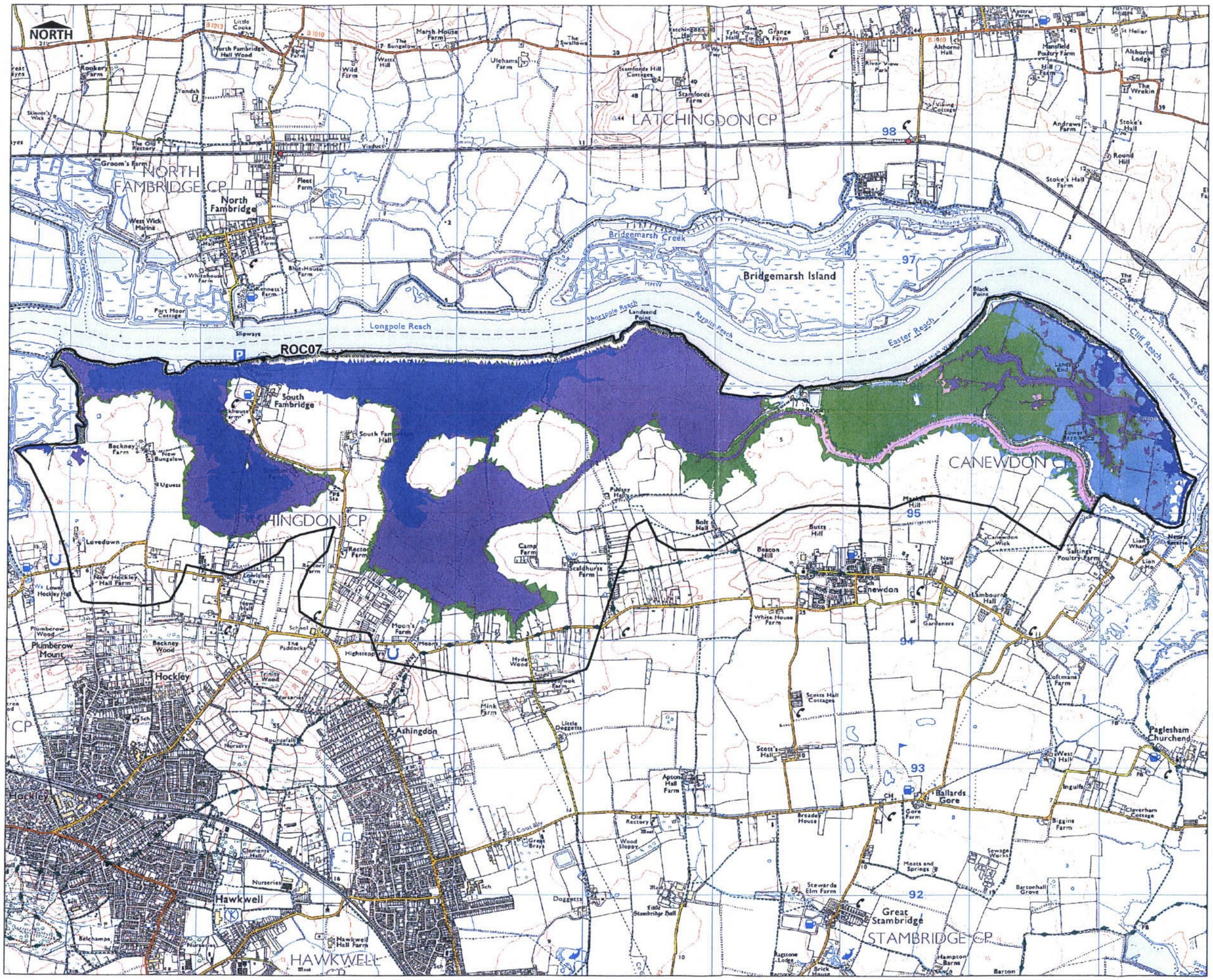
Basildon Council · castlepoint · Rochford District Council

Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER

FIGURE D-21

REV 01



KEY

Flood Cell

Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours
- Inundation from overtopping prior to breach

TECHNICAL NOTE

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DISCLAIMER

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DRAWN BY	CHECKED BY	DATE
SL	EC	JAN 2011
SCALE @ A3		ISSUING OFFICE
1 : 28,000		London

THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION
0200YR (2010)
BREACH ROC07

Basildon Council · castlepoint · Rochford District Council

Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER

FIGURE D-28

REV 01

HALCYON PARK, HULLBRIDGE

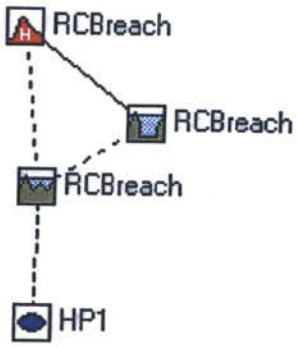
FLOOD RISK ASSESSMENT

APPENDIX 8

ISIS Breach Analysis

ISIS Breach Model

Model Geometry



Breach Dimensions

50m wide for soft defences

Minimum ground level immediately behind defences: 3.3mAOD

Model Results

1 in 200 year

Peak Water level on site: 4.549mAOD

Maximum Depth on site: 1.249mAOD

1 in 200 year plus climate change (EA Modelled Level)

Peak Water level on site: 4.937mAOD

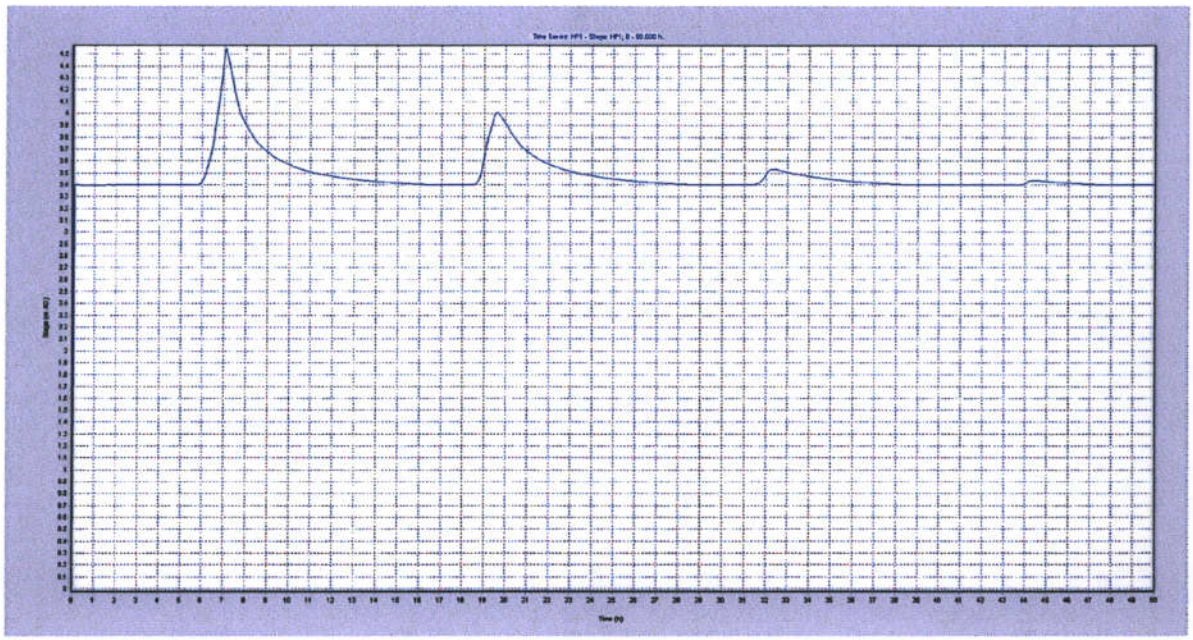
Maximum Depth on site: 1.637mAOD

1 in 200 year plus climate change (60yrs Sea Level Rise based on PPS25)

