

GREAT YARMOUTH PORT COMPANY

Flood Warning Action Plan

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FLOOD WARNING ACTION PLAN

VERSION 10/2023

Note: In this document CD refers to Chart Datum and ODN refers to Ordnance Datum Newlyn

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THIS DOCUMENT IS RESTRICTED TO INTERNAL CIRCULATION ONLY

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Quick Reference Guide

TIDE	ACTION	REMARKS
<i>Flood Alert (if 3.46m CD expected)</i>	<i>LPS to inform Marine Duty Officer.</i>	<i>Flood Alert might be received before or after tide reaching 2.9m CD.</i>
2.9m CD	<i>LPS to notify Duty Officer, Port Engineer & Duty Operations Manager.</i>	<i>Ballast chambers on Haven Bridge will flood at 3.22m CD (Haven Bridge Gauge). Bungs to be inserted before flooding occurs.</i>
3.5m CD	<i>LPS to advise Duty Officer, Port Engineer & Duty Operations Manager. Advise ships and inform Pilots and SMC. Pilot Boat crew to check Brush Bend flood gates. LPS to advise the Environment Agency if they are open.</i>	<i>View Tidal Graph tendency and review need for sandbagging and raising equipment in the stores at the Pilot Station.</i>
3.96m CD	<i>Flood Warning or anticipated Flood Warning– LPS to advise Duty Officer.</i>	<i>DO to advise SMMO & PD flood warning received or expected.</i>
4.30m CD	<i>Severe Flood Warning or anticipated Severe Flood Warning</i> <i>Advise Pilot Station to remove any equipment from floor in the stores & sandbag the doors.</i>	<i>DO to advise SMMO & PD severe flood warning received or expected.</i>
4.46m CD	<i>Call other members of staff if not already done.</i>	<i>Will depend on specific circumstances.</i>

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1. ACTION ON RECEIPT OF A FLOOD WARNING OR POTENTIAL FLOODING SITUATION

(Unless stated, local actions on tidal heights refer to the River Port tide gauge)

Carry out the following actions in the stated condition

1.1 Flood Alert:

On receipt of a Flood Alert the Local Port Services (LPS) to inform Marine Duty Officer (See Table B & Appendix 8 Emergency contacts list). (See Appendix 1 for sample Flood Alert email and explanation.)

1.2 Tide 2.9m CD:

If tide reaches **2.9m CD** (1.34m ODN) on River Port tide gauge and there is a possibility of Haven Bridge flooding, the LPS to notify the Marine Duty Officer, Port Engineer and Duty Operations Manager (regardless of whether a Flood Alert notification has been received from the Environment Agency{EA}).¹

1.3 Tide 3.5m CD:

If tidal height reaches **3.5m CD** (1.94m ODN) on the gauge LPS to advise Marine Duty Officer, Port Engineer and Duty Operations Manager and thereafter:

1.3.1. Local Port Services:

- To discuss any staff requirements and actions with the Marine Duty Officer to deal with marine issues.
- To inform shipping (by VHF, telephone and via ships agents) of the expected tide height, and advise to take necessary precautions. If vessels cannot be contacted by radio or phone then the Pilot Boats/vehicles should be used to alert vessels (NB: there may be restrictions on vehicle movements)
- To inform small craft (by VHF, telephone and via ships agents) of the expected tide height, and advise to take necessary precautions. If vessels cannot be contacted by radio or phone then the Pilot Boats/vehicles should be used to alert vessels (NB: there may be restrictions on vehicle movements)
- To inform Pilots/SMC/Marine Crew. SMC to arrange for checks on the “Compass” power supply and to ensure that Boat Crews keep a vigilant watch on all craft moored near Pilot Station and Company craft that may be moored elsewhere in the Port. If necessary additional moorings to be put out to secure vessels. Generally there should not be a need to move port craft off the Pilot station. (Wellington boots may be required to get to and from the boats).

¹ EA website - <https://www.gov.uk/check-flood-risk> or Floodline Telephone: 0345 988 1188 then Quickdial 213480

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Note: The quay edge cope fronting the Pilot Station is not part of the towns flood protection. The height of the Pilot Station quay cope is at 4.86m CD (3.3m ODN) but the quay surface is at 4.56m CD (3.0m ODN)(See Table A). As a result water may come through the flaps and/or around the end of the quay thereby flooding the quay and the stores. If this is likely then the equipment in the stores needs to be raised off the floor and the doors to the stores sandbagged.

- To advise the Environment Agency if the Brush Bend flood gates (EA reference TG 532037) are open (Boat Crew to confirm).
- To assist the Port Engineer and/or the Operations Duty Manager in passing information to the EA e.g. flood gate integrity, drain problems, quay construction works, etc. if required.
- To circulate tide gauge readings in a table format every half an hour to reflect comparison of actual vs. estimated readings by email to the Harbour Office, Port Director, Ops, Engineering, Pilots, and Marine Crew.

1.3.2. Marine Duty Officer:

- To ensure vessels are warned of tidal height and possible strong ebb and high tide.
- To advise the Senior Manager Marine Operations and Port Director if a Flood Warning [See Table B & Appendix 5(b)] is received or the tide height reaches or is expected to reach 3.96m CD (2.4m ODN) and again if a Severe Flood Warning [See Table B & Appendix 5(c)] is received or the tide height reaches or is expected to reach 4.30m CD (2.74m ODN).
- To ensure that Marine staff are deployed to prepare and assist as necessary.

1.3.3. Duty Operations Manager/Port Engineer:

- To check quays, cranes and port property, quay works etc. If there is a possibility of Berths 1 to 5A flooding (see Table A) then consider moving all cranes, plant cargo etc. off those berths to higher ground.
- To arrange a check on the integrity of flood gates at Atlas (EA reference TG 527062). Sill height at bottom of Atlas gate is only 3.38m CD (1.82mODN). If there are any problems or issues with the integrity of the flood gates then the EA should be advised immediately. (The EA assume a level of responsibility for these gates but the Company should check their integrity and advise the EA if there is a problem, otherwise flooding could occur across large areas of Atlas and into the warehouses). (See Appendix 2)
- To notify contractors who may be working on Company quays of the situation.

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Note: Sites vulnerable to flooding are advised by the EA e.g. Richards, Lifeboat Berth and owner of Berths 1A and 1B (Berth 1 floods at 3.85m). With the new EA alert procedures there is no longer a need for GYPC to inform vulnerable sites.

1.4 Tide 3.96m CD: Flood Warning

- Duty Officer to advise Senior Manager Marine Operations and Port Director when a Flood Warning is received from the Environmental Agency.

1.5 Tide 4.30m CD: Severe Flood Warning

- Duty Officer to advise Senior Manager Marine Operations and Port Director when a Severe Flood Warning is received from EA.
- Duty Officer to check with Pilot Station if all equipment have been raised off the floor in the stores and doors have been sandbagged. Police may request an attendance at the Joint Operations Centre (JOC) at the Gt Yarmouth Police station.

1.6 Tide 4.46m CD:

- If tide is expected to reach 4.46m CD then the Duty Officer/Duty Operations Manager/Port Engineer will consider the need to call in other members of staff (if this has not already happened).

