



Richard Jackson
Engineering Consultants

FLOOD RISK ASSESSMENT

67-73 Park Square West, Jaywick

Hutleys Caravan Park

August 2019

Project no: 60079

Document Review Sheet: -

Document prepared by: - *James Everitt*
on behalf of Richard Jackson Ltd

Date: - 16 / 08 / 2019

Document checked by: - *Mark Geddes*
on behalf of Richard Jackson Ltd

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on behalf of Richard Jackson Ltd

Date: - 19 / 08 / 2019

Document Status

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FINAL

Revision Status

Issue	Date	Description	Prepared	Checked	Approved

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Title: FLOOD RISK ASSESSMENT
 Project: 67-73 Park Square West, Jaywick
 Client: **Hutleys** Caravan Park
 Project No.: 60079

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Appendix D3: Environment Agency Response
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1. Introduction

- 1.1. Richard Jackson Ltd has been appointed by Hutleys Caravan Park to carry out a Flood Risk Assessment for the land at 67-73 Park Square West, Jaywick in support of the planning application for construction of two residential dwellings. This assessment will follow the checklist for flood risk assessment published as part of the Planning Practice Guidance website (PPG).

2. Development Site and Location

- 2.1. The site is located midway along Park Square West, Jaywick, approximately 1km north of the coast. The site is within an existing residential area and bound by existing properties to the north, east and south. To the west of the site is Greenfield farmland. The postcode is CO15 2NT and the Ordnance Survey Grid Reference is TM 14689 13938. The site is currently Greenfield land. A site location plan is in Appendix A.
- 2.2. The site has an approximate area of 0.1Ha and has been topographically surveyed, see Appendix B. The survey shows that the site drains east to west to a stream, with levels in the range of 3.47m AOD in the west to 5.90m AOD to the highway in the east.
- 2.3. The flood map for planning, see Appendix C, shows the western third of the site to be located in flood zone 3 and benefitting from defences, a small section in the middle of the site to be located in flood zone 2 and the eastern portion of the site to be in flood zone 1.

3. Sequential Test

- 3.1. The flood map for planning shows that the lower parts of the site to the west are in flood zone 3, but benefitting from defences. The mid portion of the site is shown to be in flood zone 2. The highest portion of the site, to the east, is in flood zone 1. We are therefore able to conclude that as the proposed new dwellings are located at the eastern end of the site that the sequential test has been passed.

4. Development Proposals

- 4.1. It is proposed to construct two detached residential dwellings. A plan of this proposal is in Appendix B.

5. Climate Change

- 5.1. The PPG defines climate change allowances that should be considered for various development proposals across the nation. For this proposed use at this site, climate change should be considered as set out below.

Rainfall uplift	40%
Watercourse flow	25 – 35%

6. Site Specific Flood Risk

Ground Water Flooding

- 6.1. The British Geological Survey (BGS) data suggests the predominant underlying geology comprises of clay, silt and sand creating an impermeable barrier preventing groundwater rising to the surface, reducing the risk of groundwater flooding. The local topography is such that the groundwater will flow away from the proposed dwellings, therefore a low risk.

Surface Water Flooding (Appendix D1)

- 6.2. The Gov.UK mapping has also been reviewed. This source provides depth and velocity mapping for three scenarios. In the high risk (1 in 30 year) event and the medium risk (1 in 100 year) event the mapping shows that there is no surface water flood risk. In the low risk (1 in 1000 year) event the mapping shows that there is a surface water flow path connecting the highway to the watercourse located to the west of the site with a depth below 300mm.

Tidal and Fluvial Flood Risk (Appendix D2)

- 6.3. The Gov.UK mapping shows the western portion of the site to be in flood zone 2, very low risk of flooding.
- 6.4. The EA has been contacted to provide the best available flood information for this site. The EA mapping shows that the western part of the site is shown to be within flood zone 2, 3 for fluvial risk and in an area which benefits from defences. The site is protected by the EA defence with Asset ID 170714, the defence has a crest level of 3.78m AOD and is described as a clay counterwall in fair condition. The defence data can be seen in Appendix D3. The Shoreline Management Plan states the policy for these defences is to hold the line until 2055, the next epoch (2055-2105) has a dual policy of hold the line or managed realignment.
- 6.5. The defended model mapping shows that currently the site is not at risk of flooding in events up to 1 in 1000 year return period. However with the addition of climate change the mapping shows the site is at risk of flooding during a 1 in 200 year event.
- 6.6. The undefended model mapping shows that the western portion of the site is at risk, the 1 in 20 year return period shows a small area to the western boundary of the site is at risk, the 1 in 200 year event shows approximately a third of the site is at risk and the 1 in 1000 year event shows approximately half of the site is at risk. With the addition of climate change approximately 60% of the site is at risk of flooding during the 1 in 20 year event, this increases to approximately 80% for the 1 in 200 year event and the remainder of the site is at risk during the 1 in 1000 year event.
- 6.7. To better define this risk the Environment Agency has been requested to provide further data including Product 4 and Product 8 defence breach data. This is in Appendix E3. If the water levels from the node based model

mapping are used to assess risk at this site then the potential undefended water depths are as shown in Table 1 using a typical site level of 5.8m AOD.

Event	1:20 (5%)	1:200 (0.5%)	1:1000 (0.1%)	1:20 + CC	1:200 + CC	1:1000 + CC
Level (m AOD)	3.74	4.14	4.47	4.85	5.24	5.50
Depth (m)	0	0	0	0	0	0

Table 1 – Undefended water levels and depths based on a site level of 5.8m AOD

- 6.8. The assessment of levels and depths confirmed that part of the site is currently at risk of flooding, should the defences breach or be over topped the proposed gardens would be flooded. It is proposed to set the finished floor level of the new building to a minimum level of 5.8m AOD to give a 300mm freeboard to the undefended 1 in 1000 + CC year event water level.
- 6.9. The EA mapping shows that the site area is not shown to have flooded in the 1953 event.
- 6.10. The development proposal is to construct two new dwellings on Greenfield land, therefore the scope to provide flood resilient construction within these buildings is therefore reasonable.

Reservoir and Artificial Flooding (Appendix E4)

- 6.11. The Gov.UK flood mapping shows that flooding from a reservoir failure will not reach the boundary of this site.
- 6.12. It is likely that there will be foul, surface water sewers and water mains serving the nearby dwellings, which may be a further source of flooding.

7. Surface Water Management

- 7.1. The redevelopment of the existing site will not alter its surface water drainage outfall location. The current site drains overland from east to west to the watercourse bounding the western edge of the site.
- 7.2. The level of discharge from the site needs to be reduced to meet the requirements of the LLFA and local flood planning guidance. As the site is Greenfield, the discharge from the site needs to be limited to the 1 in 1 year Greenfield run-off rate. The Greenfield run-off rate for the site is calculated to be approximately 0.2 l/s, based on 2 l/s/Ha and a site area of 0.1Ha. It is proposed to discharge the site at 1 l/s, as this is the lowest practicable rate achievable using a vortex flow control device.
- 7.3. The roof area of the proposed site is 80m² approximately (per dwelling) and increases to 88m² with a 10% allowance for urban creep. The private drive area of the proposed site is approximately 135m². Therefore the total impermeable area of the proposed site including urban creep equates to 311m².

- 7.4. It is proposed to drain the roof area and private driveway area to permeable paving and discharge direct to the adjacent drainage ditch via a flow control device.
- 7.5. Preliminary calculations and a sketch of the proposed store location are in Appendix E. The outflow rate is proposed to be limited to 1 l/s by the provision of a flow control device with a 75mm orifice. The size of the permeable paved area required is 135m² proposed to store all flows up to the 1 in 100 year plus 40% climate change. The depth of both the permeable paving and the crates is proposed to be 0.5m (0.4m of sub-base).
- 7.6. For the development proposed, the land-owners will be responsible for the drainage system. A schedule for this can be seen in Appendix F.
- 7.7. To improve the quality of the roof and car parking water which will be collected by the proposed drainage system serving the new dwellings, permeable paving and green landscaping will be used to replace the existing surface at the site.
- 7.8. The existing site has a flow path running along the southern boundary, which will need to be maintained, thus external ground levels at the site must be kept as close to the existing level as possible.

8. Occupants and Users of the Development

- 8.1. The occupants of the new buildings will be encouraged to sign up for flood warnings from the Environment Agency.
- 8.2. As climate change occurs, the potential for fluvial and surface water events of a large enough scale to impact upon this site will increase.

9. Exception Test

- 9.1. The proposed building will be located in flood zone 1 now and for the lifetime by raising the finished floor levels.
- 9.2. The exception test is in three parts:
 - a) Does the proposed development bring wider sustainable benefits to the community that outweighs flood risk? – These proposals provide much needed additional housing.
 - b) How can it be demonstrated that the proposed development will remain safe over its lifetime without increasing flood risk elsewhere? – The finished floor levels of the proposed dwellings have been set above the predicted 1 in 1000 year + CC event level. The surface water outflow from the site will be restricted to the practicable minimum to reduce flood risk offsite.
 - c) Will the development reduce flood risk overall? (eg through the provision of improved drainage) – As this is a Greenfield site there is no opportunity to provide wider benefits.

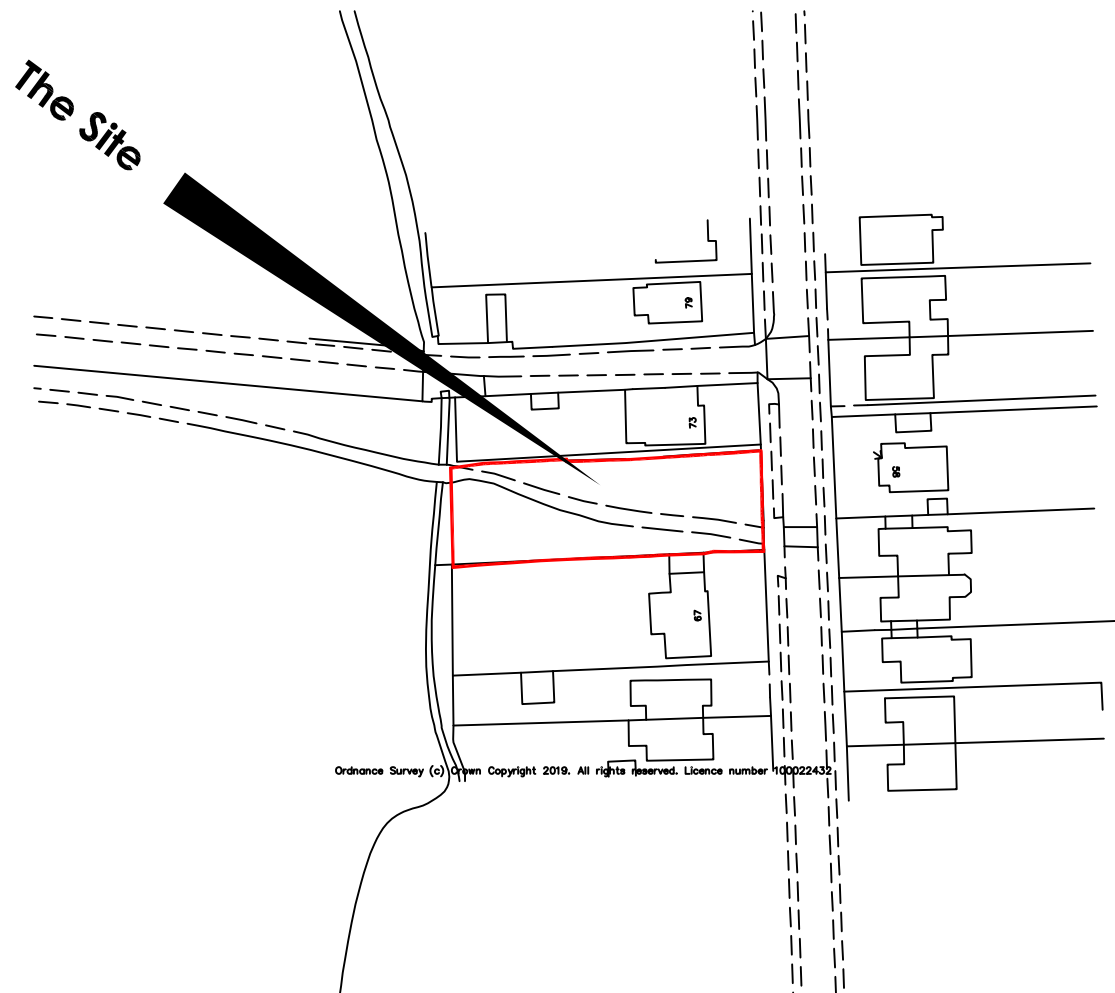
10. Residual Risk

10.1. The residual risks of flooding at the site include:

- Tidal / Fluvial flooding, including defence failure and overtopping;
- Surface water flooding;
- Sewer or water main failure.

