Flood Risk

Flood risk is defined by DEFRA as “a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources”.

Current Services/Arrangement

Flood incident management in Southsea is served by the Environment Agency’s (EA) Tidal Flooding Forecasting and Met Office Weather Warnings services. Operational alerts are raised by the EA to Portsmouth City Council (PCC) when sea levels rise above a pre-determined level. Above this level, the sea level rise is deemed to be a threat. We encourage residents and businesses at risk from flooding to sign up to the EA Flood Warnings Direct service; this can be done here. In Southsea, operational measures are currently in place to close Clarence Esplanade and the Esplanade to the east of South Parade Pier when a high tide greater than 5mCD is predicted, in combination with a Southerly or South Westerly wind of Force 6 or above. These preventative measures are carried out by Coastal Incident Duty Officers and contractors, who attend the site to manually operate road closures. This is solely to reduce the risk to the public from waves that overtop the current defences. Wave overtopping occurs 3-5 times a year in Southsea and brings with it large volumes of seawater beach shingle onto the promenade and further landward.

Emergency Response

PCC works with its partners to provide a comprehensive emergency response, recognising the high risk of flooding in the area. The council has a team of duty officers on standby to manage, react and implement its well-practiced emergency response plans. In addition, a standby workforce, pumping equipment, engineering consultants and sandbags are available to respond to events as they occur. The public highway, promenade and beach access are closed, when required, to maintain public safety. PCC has prepared a local Emergency Flood Plan for the City. This identifies roles, responsibilities and actions to be taken by the councils in responding to flood warning or any other type of major flood event. The plan also forms part of the Hampshire County Multi-Agency Flood Plan (MAFP).

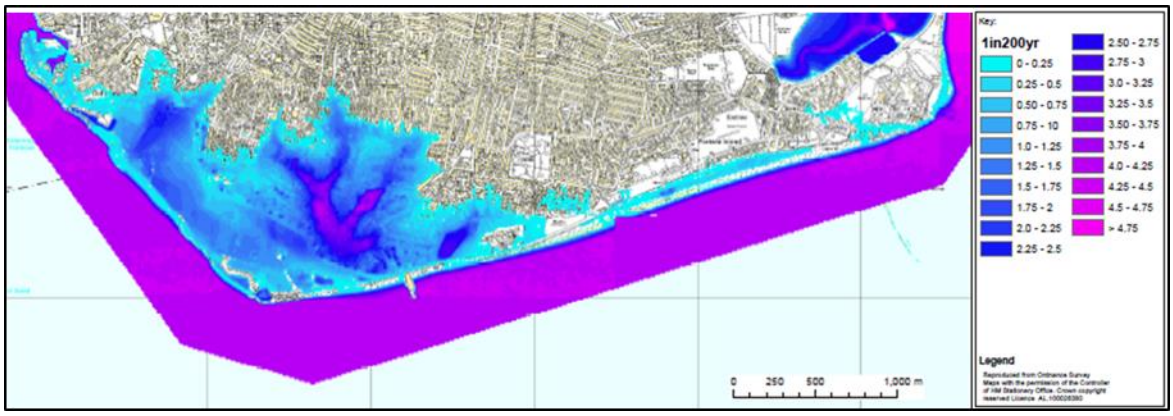
Flood Modelling

To further understand the flood risk to Southsea, flood modelling has been conducted to show the areas that would be flooded and at what depth, should a flood event of a certain level happen. This is done on computer software that can be programmed to analyse the area and level of flood depending on the rarity of an event occurring. This event could be an element, or a combination, of wind, tide or weather that combine to create conditions that would result in a flood. To categorise certain combinations of these 3 factors or to isolate them, each scenario is given a value for Annual Exceedance Probability (AEP).