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2. TIDAL SURGE FORECASTS (NATIONAL OCEANOGRAPHY CENTRE NATURAL ENVIRONMENT RESEARCH COUNCIL WEBSITE)

Tidal surge forecast information is not part of the Environment Agency Tidal Alert system but can be obtained from the following website:

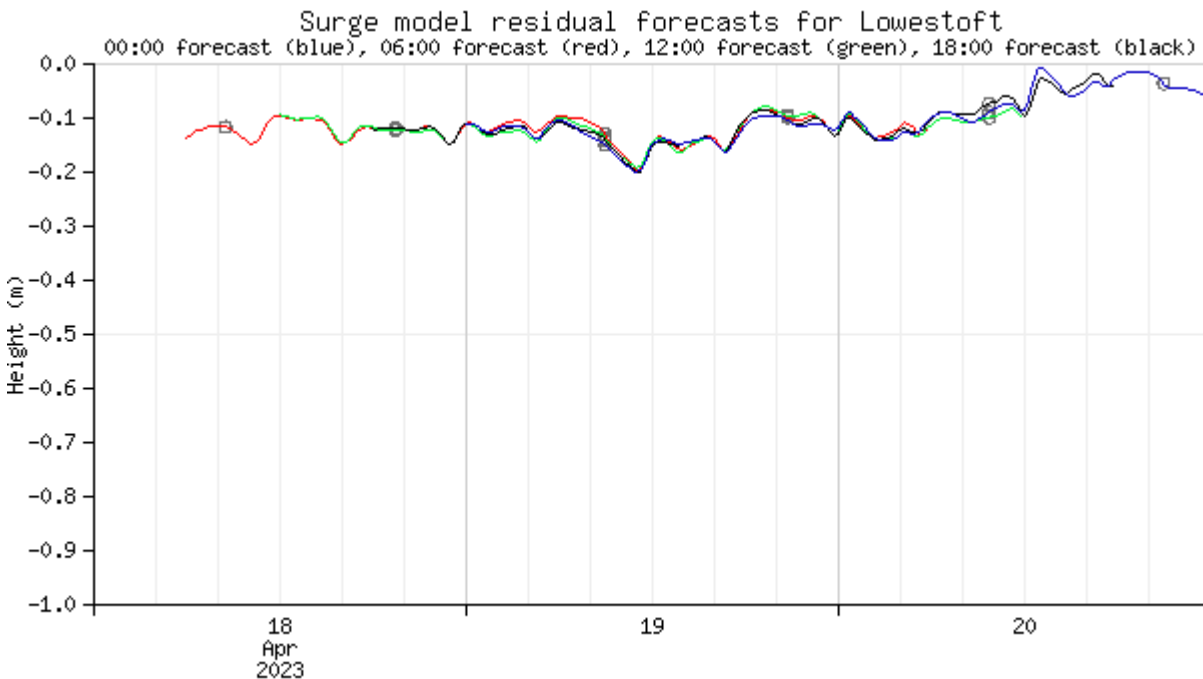
<http://www.ntsif.org/storm-surges/latest-surge-forecast?port=Lowestoft>

Tidal surge information will be useful to the Port Engineer and Operations Manager in planning Haven Bridge flooding preparation. It will also be useful to the Marine Department when planning shipping movements and berthing.

It should be noted that information obtained from this website is only a forecast and as such should be treated with caution and used only as a guide to possible tidal heights. The nearest location to Great Yarmouth for surge level forecasts is Lowestoft, however forecasted surge levels for Lowestoft have historically been very similar to those that have been experienced at Great Yarmouth.

The information should be overlaid against the predicted tidal graph for Great Yarmouth to give an indication of the possible tidal heights that can be expected. Peak surge levels may not necessarily correspond with times of high water; levels displayed on the graph could be positive or negative.

Example of surge forecast graph



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Note 1: *Circles on the graph relate to times of high water for Lowestoft. The numbers along the bottom axis relate to the date (each vertical line on the graph represents 4 hours). The times of high water at Lowestoft are different to Great Yarmouth but the surge graph (using the height scale) can be overlaid on the Great Yarmouth predicted graph to give a good indication.*

Note 2: *The graphs are updated throughout the day; ensure that you use the latest surge prediction.*

3. BRIDGE NOTES

- Operations Duty Manager and Port Engineer must be advised as detailed above because if the tide reaches 3.22m CD on the Haven Bridge Gauge (approximately 3.47m CD on the Gorleston Gauge), the Haven Bridge may flood and the Haven Bridge High Tide Precautions procedures must be instigated. (See reference in Appendix 3).
- Operations Department to check on E.T.A.s/E.T.D.s for vessels above the bridge and/or bridge lifting times and advise the appropriate agent/person. The Broads Authority to be advised during office hours that Bridge is flooded and will be out of action until further notice.

Note: *The Port Engineer will arrange pump out commencement time according to commercial implications. However if the pump out of the chambers is unduly postponed then the mud in the bottom of the chambers may harden and become difficult to remove. If an early start is required the Port Engineer will call out the necessary staff. Pumping and cleaning time is approximately 6½ hours with 3 inch pump and 2 ½ hours with main pump (needs advance priming). (See Appendix 3).*

4. GENERAL NOTES

- Duty LPSO must be aware that in the Norfolk Constabulary action plan there is a procedure whereby they will contact the Port for an accurate report on conditions and a judgement on what may happen. (This should be dealt with by the Marine Duty Officer only).
- In the event of a Severe Flood Warning it is likely that the either the Duty Marine Officer, SMMO or Port Director will be asked to attend the Tactical Co-ordinating Group at the Joint Operations Centre at Howard Street Police Station. This in order to provide technical knowledge, resources and equipment where available, and to assist in controlling river traffic and dealing with any breaches of flood defences in the port area.

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- It is possible that the Port Company will be contacted for advice on the safety of both the Haven, Herring and Breydon Bridges. This should be passed to the Port Engineer for advice.
- The Local Port Services Operator should will record the level of Warning and the date/time it was received on the Marine Services Flood Warning Record Sheet (see Appendix 9). Information on Warning Levels can be found in Appendices 4 and 5. Local Port Services will also complete the Marine Action Plan checklist when actions have been taken (see Appendix 9).
- The Port Engineer/Operations Duty Manager will complete the Port Engineer/Operations Action Plan checklist when actions have been taken (see Appendix 9).
- When warnings are issued, the Environment Agency (EA) will carry out a schedule of checks on floodgates in the area. In the event of floodgate leakage they will sand bag the gates or take other measures to secure the gates. However, the Port Company has an interest and responsibility for the gates at Atlas (See Appendix 2). The Company also hold a key for the gates at Brush Bend. We should therefore assist the EA in the checking of the aforementioned gates.
- Advice as to flood risk will be provided by the Environment Agency (EA). Members of the public requesting advice should be referred to the EA. Causes of flooding could be overtopping, breaching of the flood walls, sea water entering the storm flaps or back up of mains drainage. Flooding of areas could be caused from breaches on Breydon or Burgh Castle, thereby bypassing intact flood defences further downstream. Therefore, advice to third parties should only be given if staff have received instructions to do so or have sufficient knowledge of the situation. If information is provided ensure it is factual and be aware that many of the Authorities involved with flood risk, work to different datum and may not understand the differences.
- At Severe Flooding Warning Level the Police may close off the whole of Great Yarmouth and Gorleston or sections of roads (including the lower parts of Gorleston and Riverside Road, South Quay and Haven Bridge). Staff will need to produce their company ID cards to gain access to the port area.
- During large surges extreme rates of tidal flow may be observed, consequently posing a risk to navigational safety. The Pilot will consult with the Duty Marine Officer when suspension or restriction of the Pilotage service may be necessary. The Duty Marine Officer will notify the Port Director if the decision is made to suspend or restrict the service.