Appendix A

Site Location Plan



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**Location Plan
(1:1250)**

hurley porte & duell
CHARTERED ARCHITECTS

3 Balkerne House, Balkerne Passage
Colchester, Essex, CO1 1PA
tel. 01206 544939
fax. 01206 760688
email@hpd-architects.co.uk
www.hpd-architects.co.uk

PRELIMINARY

project and client
Proposed Development
Land between 67 and 73
Park Square West
Jaywick, Cacton-on-Sea
Essex, CO15 2NT

drawing title

Site Location Plan

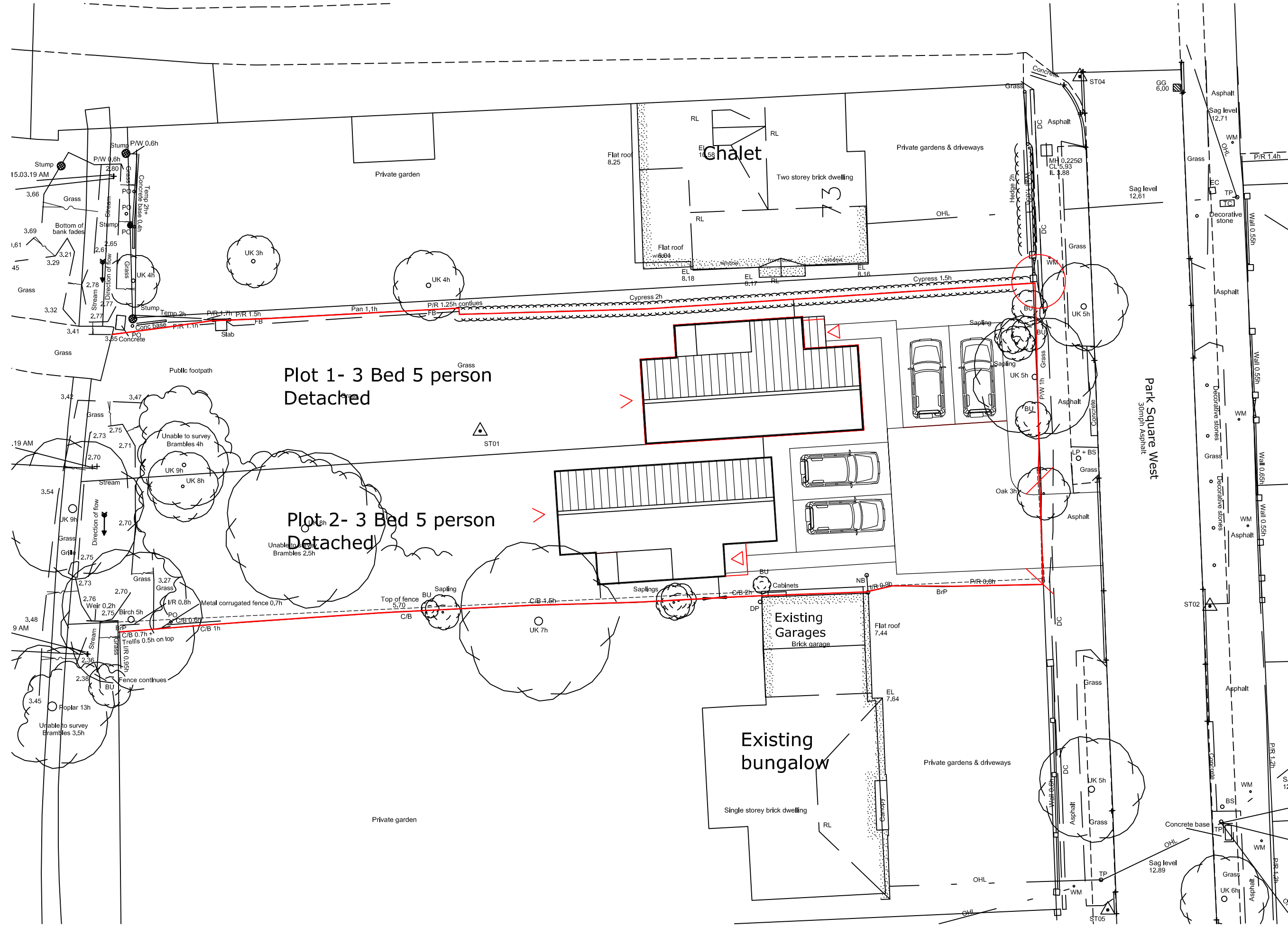
scale date
1:1250 @ A4 January 2019

ref. no.
SW3 01

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for Hurley Porte and Duell Ltd.

Appendix B

Proposed Site Plan & Topographical Survey



hurley porte & duell
 CHARTERED ARCHITECTS

3 Balmerne House, Balmerne Passage
 Colchester, Essex, CO1 1PA
 tel. 01206 544939
 fax. 01206 760688
 email@hpd-architects.co.uk
 www.hpd-architects.co.uk

OPTION 1
 Site Only

PRELIMINARY

project and client
 Proposed Development
 Land between 67 and 73
 Park Square West
 Jaywick, Clacton-on-Sea
 Essex, CO15 2NT

drawing title
 Site Plan

scale 1:200 @ A3
 date January 2019

ref. SW3
 no. 02A

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Appendix C

Flood Map for Planning

Flood map for planning

Your reference
SW3

Location (easting/northing)
614672/213938

Created
4 Jul 2019 1:28

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Flood map for planning

Your reference

SW3

Location (easting/northing)

614672/213938









Scale

1:2500

Created

4 Jul 2019 1:28



-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m

Appendix D1

Surface Water Flood Risk Mapping

Learn more about flood risk

Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

Basic view Detailed view
Location
Q

Map


- Extent of flooding
- Depth and flow estimates at monitoring stations

High risk

- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity

Water

- Extent of flooding
- Flood depth
- Flood speed



High risk scenario

Flood depth (millimetres)

- Over 900mm
- 300 to 900mm
- Below 300mm
- +
 Location you selected

► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

▶ [Other ways of getting this information](#)

05 August 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC

Learn more about flood risk

Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

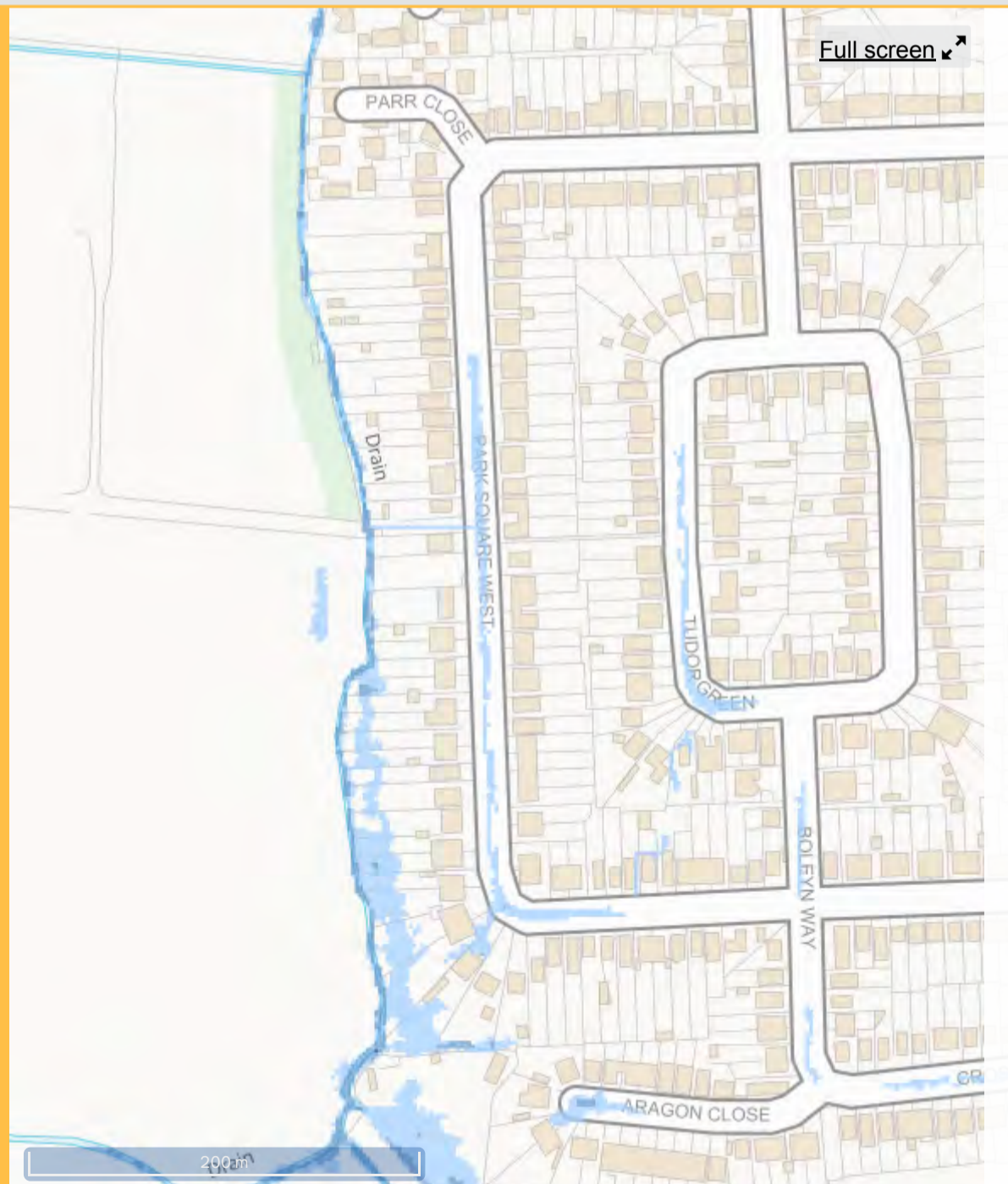
All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

Basic view Detailed view
Location

- Extent of flooding
- Depth and flow estimates at monitoring stations

- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity

- Extent of flooding
- Flood depth
- Flood speed



Medium risk scenario

Flood depth (millimetres)

- Over 900mm
- 300 to 900mm
- Below 300mm
- Location you selected

► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

▶ [Other ways of getting this information](#)

05 August 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC


Learn more about flood risk


Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.


'Detailed view' shows more technical information.

All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.


Basic view Detailed view
Location




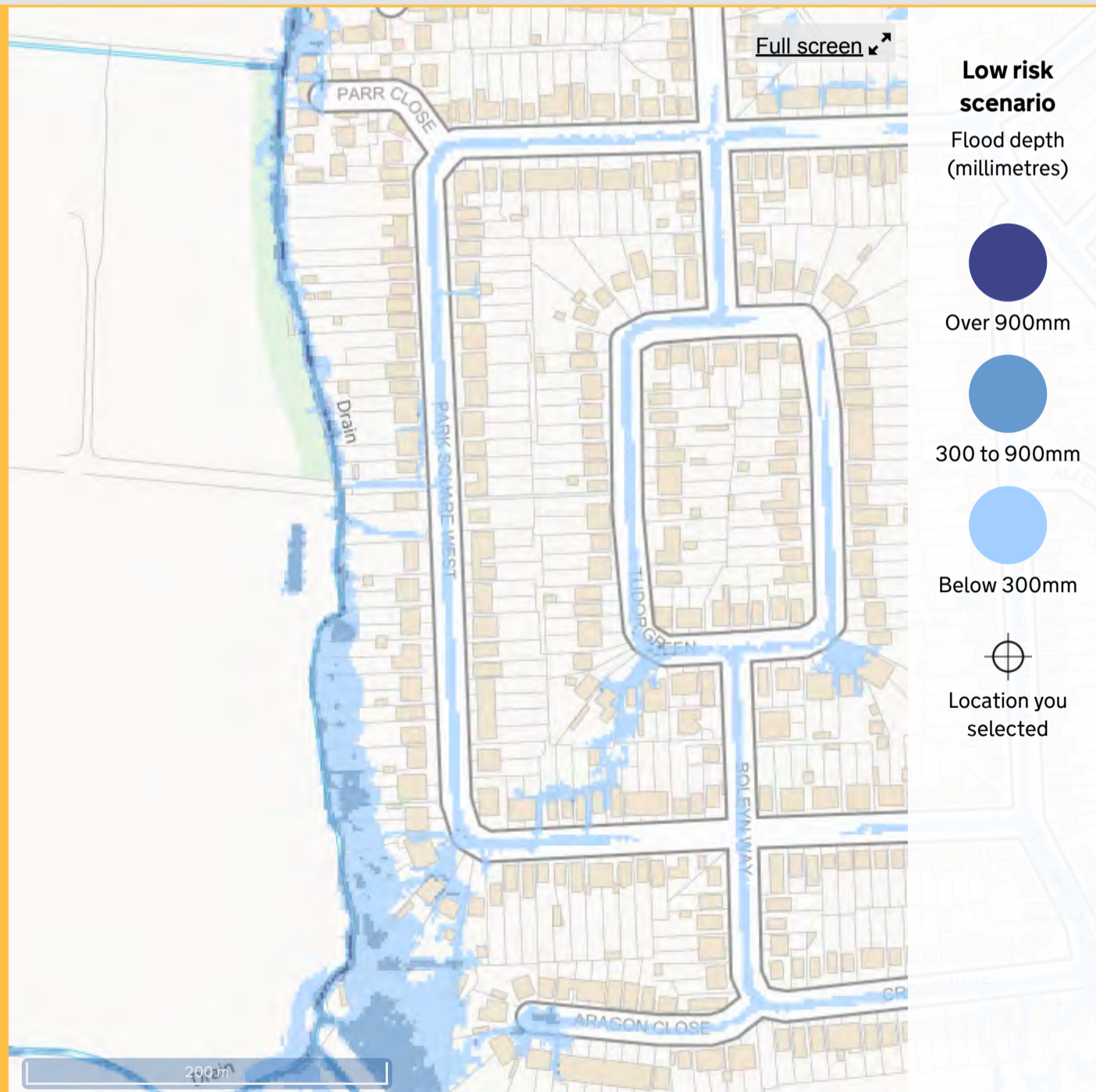
- Extent of flooding
- Depth and flow estimates at monitoring stations



- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity







- Extent of flooding
- Flood depth
- Flood speed



Low risk scenario

Flood depth (millimetres)

-  Over 900mm
-  300 to 900mm
-  Below 300mm
-  Location you selected

► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

▶ [Other ways of getting this information](#)

05 August 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC

Appendix D2

Fluvial Flood Risk Mapping

Learn more about flood risk

Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

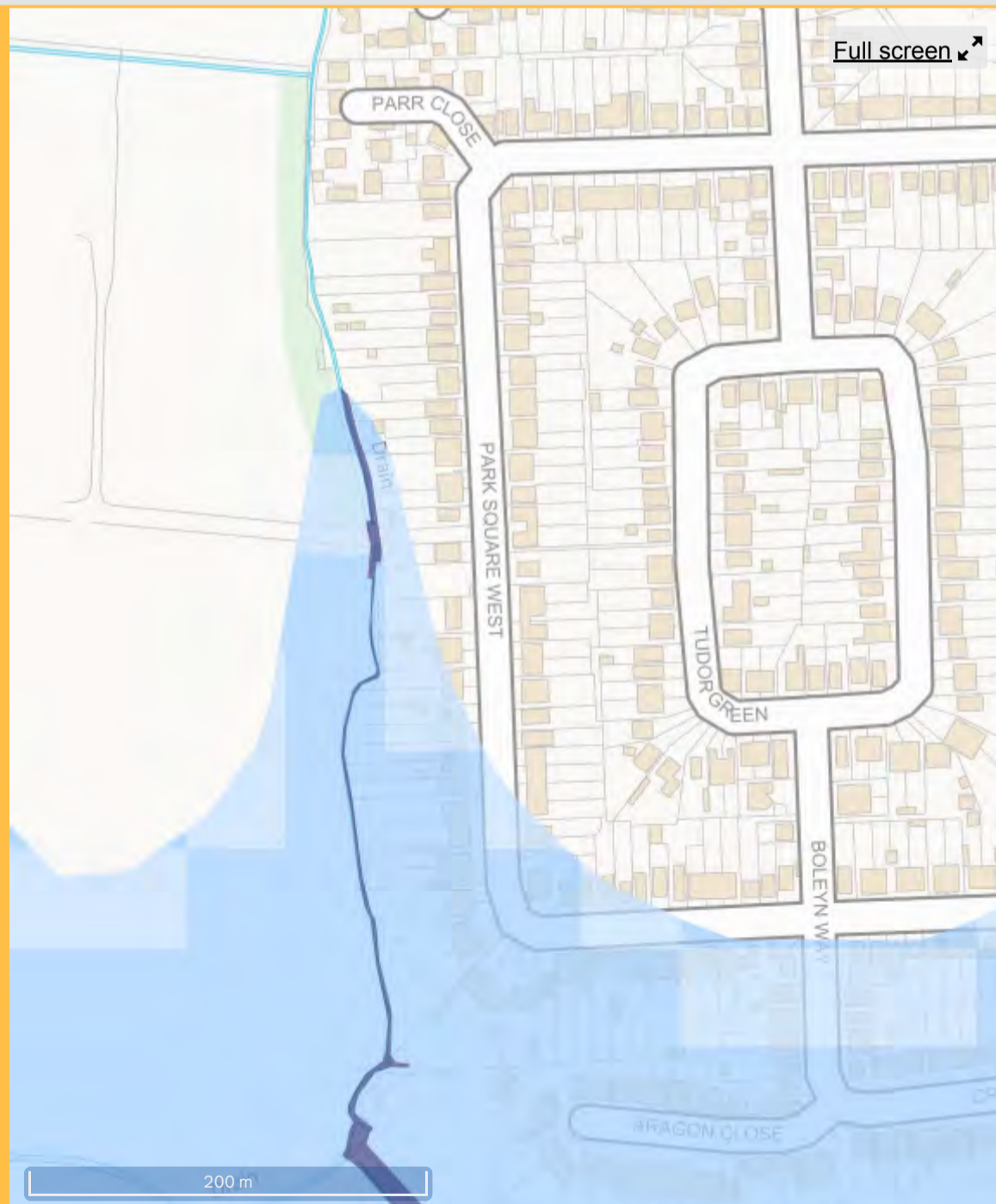
All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

Basic view Detailed view
Location

- [Extent of flooding](#)
- Depth and flow estimates at monitoring stations

- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity

- Extent of flooding
- Flood depth
- Flood speed



Flood risk

- High
- Medium
- Low
- Very low
- Location you selected

► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

▶ [Other ways of getting this information](#)

05 August 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC

Appendix D3

Environment Agency Response

Date: 18/07/2019

Datasheet Reference: EAN/2019/135343

**Defence Information**

Asset Reference	Maintainer	Bank	Asset Type	Asset Description	Standard of Protection	Overall Condition Grade	Crest Level
5517	Environment Agency	coastal	wall	CLAY EMBANKMENT - Grouted Stone + Concrete Revetment + Concrete Crest Wall.	200.0	3	4.110
5518	Environment Agency	coastal	wall	Concrete defence wall	200.0	3	3.590
5619	Environment Agency	coastal	wall	CLAY SEAWALL + Concrete Crest Wall.	200.0	2	3.140
5620	Environment Agency	coastal	wall	CLAY SEAWALL - Granite Revetment + Concrete Crest Wall.	200.0	3	4.110
5621	Environment Agency	coastal	wall	CLAY SEAWALL - Concrete Crest Wall + Essex Blockwork Revetment.	200.0	2	4.110
5622	Environment Agency	coastal	wall	CLAY SEAWALL - Concrete Crest Wall + Essex Blockwork Revetment Landside.	200.0	3	4.110
6370	Environment Agency	coastal	wall	CLAY SEAWALL + Concrete Crest Wall + Essex Block Revetment in Places.	200.0	2	4.110
6413	Environment Agency	coastal	wall	Clay Core + Essex Block revetment under sand. Concrete Crest Wall with cantilever under road.	200.0	3	4.110
6780	Environment Agency	coastal	wall	CLAY SEAWALL - Grouted Stone Revetment + Concrete Crest Wall + Essex Blockwork Revetment + Concrete Retaining Wall.	200.0	3	3.140
136636	Environment Agency	coastal	wall	CLAY SEAWALL - Concrete Crest Wall + Essex Blockwork Revetment front and back	200.0	3	3.580
159187	Environment Agency	coastal	wall	Concrete parapet wall. L return under road. slopping revetment and piled toe buried under beach recharge.	200.0	3	4.950
170714	Environment Agency	coastal	embankment	CLAY COUNTERWALL	200.0	3	3.780

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.

Mr James Everitt
Richard Jackson
JamesEveritt@rj.uk.com

Our ref EAn/2019/135343
Date 16 August 2019

Dear Mr Everitt

Enquiry regarding Products 4 & 8 for Park Square West, Jaywick, CO15 2NT

Thank you for your enquiry of 17 July 2019. Please accept our apology for the delay in responding.

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

The information for product 4 is attached. The Product 8 information we hold has been uploaded to our sharefile system and can be accessed using this link:

<https://ea.sharefile.com/d-s54341bd04c34de58>

Further Asset Management Data and Information can be found online using this link:
<https://environment.data.gov.uk/asset-management/index.html>

The location is in the following Flood Warning and Flood Alert areas:

Flood Warning Area: The Essex coast from Clacton, to and including, Lee-over-Sands (051FWCDV4C1a): The threshold is 3.30 mAODN (**mAODN** is a standard measure used across the UK for height above average sea level. It is different to Chart Datum). This measurement was taken at Clacton Gauging Station.

Flood Alert Area: The Essex coast from Clacton to and including, St Peters Flat and the Colne and Blackwater estuaries (051WACDV4C): The threshold is 2.70 mAODN (**mAODN** is a standard measure used across the UK for height above average sea level. It is different to Chart Datum). This measurement was taken at Clacton Gauging Station.

A copy of the Flood Risk Assessment (FRA) advisory note is attached to my email.

Coastal Modelling

Our New Coastal Hydraulic Modelling 2018 is now available on the .gov.uk website. To find the new mapping please use the following link: <https://flood-map-for-planning.service.gov.uk/>

You may be aware that some Local Planning Authorities have updated their Strategic Flood Risk Assessments (SFRAs) using data from this modelling study. As SFRA's are not updated regularly we agreed that they could use draft outputs as we wanted to ensure that the SFRA's were not out of date as soon as they were published.

East Anglia Area

Ipswich Office, Icen House, Cobham Road, Ipswich, Suffolk, IP3 9JD
Brampton Office, Bromholme Lane, Brampton, Huntingdon, PE28 4NE
General Enquiries: 03708 506506
Email: enquiries@environment-agency.gov.uk
Website: <https://www.gov.uk/government/organisations/environment-agency>

Name	Product 4
Description	Detailed Flood Risk Assessment Map for Park Square West, Jaywick
Licence	Open Government Licence
Information Warnings	None
Information Warning - OS background mapping	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Name	Product 8
Description	Breach Hazard Map for Colne & Blackwater
Licence	Open Government Licence
Conditions	<p>1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you.</p> <p>2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice.</p> <p>3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of sensitive data.</p>
Information Warnings	<p>1.0 This map shows the level of flood hazard to people (called a hazard rating) if our flood defences are breached at certain locations, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.</p> <p>2.0 The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.</p> <p>3.0 The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring.</p>

East Anglia Area

Ipswich Office, Icen House, Cobham Road, Ipswich, Suffolk, IP3 9JD

Brampton Office, Bromholme Lane, Brampton, Huntingdon, PE28 4NE

General Enquiries: 03708 506506

Email: enquiries@environment-agency.gov.uk

Website: <https://www.gov.uk/government/organisations/environment-agency>

	<p>The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.</p> <p>4.0 Please contact the Environment Agency for further information on emergency planning associated with flood risk in this area.</p>
Information Warning - OS background mapping	<p><i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i></p>
Attribution	<p>Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.</p> <p>Contains Environment Agency information © Environment Agency and/or database rights.</p>

We have considered your request under the provisions of the Freedom of Information Act 2000 / Environmental Information Regulations 2004 (EIR). The Act requires that we respond to requests by advising you whether or not information is held, and if so by providing you with that information.

EIR Regulation 3(2) states that information is held if it is in our possession and has been produced or received by us, or it is held by another person on our behalf at the time the request is received.

Information not held

In this case, the hydrograph of critical events information you have requested is not held by us. Therefore we are refusing this part of your request on the grounds that there is no information we can provide.

Where a request is for environmental information, the Regulations allow us to refuse to disclose it if the exception at EIR Regulation 12(4)(a) applies. The regulation states that a public authority may refuse to disclose environmental information to the extent that it does not hold that information when an applicant's request is received.

It is not possible for us to conduct a public interest balancing test because the reason for non-disclosure is that the information is not held.

Rights of appeal

If you are not satisfied you can contact us within 2 calendar months to ask for our decision to be reviewed. We shall review our response to your request and give you our decision in writing within 40 working days.

If you are still not satisfied following this, you can raise a concern with the Information Commissioner, who is the statutory regulator for Freedom of Information and the Environmental Information Regulations. The contact details are:

East Anglia Area

Ipswich Office, Icen House, Cobham Road, Ipswich, Suffolk, IP3 9JD
 Bampton Office, Bromholme Lane, Bampton, Huntingdon, PE28 4NE
 General Enquiries: 03708 506506
 Email: enquiries@environment-agency.gov.uk
 Website: <https://www.gov.uk/government/organisations/environment-agency>

Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF
Tel: 0303 123 1113
Website: <http://ico.org.uk>

Data Available Online

Many of our flood datasets are available online:

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

What's In Your BackYard (WIYBY) is no longer available.

Most of the data is still available via other sharing services such as [DATA.GOV.UK](#), [MAGIC map](#) and new [GOV.UK digital services](#). Where the datasets are no longer available as maps, you will be able to download and use within specialist applications.

To find out all the services the Environment Agency have available, please click [here](#).

For any other enquiries please send your request to us at:

Enquiries_EastAnglia@environment-agency.gov.uk.

Additional information

Please be aware that we now charge for planning advice provided to developers, agents and landowners. If you would like advice to inform a future planning application for this site then please complete our <https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion> and email it to our Sustainable Places team planning.ipswich@environment-agency.gov.uk. They will initially provide you with a free response identifying the following:

- the environmental constraints affecting the proposal;
- the environmental issues raised by the proposal;
- the information we need for the subsequent planning application to address the issues identified and demonstrate an acceptable development;
- any required environmental permits.

If you require any further information from them (for example, a meeting or the detailed review of a technical document) they will need to set up a charging agreement. Further information can be found on our [website](#).

Please note we have published revised climate change allowances, which are available online. These new allowances will need to be reflected in your Flood Risk Assessment. If you want to discuss this please call our Sustainable Places team on 0203 025 5475.