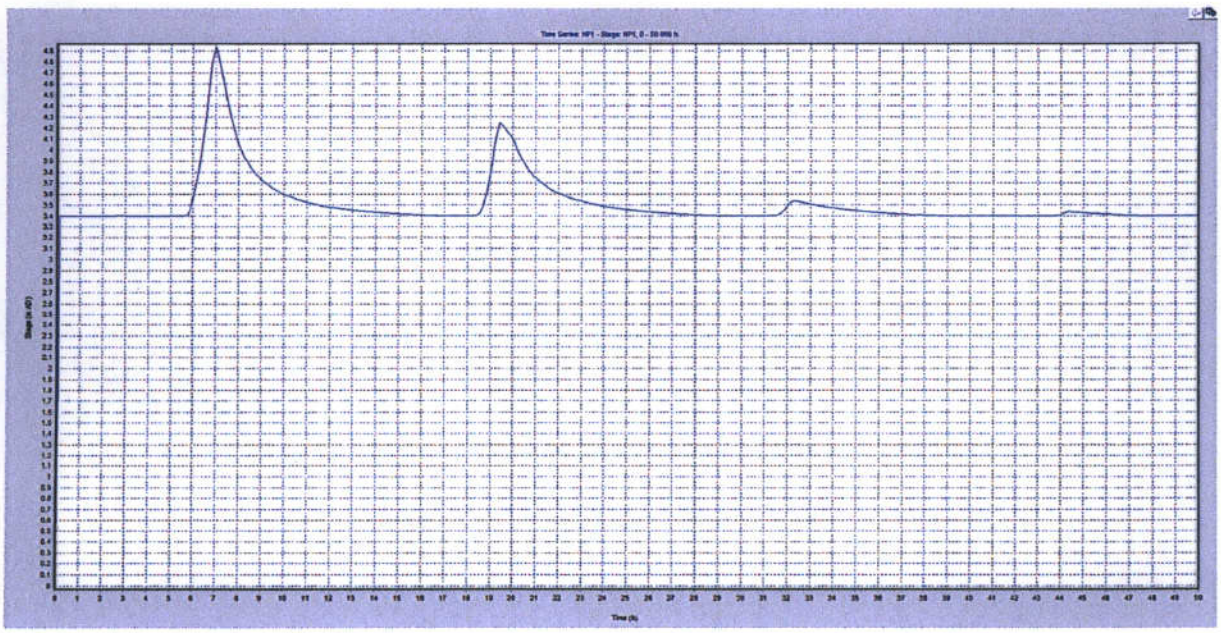
Peak Water level on site: 5.0mAOD

Maximum Depth on site: 1.7mAOD

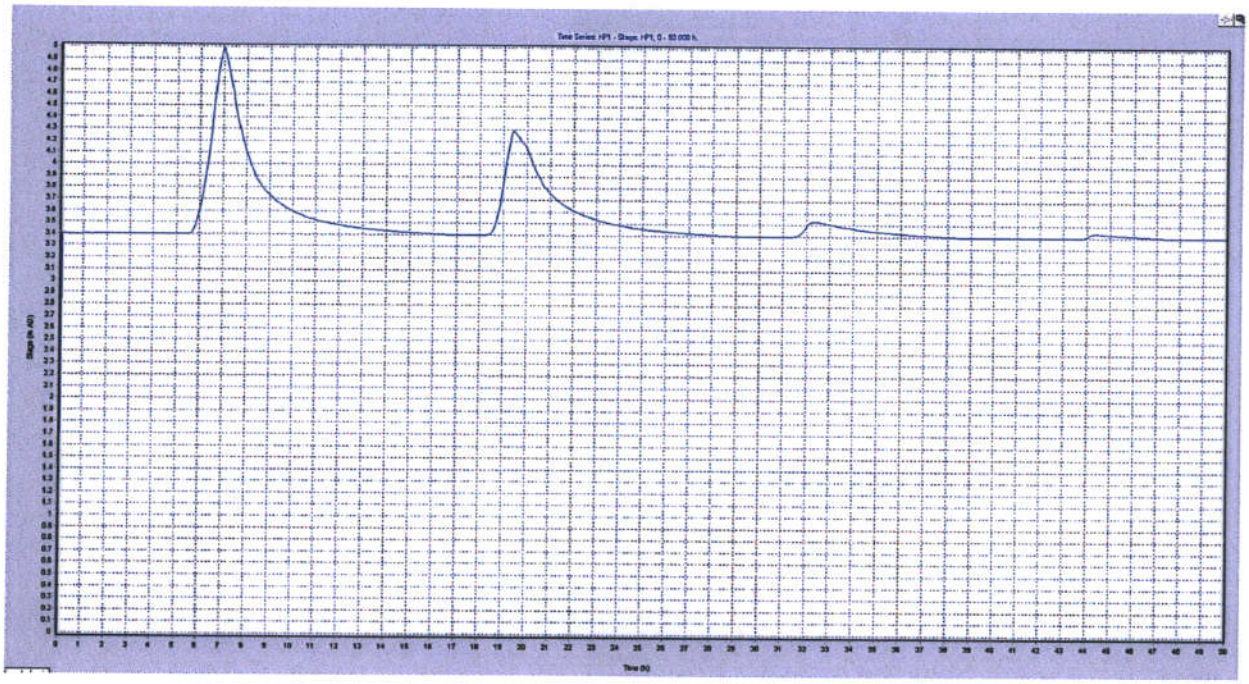
200 year Results

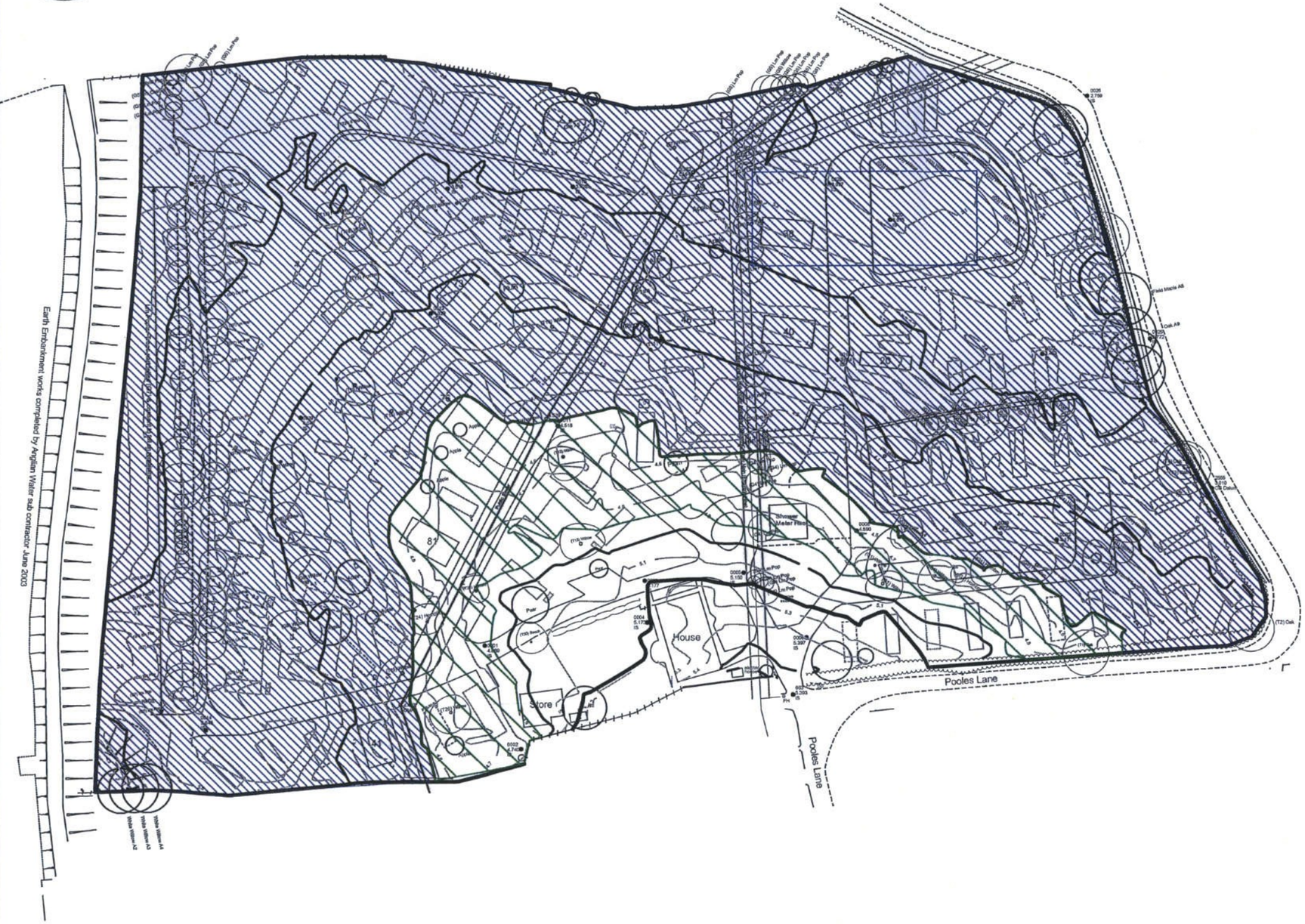


200 year plus Climate Change Results (based on EA Modelled Data)



200 year plus Climate Change (based on 60 years Sea Level Rise PPS25)





Key

Area of site below the level of 4.5mAOD which will be inundated by a breach during the 0.5% probability (1 in 200 year return period).

Area of site below the level of 4.9mAOD which will be inundated by a breach during the 0.5% probability (1 in 200 year +cc return period).

PRELIMINARY

Rev	Description	Dr	Ch	Date
P1	Initial issue	JG		19/10/11

Client: The Berkeley Leisure Group

Project: Halcyon Park, Hockley
Flood Risk Assessment

Title: Appendix
Breach Analysis

Scale: 1:1000
Sheet Size: A3
Drawn:
Checked:
Approved:

Hannah · Reed
Telford House, Fulbourn, Cambridge. CB21 5HB
Telephone: 01223 882000
Fax: 01223 881888
e-mail: cambridge@hannahreed.co.uk