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- If it is likely that the situation will progress to a Severe Flood Warning Alert, then Marine Services should familiarise themselves with the Great Yarmouth Borough Multi Agency Flood Plan (Tactical).
- The Great Yarmouth Borough Council declares that they have no statutory obligation to supply sandbags (see GY Borough Multi Agency Flood Plan).
- Company sandbags stock levels and condition thereof to be checked on an annual basis by Operations and Marine Crew. No sandbags are to be sold and/or given to the public.
- If Local Port Services receive calls requesting sandbag information they should direct the caller to contact GYBC Emergency Planning in office hours only on Tel. No. 01493 846478/01493 856100
- The Port Engineer may be questioned about the possible closure of Haven Bridge to road traffic (and pedestrians) due to high tide levels impacting fast flowing water on the bridge web structures.
- The GYBC OOH numbers are as such and not for dissemination to the public;- Control Room 01493 330369 and OOH mobile 07736404102

5. ACTIONS FOLLOWING A VERY HIGH TIDE

- Monitoring checks to be carried out on port craft, plant and premises to assess condition and note any damage caused.
- There may be debris in the river. Any debris to be removed following dynamic risk assessment to ensure that it is safe to do so.
- See Haven Bridge High Tide Procedures, i.e. arrange pump out and cleaning of bridge.
- Check Skeleton Works for loose or missing timbers. Check low lying quays for debris (Berths 1 to 5A) if they have been overtopped.

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6. FLOOD AREAS

For flood warning purposes, the Environment Agency has divided the coast into divisions. Great Yarmouth Port is in Division A (Winterton to Shingle Street) and specifically in Division DV3A (Winterton to Hopton). You should expect to receive warnings as per the top three rows of Table B, for sub-division 3A. (We are not included in the warnings for sub-division 3B (Hopton to Shingle Street) but, for information purposes only, the warning levels for 3B are 1.7m ODN (3.26CD) for Flood Alert, 2.2m ODN (3.76m CD) for Flood Warning and 2.7m ODN (4.26m CD) for Severe Flood Warning.) The Great Yarmouth area is sub-divided into smaller community areas for warning purposes. These areas are shown in the maps in Appendix 6. The trigger levels for these areas are included in Appendix 7; see also the tidal diagram in Appendix 8. GYPC will continue to receive warnings for all areas. You should receive an “All Clear” notification; however, this can be checked on the Internet at “www.environment-agency.gov.uk”.

7. QUAY AND FLOOD LEVELS

Table A shows the heights of various quays related to OD Newlyn and Chart Datum (CD) at Great Yarmouth. Any notification from the Environment Agency will normally be to ODN; you must add 1.56 metres to this to arrive at the equivalent height above CD. Berths 1 to 5A may flood when the tide is high. The ground at the back of these berths is higher and this maintains the flood protection integrity but does not protect the berth.

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TABLE A

COMPARISON OF DATUMS (GYPC Data)			
Location	OD Newlyn	Chart Datum (CD)	Remarks
Berth 1 Quay	2.29	3.85	No floodwall
Berth 5A Quay	2.59	4.15	No floodwall
Berth 5B Floodwall	3.30	4.86	East Quay
Berth 10 Floodwall	3.20	4.76	Lower Ferry East
Atlas Sill (Bottom edge of Gate)	1.82	3.38	Old Ro-Ro Ramp
Berth 17A Quay Edge	2.32	3.88	Not a floodwall
Berth 21 Floodwall	3.05	4.61	South Quay
Berth 25 Floodwall	3.14	4.70	Southtown
Berth 28 Floodwall	3.3	4.86	Atlantic Marine
Berth 29 Floodwall	2.93	4.13	Alicat
Berth 30 Floodwall	3.14	4.70	
Berth 31 Floodwall	3.20	4.76	Bollard Quay
Pilot Station Quay Cope	3.30	4.86	Not a floodwall
Pilot Station Quay Surface	3.00	4.56	Not flood protected
Berth 54/55 Floodwall	4.00	5.56	Rock Revetment Area
Gorleston Pier West	3.96	5.52	
Gorleston Pier East	4.87	6.43	
Outer Harbour & Caissons	3.94	5.50	To top of quay coping
Low crest Breakwater OH	2.44	4.0	Close to entrance area

TABLE B

FLOOD MESSAGES REPORTING & TIDE LEVELS OF SIGNIFICANCE FOR DIVISION 3A (EA Data)			
ENVIRONMENT AGENCY	ODN	Chart Datum	EA Warning Methods
Flood Alert	1.9	3.46	Auto-phone call, email and text
Flood Warning	2.4	3.96	Auto-phone call, email and text
Severe Flood Warning			Auto-phone call, email and text
Area 3A1 Gorleston to Breydon Bridge	2.94	4.50	
Area 3A2 South Quay to Bure Park	2.85	4.41	
Area 3A3 South Denes and River Mouth	2.77	4.33	
Area 3A4 East Quay to South Quay and Pilot Stn to Ferry Steps	2.77	4.33	
Area 3A5 River Bure. Euro Centre to Scare Gap	2.77	4.33	
Area 3A6 Great Yarmouth Seafront	3.41	4.97	
GYBC & OTHER AGENCIES	ODN	Chart Datum	Remarks
Localised Flooding	2.5	4.06	
Severe Flooding	2.8	4.36	
Flood Watch Level - Lowestoft	1.7		Reference Only

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APPENDIX 1: Flood Alert Example Email

(Explanations in red)

From: floodline@environment-agency.gov.uk [mailto:floodline@environment-agency.gov.uk]
Sent: 27 November 2022 11:34
To: Harbour Office
Subject: A Flood Alert has been issued for the Norfolk Coast at Great Yarmouth.

A Flood Alert has been issued by the Environment Agency for the Norfolk Coast at Great Yarmouth.

Flooding is possible. (This line will detail the area)

The forecast high water is due at 10:15 pm on 27 Nov 2022.

Reference Port: Great Yarmouth

The predicted astronomical tide level is 1.16 m AODN. *1 (see below)

The forecast surge height is 1.14 m. (This is the additional height expected above the predicted height)

The forecast tide level is 2.30 m AODN. *2 (see below)

The forecast wind direction is West North West.

The forecast wind strength is force 5.

Low lying land and roads will be affected first.

This warning is in force until 12:15 am.

- Check your flood response plans to see how your organisation needs to respond.
- Advise the public to call Floodline on 0845 988 1188 using quick dial 03432 for up-to-date flooding information.
- The Environment Agency website contains details of river level and flooding information and can be accessed at www.environment-agency.gov.uk.
- Please report any flooding in your area to your local Environment Agency office.

Contact

Flood Warning Duty Officer, Eastern Area Incident Room Icen House Cobham Road Ipswich
IP3 9JD
Tel: 01473 270066
Duty Officer: 0300 200 3196
Out of Hours; 0300 200 3196

Professional Partner/Flood Alert/054WACDV3A

Please do not reply to this email. If you want more information about flooding or to stop receiving these emails, please phone Floodline on 0845 988 1188 or log onto Floodline Warnings Direct at www.environment-agency.gov.uk/floodline.

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*1 - This is the NORMAL TIDE LEVEL as predicted by the EA above OD Newlyn. Note: This may be slightly different to the GYPC predicted height (A check can be made by adding 1.56 metres to this height to then compare with the GYPC tide tables).

*2 – This is the EA predicted SURGE TIDE HEIGHT above ODN. Note: This may be different to the GYPC predicted surge tide height. (To carry out a comparison add 1.56 metres to the EA predicted surge height and then add the forecast surge height to the GYPC predicted tide height from either the Tide Tables or the tidal graph – compare the two figures).

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APPENDIX 2: Flood gates on GYPC Property

The flood gate at Atlas is now a semi-permanent gate that is slotted into slides and can only be moved by forklift or crane. It originally closed off the vehicular access that once formed part of the Atlas Ro-Ro Terminal. In 2004 the Environment Agency lifted the gate, cleaned it up and secured it in place with mastic. The Environment Agency number for this gate is TG527062.

Atlas flood gate



Brush Bend flood gate



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APPENDIX 3: Haven Bridge

4.1. Haven Bridge Ballast Chambers and Engine Rooms

- The ballast chambers on Haven Bridge will flood at 3.22m CD on the Haven Bridge tide gauge. As a rough guide the Gorleston tide gauge will be at about 3.47m CD but be aware that due to surges in the river, this comparison can only be used as a rough guide.
- The Port Engineer/Operations Department are to secure the 'bungs' at the bottom of the Bridge Leaf Engine Rooms before flooding occurs to prevent water entering the engine compartments.
- The watertight doors into the Pump Rooms must also be checked and firmly secured in order to prevent any water entering this space and then flooding the cross-river tunnel. It is essential that the watertight doors are closed and bungs inserted in advance of the River Port gauge reaching 3.47m CD (3.22m CD on Haven Bridge gauge).