East Anglia Area

Ipswich Office, Icen House, Cobham Road, Ipswich, Suffolk, IP3 9JD
Brampton Office, Bromholme Lane, Brampton, Huntingdon, PE28 4NE
General Enquiries: 03708 506506
Email: enquiries@environment-agency.gov.uk
Website: <https://www.gov.uk/government/organisations/environment-agency>

TEAM2100: delivering the first 10 years of investment in tidal flood defences for the Thames Estuary 2100 Plan. For more information, visit [the TEAM2100 website](#) or email team2100@jacobs.com

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

Yours sincerely

Teresa Chapman

Teresa Chapman
Customers and Engagement Officer

Direct dial: 02030 255472

East Anglia Area

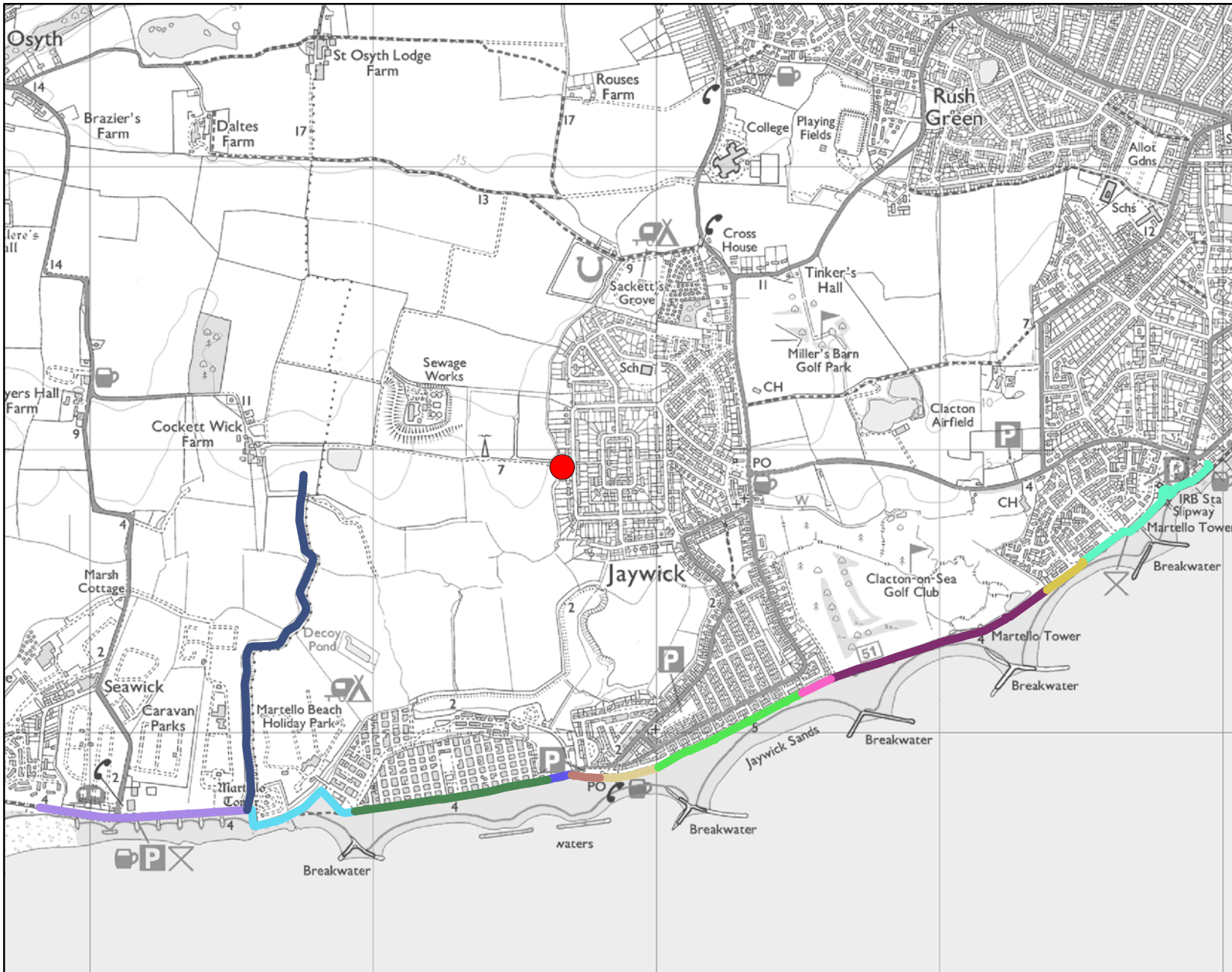
Ipswich Office, Icen House, Cobham Road, Ipswich, Suffolk, IP3 9JD
Brampton Office, Bromholme Lane, Brampton, Huntingdon, PE28 4NE
General Enquiries: 03708 506506

Email: enquiries@environment-agency.gov.uk

Website: <https://www.gov.uk/government/organisations/environment-agency>

Flood Defence Location Map showing Park Square West, Jaywick (TM 14672 13938)

Ref: EAN/2019/135343



Legend

● Site

Defences

ASSET_ID

5517

5518

5619

5620

5621

5622

6370

6413

6780

136636

159187

170714



Reference: EAn/2019/135343
Site Address: Park Square West, Jaywick
Date: 23/07/19

Included:

- Flood Map
- Historic Flood Outlines Map
- Outline & Levels Maps

Important information to note with your Product:

Flood Risk Assessments (FRAs)

If you are obtaining this information for use within a Flood Risk Assessment (FRA) required for a planning application, please include our unaltered Product 4 data within an appendix of your FRA.

Flood Zones

Please see the attached map showing the Flood Zones (outlines) for the area of the site. Our maps show the site is located in fluvial/ tidal Flood Zone 3. For further information with regards to Flood Zones, please see below:

Table 1: Flood Zones

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.(Land shown in dark blue on the Flood Map)

Paragraph: 065 Reference ID: 7-065-20140306

Historic Flood Events

Examinations of our records of historic flooding show that the general area has previously flooded. Please note that these records show flooding to the land and do not necessarily indicate that properties within the historic flood events were flooded internally. It is also possible that the pattern of flooding in this area has changed and that this area would now flood under different circumstances. Please see the attached PDF for flood history information.

Surface Water

Please be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed. We have worked with Lead local Flood Authorities (LLFAs) to develop a map which incorporates the best local and national scale information on surface water flood risk. These maps can be viewed on our website at the following:-

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/>

Reservoir Flooding

You can obtain a map which shows the extent of flooding if a reservoir was to fail and release the water that it holds. The map shows the worst case scenario. These maps can be viewed on our website at the following:-

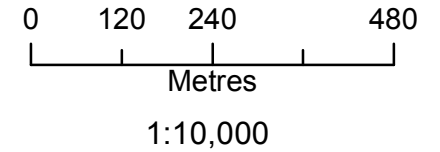
<https://flood-warning-information.service.gov.uk/long-term-flood-risk/>

Flood Map for Planning







At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343



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Legend

-  Site_Location
-  Outline_Reservoir_Flood_Maps
-  Flood Storage Area
-  Areas Benefiting from Defence
-  Flood Zone 3
-  Flood Zone 2



Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
 - from the sea with a 1 in 200 or greater chance of happening each year
 - or from a river with a 1 in 100 or greater chance of happening each year.

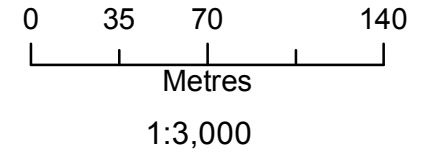
Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Recorded Flood Events Outlines Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

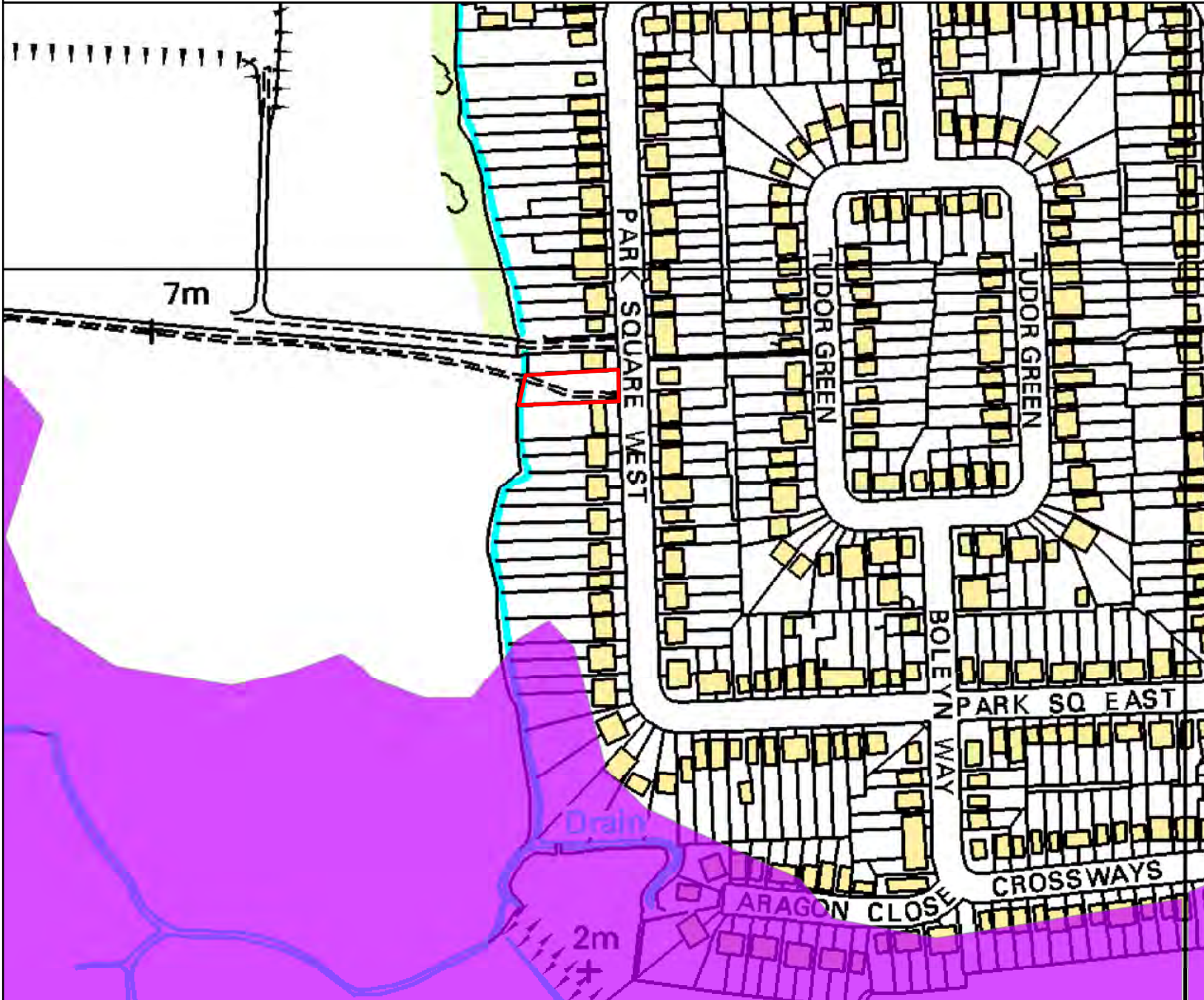


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Legend

-  Site_Location
-  1953 Outline



The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.

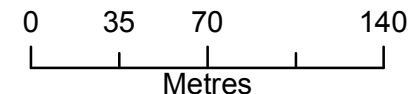
Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding. It is also possible for errors occur in the digitisation of historic records of flooding.