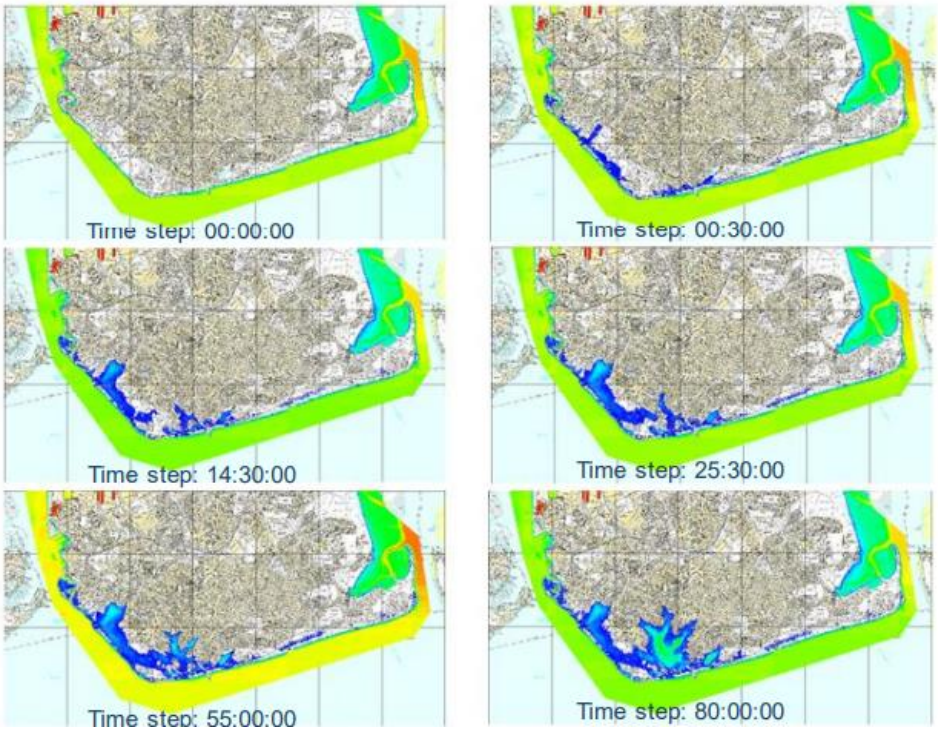
Annual Exceedance Probability (AEP) is the chance of a flood event occurring in any year (Source: USGS). This is shown as a percentage that expresses the chance of occurrence. An AEP value is always a fraction of 1. For example, an AEP flood value of 0.2 means that there is a 20% chance of a flood of that size happening or being exceeded within any year. An AEP value does not mean that one rare flood reduces the chances of another rare flood

in a short time period, there could be 2 successive rare flood events in the same year even though they have very low AEP values. A 1 in 100 year flood can be expressed as 1% AEP flood, which has a 1% chance of being exceeded in any year (Source: EA).

Flood modelling has been developed for the Southsea Coastal Scheme that is based on the EA Flood Warning Model. The model was adapted to ensure sufficient scenarios were run to see the impact on Southsea generally and economic impact. The flood model for Southsea shows that in a 1 in 200 year flood (0.5% AEP) there is a very substantial risk to property, life, and infrastructure, with depths reaching in excess of 4m.



The below images are an example of some of the computer models that were carried out to understand the flow path in the event of a 1 in 10 year event (10% AEP).



These models have been carried out for a range of scenarios to simulate different levels of extreme events, to see the spread of the flood, and the depth of the flood within the area.

Understanding Flood Risk for property purchasers

5.9 million properties are at risk of flooding

(1 in 6 homes)

Parliamentary publication, 2016

2.7 million properties at risk of flooding from rivers and the sea alone

500,000 properties at risk of both flood from rivers and the sea and surface water

3.2 million properties at risk of surface water flooding alone

Parliamentary publication, 2016

UK coastal flooding is one of the highest priority risks on the United Kingdom's National Risk Register of Civil Emergencies **amongst catastrophic terrorist attacks and pandemic influenza.**

National Risk Register of Civil Emergencies, 2015

Winter 2015/16
- Wettest winter on record for 250 years
- December 2013 The worst tidal surge in 60 years

Affected over
16,000
homes and businesses

Cost of 2015 floods to exceed
£5 billion

The cost of flooding:
£28,000
home flooding (average)

VS

£7,300
fire damage (average)

£1,000
burglary (average)

A survey of 2000 people found:
6% had taken steps for **flood protection**
54% installed measures for **burglary**
80% installed **fire protection** measures

Your home/property can still flood if:
- You live on a hill
- You're not near any body of water
- You live in a top floor flat as essential infrastructure can be affected:
  - -drainage
  - -clean water
  - -electricity/gas supply
  - -building lifts
  - -underground car parks

Source for infographic: https://www.groundsure.com/wp-content/uploads/2017/01/FLOOD-INFOGRAPHIC_01-17_FA.pdf

Further Reading:

Page 11: Section 2.2 describes defence SoP and Annual Exceedance Probability
http://publications.naturalengland.org.uk/file/71028

Sources:

https://water.usgs.gov/edu/100yearflood.html

http://evidence.environment-agency.gov.uk/FCERM/en/FluvialDesignGuide/Chapter2.aspx?pagenum=4

The Southsea Scheme OBC document

Further Reading:

https://www.groundsure.com/news/the-importance-of-coastal-defence-to-prevent-flood-risk/

https://water.usgs.gov/edu/100yearflood.html

http://evidence.environment-agency.gov.uk/FCERM/en/FluvialDesignGuide/Chapter2.aspx?pagenum=4

https://www.theguardian.com/environment/2017/may/18/sea-level-rise-double-coastal-flood-risk-worldwide

Last updated: 31 March 2018