4.2. Haven Bridge Pump Out

- There are small sump pumps in the bridge ballast chambers operated by float switches.
- Haven Bridge main pump will only work if it is primed before flooding occurs.
- If the bridge has flooded and tides returned to normal, the bridge will need to be pumped out as soon as possible.

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APPENDIX 4: Flood Alert and Flood Warning Messages

4.1 - Flood symbols and messages

Flood Alert



A flood alert means that flooding is possible and that you need to be prepared.

Flood Warning



A flood warning means that flooding is expected and that you should take action when a flood warning is issued and not wait for a severe flood warning.

Severe Flood Warning



A severe flood warning means that there is severe flooding and danger to life. These are issued when flooding is posing significant risk to life or disruption to communities.

4.2 - Format of Flood Warning Messages

The Environment Agency will issue warnings to Great Yarmouth Port Company by automated phone call, email and text. [See footnote]. The phone calls will be in the following format:

(a) Flood Alert



Introduction: This is a recorded message from the Environment Agency. Flooding is possible in your area. Please listen carefully to the following information.

Main Message: A Flood Watch has been issued for the Coast at Great Yarmouth.

General Flooding is possible in your area. You are advised to:

Action: Be aware, be prepared and keep a watch on water levels. Listen to weather and travel bulletins and pass this message on to your neighbours.
Call Floodline on **0345 988 1188** for up-to-date information.
The quick dial code for this area is: **213480**

Close: If you have a touch tone telephone, please press 1 now to acknowledge this Environment Agency message. Thank you.

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(b) Flood Warning



Introduction: This is a recorded message from the Environment Agency. Flooding is expected in your area. Please listen carefully to the following information.

Main Message: A Flood Warning has been issued for the Coast at Great Yarmouth. The sea is expected to overflow sea defences and beaches.

Flooding of your home or business and some roads from the next high tide is expected. You are advised to take the following action now:

Action: Move yourself, family, pets and valuables to safety. Listen to weather and travel bulletins and pass this message on to your neighbours. Call Floodline on **0345 988 1188** for up-to-date information. The quick dial code for this area is: **213480**

Close: If you have a touch tone telephone, please press 1 now to acknowledge this Environment Agency message. Thank you.

(c) Severe Flood Warning



Introduction: This is a recorded message from the Environment Agency. Severe Flooding is expected in your area. Please listen carefully to the following information.

Main Message: A Severe Flood Warning has been issued for the Coast at Great Yarmouth. The sea is expected to overflow sea defences and banks

Severe Flooding of many homes, businesses, roads and land from the next high tide is expected. There is a serious danger to life and property. Act now to protect yourself, your family and your home or business.

Action: Co-operate with the emergency services - you may be evacuated to safety. Listen to weather and travel bulletins and pass this message on to your neighbours. Call Floodline on **0345 988 1188** for up-to-date information. The quick dial code for this area is: **213480**

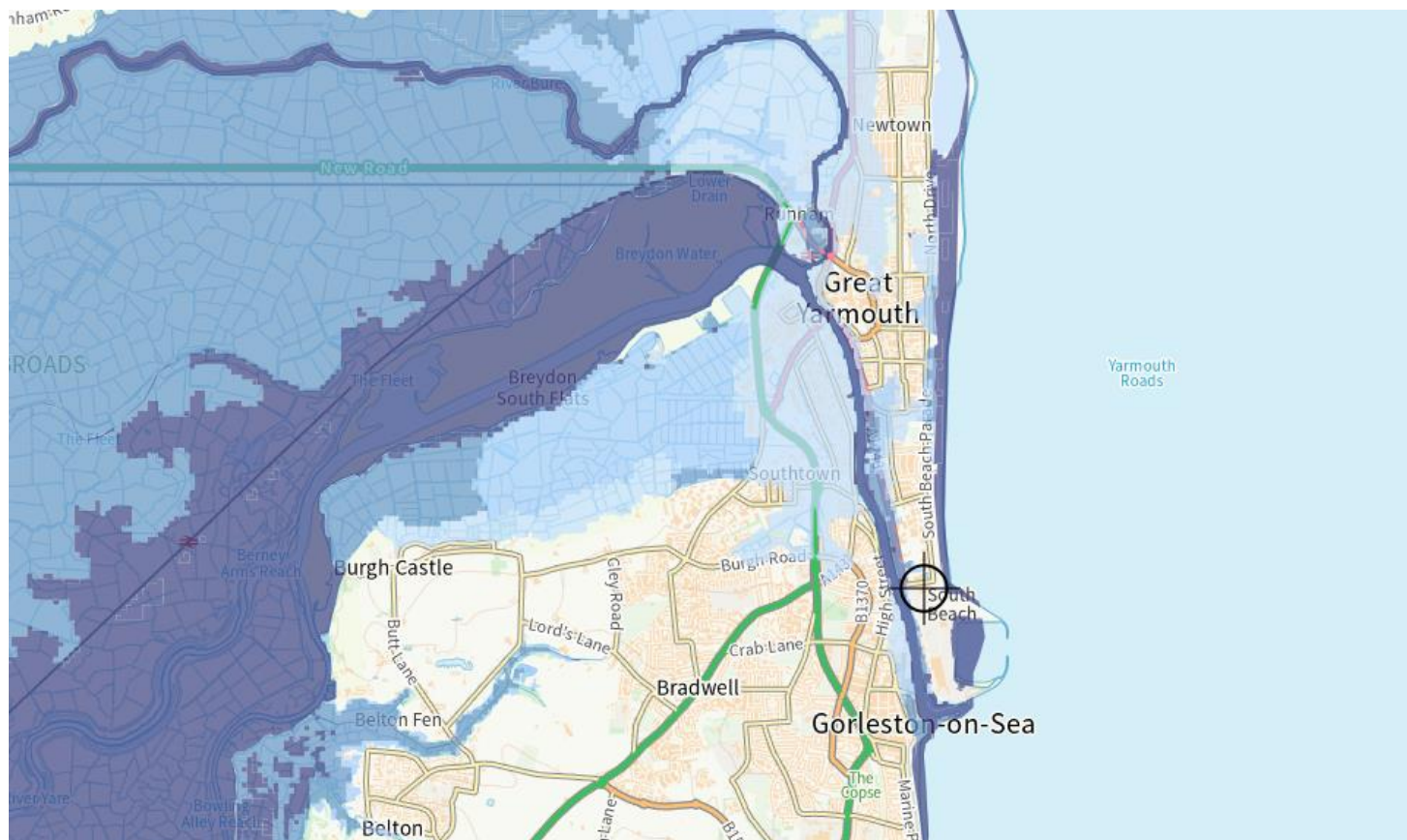
Close: If you have a touch tone telephone, please press 1 now to acknowledge this Environment Agency message. Thank you.

Note: Under 'Action' the quick dial code mentioned for this area is 213480, this number is entered when dialling the Floodline number **0345 988 1188 and after selecting the option for 'pre recorded flood warnings in force'. (213480 is the Great Yarmouth area)**

APPENDIX 5: Flood Areas

APPENDIX 5.1

054FWCDV3A1 The River Yare at Great Yarmouth from Gorleston to Breydon Bridge including Southtown and Cobholm Island.



Extent of flooding from rivers or the sea.