Modelled (Defended) Outlines Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343



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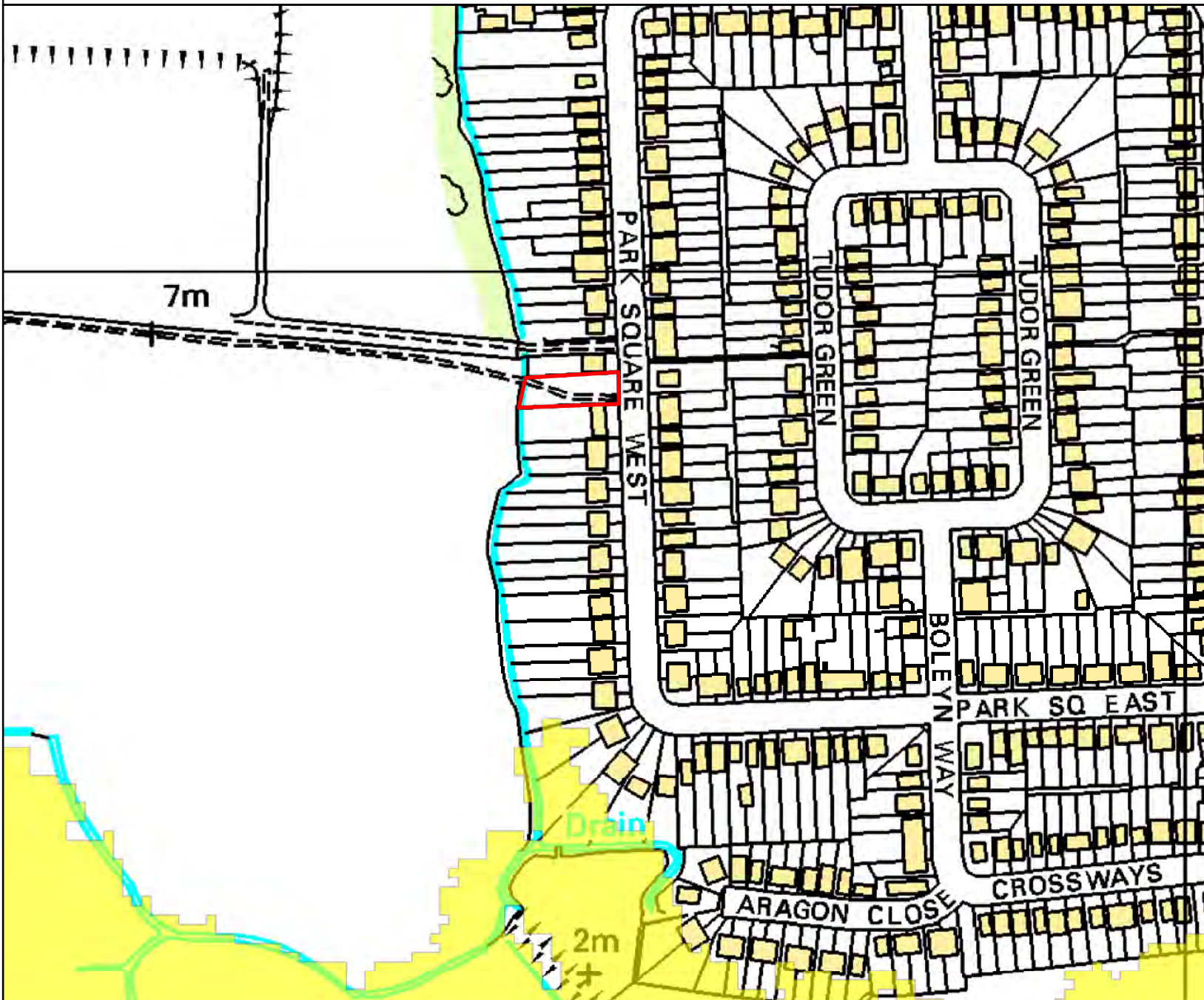


1:3,000

Legend

- Site_Location
- 1 in 20 (5%)
- 1 in 200 (0.5%)
- 1 in 1000 (0.1%)

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences if present.

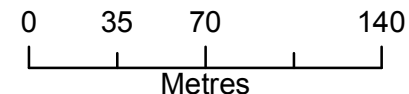


Modelled (Defended) Outlines Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343



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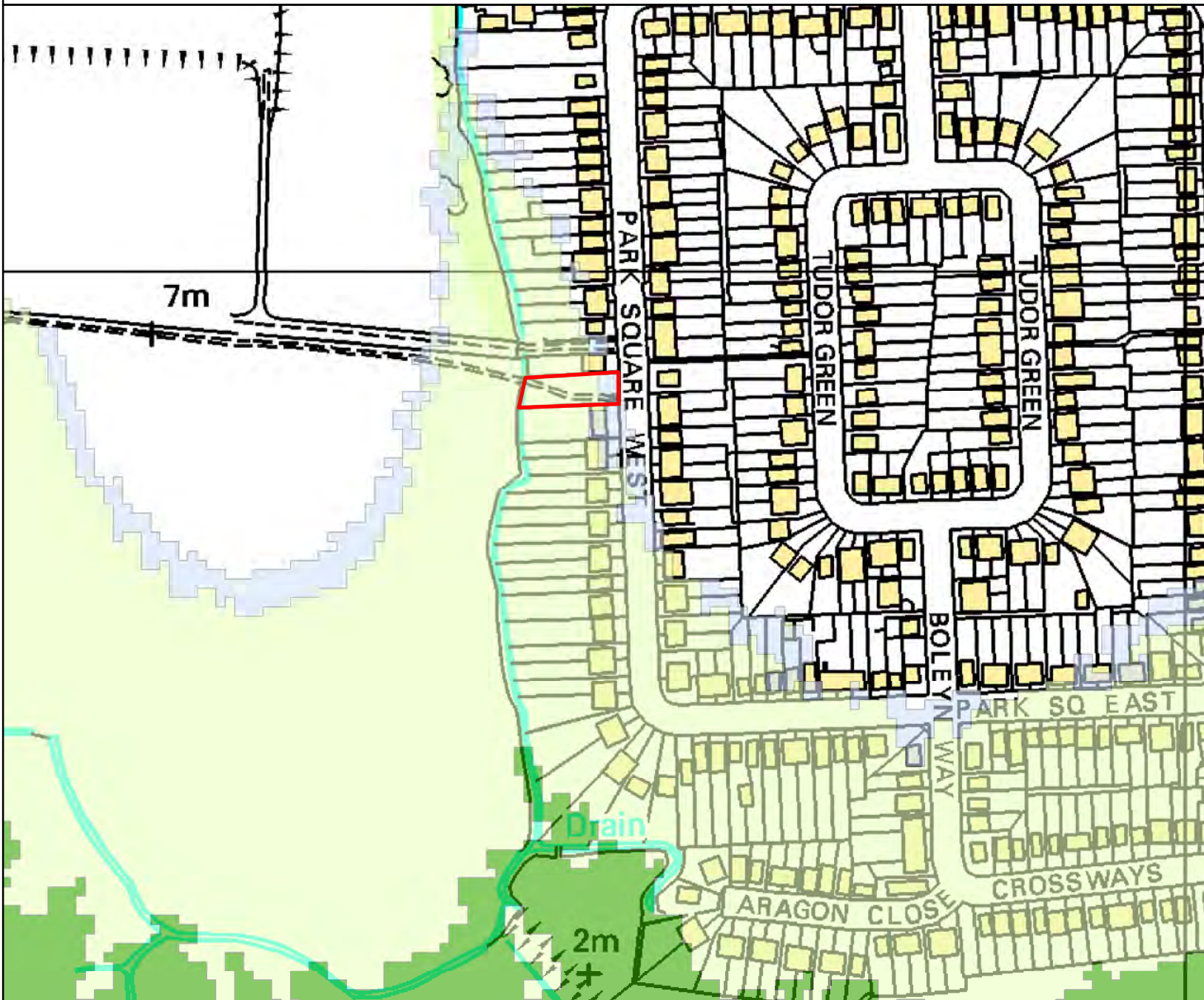


1:3,000

Legend

- Site_Location
- 1 in 20 (+CC)
- 1 in 200 (+CC)
- 1 in 1000 (+CC)

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences if present.

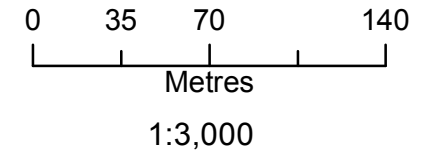


Modelled (Undefended) Outlines Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

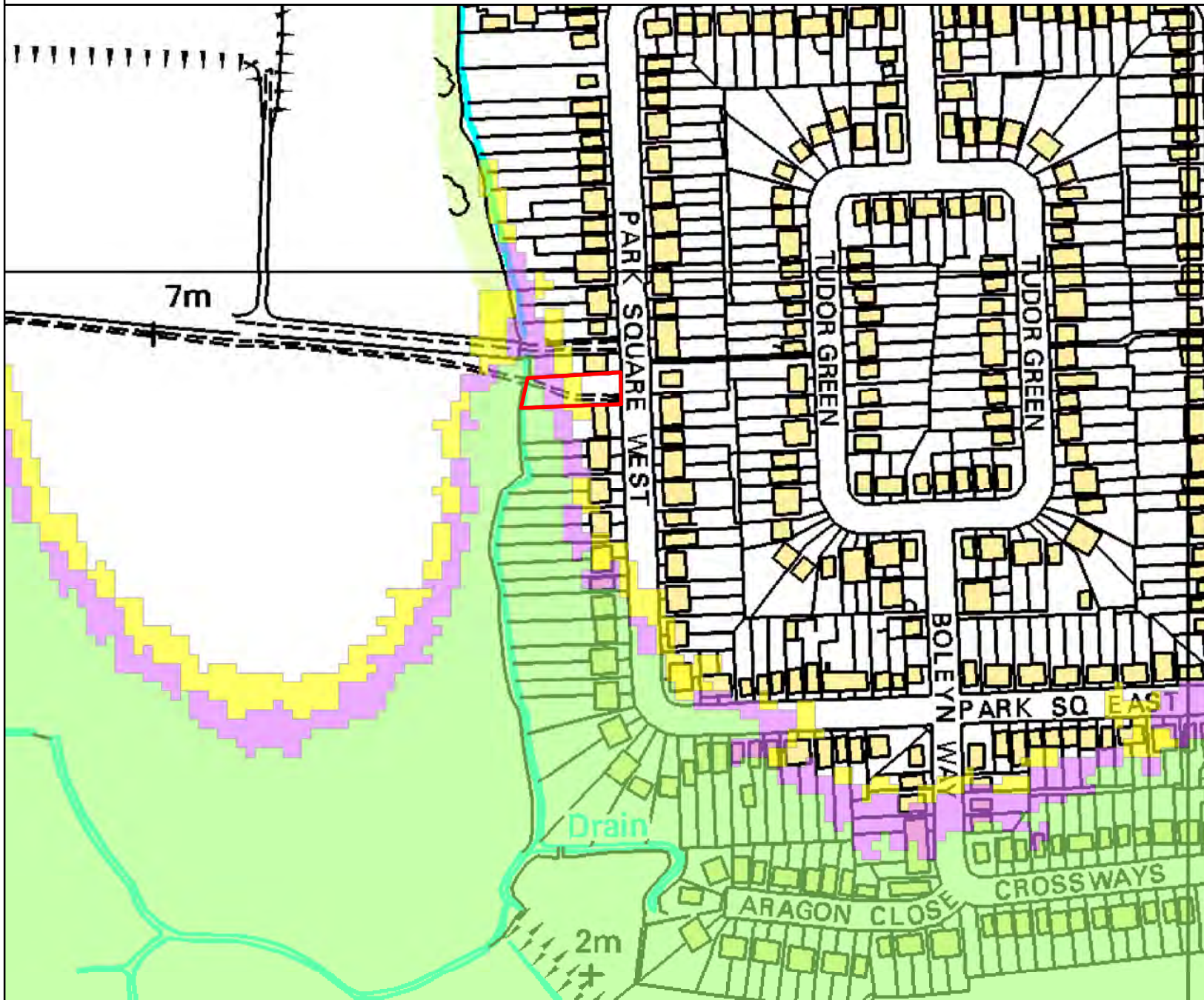


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Legend

- Site_Location
- 1 in 20 (5%)
- 1 in 200 (0.5%)
- 1 in 1000 (0.1%)



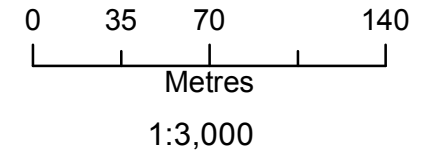
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Modelled (Undefended) Outlines Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343



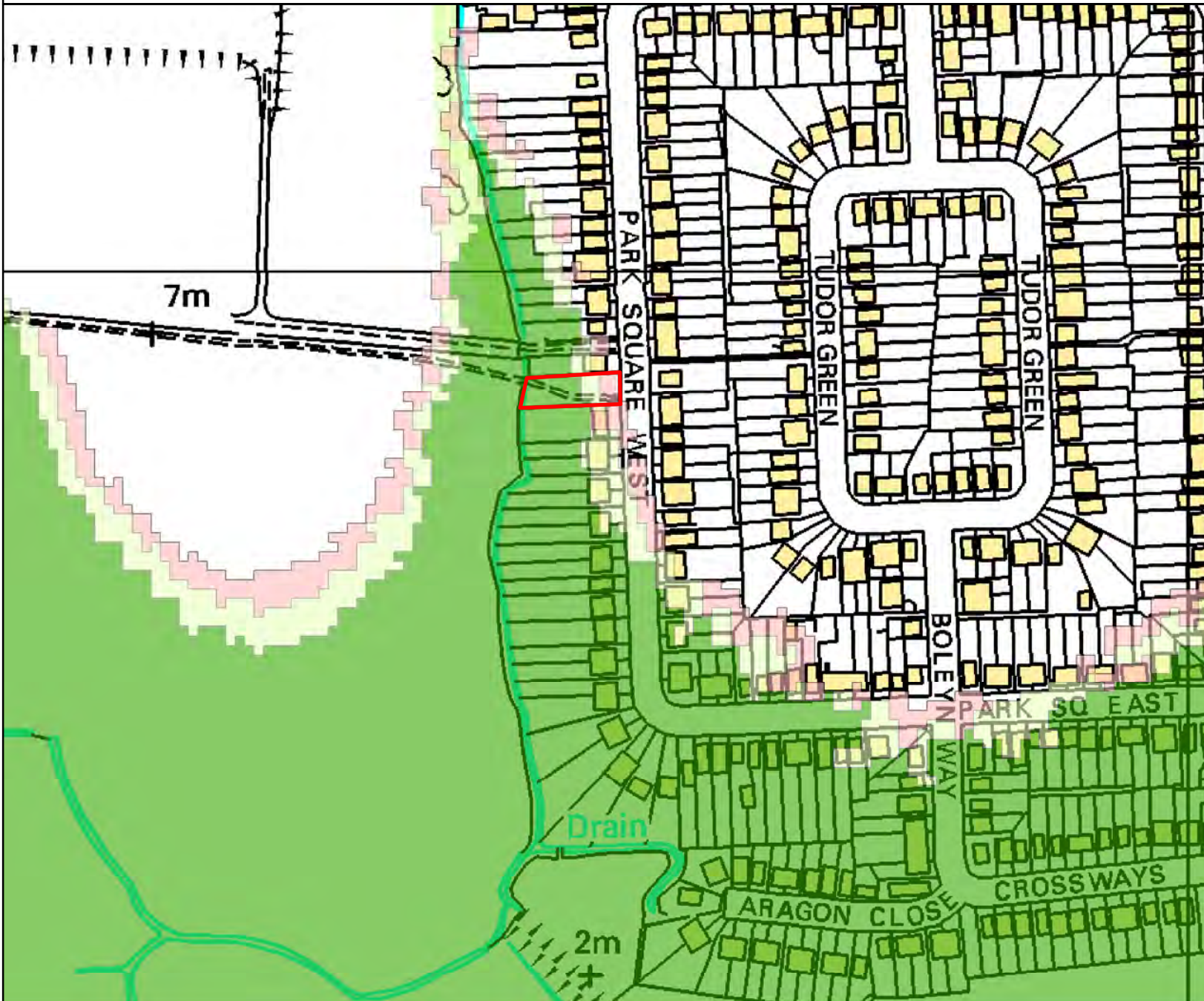
Environment Agency
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Suffolk
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Legend

- Site_Location
- 1 in 20 (+CC)
- 1 in 200 (+CC)
- 1 in 1000 (+CC)

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences if present.