Drawing Number: C-211119/10
Rev: P1

LAST PLOT DATE: 7/12/2011 4:49 PM

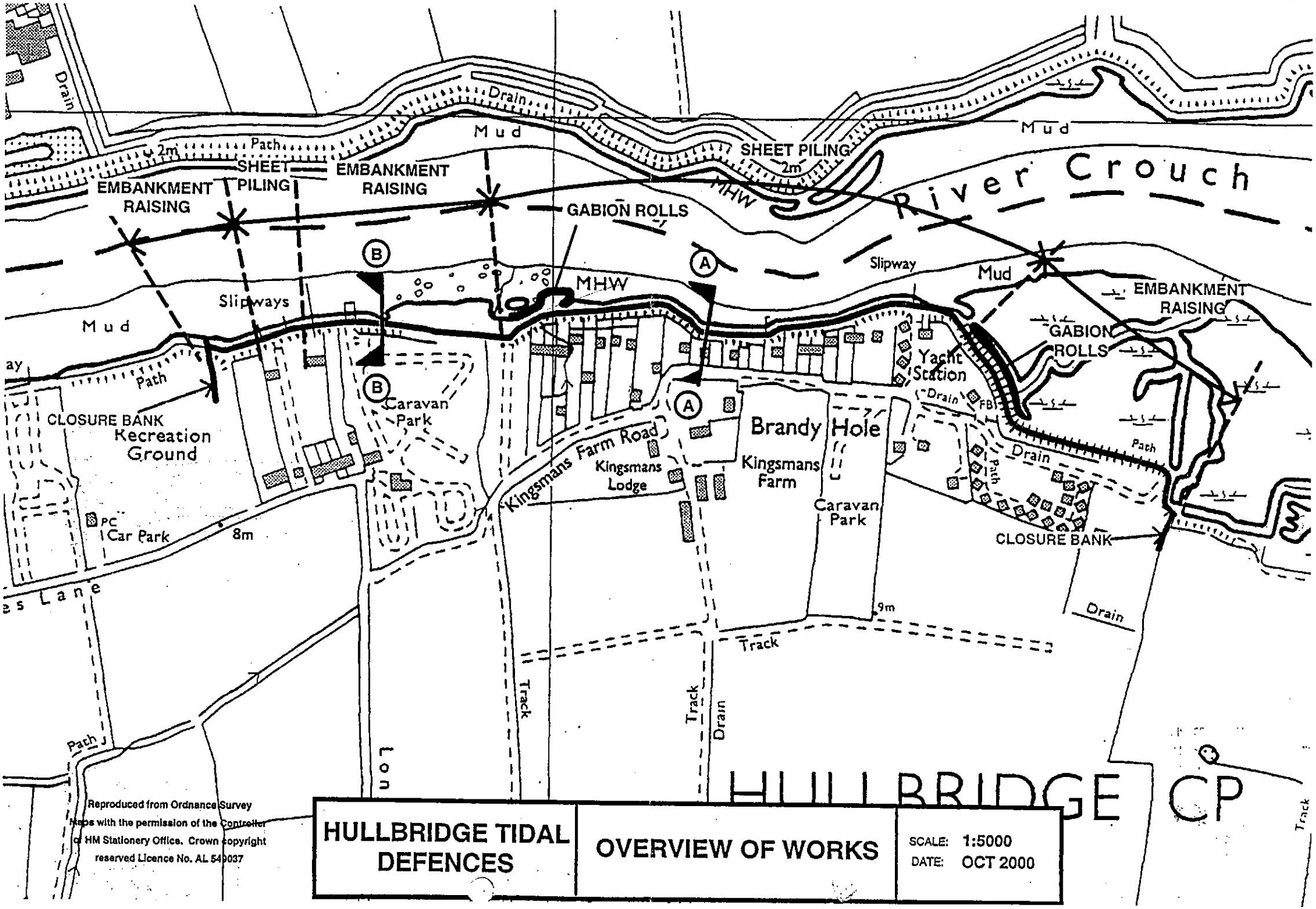
CAD FILENAME: P:\2011 Projects\C-211119-Heydon Park FRA and Evac Plan\DRAWINGS\C-211119 Breach Analysis.dwg

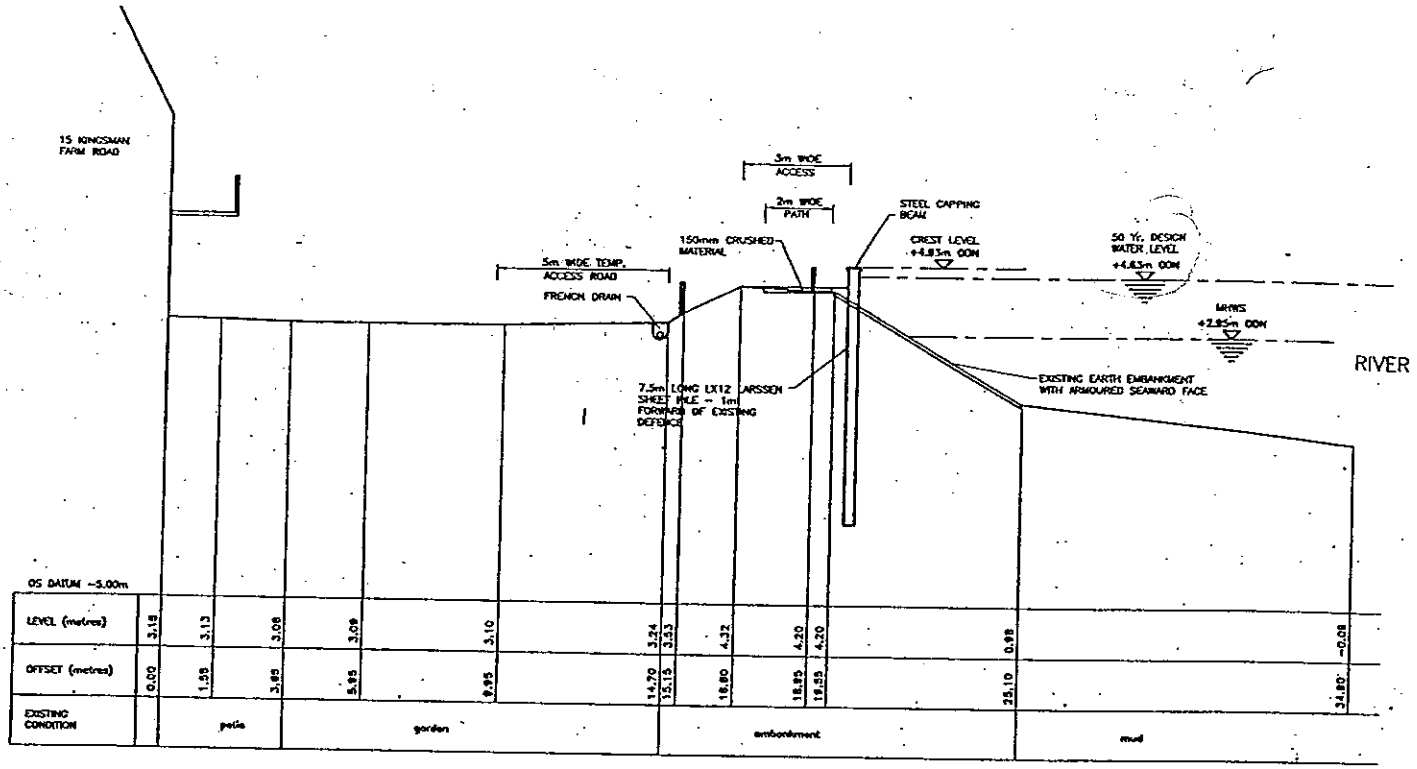
HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

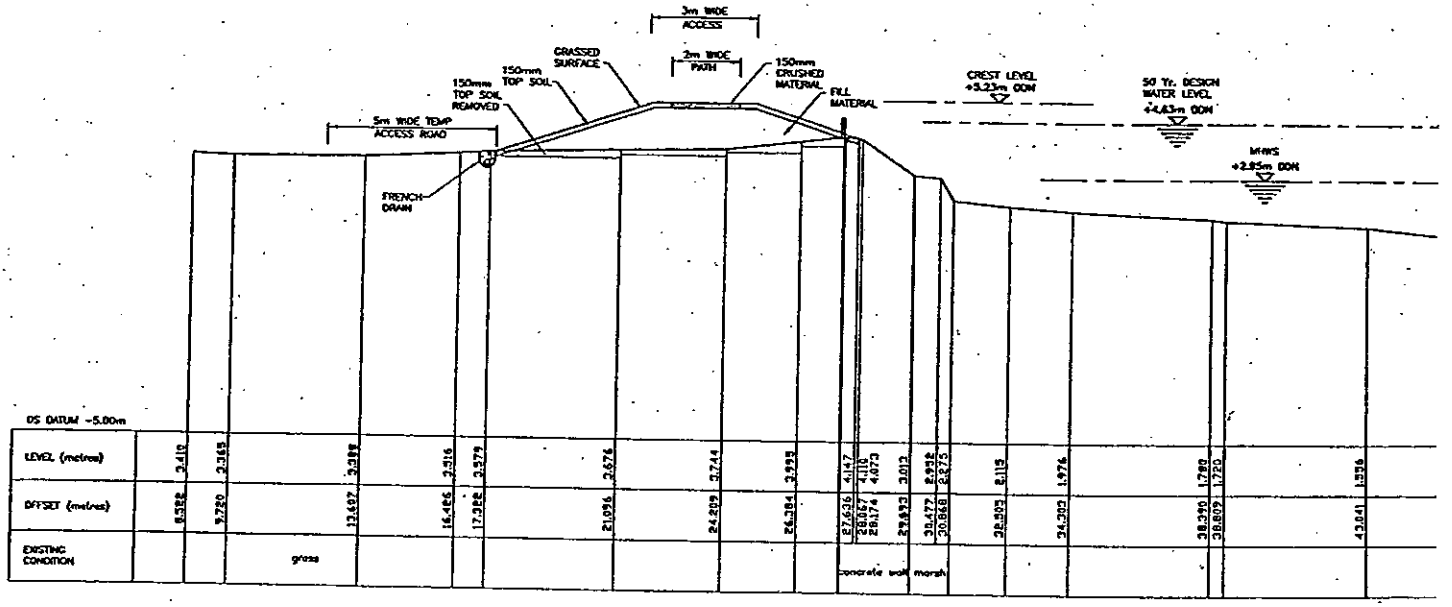
APPENDIX 9

Details of flood embankment provided the Environment Agency


River Crouch
Drain
Mud
2m
Path
SHEET PILING
EMBANKMENT RAISING
GABION ROLLS
MHW
Slipways
Slipway
B
A
Caravan Park
CLOSURE BANK
Recreation Ground
PC
Car Park
8m
Kingsmans Farm Road
Kingsmans Lodge
Brandy Hole
Kingsmans Farm
Yacht Station
FB
Track
9m
Lane
Reproduced from Ordnance Survey Maps with the permission of the Controller of HM Stationery Office. Crown copyright reserved Licence No. AL 549037
HULLBRIDGE CP
HULLBRIDGE TIDAL DEFENCES
OVERVIEW OF WORKS
SCALE: 1:5000
DATE: OCT 2000



