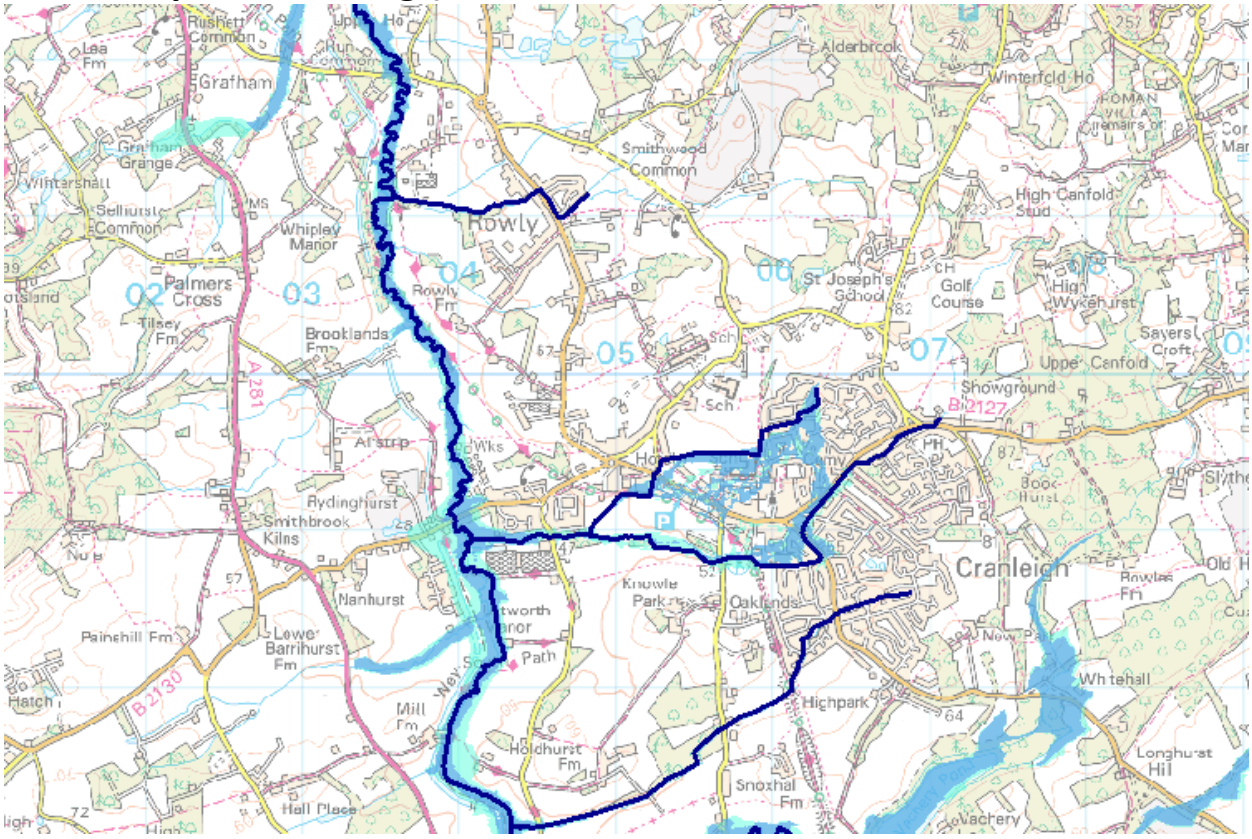
Appendix 4.4 Flood Risk

The following information is taken from the Environment Agency's web site ***maps.environment-agency****.gov.uk/.*

Flood Map for Planning (Rivers and Seas)



- Flood Zone 3
- Flood Zone 2
- Flood defences (Not all may be shown*)
- Areas benefiting from flood defences (Not all may be shown*)
- Main River Line

Flood Zone and Flood Risk Tables

The following information is taken from Government Planning Guidance
http://planningguidance.planningportal.gov.uk

Table 1: Flood Zones

Paragraph: 065 Reference ID: 7-065-20140306

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's web site, as indicated in the table below.

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)
Zone 3b The Functional Floodplain	**This zone comprises land where water has to flow or be stored in times of flood.** Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential

History of Flooding

Cranleigh is vulnerable to flooding from all sources; fluvial, groundwater and surface water flooding. Much of Cranleigh lies on heavy clay soil making it unsuitable for infiltration drainage systems.

Environment Agency Groundwater maps record the presence of aquifers i.e. a body of saturated rock to the south and west of Cranleigh. This means that water may be discharged from this area by upward seepage through the overlying clay. Previously saturated weald clay has a "rapid run-off behaviour", meaning that water exits the site far more aggressively than "dry-soil" models. The EA refer to Cranleigh as a "flashy catchment" – defined as a catchment area that, because of geographic, topographic, and geological factors, shows an almost immediate response to intense rainfall, resulting in a flash flood.

Historically, land to the South of the High Street has acted as Cranleigh's natural flood plain. It has always been used predominantly for agriculture and has not been built on (See Cranleigh Design Statement 2008 – "New development should take account of the existence of a flood plain in Cranleigh"). There is a history of flooding in Cranleigh, with records going back as far as 1852.

There records of flooding in 1852, 1872, 1877, 1903, 1968, 1979, 1981, 2000, 2007, 2010, 2013, 2014, 2015 and 2016.