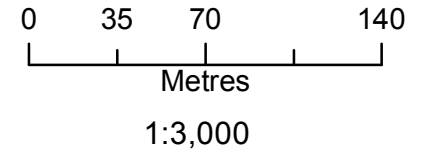


Modelled (Defended) Levels Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

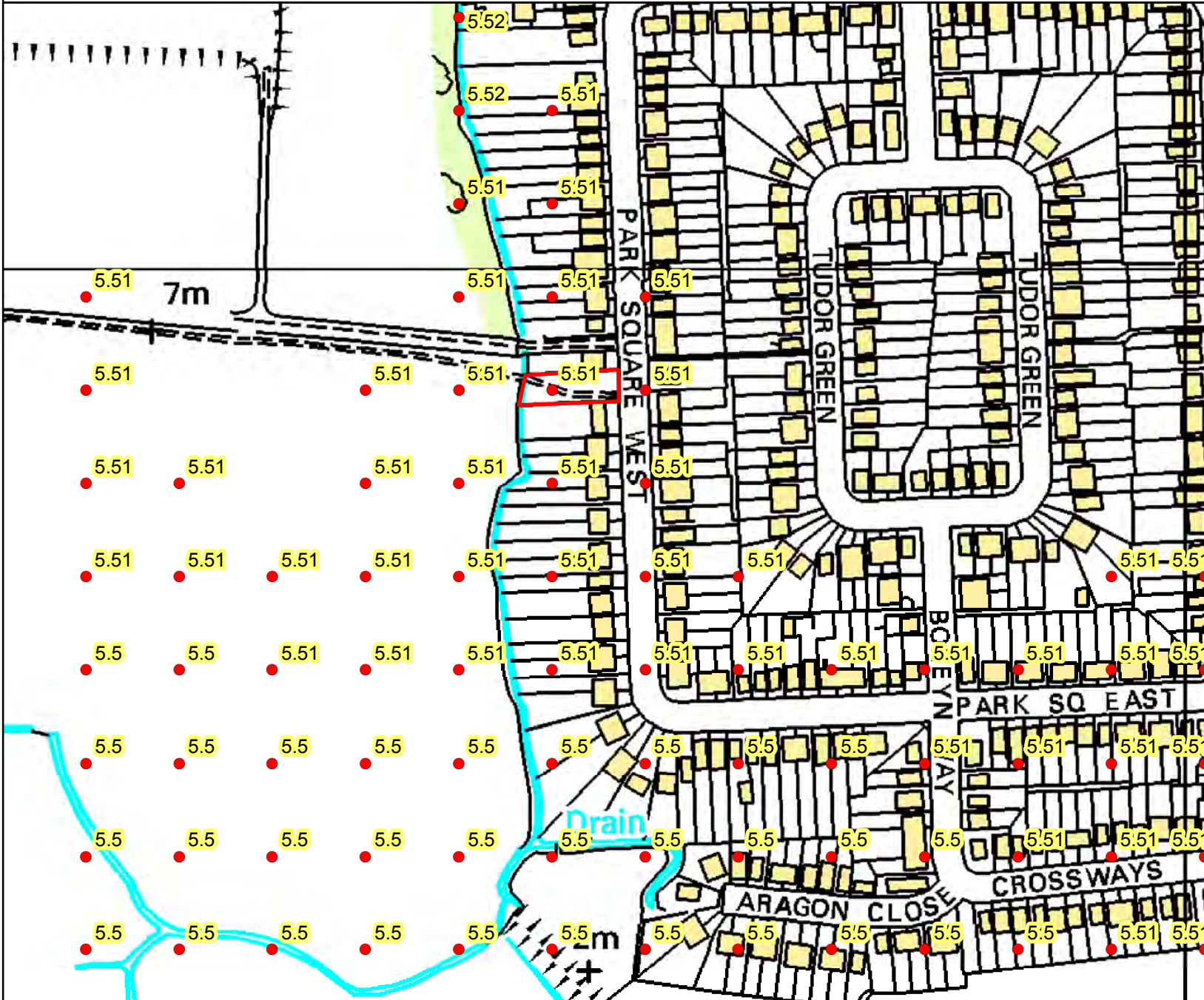


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Suffolk
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Legend

- Site_Location
- 1 in 1000 (+CC)



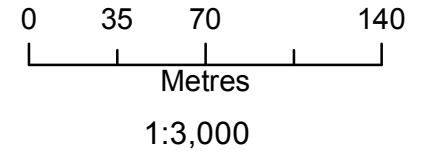
The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey. Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding. It is also possible for errors occur in the digitisation of historic records of flooding.

Modelled (Undefended) Levels Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

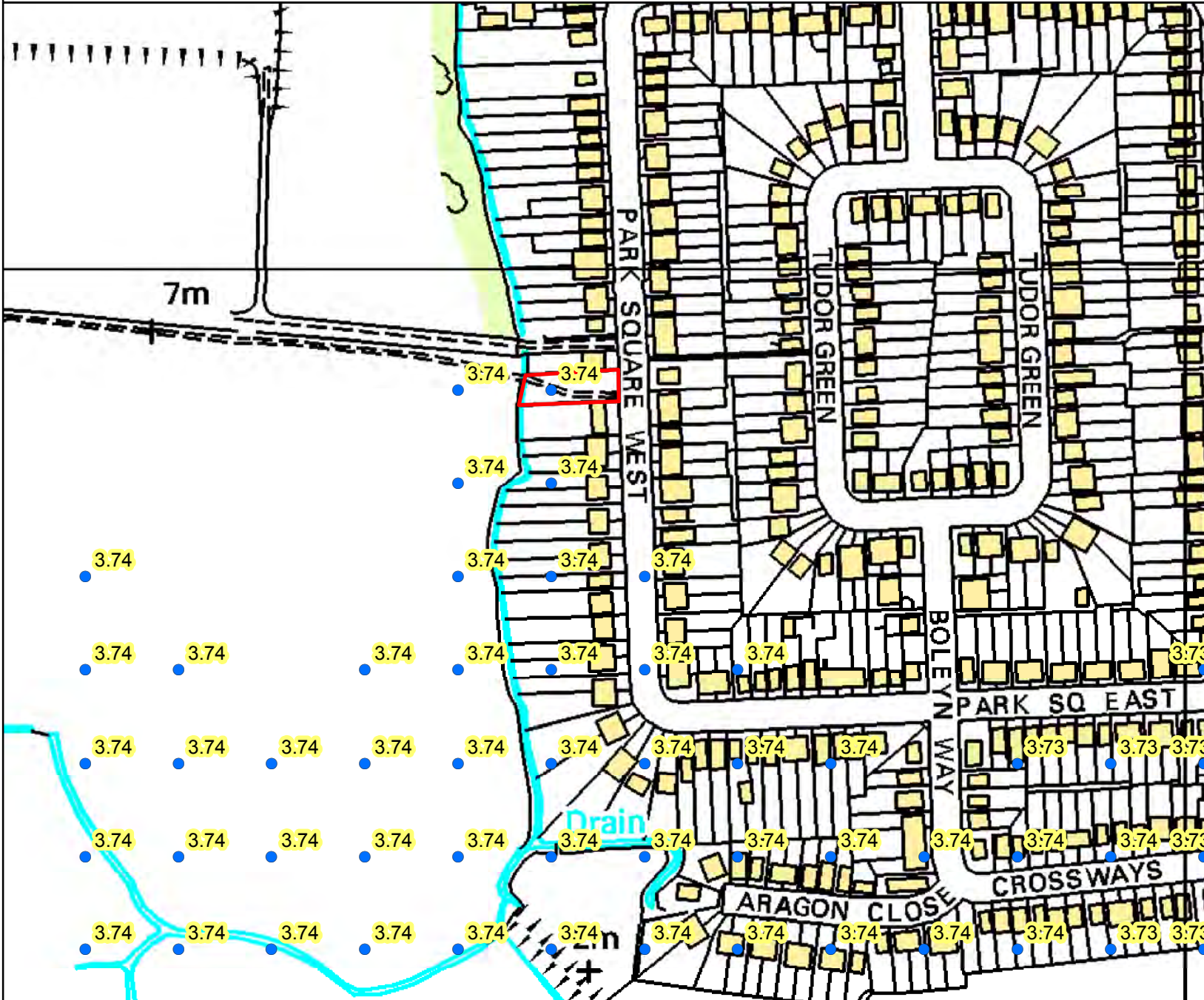


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Legend

- Site_Location
- 1 in 20 (5%)



The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.

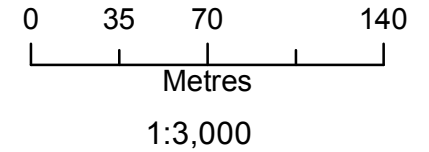
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Modelled (Undefended) Levels Location Map

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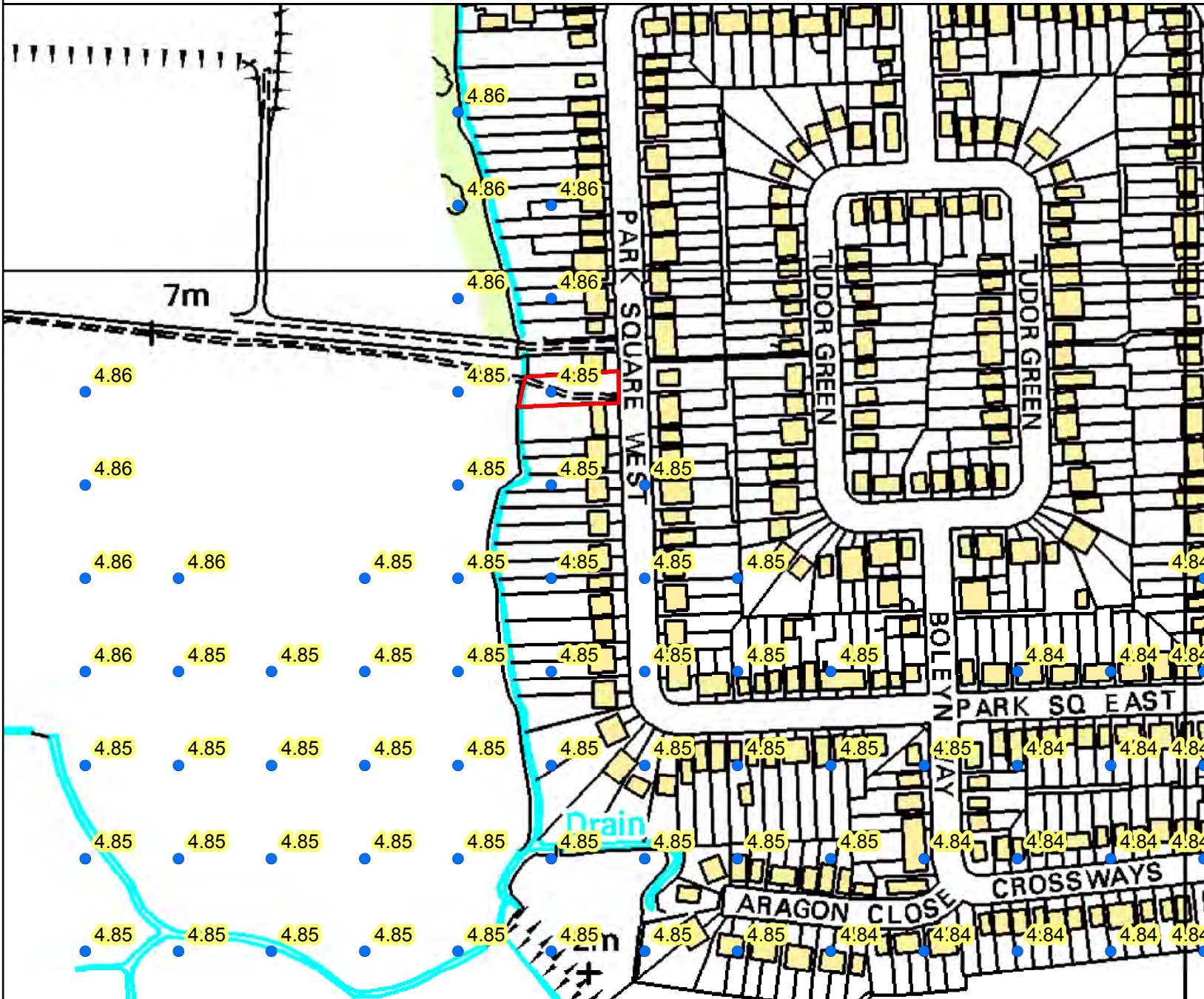