High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

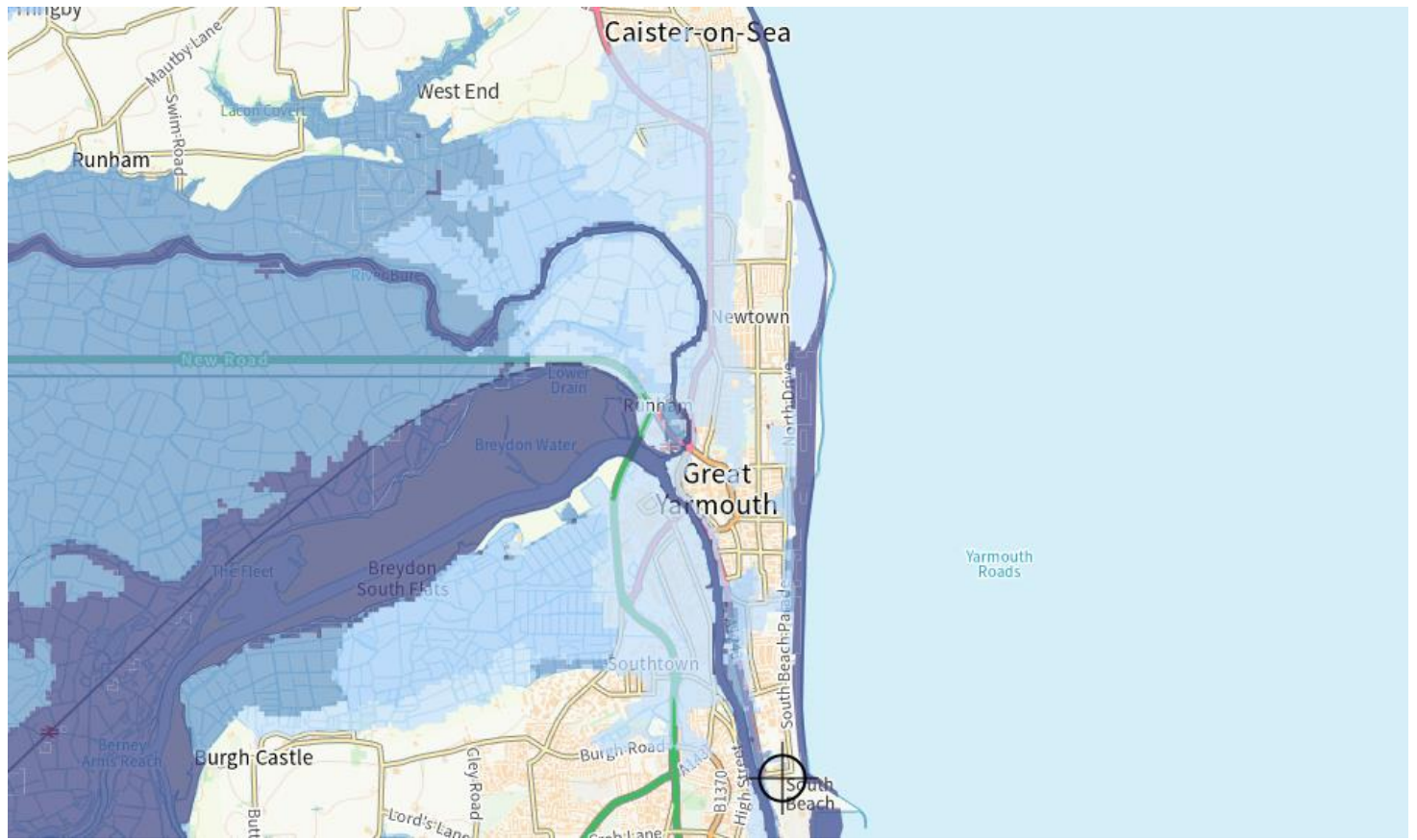
Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

APPENDIX 5.2

054FWCDV3A2 The River Yare and Bure at Great Yarmouth from South Quay to Bure Park incl. Runham, Newton and North Denes.



Extent of flooding from rivers or the sea.

- High
- Medium
- Low
- Very Low

High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

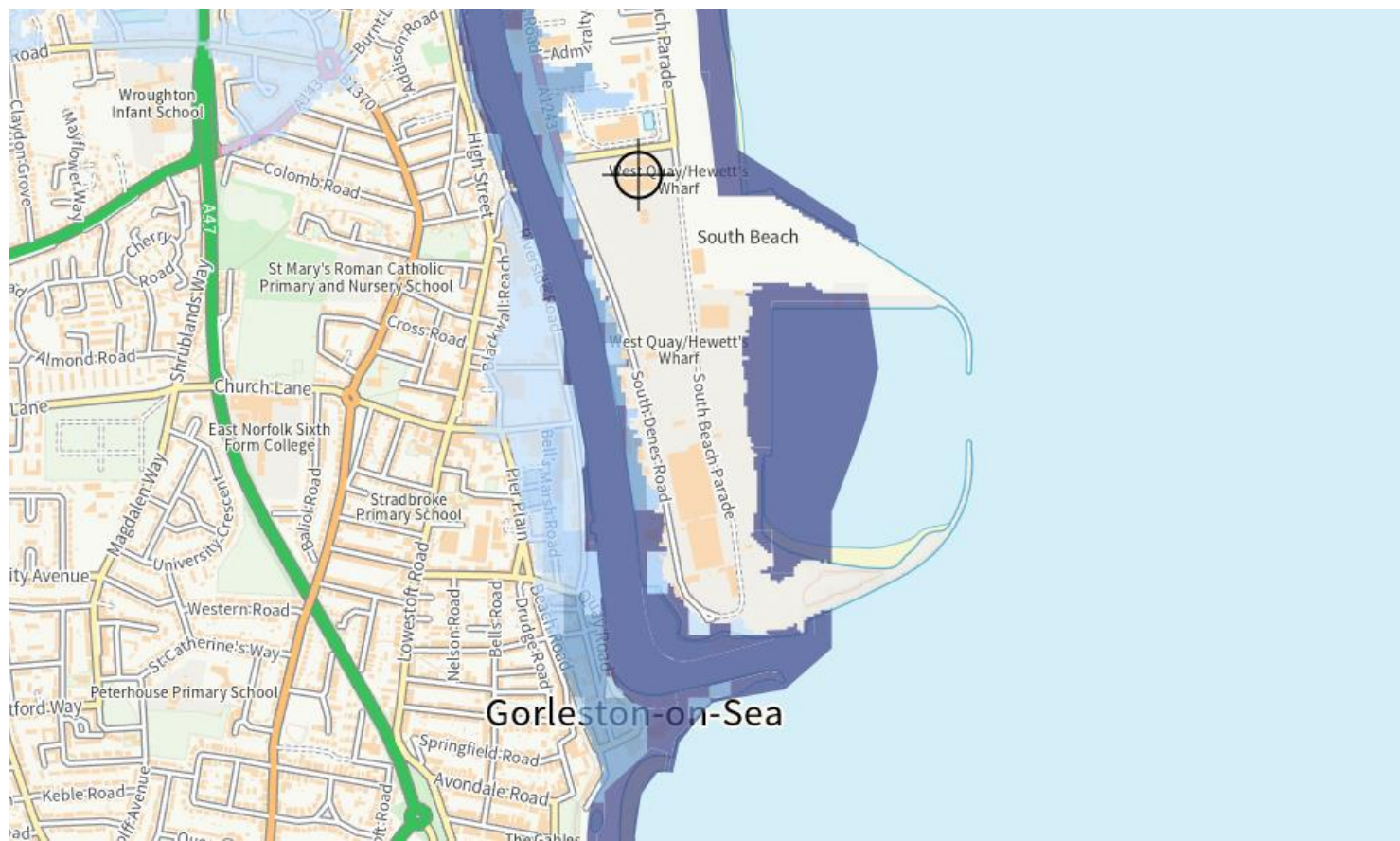
Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Flood Warning Action Plan

APPENDIX 5.3

054FWCDV3A3 The River Yare at Great Yarmouth and South Denes from Wimpey Quay to the River mouth.