CROSS SECTION @ 15 KINGSMAN FARM ROAD Ⓐ – Ⓐ



CROSS SECTION @ HALYCON CARAVAN PARK Ⓑ – Ⓑ

ENVIRONMENT AGENCY

ANGLIAN REGION

CONSULTING ENGINEERS

POSFORD DUVIVIER

HALCYON PARK, HULLBRIDGE

FLOOD RISK ASSESSMENT

APPENDIX 10

Glossary of Terms
PPS25 Development and Flood Risk: The Sequential Test
FCDPAG Indicative Standards of Protection

GLOSSARY OF TERMS AND ABBREVIATIONS

Attenuation	Slowing down the rate of flow to prevent flooding and erosion, with a consequent increase in the duration of the flow.
Balancing pond	A pond designed to attenuate flows by storing runoff during peak periods and releasing the water after the flood peak has passed. The pond always contains water. Storage periods may not be long enough to improve water quality.
Catchment	A river catchment is the whole area which drains either naturally or with artificial assistance to a river. It includes the drainage channels, tributaries, floodplains and washlands associated with a river and an estuary where one is present.
Climate Change	Flood risk may increase due to environmental changes, and one of the key uncertainties in assessing flood risk at present is the extent to which climate is changing and may change in the future. Annex B of PPS25 advocates a precautionary approach to deal with the uncertainties of how climate change may affect sea levels, river flows and flood risk. Current best practice recommends allowing for a 10% increase in peak rainfall intensity and a 20% increase in peak river flow to 2055. Recommended allowances for net sea level rise in the East of England are 4mm/yr to 2025 and then 8.5mm/yr onwards to 2055.
Critical ordinary watercourse	Ordinary watercourses which the Environment Agency and other operating authorities agree are critical because they have the potential to put large numbers of people and property at risk from flooding.
Design flood level	The flood level to which defences or mitigation measures are designed. This is typically the 1% (1 in 100 year) flood level. More extensive flooding and higher levels due to more extreme conditions than the design event or as a result of obstructions of the watercourse may occur at any time.
Development	In accordance with the definitions given in Section 55 of the Town and Country Planning Act 1990, with certain exceptions development means the carrying out of building, engineering, mining or other operations, in on over or under land or the making of any material change in use of any buildings or other land.
Drainage (land drainage)	The Water Resources Act 1991 (as amended by the Environment Act 1995) defines drainage as including: a) defence against water, including sea water; b) irrigation other than spray irrigation; c) warping; and d) the carrying on, for any purpose, of any other practice which involves management of the level of water in a watercourse.
Exception Test	If, following application of the Sequential Test (see below), it is not possible for proposed development to be located in zones of lower probability of flooding, the Exception Test can be applied as detailed in Annex D of PPS25. For the Exception Test to be passed the Flood Risk Assessment must demonstrate the proposed development provides wider sustainability benefits to the community that outweigh the estimated flood risk.

Flood defence	Flood defence means the drainage of land (as defined above), and the provision of flood warning systems.
Flood Estimation Handbook (FEH)	The primary national guide to flood probability estimation in the UK, developed by CEH Wallingford. The use of the FEH ensures national consistency in estimating the probability of flooding, although users must be aware of the need to exercise good judgment and recognise the uncertainty inherent in flood estimation. Prediction of flood flows is not an exact science and therefore the results of estimation cannot be guaranteed and the user makes use of them at his own risk.
Flood return period/risk	The risk of flooding to floodplain areas and property is often described in terms of a return period. Statistical return periods relate to the long term average time interval between events of a particular magnitude. The 1 in 100 year return period flood has a one percent chance of occurring in any one year, i.e. the odds of it happening are one hundred to one. It does not mean that flooding of this magnitude will only occur once every 100 years.
Flood Zone Maps	These were produced by the Environment Agency after the 1998 and 2000 floods to improve public awareness of flood risk and updated in 2004 alongside the release of the new FRA guidance. The floodplain envelopes indicate where flooding from rivers, streams, watercourses or the sea is possible or has occurred, but ignore the presence of all flood defences such as embankments, pumping stations and walls, although the locations of flood defence structures are indicated. The maps therefore only give a general indication of potential areas at risk of flooding, generally based on either 1% probability assessments or historic flood levels. (www.environment-agency.gov.uk/subjects/flood/?lang=_e)
Flooding	Inundation by river or sea water whether caused by inadequate or slow drainage, or by breaches or overtopping of banks or defences.
Floodplain	All land adjacent to a watercourse over which water flows in times of flood.
Greenfield	Land which has not been developed.
Greenfield rate of runoff	Rate of water flow which would occur over the ground surface of undeveloped land to the drainage system.
Hydrology	The study of water resources
Main River	Watercourses shown as such on the statutory main river maps held by the Department for Environment, Food and Rural Affairs. Main rivers are maintained by the Environment Agency and are generally larger arterial watercourses.
Ordinary Watercourses	Any watercourse that does not form part of Main River. Internal Drainage Boards maintain certain designated common watercourses within Internal Drainage Districts. Local Authorities maintain certain 'awarded' common watercourses and highway ditches outside Internal Drainage Districts. Generally, other common watercourses are the responsibility of riparian owners.
PAGN/FCDPAG	The DEFRA Flood and Coastal Defence Project Appraisal Guidance (FCDPAG) documents provide advice on best practice for the appraisal of flood and coastal defence projects. A brief

	summary of these documents and the applicable standards (tables 6.1 & 6.2) are appended to this glossary.
PPS25	Planning Policy Statement 25: Development and Flood Risk is a document published by Communities and Local Government in December 2006. PPS25 explains how flood risk should be considered at all stages of the planning and development process in order to reduce future damage to property and loss of life.
Riparian	Relating to, or situated on the banks of a river or watercourse.
Runoff	Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable or if permeable ground is saturated.
Sequential test	Annex D of PPS25 advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible. Details of this test are summarised in the PPS25 Table 1, appended to this glossary.
Soakaway	A subsurface structure into which surface water is conveyed, designed to promote infiltration.
Source Control	The control of runoff at or near its source.
Storage Compensation	Due to the cumulative impacts of developments on the extent and function of the floodplain, the EA may require compensation storage to be provided at a site where a loss of storage in the floodplain occurs, irrespective of the negligible impacts of individual developments. In other words, an area of ground above the floodplain level must be found that can be excavated to compensate for the floodplain storage volume lost by developing the building area. In addition, the EA may insist that compensation is provided on a 'level-for-level' basis, i.e. providing compensation areas at the same level as where storage has been lost, so that there is a minimal impact on the flood patterns in the area.
SuDS	Sustainable Drainage Systems: A strategy, supported by a range of techniques, for dealing with surface water drainage that seeks to promote sustainable and environmentally beneficial or least damaging solutions. Developing a 'greenfield' site can significantly alter the way rainfall runs off the site. Impermeable areas such as tarmac mean that rainwater cannot infiltrate into the ground, and is instead channelled directly into rivers via drains and sewers. Flood risk may therefore be increased by the rapid flow of surface water run-off from developed areas into the watercourse. SuDS were developed initially with urban drainage in mind but the approach has broad application over all development drainage. SuDS techniques include Source Control.
Swale	A grass-lined channel designed to drain water from a site as well as controlling the flow and quality of the surface water.
Watercourse	Any natural or artificial channel which conveys surface water.
Wetland	A pond that has a high proportion of emergent vegetation in relation to open water that provides a variety of habitats.

PPS25 DEVELOPMENT AND FLOOD RISK: THE SEQUENTIAL TEST

PPS25 advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible. The risk of flooding to the site should be assessed and the land should be classified into the appropriate flood zone as described in below (Table D.1 of PPS25). In areas at risk of river or sea flooding, preference should be given to locating new development in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, the flood risk vulnerability of the proposed development (Table D.2 of PPS25) can be taken into account in locating development in Flood Zones 2 and then Flood Zone 3 through applying the Exception Test if required. Within each Flood Zone new development should be directed to sites at the lowest probability of flooding from all sources.

