G.6.1 Damages assessment

Based on the modelled flood extents we have estimated the Present Value Damages (PVd) and the maximum viable scheme cost as summarised in Table 34. There are limited damages in this hotspot and therefore very little scope to progress any mitigation works.

Table 34: Estimate of Hotspot H Maximum Scheme Cost

Hotspot	PV Damages (£k)	iBCR	Maximum PV Scheme Cost (£k)
I	1,856	1	1,136

Appendix H Individual Flood Mitigation Measures

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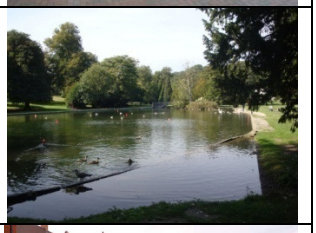
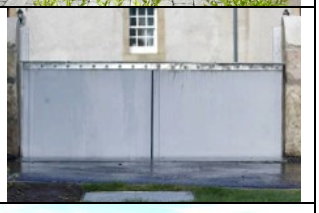
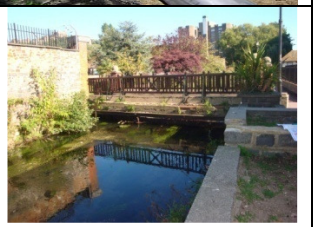
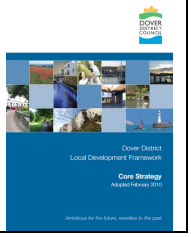
Introduction to Individual Measures Considered to Mitigate Surface Water Flood Risk

Category	Measure	Illustration
Source control and Sustainable Drainage Systems (SuDS)	**Fringe Interception** of runoff could reduce the volume of water entering the urban area via overland flow. The hills to the south and west of Deal are characterised by dry valleys. Potentially, runoff from the saturated Chalk could be attenuated in detention basins or through alternative land management practices (e.g. contour ditching or afforestation).	
	Detention basins are surface water storage areas which provide flow control and reduction through attenuation. They are normally dry and therefore could be used as car parks (including underground car parks), recreational facilities etc for much of the time. It may be possible to reuse the stored water on site (e.g. irrigation or aquifer recharge) depending on storage arrangements.	
	Ponds and wetlands are designed to be areas of permanent standing water which can provide attenuation of flows and a certain degree of treatment. In doing so they can provide some improvement in water quality. They can provide ecological, aesthetic and amenity benefits.	
	Swales are shallow linear vegetated drainage features which can store and convey surface water. As part of an engineered flowpath, they can pass water from one storage/treatment area to the next and provide infiltration where underground conditions are suitable. Swales can be designed to be permanently wet or generally dry and are often located next to roads, car parks or other open spaces.	
	Green roofs covered with vegetation can intercept and retain precipitation to reduce the volume of runoff and attenuate peak rainfall. Large flat or gently sloping roofs (e.g. commercial buildings, schools and hospitals) are particularly suited and cost-effective.	
	Pervious pavements are suitable for pedestrian and vehicular traffic. Construction can use porous material which permits infiltration across the entire surface or material which is impervious to water but which is laid with void spaces to permit infiltration. The sub-base of the pavement may use geocellular block systems which provide storage.	

Category	Measure	Illustration
Source control and SuDS	**Soakaways** are filled excavations which store runoff from single properties or larger developments and roads and allow infiltration into the surrounding soil. They only work in freely draining soils.	
	Water butts are used to collect rainwater from individual properties for outside use although some capacity must be available at the start of a storm. Alternatively, downpipes can be disconnected from discharging directly into surface water drains and be routed through a SuDS attenuation feature. **Rainwater harvesting** collects rainwater for non-potable reuse both internally and externally.	
Design for exceedance	**Surface flow routes**, formalised through road profiling etc, can be used to safely route exceedance flows through urban areas. **Green Streets** use attractive kerbside planters into which surface water on the road is directed. The plants provide some cleaning of the water, attenuation of peak flows and possibly infiltration of the stored water.	
	Resistance and resilience measures can be fitted to prevent surface water entering buildings and minimise the damage caused by flood water. Some form of grant assistance could be allocated to property owners for installation. The practicality of resistance or resilience measures that are deployed upon receipt of a flood warning would need to be carefully considered.	
Increasing capacity	**Increasing the capacity of the current drainage network** may be possible through enlarging existing sewers, adding new sewers (which can be oversized to provide additional storage) or providing overground storage through interruption of the existing sewers. These could reduce the likelihood of discharge of potentially polluted floodwater through Combined Sewer Overflows.	
	Widening and/or regrading of the watercourse and opening up of culverted sections have the potential to improve the capacity of the watercourses to receive and convey flood flows. Where rapidly passing peak flows could cause flooding downstream, any local improvement in conveyance should be offset with increased storage to attenuate the peak.	
Separation of foul and surface water	**Greenfield developments** are usually separately sewered and such opportunities should be maximised. **Brownfield development** opportunities are generally as for Greenfield but the existing drainage system may be combined. Opportunities should be taken to convert to a separate piped system where practical.	

Category	Measure	Illustration
	Misconnections between the surface water and foul systems should be rectified as opportunities arise. This can reduce pollution associated with surface water flooding.	
Non-structural measures	**Maintenance, desilting and removal of obstructions** can ensure that drainage infrastructure (particularly road gullies) are operating to their design potential. In the case of surface water features (e.g. watercourses, ponds, swales etc) this also provides improved amenity and aesthetic value.	
	Raising Awareness of surface water flood risk within the councils, partner organisations and with the public may encourage property owners to consider property level resistance and resilience measures; discourage paving over property curtilage or otherwise blocking natural drainage routes; and encourage reporting and recording of flooding.	
	Flood Warning: the Met Office and the EA operate an Extreme Rainfall Alert Service which provides county-scale alerts of extreme rainfall to Category 1 and 2 responders. Given the knowledge of areas most susceptible to surface water flooding, these alerts could be used to target responsive action.	
	Planning policies could be developed and adopted by DDC to steer new development away from known surface water flood risk areas and flow paths or, if necessary, to control their development. Basements should be given particular consideration. Policies should also aim to control or limit urban creep.	

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