Extent of flooding from rivers or the sea.

- High
- Medium
- Low
- Very Low

High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

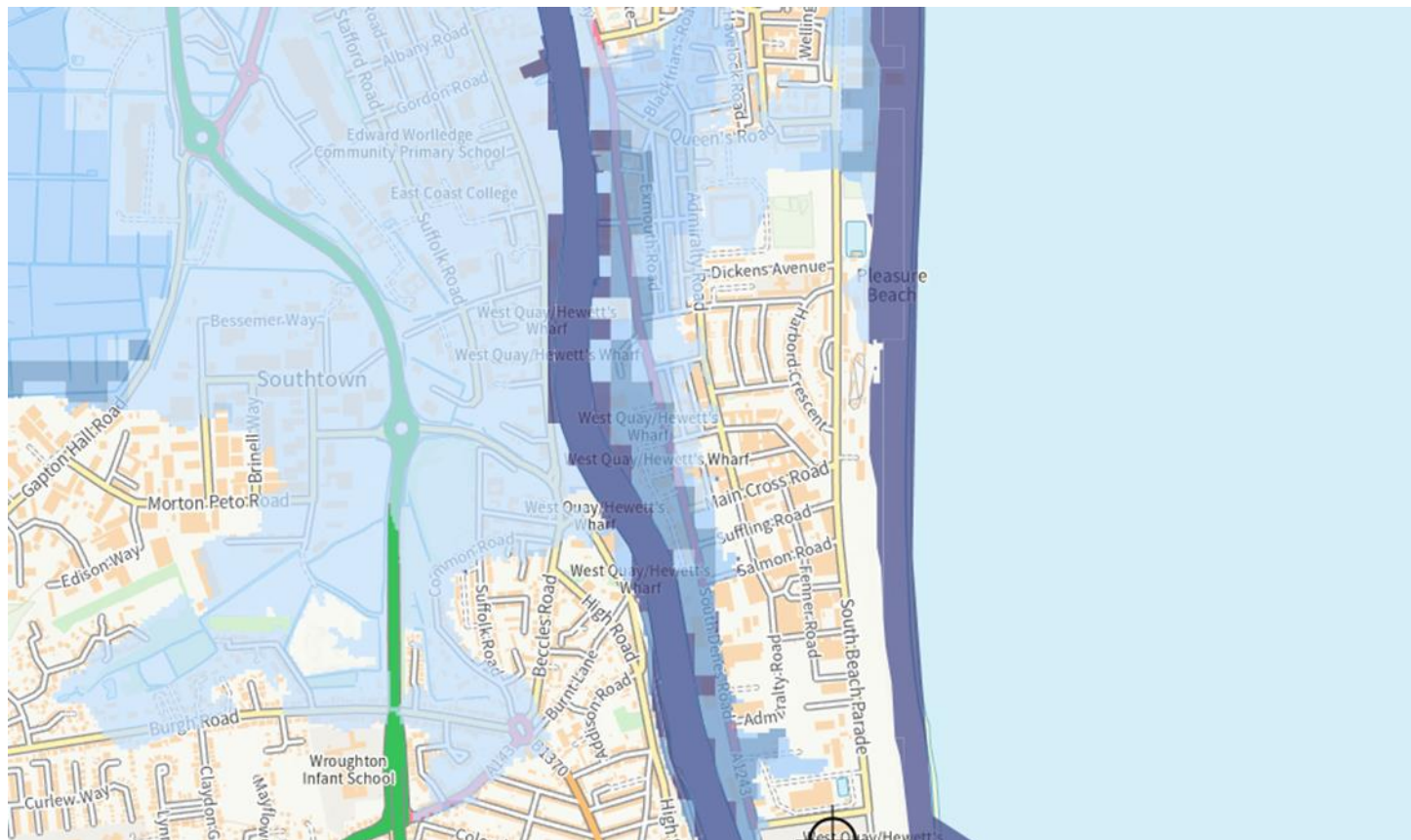
Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Flood Warning Action Plan

Appendix 5.4

054WCDV3A4 The River Yare at Great Yarmouth from the Pilot Station to Lower Ferry and from South Quay to Phillips Quay.



Extent of flooding from rivers or the sea.

- High
- Medium
- Low
- Very Low

High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

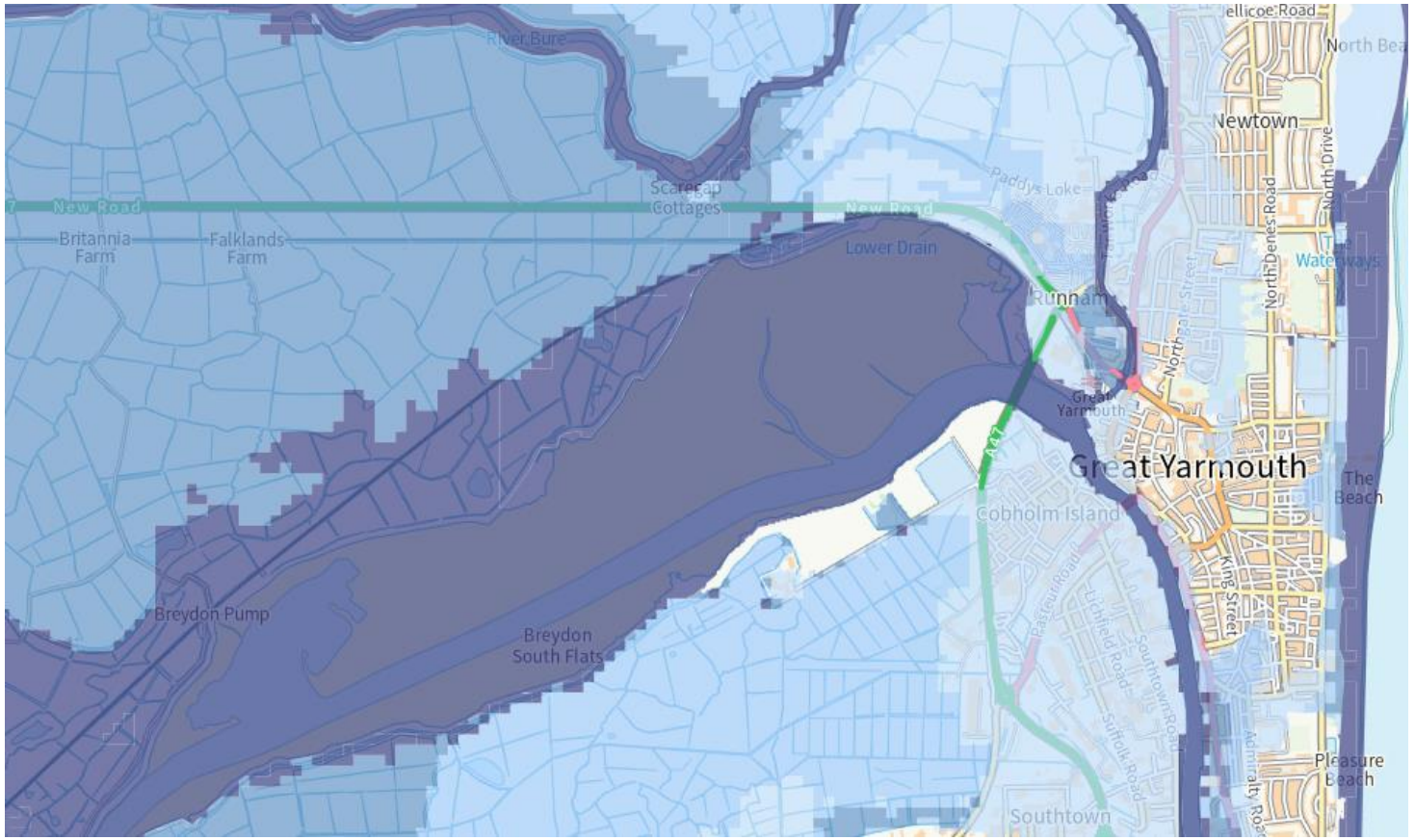
Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

GREAT YARMOUTH PORT COMPANY

Flood Warning Action Plan

Appendix 5.5

054FWCDV3A5 The River Bure from Scare Gap to the Euro Centre Industrial Estate.