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Residents recall the flood plain completely inundated in 1968, when there was widely-reported and extensive catchment wide flooding. There are also press clippings from December 1979 and June 1981 when tempers frayed in Cranleigh due to repeated flooding of the high street including local businesses.

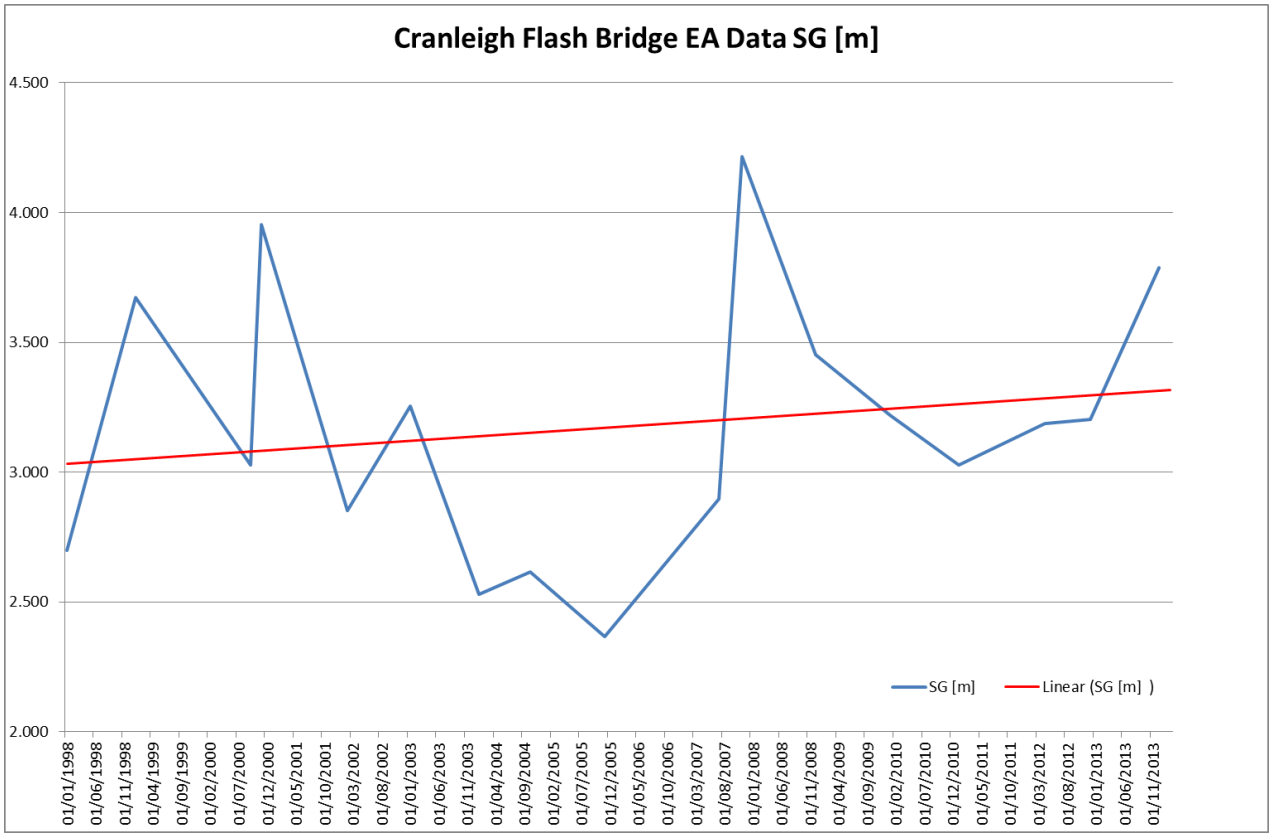
Following the engineering assessment of flooding problems in 1981/82, Waverley Borough Council constructed an extensive amount of flood relief works to reduce the flooding risk to many of the more vulnerable areas.

Once again in 2000 when Littlemead Brook overflowed directly onto the flood plain and more recently, the flood plain absorbed heavy rainfall in July and December 2013. On the latter date flooding took place after 56.8mm of rain fell in one day between 23 and 24 December 2013, flooding homes and leaving main roads impassable. Localised flooding in and around Cranleigh remains an ongoing problem and is a major concern amongst residents.

In times of heavy rain, surface water quickly results in inundation of the sewage network also leading to sewer flooding as confirmed in the Waverley Borough Council Strategic Flood Risk Assessment July 2015 Figure 10 – "Historical Sewer Flooding Incidents".

With climate change, the EA now require applicants and developers to assess a range of climate range allowances from 25% to 70% above the 1% Annual Exceedance Probability (AEP) as part of planning applications.

Local rainfall data gathered by the EA at Flash Bridge Cranleigh supports an increase in future rainfall and potential flood risk in the area.



The Flash Bridge data is reflective overall of the UK Climate Change Risk Assessment: Government Report January 2012 which acknowledges that there will be an increasing frequency of extreme weather events in the UK.

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Flood defence measures designed and implemented at the construction stage are more cost effective than retrofitting. Examples include; -landscaping the roads and gardens to help divert water away from buildings, -

fitting non-return values to drain-pipes and other pipework, - raising damp-proof courses and sealing floors, - raising electrical sockets, fuse boxes and wiring well above floor level, together with the use of hard flooring and water-resistant materials rather than chipboard and MDF at ground floor level. There is much information on building-in flood resilience measures, including the Government's document 'Advice on Improving the Flood Performance of New Buildings and Flood Resilient Construction'19