Table D.1: Flood Zones

(NB: Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences)

Flood Zones	
Zone 1: Low Probability Annual probability of flooding: River, tidal & coastal <0.1%	*Appropriate uses*: All uses of land are appropriate in this zone. *FRA requirements*: For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. See Annex E for minimum requirements. *Policy aims:* In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques.
Zone 2: Medium Probability Annual probability of flooding: River 0.1 – 1.0% Tidal & coastal 0.1 – 0.5%	*Appropriate uses*: The water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in Table D.2 are appropriate in this zone. *FRA requirements*: All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements. *Policy aims*: In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

Flood Zones (continued)	
Zone 3a: High Probability Annual probability of flooding, with defences where they exist: River 1.0% or greater Tidal & coastal 0.5% or greater	*Appropriate uses*: The water-compatible and less vulnerable uses of land in Table D.2 are appropriate in this zone. The highly vulnerable uses in Table D.2 should not be permitted in this zone. The more vulnerable and essential infrastructure uses in Table D.2 should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood. *FRA requirements*: All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements. *Policy aims*: In this zone, developers and local authorities should seek opportunities to: (i) reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; (ii) relocate existing development to land in zones with a lower probability of flooding; (iii) create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.
Zone 3b: The Functional Floodplain Annual probability of flooding: River 5% or greater Or, is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the Local Planning Authority and Environment Agency, including water conveyance routes.	*Appropriate uses*: Only the water-compatible uses and the essential infrastructure listed in Table D.2 that has to be there should be permitted in this zone. It should be designed and constructed to: - remain operational and safe for users in times of flood; - result in no net loss of floodplain storage - not impede water flows; and - not increase flood risk elsewhere. Essential infrastructure in this zone should pass the Exception Test. *FRA requirements*: All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements. *Policy aims*: In this zone, developers and local authorities should seek opportunities to: (i) reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and relocate existing development to land in zones with a lower probability of flooding.

Table D.2: Flood Risk Vulnerability Classification

Essential Infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind Turbines
Highly Vulnerable	• Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal and water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)
More Vulnerable	• Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, **subject to a specific warning and evacuation plan.**
Less Vulnerable	• Police, ambulance and fire stations which are **not** required to be operational during flooding. • Buildings used for: shops, financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do **not** need to remain operational during times of flood. • Sewage treatment plants (if adequate measures to pollution control and manage sewage during flood events are in place).

Water-compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, **subject to a specific warning and evacuation plan**.

Notes:

1) This classification is based partly on DEFRA/Environment Agency research on Flood Risks to People (FD2321/TR2) and also on the need of some uses to keep functioning during flooding.

2) Buildings that combine a mixture of uses should be placed into the higher of the relevant classes of flood risk sensitivity. Developments that allow uses to be distributed over the site may fall within several classes of flood risk sensitivity.

3) The impact of a flood on the particular uses identified within this flood risk vulnerability classification will vary within each vulnerability class. Therefore, the flood risk management infrastructure and other risk mitigation measures needed to ensure the development is safe may differ between uses within a particular vulnerability classification.

FCDPAG INDICATIVE STANDARDS OF PROTECTION

The DEFRA Flood and Coastal Defence Project Appraisal Guidance (FCDPAG) documents provide advice on best practice for the appraisal of flood and coastal defence projects. Volume 3: Economic Appraisal gives indicative standards for flood and coastal defence in England and Wales. The tables below are provided "as an aid to authorities to help in establishing the range of options to be considered, though they should not constrain the need to consider a full range of alternatives. They do not represent any entitlement to protection or minimum level to be achieved". Please refer to the FCDPAG documents at http://www.defra.gov.uk/environ/fcd/pubs/pagn/default.htm for further information.

Table 6.1 Indicative standards of protection

Land use band	*Indicative standards of protection*			
	Fluvial		**Coastal**	
	Return period (years)	**Annual probability of failure**	**Return period (years)**	**Annual probability of failure**
A	50-200	0.005-0.02	100-300	0.003-0.01
B	25-100	0.01-0.04	50-200	0.005-0.02
C	5-50	0.02-0.20	10-100	0.01-0.10
D	1.25-10	0.10-0.80	2.5-20	0.05-0.40
E	<2.5	>0.40	<5	>0.20

The standards shown in Table 6.1 are determined by land use bands, as defined in Table 6.2 below.

Table 6.2 Description of Land Use Bands

Land use band	*Indicative range of housing units (or equivalent) per km of coastline or single river bank*	*Description*
A	>=50	Typically intensively developed urban areas at risk from flooding and/or erosion
B	>=25 to <50	Typically less intensive urban areas with some high-grade agricultural land and/or environmental assets of international importance requiring protection.
C	>=5 to <25	Typically large areas of high-grade agricultural land and/or environmental assets of national significance requiring protection with some properties also at risk, including caravans and temporary structures.
D	>=1.25 to <5	Typically mixed agricultural land with occasional, often agriculturally related, properties at risk. Agricultural land may be prone to flooding, water logging or coastal erosion. May also apply to environmental assets of local significance.
E	>0 to <1.25	Typically low-grade agricultural land, often grass, at risk from flooding, impeded land drainage or coastal erosion, with isolated agricultural or seasonally occupied properties at risk, or environmental assets at little risk from frequent inundation.

Hannah · Reed

Hannah • Reed

HALCYON PARK, HULLBRIDGE

FLOOD EVACUATION PLAN

The Berkeley Leisure Group
West Coker House
West Coker
Yeovil
Somerset
BA22 9BW

ace
consultancy engineering business environment

Hannah, Reed and Associates Limited
Telford House
Fulbourn
Cambridge
CB21 5HB

C-211119/AJB/Jan 2012

Revision: P1

Halcyon Caravan Park Flood Evacuation Plan – Cover Note

Further to the enclosed Flood Evacuation Plan (FEP), proposed site signage and site map we consider the following supplementary guidance appropriate.

The Flood Evacuation plan has provided details of the triggers and responses to receipt of a flood warning from the Environment Agency (EA). However, it is essential that residents at the site are made fully aware of the FEP prior to this in order for the actions required to be implemented successfully. Therefore long term residents are recommended to sign up for the flood warnings as individuals, not just relying on the site management for information in the event of a flood event. Therefore, on arrival to the site the site management should inform all short terms holiday visitors and long term residents of the flood evacuation pack of which a copy will be located in each caravan. This should include a copy of the warning sign, FEP, site map showing the evacuation routes and assembly point and the EA guidance note on 'What to do before, during and after a flood', in order to inform residents of their own responsibilities in the event of site evacuation.

The EA Guidance provides details on preparing a flood kit, the EA flood warning codes as well as actions to be taken prior, during and after a flood event, highlighting in particular the potential health and safety risks and advice on dealing with an insurance claim.

The FEP highlights the requirements for residents and caravan owners to anchor their caravans at a minimum of two points, disconnecting the gas and electric supply to the caravan and evacuate the caravan when requested to by the site staff or the emergency services.

The anchoring of the caravans at 2 points is a minimum requirement which will mitigate the impact of potential flood damage preventing mobilisation of the caravans in flood waters in excess of 2 feet of water. Additional mitigation measures available include installation of floatation devices such as those available from Marche Industries, these are supplementary to the anchoring and are intended to enable the caravan to rise above the flood water reducing the potential damage to caravan. Installation of such systems can also enable residents to get insurance for their caravans.

The site management team who live on site led by the site manager are responsible for coordinating the site evacuation, informing all residents of the current status of a Flood Warning and managing the situation as people return to the site following potential flooding.

The FEP will need to be reviewed annually to incorporate any changes to the site management team, to ensure contact details are current. In addition, if any changes are made to the EA Flood Warning Procedure these will need to be incorporated.

Person responsible for activating evacuation plan: Christopher and Trudy Palmer

Emergency contact number: 01702 230329

Environment Agency

flood evacuation plan

For caravan and camping sites

Site name Halcyon Caravan Park

Address Pooles Lane, Hullbridge, Hockley, Essex, SS5 6QA

Tel: 01702 230329

Floodline quickdial number: 111124

Which Environment Agency flood warnings are you registered to receive? (EA Flood Warning Area - 051FWCDV4D3)

Local flood warning trigger
i.e. when water reaches bottom of the bridge, sound siren: When Flood Alert issued by the Environment Agency (based on trigger levels at tide gauge in Clacton of 3.77mAOD)

Evacuation Assembly Point: Site Entrance on Pooles Lane

Be prepared for flooding. Act now

Contents

1 Actions to be taken during a flood A When to activate your flood evacuation plan

The following information should be put into action when your trigger is reached. This trigger would be a flood warning from the Environment Agency or the trigger you have set yourself.

Identify the actions you will take before activating your flood evacuation plan

	Action	Trigger	Refer to Section	Action completed
1	Following receipt of a Flood Alert from the Environment Agency alert residents to prepare for a potential flood event. Prepare a flood kit of essential items and monitor local media and the Environment Agency website or iphone/Android phone Flood Warning App for updates.	Flood Alert from Environment Agency Flood Line	B	
2	Update residents that Flood Warning Category has been upgraded to a flood warning, prepare residents for evacuation, securing there belongings and properties and implementing any flood protection measures before evacuating the site. Assist vulnerable residents who may need assistance.	Flood Warning from Environment Agency Flood Line	B	
3	The lead time from a flood warning to potential flooding at the site is between 6-12 hours, therefore encourage all residents to evacuate the site to a safe location.	Flood Warning from Environment Agency Flood Line	B	
4	Staff should distinguish themselves from residents by wearing high visibility jackets	Once the site Manager has received the Flood Warning.		
5				
6				
7				
8				

1 Actions to be taken during a flood **B** Evacuate staff and visitors

Identify the actions you will take to safely evacuate staff and visitors during a flood.