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Suffolk
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Legend

- Site_Location
- 1 in 20 (+CC)



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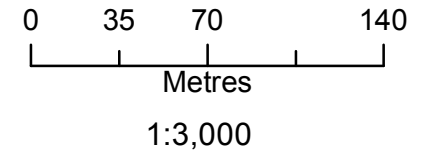
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At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

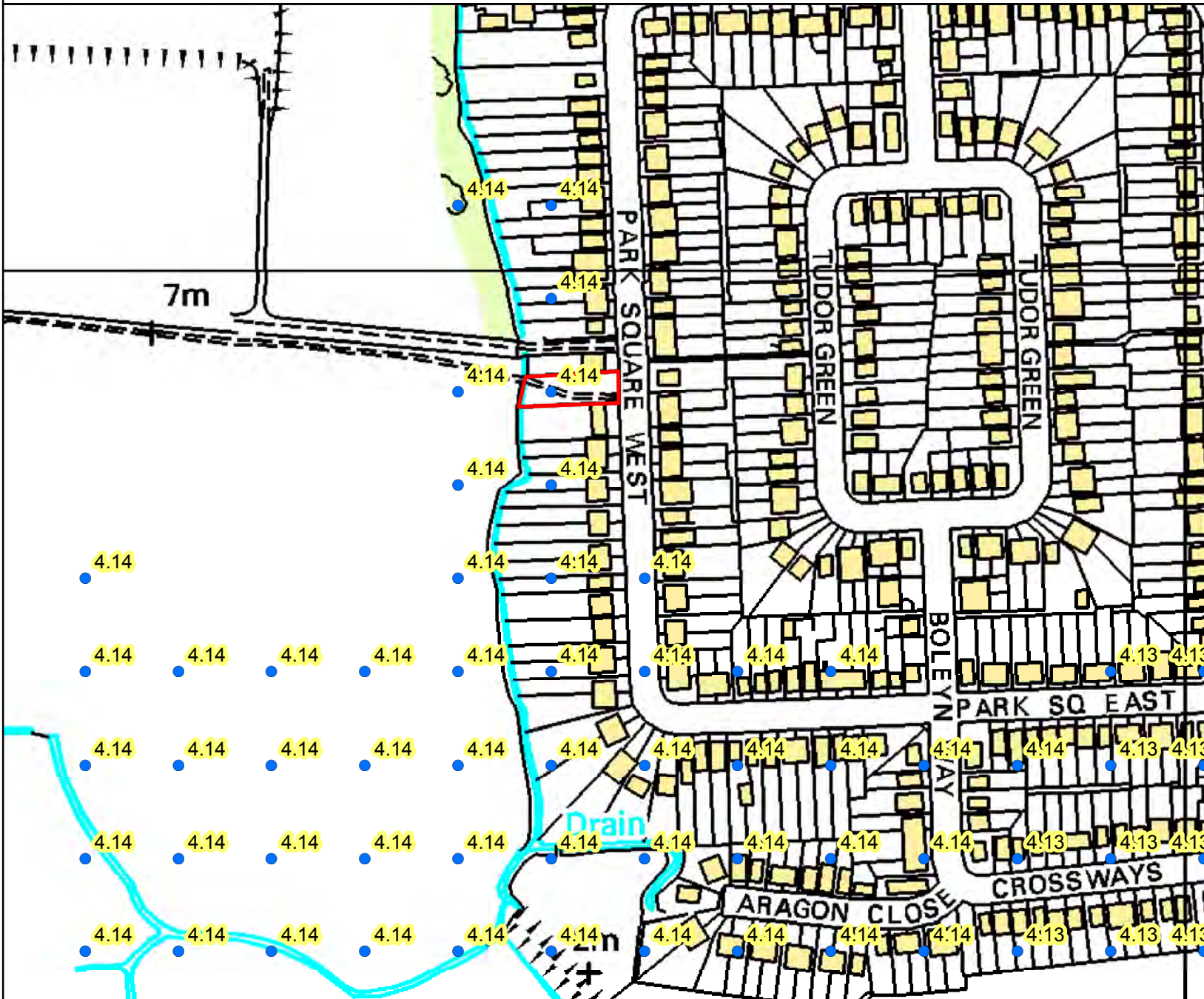


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Legend

-  Site_Location
-  1 in 200 (0.5%)



The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.

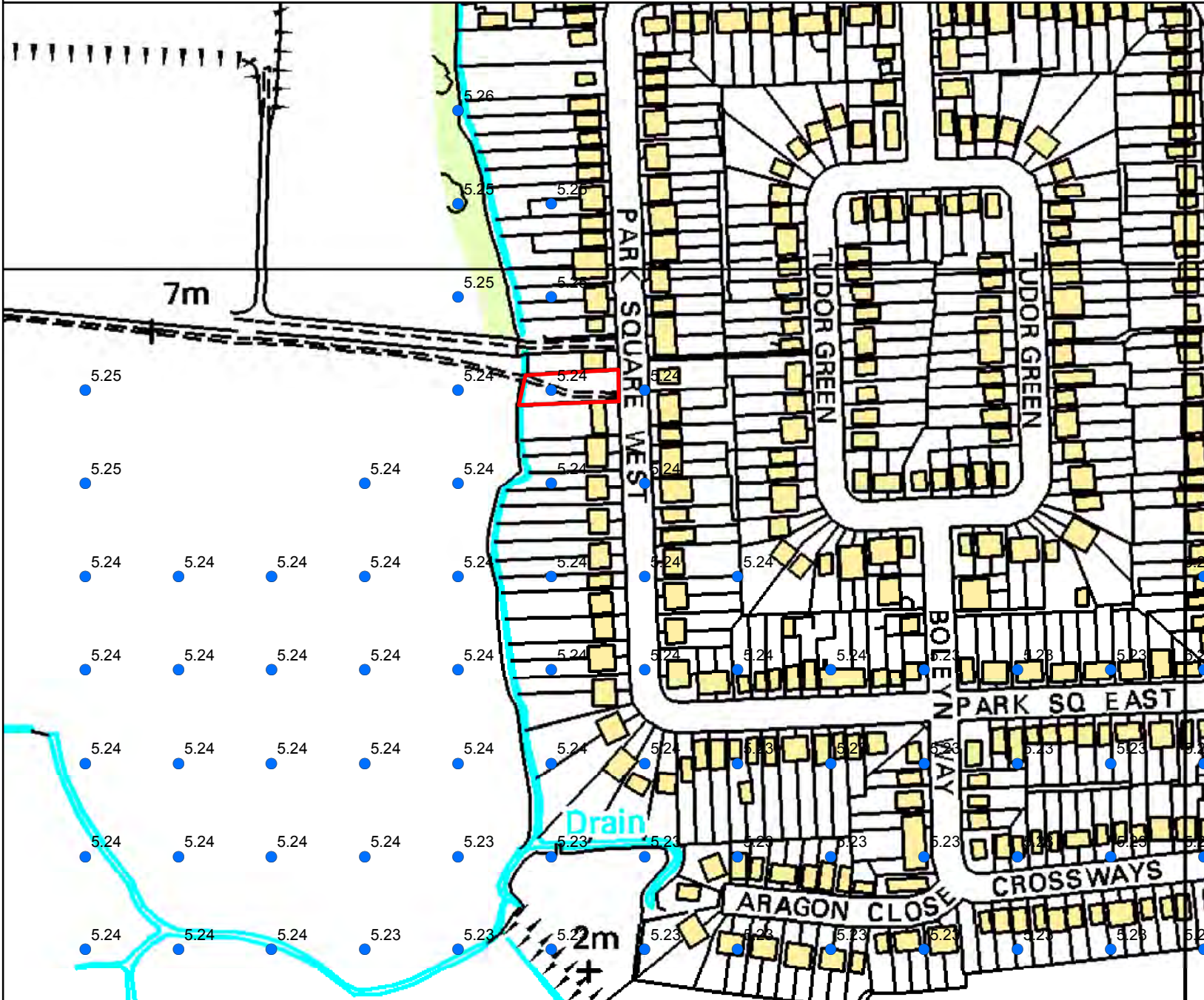
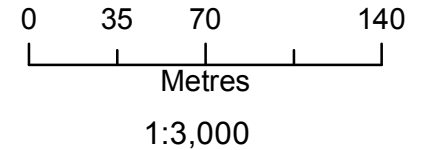
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Modelled (Undefended) Levels Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343



Environment Agency
Iceni House
Cobham Road
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Legend

- Site_Location
- 1 in 200 (+CC)

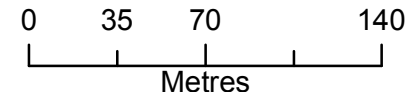
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Modelled (Undefended) Levels Location Map

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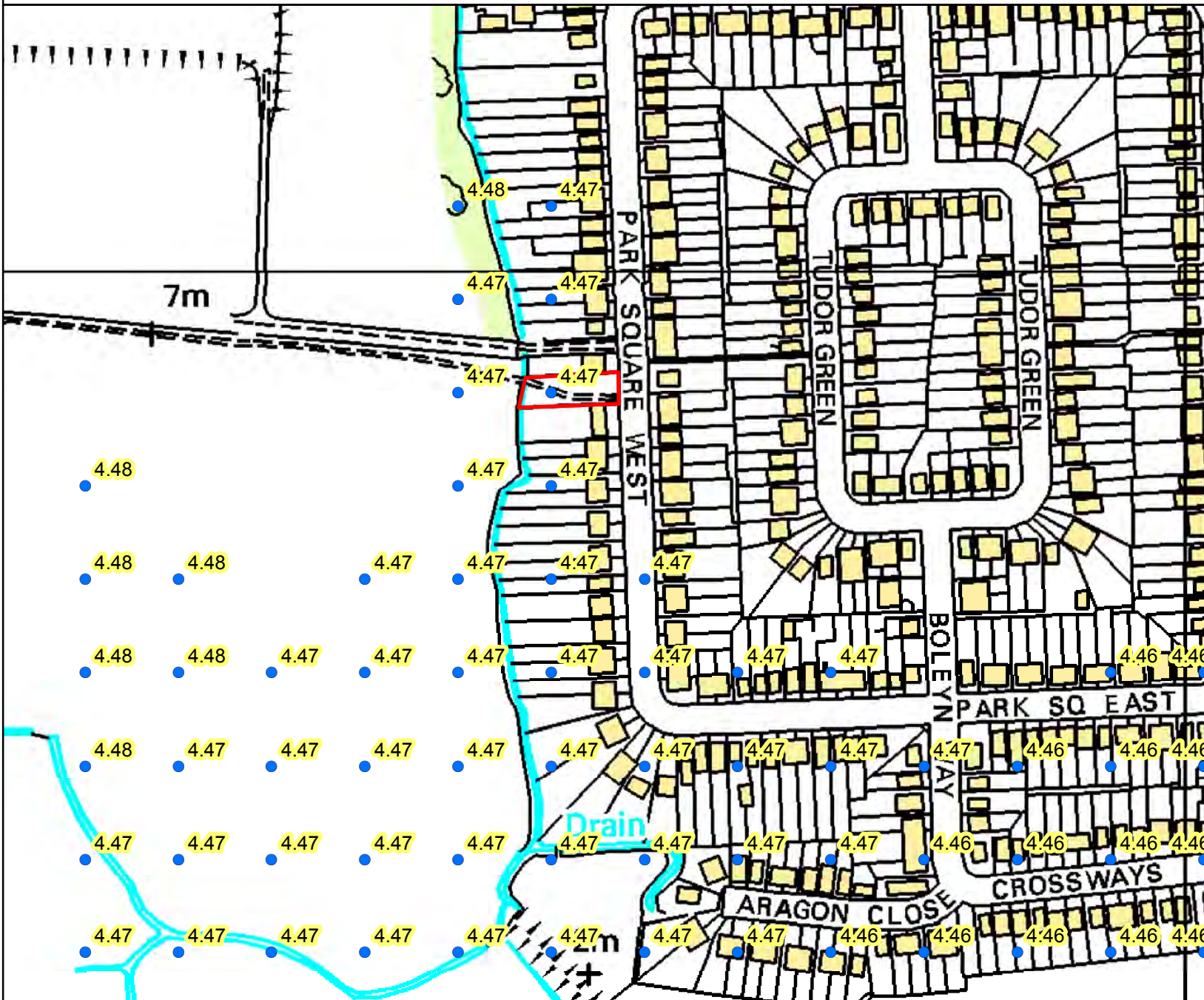
Environment Agency
Iceni House
Cobham Road
Ipswich
Suffolk
IP3 9JD