Extent of flooding from rivers or the sea.

- High
- Medium
- Low
- Very Low

High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

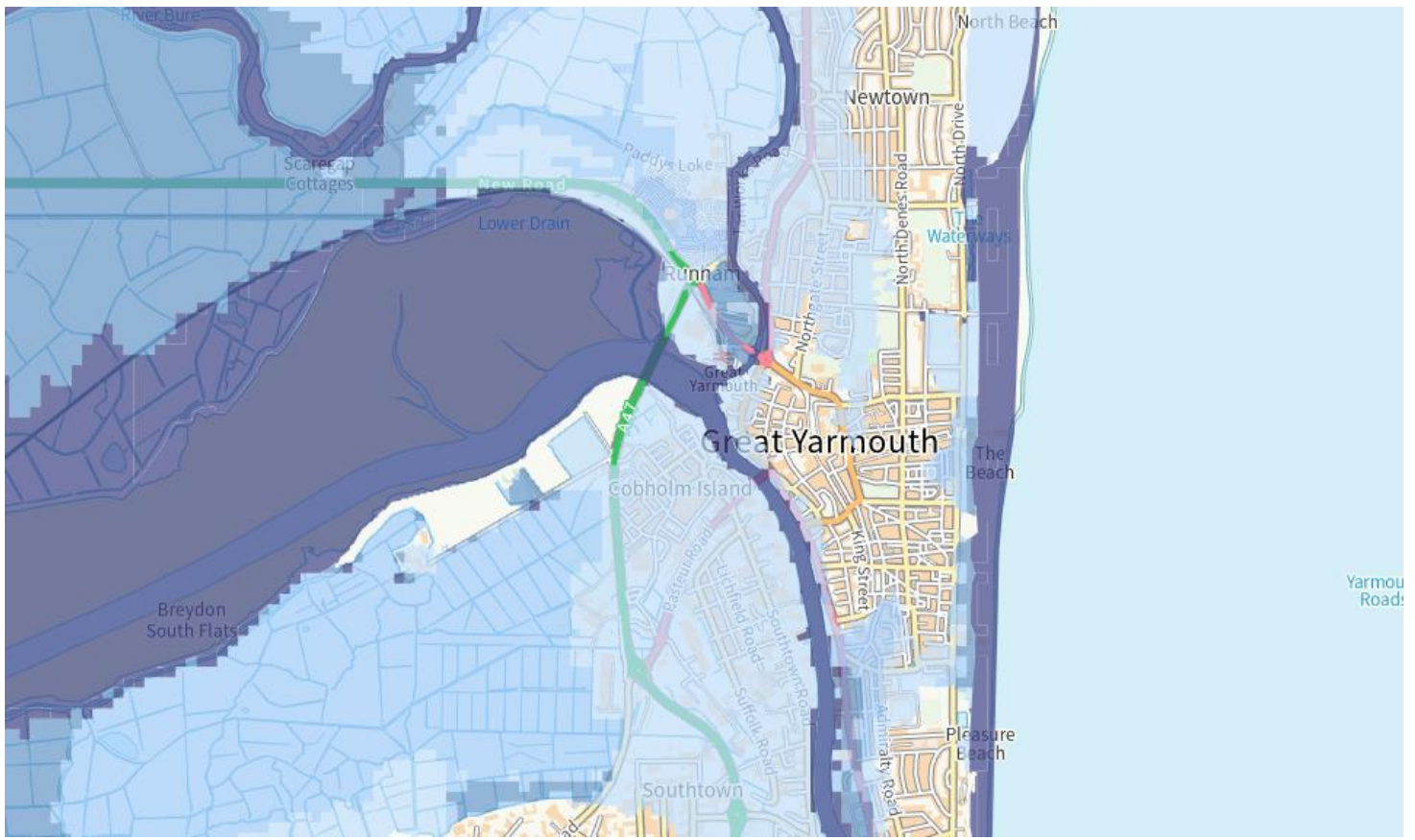
Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Flood Warning Action Plan

Appendix 5.6

054FWCDV3A6 The Seafront at Great Yarmouth from Salisbury Road to the Pleasure Beach.



Extent of flooding from rivers or the sea.

- High
- Medium
- Low
- Very Low

High risk means that this area has a chance of flooding of greater than 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Low risk means that this area has a chance of flooding of between 0.1% and 1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Very low risk means that this area has a chance of flooding of less than 0.1% **each year**. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

GREAT YARMOUTH PORT COMPANY

Flood Warning Action Plan

APPENDIX 6: Trigger Levels for Great Yarmouth Flood Warning Areas

(mAOD = metres above ordnance Datum)

All Triggers are from Great Yarmouth (mAOD)	TIDAL ALERT	FLOOD WARNING	SEVERE FLOOD WARNING
054FWCDV3A1 The River Yare at Great Yarmouth from Gorleston to Breydon Bridge incl Southtown & Cobholm Island	3.46 CD (1.9 mAOD)	<i>(See note below table)</i>	4.5 CD (2.94 mAOD)
054FWCDV3A2 The River Yare & Bure at Great Yarmouth from South Quay to Bure Park incl Runham, Newton & North Denes.		<i>(See note below table)</i>	4.41 CD (2.85 mAOD)
054FWCDV3A3 The River Yare at Great Yarmouth at South Denes from Wimpey Quay to the river mouth.	3.46CD (1.9 mAOD)	3.96 CD (2.4 mAOD)	4.33 CD (2.77 mAOD)
054FWCDV3A4 The River Yare at Great Yarmouth from the pilot station to Lower Ferry.		<i>(See note below table)</i>	4.33 CD (2.77 mAOD)
054FWCDV3A5 The River Bure from Scare Gap to the Euro Centre Industrial Estate.		3.96 CD (2.4 mAOD)	4.33 CD (2.77 mAOD)
054FWCDV3A6 The Seafront at Great Yarmouth from Salisbury Road to the Pleasure Beach		<i>(See note below table)</i>	4.97 CD (3.41 mAOD)

Note: Only in sections DV3A3 and DV3A5 will a flood warning be issued. In all of the other sections any escalation from a flood alert will go straight to a severe flood warning.

Information courtesy of the Environment Agency.
This flood risk summary is not property specific.