	Action	Trigger	Refer to Section	Action completed
1	Identify Safe Evacuation Routes - In advance of flooding, evacuation routes should be identified and highlighted and training/information given to staff/residents. Consideration should be given to the visibility of signs during a flooding event.	Should be identified immediately and kept up-to-date and regularly maintained.		
2	Identify Safe Refuges and Shelters - As indicated on the evacuation plans, these will generally be towards the south of the site where ingress and egress from the site is possible due to higher ground levels via Pooles Lane to Ferry Road.	Should be identified immediately and kept up-to-date.		
3	Identify Site Contact - The contact for the Environment Agency flood warning system will include the Site Manager and one other person who is responsible in the absence of the Site Manager.	Should be identified immediately and kept up-to-date.		
4	In addition permanent residents who are registered with floodline; the Environment Agency flood warning system, independently can inform the site manager.	Two way transfer of information from other permanent site residents can assist.		
5	Training and Planning - New staff should be trained and residents informed of the evacuation procedures with regular drills being carried out.	Information should be provided by way of a site induction pack included Environment Agency pack.		
6	Keep an up-to-date list of the whereabouts of residents and particularly those requiring special assistance in the event of an evacuation.	Should be identified immediately and kept up-to-date and regularly maintained.		
7	Keep residents informed of the situation at all times. There is between 6-12 hours lag time between receipt of the Flood Warning and Flooding at the site.	Based on Environment Agency designation of Flood Alert and Flood Warning.		
8	In the event of a worsening situation implement evacuation of the site. Where a preemptive evacuation is possible, commence the evacuation with residents located in low areas of the site or adjacent to the flood bank	Based on Environment Agency designation of a Flood Warning.		
9	Call the emergency services, set the residents evacuation procedure into action. Assist with the evacuation, however do not put your own safety at risk.	Site Flooding.		
10	Site Staff (in high visibility jackets) to evacuate the site immediately.	Imminent danger of the flood bank breaching or if damage to the flood bank is evident during a period of high tide, high wind and heavy rain.		

1 Actions to be taken during a flood C Locations at risk and flood actions

Look at the flood risk map of your site. Divide the flood risk area of your site into different uses, such as camping area, tourers and statics, site office and shower block etc. Identify the flood actions for each use. Consider the risk to visitors on site and to where they will be evacuated. Indicate on the map where an Evacuation Assembly Point will be.

Priority	Use	Action by site staff / volunteers	Equipment required	Time required	Risk to life	Evacuation action
1	Holiday Mobile Homes	Evacuate Mobile Homes, switch off gas and electric and implement any flood protection measures.	Sand bags/ flood boards to stop water entering properties			Assist residents with mobility problems to evacuate to a safe area .
2	Residential Mobile Homes	Evacuate Mobile Homes, switch off gas and electric and implement any flood protection measures.	Sand bags/ flood boards to stop water entering properties			Assist residents with mobility problems to evacuate to a safe area .
3	Car Parking	Where possible remove cars to higher ground in advance of flooding and place signs/traffic cones closing site to traffic.	Signs or traffic cones to close site.			
4	Electric House	Switch off electricity to site in the event of flooding.	N/A			N/A
5						
6						
7						
8						

1 Actions to be taken during a flood D Key locations

Service cut-off	Description of location
Electricity	Electric House close to Halcyon House.
Gas	The site do not have a supply of Spare Gas Cylinders as the caravans are supplied directly by Calor.
Water	

1 Actions to be taken during a flood E Protective actions / Hazardous materials

Hazardous materials on site which should be considered during a flood - *Answer the following if applicable.*

Materials	Description of location	How to protect from a flood (i.e. move, cover, tie down)
Chemicals (including cleaning products)		
Oil based products (gasoline, oil, cooking oil etc.)		
Gas cylinders	Calor Gas located outside all Caravans	Disconnect supply to caravans and secure Gas Cylinders

1 Actions to be taken during a flood F Protective actions / Important items

Identify stock, equipment and possessions that may need special protective measures, and describe the actions you will take to prevent their damage in the event of a flood. We have suggested items and ways to protect them, but make sure you follow through on your plans.

Items to consider

Static caravans	Touring caravans	Chairs/stools	Paper files
Machinery	Food	Tables/heavy furniture	Databases
Vehicles	Fittings	Soft furnishings	Computers
Electrical items	Movable goods	Staff files	Computer files

Ways to protect items

- Move to safer location
- Buy flood protection products
- Raise above ground level
- Make a copy and store in safe location
- Buy new flood-resistant item

Item	Protective action	New location (if applicable)	Done
Mobile Homes	Utilise flood protection measures and anchor mobile homes in place.	Off-site	
Mobile Homes (Continued)	If there is time and are vehicles available relocate caravans outside Flood Zone.	Off-site	
Cars	Move to higher ground outside of risk area.	Off-site	
Valuable items (Electrical/Digital information/IT)	Move to a safer secure location if possible or store in a high place.	Off-site, site office or high shelves.	
Paper Documents	Protect by placing in a water tight container/bag, make a copy or store in a safe location.	Copies in site office, car or permanent home.	
Food	Protect by placing in water tight container/bag and storing on high shelves if possible.	N/A	
Heavy Furniture	Utilise flood protection measures at entrance to mobile homes and wrap in water tight material for protection.	N/A	
Databases, Computers and Computer Files	Digital back up of information to be maintained by Berkeley Leisure Group for business continuity.	Off-site	

1 Actions to be taken during a flood G Resources required

Note basic building materials required. If materials are not needed, write in 'not appropriate'.

Materials	Used for	Items to protect / where to use	Storage location	Done
Sand and sandbags (unfilled), shovel, plastic sheeting	Creating flood barriers	Entrances to buildings, mobile homes and blocking sinks/toilets.		
Tools - hammer, nails, saw	Boarding up doors, windows and openings, creating shelves	Entrances to buildings.		
Wood - plywood, blocks of wood	Boarding up doors, windows and openings, creating shelves	Entrances to buildings.		
Sturdy plastic sheeting	Sandbag barriers, pulling up around furniture and appliances	Entrances to buildings		
Plastic bags	Putting around legs of tables and chairs	Protecting furniture and providing water tight containers for personal documents or food.		
Pallets	Raising stored stock above flood level	not appropriate		
Emergency power generator	Essential electrical appliances	not appropriate		

2 Actions to be taken after a flood A Recovery and clean-up

The recovery and clean-up period following a flood often involves more effort than required during it. Identify the actions you will take after a flood.

	Action	Trigger	Refer to Section	Action completed
1	Check with authorities (emergency services or Environment Agency) that site is safe to enter.	Environment Agency website changes so that warning is no longer in force.		
2	Call insurers to check coverage.	Damage occurring to the site.		
3	Site Manager to investigate the site and cordon off any areas which remain flooded or which appear in any way dangerous.	When Flood Warning is no longer in force		
4	Review of flood evacuation procedures.	Should be done annually and following drills and flood events.		
5	Before permitting access to residents provide guidance on the Health and Safety issues resulting from the Flooding - including disinfecting flood damaged property.	When Flood Warning is no longer in force		
6				
7				
8				
9				
10				
11				
12				

2 Actions to be taken after a flood B Suppliers and external links

Identify back-up plans for disruption of deliveries, or arrangements for short-notice cancellation with suppliers.
Also include contacts for alternative accommodation for visitors.

Supplier	Supplier contact and telephone	Contingency plan	Alternative delivery address
Site Manager	Park Managers - Christopher and Trudy Palmer Contact Number - 01702 230329	Provide contact details of alternative accommodation in the local area in the event of the site flooding	

List companies / reputable contractors whose help you may need after a flood. Get contracts in place, or know who to call for assistance. If help is not needed or you plan to do the work yourself, leave this section blank.

Materials	Company name	Contact	Telephone / mobile	Contract agreed
Hazardous materials response team				
Water pumping services				
Suppliers of emergency power / equipment				
Earthmoving or engineering				

3 Contact lists

A Important contacts

	Company name	Contact name	Telephone (office hours)	Telephone (out of hours)
Floodline	Environment Agency		0845 988 1188	0845 988 1188
Local Environment Agency office				
Electricity provider	EDF Energy		0800 783 8838	
Gas provider	National Grid		0800 111 999	
Water company	Essex and Suffolk Water		0845 782 0999	
Telephone provider				
Insurance company and policy number				
Local Authority	Rochford District Council		01702 546366	01268 527317
Local radio station	BBC Essex			
Travel/weather info				
Police	Essex		non-emergency - 0300 333 4444	
Fire and Rescue Service	Essex County		non emergency - 01376 576000	
Ambulance Service	East of England		non emergency - 01245 443344	
Electrician				
Plumber				