1:3,000

Legend

- Site_Location
- 1 in 1000 (0.1%)



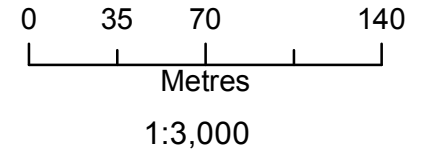
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Modelled (Undefended) Levels Location Map

At: Park Square West, Jaywick- Created: 23/07/19 - Ref: EAn/2019/135343

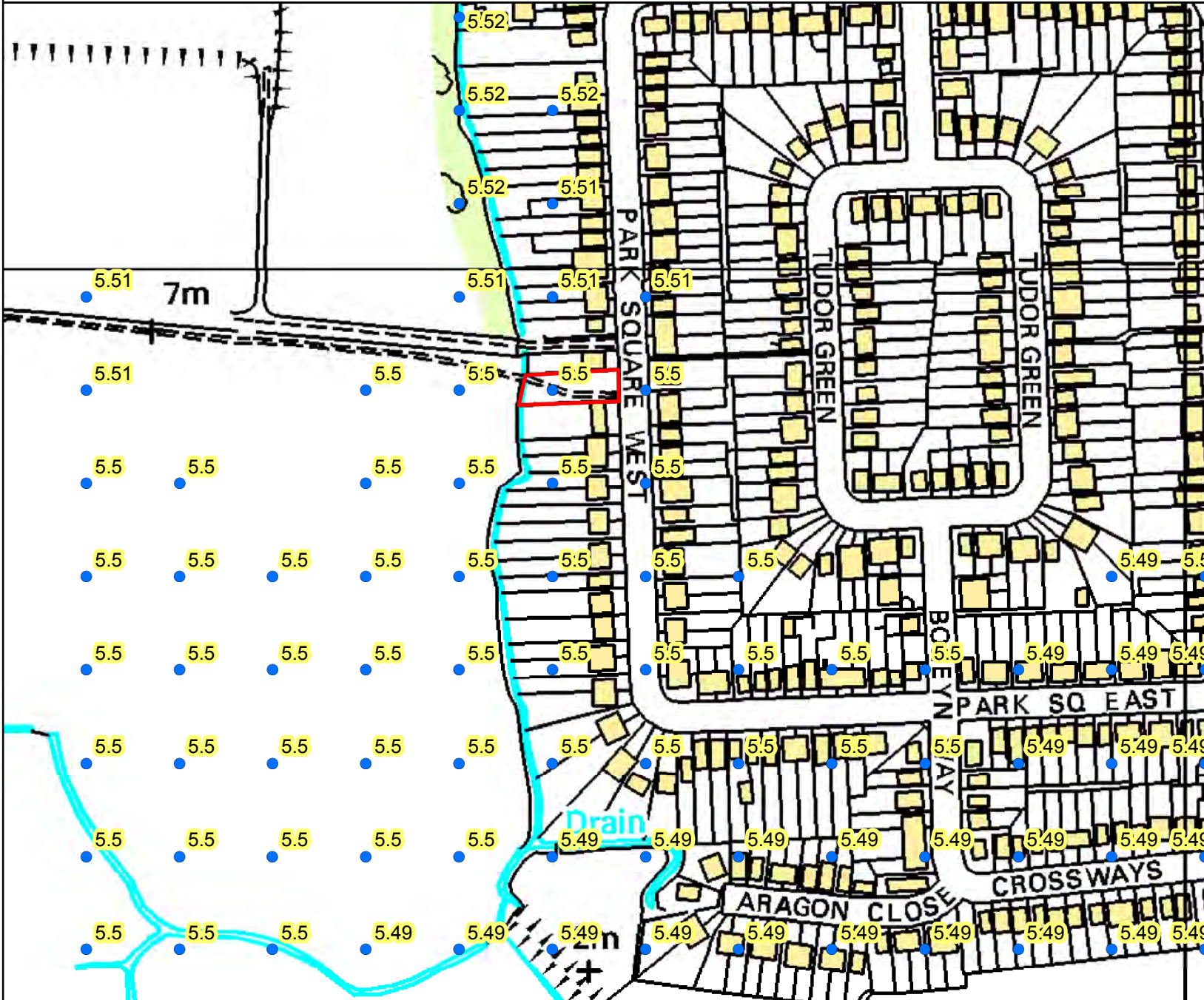


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Suffolk
IP3 9JD



Legend

- Site_Location
- 1 in 1000 (+CC)



The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey. Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding. It is also possible for errors occur in the digitisation of historic records of flooding.

Use of Environment Agency Information for Flood Risk Assessments

Important

The Environment Agency are keen to work with partners to enable development which is resilient to flooding for its lifetime and provides wider benefits to communities. If you have requested this information to help inform a development proposal, then we recommend engaging with us as early as possible by using the pre-application form available from our website:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

We recognise the value of early engagement in development planning decisions. This allows complex issues to be discussed, innovative solutions to be developed that both enables new development and protects existing communities. Such engagement can often avoid delays in the planning process following planning application submission, by reaching agreements up-front. We offer a charged pre-application advice service for applicants who wish to discuss a development proposal.

We can also provide a preliminary opinion for free which will identify environmental constraints related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In preparing your planning application submission, you should refer to the Environment Agency's Flood Risk Standing Advice and the Planning Practice Guidance for information about what flood risk assessment is needed for new development in the different Flood Zones. This information can be accessed via:

<https://www.gov.uk/flood-risk-assessment-standing-advice>
<http://planningguidance.planningportal.gov.uk/>

You should also consult the Strategic Flood Risk Assessment or other relevant materials produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment (FRA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or surface water runoff. Information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires an FRA and this is not submitted or is deficient, the Environment Agency may raise an objection.

Appendix D4

Reservoir Flood Risk

Learn more about flood risk

Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

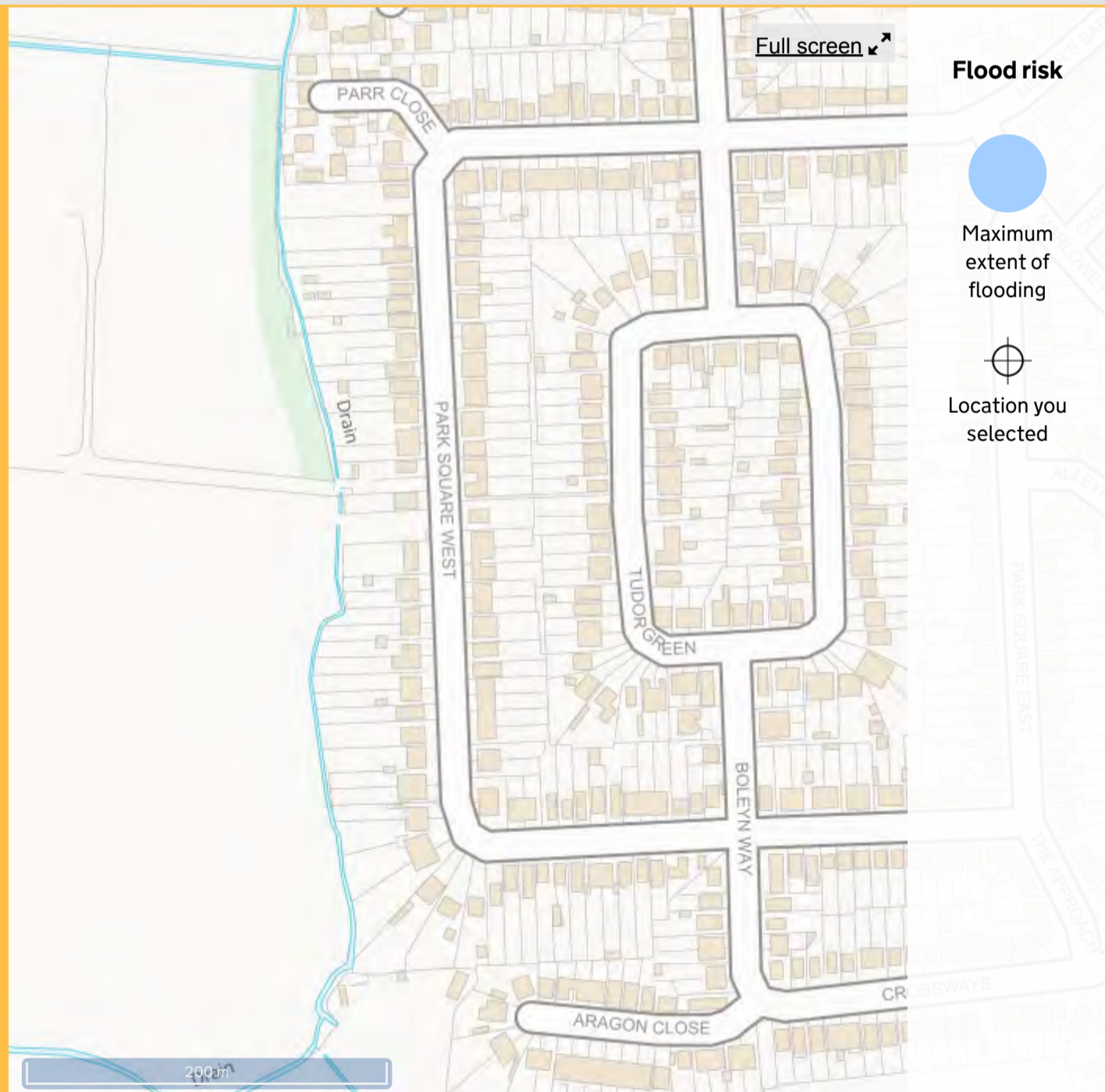
All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

Basic view Detailed view
Location

- Extent of flooding
- Depth and flow estimates at monitoring stations

- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity

- Extent of flooding
- Flood depth
- Flood speed



Flood risk

- Maximum extent of flooding
- Location you selected

► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

▶ [Other ways of getting this information](#)

05 August 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC

Appendix E

Preliminary Calculations and Strategy Drawing

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.75
FSR Region	England and Wales	Connection Type	Level Inverts
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	2.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
PP	0.031	2.00	6.000	1200	0.500
Outfall			3.000	1200	0.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1	PP	Outfall	40.000	0.600	5.500	2.500	3.000	13.3	100	2.31	50.0



Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1	2.127	16.7	4.2	0.400	0.400	0.031	0.0	34	1.767

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1	40.000	13.3	100	Circular	6.000	5.500	0.400	3.000	2.500	0.400

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1	PP	1200	Manhole	Adoptable	Outfall	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PP	6.000	0.500	1200				
				0	1	5.500	100
Outfall	3.000	0.500	1200		1	2.500	100

Simulation Settings

Rainfall Methodology FSR FSR Region England and Wales M5-60 (mm) 20.000 Ratio-R 0.400 Summer CV 0.750 Winter CV 0.840	Analysis Speed Normal Skip Steady State x Drain Down Time (mins) 240 Additional Storage (m ³ /ha) 20.0 Check Discharge Rate(s) x Check Discharge Volume x
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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node PP Online Hydro-Brake® Control

Flap Valve x Replaces Downstream Link ✓ Invert Level (m) 5.500 Design Depth (m) 0.400 Design Flow (l/s) 1.0		Objective (HE) Minimise upstream storage Sump Available ✓ Product Number CTL-SHE-0055-1000-0400-1000 Min Outlet Diameter (m) 0.075 Min Node Diameter (mm) 1200
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Node PP Carpark Storage Structure

Base Inf Coefficient (m/hr) 0.00000 Side Inf Coefficient (m/hr) 0.00000 Safety Factor 2.0 Porosity 0.30		Invert Level (m) 5.500 Time to half empty (mins) 158 Width (m) 11.620 Length (m) 11.620		Slope (1:X) 1000.0 Depth (m) 0.400 Inf Depth (m)
--	--	--	--	--

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	PP	44	5.556	0.056	2.3	2.1619	0.0000	OK
15 minute summer	Outfall	1	2.500	0.000	0.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m ³)
60 minute winter	PP	Hydro-Brake®	Outfall	0.7	3.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	PP	55	5.640	0.140	5.6	5.7466	0.0000	SURCHARGED
15 minute summer	Outfall	1	2.500	0.000	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m ³)
60 minute winter	PP	Hydro-Brake®	Outfall	1.0	7.9

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute winter	PP	114	5.805	0.305	6.2	12.8296	0.0000	FLOOD RISK
15 minute summer	Outfall	1	2.500	0.000	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m ³)
120 minute winter	PP	Hydro-Brake®	Outfall	1.0	17.0

Appendix F

Drainage Maintenance Regime

SUDS Feature	Regular Maintenance Activity	Frequency	Occasional Maintenance Activity	Frequency	Responsibility
Pipes and Manholes	<ul style="list-style-type: none"> Visual inspection 	Monthly or as required	<ul style="list-style-type: none"> Cleaning/jetting when silt accumulation occurs 	Annually or as required	Maintenance company/Householder.
Control Structures	<ul style="list-style-type: none"> Inspect control structures for blockages and remove blockage if found 	Monthly or as required	<ul style="list-style-type: none"> Maintenance in accordance with manufacturers recommendations 	Annually or as required	Maintenance Company
Permeable Paving	<ul style="list-style-type: none"> Visual Inspection 	Monthly or as required	<ul style="list-style-type: none"> Remove debris and sweep 	Annually or as required	Maintenance Company / householder





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