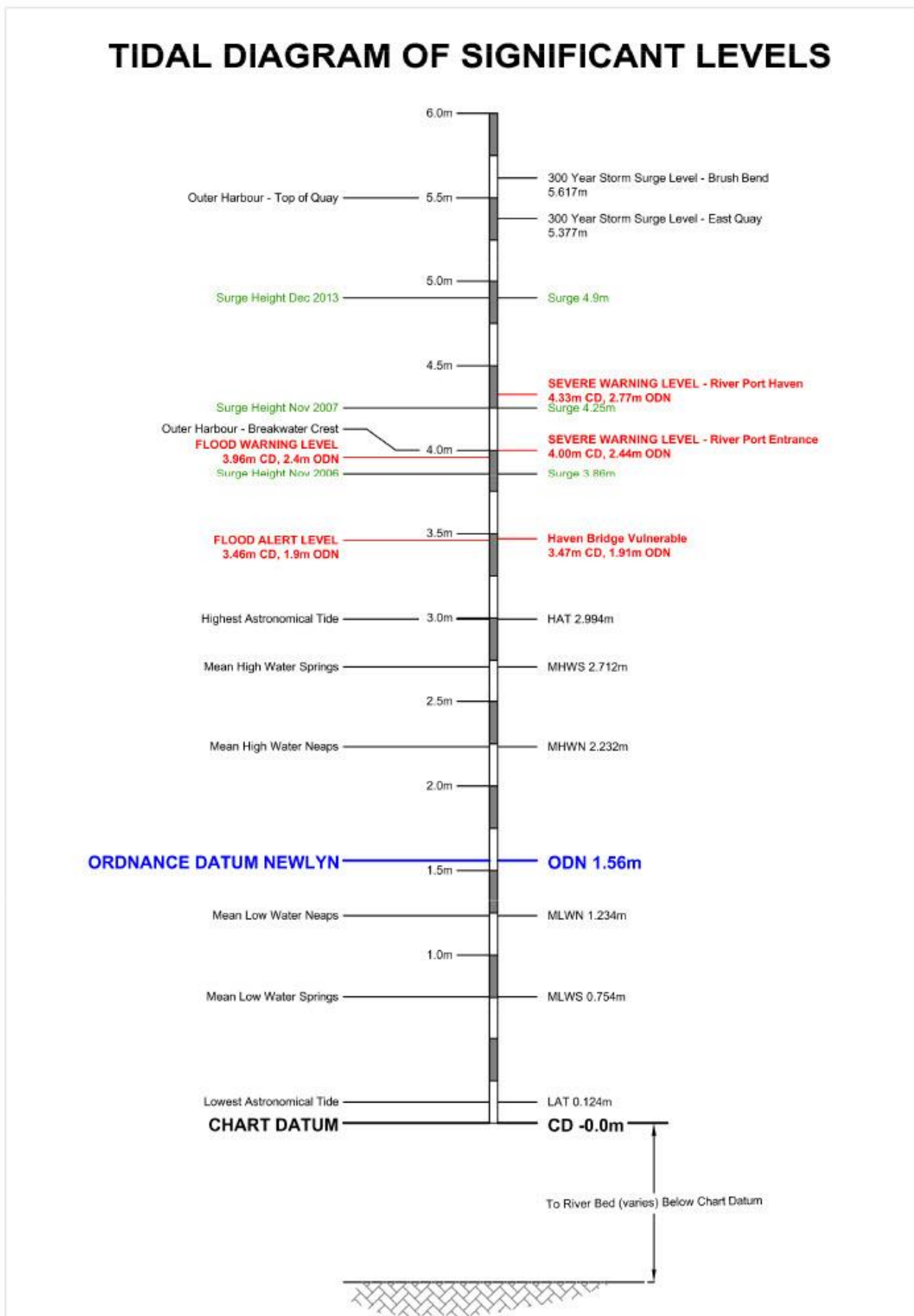
Very low risk means that this area has a chance of flooding of less than 0.1% **each year**.

This service takes into account any flood defences.

The Environment Agency is responsible for managing the flood risk from rivers and the sea.

Flood Warning Action Plan

APPENDIX 7: Tidal Diagram of Significant Levels (GYPC Harmonics)



GREAT YARMOUTH PORT COMPANY

Flood Warning Action Plan

APPENDIX 8 – Emergency Contacts Directory

ORGANISATION	TELEPHONE	EMAIL
PPGY	D. Zalewski (SMMO) 07771342556 C. Bunce (SMC) 07436 539923 A. Coleman (Engineering) 07833299723 J. Mason (Eng./Ops Manager) 07887825046 R. Goffin (Port Director) 07833 092323 N. Shaw (QSSHE Manager) 07425629271 L. Sebastian (MOM) 07741330709 P. Sommerfield (MOM) 07721704679 J. Bayfield (MOM) 07818595995 Harbour Office 01493 335511 Pilot Station 01493 335515 OH Security 01493 335529 LPS (Control) 01519496649	Dominik.Zalewski@peelports.com conrad.bunce@peelports.com Avril.Coleman@peelports.com Jonathan.Mason@peelports.com richard.goffin@peelports.com Nigel.Shaw@peelports.com Luke.Sebastain@peelports.com Peter.Sommerfield@peelports.com John.Bayfield@peelports.com gymarineservices@peelports.com gypilotsgroup@peelports.com greatyarmouthsouthgate.security@peelports.com GroupPortControl.ShiftManagers@peelports.com
Environment Agency	Floodline 0345 988 1188 Quick dial 213480 Flood Incident Room (Ipswich) 0300 200 3196 Duty Officer Mobile 0300 200 3196 (Listen to options)	ics@environment-agency.gov.uk
NCC Resilience	NCC Resilience Manager: Gemma Bailey Office hours: 01603 222520 Team number: 01603 222016 Duty/Out of hours: 07771527243	Gemma.bailey@norfolk.gov.uk
GYBC Coastal Protection	Senior Coastal Adviser Colin Bye 01493 846436	Colin.bye@greatyarmouth.gov.uk
Environmental Health	Vicky Ellis 07768404102 Emergency: 07768404102	Vicky.ellis@great-yarmouth.gov.uk
Norfolk Fire & Rescue Service	Headquarters 03001 231669 GY Fire Station: 01493 843212	hq@fire.norfolk.gov.uk
Norfolk and Suffolk Constabulary	101	enquiries@norfolk.pnn.police.uk

GREAT YARMOUTH PORT COMPANY

FLOOD WARNING – ACTION PLAN - RECORDS

APPENDIX 9.1: Marine Services Flood Record Sheet

Flood Alert

Received: Date: _____ Time: _____ Recipient: _____

Flood Warning

Received: Date: _____ Time: _____ Recipient: _____

Severe Flood Warning

Received: Date: _____ Time: _____ Recipient: _____

.....

Predictions

Actual Maximum Tide Height Reached

Notes and Comments

APPENDIX 9.2: Marine Services Action Plan Checklist

Actions at tide level of 2.9m CD

Marine Duty Officer advised

Marine Duty Officer, Operations Duty Manager & Port Engineer advised
if there is a possibility of Haven Bridge flooding

If tide *expected* to reach 3.47m CD

Port Engineer and Operations Duty Manager Advised

When tide reaches 3.50m CD

Marine Duty Officer, Port Engineer and Operations Duty Manager Advised

Marine Crew requested to check flood gates at Brush Bend (EA reference TG 532037)

Vessels informed of expected tide levels and warned of possible strong tidal flows

Actions on Flood Warning of 3.96m CD

Marine Duty Officer, Senior Manager Marine Operations, Port Engineer, Operations Duty
Manager and Port Director advised of **Flood Warning (3.96m)**

Pilots, SMC and Marine Crew informed

SMC and Marine Crew requested to lift equipment off the Pilot Station stores lower floor
& Sandbag doors

SMC requested to check "Compass" power supplies/moorings

Marine Crew requested to monitor all craft on the river

Peel Ports Great Yarmouth
Vanguard House
South Beach Parade
Great Yarmouth, NR30 3GY

T: +44 (0)1493 335500
F: +44 (0)1493 857120
E: info@peelports.com

Actions on Severe Flood Warning of 4.46m CD

Marine Duty Officer, Senior Manager Marine Operations, Port Engineer, Duty Operations Manager and Port Director advised of **Severe Flood Warning (4.46m)**

Pilots, SMC and Marine Crew informed

Peel Ports Great Yarmouth
Vanguard House
South Beach Parade
Great Yarmouth, NR30 3GY

T: +44 (0)1493 335500
F: +44 (0)1493 857120
E: info@peelports.com

APPENDIX 3: Port Engineer/Operations - Action Plan Checklist

- Check quays and quays works
- Check properties
- Check cranes and their locations
- Check integrity of flood gates at Atlas (EA reference TG 527062)
- Inform contractors who are carrying out quay works on Port Company quays.
- Advise other vulnerable sites as required
- Check berth security is in place
- Pump out Haven Bridge if required

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