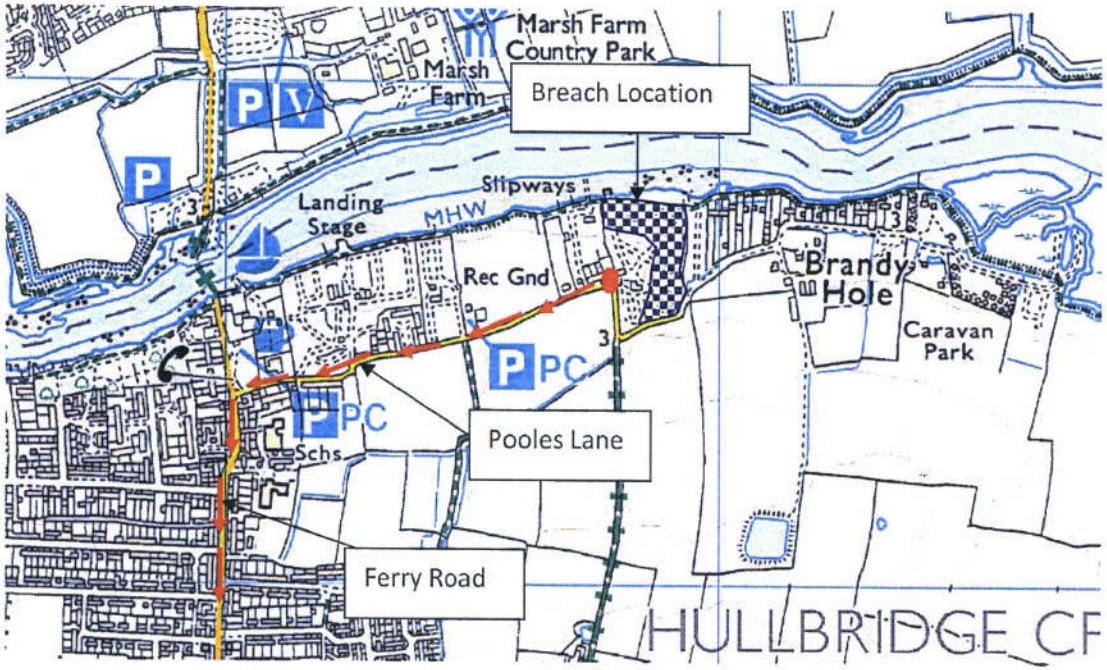
3 Contact lists B Staff / volunteer contact list

Staff / volunteers that can help during a flood. Jobs designated to these people could include overall coordinator of evacuation process, people allocated to staff and visitor safety (including one specific for vulnerable people). Ensure those doing manual work are physically able and reasonably fit.

By registering these volunteers on Floodline Warnings Direct they can also receive flood warnings.

Name	Job title	Telephone / mobile	Emergency contact	Responsibility	Help agreed
Christopher and Trudy Palmer	Park Mangers	01702 230329		Site Management	
Duty Director		07791 377997		Emergency Number	

Evacuation Plan



Key

- Assembly Point
- Evacuation Route
- Inundation Area

Appendix 1 – Flood warning information sign

Flood action!

In the event of a flood warning

Gather your family and leave the caravan

Report to your assembly point at

Site Office at entrance on Pooles Lane

Do not walk or drive through floodwater

Six inches can knock you off your feet, two feet can float your car

In an emergency call 999

Site manager: 01702 230329

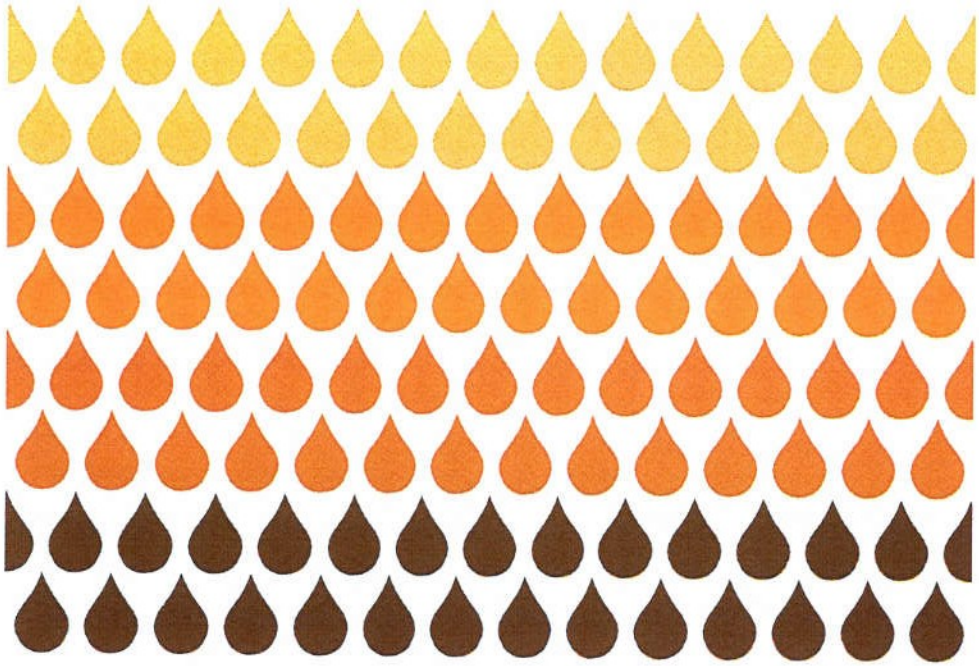
For flood advice phone
the Environment Agency's
Floodline **0845 988 1188**

Environment Agency

Environment Agency

What to do before, during and after a flood

Practical advice on what to do
to protect yourself and your property



We are the Environment Agency.

It's our job to make people aware of flooding from rivers and the sea, provide flood warning services and build and maintain flood defences.

This leaflet contains useful information to help you reduce the effects of flooding on you and your property.

Published by:
Environment Agency
Rio House
Waterside Drive, Aztec West
Almondsbury, Bristol BS32 4UD
Tel: 08708 506 506*
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

November 2010

* Weekday Daytime calls cost 8p plus up to 6p/min from BT Weekend Unlimited. Mobile and other providers' charges may vary.

Your flood warning service

Get the service that's right for you

We provide a free flood warning service to many areas at risk of flooding from rivers and the sea.

Find out if you can sign up for our free 24 hour **Floodline Warnings Direct** service by visiting our website or by calling Floodline. You can select to receive warnings by phone, text, email, fax or pager.

In some areas we also warn people about flooding using:

- Sirens – usually a wailing sound only activated when a flood is about to happen.
- Loud hailers – a vehicle will drive around repeating the flood warnings.

Other places to get the latest flood update

- www.environment-agency.gov.uk/flood
- BBC Ceefax Page 419 and Digital Ceefax Page 405.
- Local weather, news and travel bulletins.

call Floodline on 0845 988 1188

Open 24 hours a day

- Find out what flood warning service is available where you live.
- Get practical advice on what to do before, during and after flooding.
- Get a Quickdial number for easy access to information on flooding in your area.

your personal flood plan

Start preparing today before a flood happens.
Use this checklist as your flood plan.

1. **Know who to contact and how**
   - Agree where you will go and how to contact each other.
   - Check with your council if pets are allowed at evacuation centres.
   - Keep a list with all your important contacts to hand.
2. **Think about what you can move now**
   - Don't wait for a flood. Move items of personal value such as photo albums, family films and treasured mementos to a safe place.
3. **Think about what you would want to move to safety during a flood**
   - Pets
   - Cars
   - Furniture
   - Electrical equipment
   - Garden pot plants and furniture
   - What else? .....

     .....

Think about who you could ask for help / who you could offer to help, particularly vulnerable neighbours or relatives, in a flood.

Know how to turn off your gas, electricity and water mains supplies

4. **Check your insurance cover**
   - Check your buildings and contents insurance policy.
   - Confirm you are covered for flooding.
   - Find out if the policy replaces new for old, and if it has a limit on repairs.
   - Don't underestimate the value of your contents.

5. **Know how to turn off your gas, electricity and water mains supplies**
   - Ask your supplier how to do this.
   - Mark taps or switches with stickers to help you remember.

6. **Prepare a flood kit of essential items and keep it handy**
   - Copies of your home insurance documents.
   - A torch with spare batteries.
   - A wind-up or battery radio.
   - Warm, waterproof clothing and blankets.
   - A first aid kit and prescription medication.
   - Bottled water and non-perishable foods.
   - Baby food and baby care items.

useful numbers

Your important flood telephone numbers.
Fill this out and keep this leaflet with your flood kit.

Environment Agency Floodline	**0845 988 1188**
Quickdial number	
Local authority emergency helpline	
Insurance company 24-hour number and policy number	
Local radio station frequency for news alerts and weather updates	
Family and neighbours	
Work phone numbers	
Doctor's surgery	
Local police station	
Vet/kennel/cattery	
Local hotel or B&B	
Gas supplier and meter number	
Electricity supplier and meter number	
Water supplier and meter number	
Electrician	
Plumber	
Builder	

temporary flood protection equipment

Flood protection equipment can help stop flood water getting into your property. Follow manufacturer instructions to put these in place when you get a flood warning.

You can get more information about flood protection equipment in our 'prepare your property for flooding' leaflet on our website.

Floodboards

These fix to frames around windows and doors. They can be washed, stored and used again.

Always remove flood protection equipment once the flood water has gone. This will help your property dry out.

Plastic covers to seal airbricks

These can stop flood water coming in through your airbricks.

Sandbags

Your local council may provide these during a flood, but they may be scarce. You can buy your own sand and bags, or fill pillowcases and plastic bags with earth. Be aware that following a flood they will be contaminated by sewage in the water.

You can get more informtion about using sandbags on our website.

Further steps to protect your property

There are things you can do to your property that will make it easier and cheaper to clean up after a flood. See list on page 22 of this booklet.

Know your flood

FLOOD ALERT

What it means

Flooding is possible.
Be prepared.

What to do

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels on our website.

FLOOD WARNING

What it means

Flooding is expected.
Immediate action required

What to do

- Protect yourself, your family and help others.
- Move family, pets and valuables to a safe place.
- Keep a flood kit ready.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.

warning codes

SEVERE FLOOD WARNING

What it means
Severe flooding.
Danger to life.

What to do

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate from your home.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

You need to be aware of flooding and keep an eye on the water levels and weather situation at all times. You can do this by checking the flood forecasts and the river and sea levels on our website or by listening to local news and weather forecasts.

You can get get up-to-date information about flooding in your area by checking our website or by registering for our FREE Floodline Warnings Direct service.

during a flood

What to do to stay safe in a flood.

In the event of a flood focus on the safety of you and your family

- Cooperate with the emergency services if they tell you to evacuate during flooding.
- Be prepared to act quickly and get yourself to safety.

We use our flood warning services to warn you of flooding from rivers and the sea as soon as we can. But there are some types of flooding we can't predict.

Stay alert to localised flooding

Also known as 'surface water flooding'. This usually happens where drainage systems are unable to cope with heavy spells of rainfall. We cannot give you a direct warning for this type of flooding. Instead we forecast where it might be a problem in certain counties and put a daily flood risk forecast on our website.

You can also find out about the possibility of 'surface water' flooding in your area by checking local weather forecasts.

What to do in an emergency

Follow these simple steps to stay safe:

1. Check in with other people in your household - if they are not at home make sure they are somewhere safe.
2. Gather essential items together either upstairs or in a high place.
3. Fill jugs and saucepans with clean water.
4. Move your family and pets upstairs, or to a high place with a means of escape.
5. Turn off gas, electricity and water supplies when flood water is about to enter your home if safe to do so. DO NOT touch sources of electricity when standing in flood water.
6. Keep listening to local radio for updates or call floodline 0845 988 1188.
7. Check in with vulnerable neighbours or relatives.
8. Flood water can rise quickly, stay calm and reassure those around you. Call 999 if you are in danger.

Important! Flood water is dangerous

- Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.
- Avoid walking or driving through it.
- Keep children and vulnerable people away from it.
- Wash your hands thoroughly if you touch it.

Listen to the advice of the emergency services

protect what you can...

Move important items to safety and put flood protection equipment in place when there is a flood warning. Follow manufacturers' instructions carefully to help stop or reduce the flood water entering your property.

Take items upstairs or to a safe place in your property

- Safely store important documents such as insurance papers.
- Move items of personal value such as photos, family films or treasured mementos.
- Move lightweight household belongings you can pick up easily and quickly.
- Move items of furniture that are expensive or harder to repair before cheaper ones.

If possible, move your outside belongings to higher ground

- If the flood water hasn't reached you, move your car to higher ground and move outdoor pets to safety.

Help stop water entering your home

- Put plugs in sinks and baths. Weigh them down with a sandbag, a pillowcase or plastic bag filled with garden soil, or a heavy object.

If you do not have non-return valves fitted

- Plug water inlet pipes with towels or cloths.
- Disconnect any equipment that uses water (like washing machines and dishwashers).

...but evacuate when told

Stay safe, always listen to the advice of the emergency services and evacuate when told to do so.

- Leave your home if the emergency services say so. Refusing to leave on their advice will put you, your family and those trying to help you at risk.
- When you are evacuated you will be taken to an evacuation centre run by your local council. Free food and bedding is provided. Bring spare clothing, essential medication and babycare items if you have an infant.
- Most evacuation centres will let you bring your pets. Take their food. Put cats and small animals in a pet carrier or secure box.
- People running the centres are trained to give you support and advice. They will help you through the stress of a flood and prepare you for what to do afterwards.

after a flood

Recovering from a flood.

First steps

- Take care as there may be hidden dangers in the flood water like sharp objects, raised manhole covers and pollution.
- Flood water could have caused structural damage to your property.

- In almost all cases the insurance company will send a loss adjuster to look at your property. They will confirm what repairs and replacements are needed and covered by your policy.
- If you rent your property, contact your landlord and your contents insurance company as soon as possible.
- If you do not have insurance, your local council should be able to provide information on hardship grants or charities that may be able to help you.

There are a number of things to be aware of when clearing up after a flood

. Flood water can contain sewage, chemicals and animal waste. Always wear:

- waterproof outerwear, including gloves.
- wellington boots.
- face mask.

If your electricity supply is not already switched off at the mains, get a qualified person to do this. DO NOT touch sources of electricity when standing in flood water.

You can get water out of your property using a pump and generator. Position the generator outside in the open air as generators produce carbon monoxide fumes which can kill.

Only pump out water when flood levels outside your property start to be lower than inside. This reduces the risk of structural damage.

Shovel mud away evenly from both sides of a wall. This stops pressure building up on one side.

You can clean and disinfect your property using ordinary household products.

A garden hose is useful for washing down. Do not use high-pressure hoses as they blast contaminated matter into the air.

If you are drying your property naturally, keep doors and windows open as much as possible. If using dehumidifiers, close external doors and windows.

If you have gas or oil central heating and it has been checked by an engineer, turn it on. Keep the thermostat between 20-22 degrees centigrade for steady drying.

Local councils usually provide skips and extra rubbish collections for items that your insurance company has agreed you can throw away.

dealing with an insurance c

If flooding has caused damage to large parts of the country, you may have to wait for a loss adjuster to visit you.

Ask the insurance company

- How long it will be before the loss adjuster visits.
- If you are to clean your property or if they will get a company to do it for you.

Always make your own record of flood damage

- Use a permanent ink pen to mark on the wall the height the flood water got to. Do this in every room affected by flooding.
- Photograph or video your damaged property. List the damage to your property and belongings.
- If your insurance policy covers you for loss of perishable goods, make a list of all the foods you throw away. Include any food touched by flood water and anything in your fridge or freezer ruined by loss of power.

Things to help with your insurance claim

- Confirm the insurance company will pay for any service or equipment you need.
- Make a note of all telephone calls. Record the date, name and what was agreed.

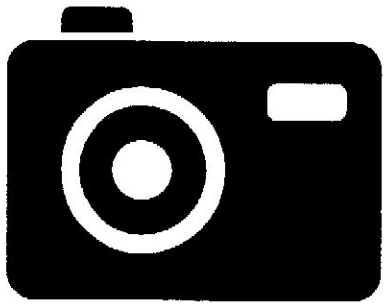
laim

- Keep copies of all letters, emails and faxes you send and receive.
- Keep receipts.
- Don't throw anything away until told (except ruined food).

Important note: the insurance company may only offer to clean and repair something, not replace it.

If you do not have insurance, your local council should be able to provide information on hardship grants or charities that may be able to help you.

Photograph or video record your damaged property



further steps to protect your pr

As you plan your property repairs, you might want to think about ways to protect it from future flooding.

There are things you can do whilst repairing your property that will make it easier and cheaper to clean up after a future flood.

Here are some improvements you can make

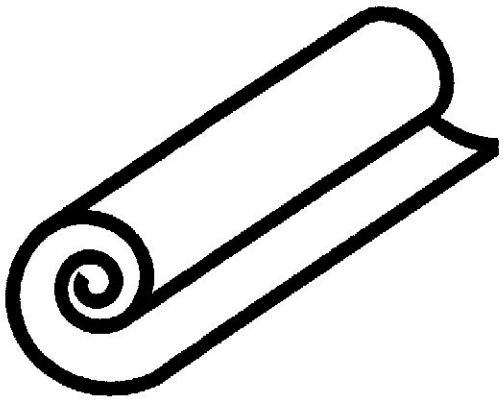
Discuss them with your loss adjuster and builder.

- Lay ceramic tiles on your ground floor and use rugs instead of fitted carpets.
- Raise the height of electrical sockets to at least 1.5 metres above ground floor level.
- Use lime plaster instead of gypsum on walls.
- Fit stainless steel or plastic kitchens instead of chipboard ones or have free-standing kitchen units you can move.
- Position any main parts of a heating or ventilation system, like a boiler, upstairs or raised well above the ground floor.
- Fit non-return valves to all drains and water inlet pipes.
- Replace wooden window frames and doors with synthetic ones. They are easier to clean.

operty

Important!
Always use reputable building contractors. Beware bogus trade people calling door-to-door. Always check references and do not pay in advance.

Lay rugs instead of fitted carpets on your ground floor



temporary housing

Flood repairs can take weeks or months to complete, especially if there has been widespread flooding and builders are scarce. It takes time to dry out a property and some buildings may have to be gutted before repairs can start.

Ask your insurance company or landlord if they will provide you with temporary accommodation. This could be a nearby bed and breakfast, a static caravan or a rented house. You do not have to accept the first place you are offered.

However, if flooding has affected many people, the choice of accommodation may be limited.

If you will be in a temporary property for some time, think about having your post redirected.

Your insurance company should provide you with temporary accommodation

For more information

These organisations have advice, information and services to help you after a flood.

National Flood Forum
www.floodforum.org.uk
01299 403055

The financial ombudsman service
www.financial-ombudsman.org.uk
0300 123 9 123

The Construction Centre
www.theconstructioncentre.co.uk
01926 865825

The British Damage Management Association (BDMA)
www.bdma.org.uk
07000 843 236

Citizens Advice Bureau
www.adviceguide.org.uk
See local telephone directory

CIRIA www.ciria.org/flooding
020 7549 3300

Health Protection Agency
www.hpa.org.uk
01235 822 603/742

Would you like to find out more about us, or about the environment?

Then call us on
08708 506 506* (Mon-Fri 8-6)

email
enquiries@environment-agency.gov.uk

or visit our website
www.environment-agency.gov.uk

incident hotline 0800 80 70 60 (24hrs)
floodline 0845 988 1188 (24hrs)
typetalk 0845 602 6340

* Weekday Daytime calls cost 8p plus up to 6p/min from BT Weekend Unlimited. Mobile and other providers' charges may vary.

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