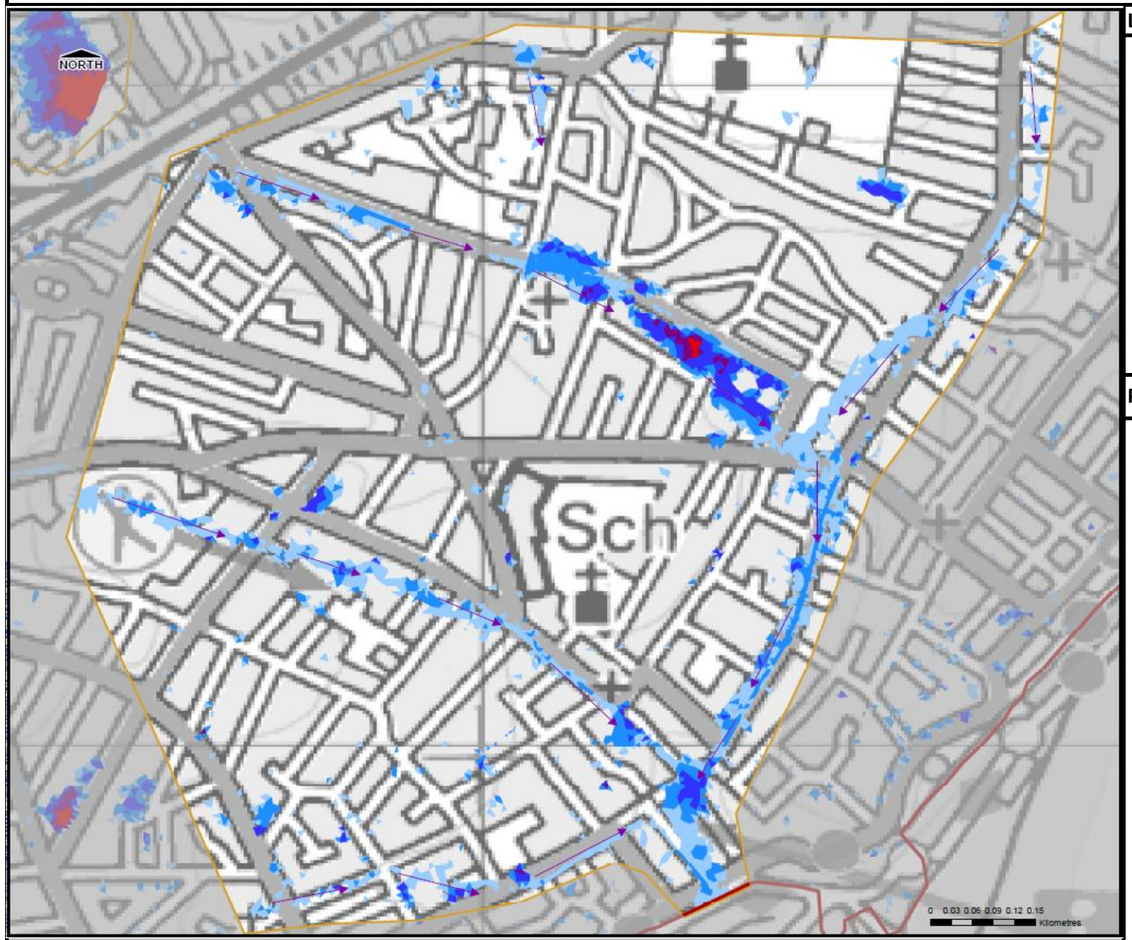
Ramsgate Surface Water Management Plan - Options Appraisal Summary

PROBLEM IDENTIFIED:

This OA is located in the south eastern part of the model. There are four different flowpaths in the area which join in the southern part of the OA near Harbour Street. This area is located at a lower ground level causing surface water to pond there. In addition, the pipe network is joining in this area and has no capacity to store all that water coming from different directions. Therefore, the manholes are surcharging in this area. Higher depths of surface water can also be found near the intersection of St Luke's Avenue and Denmark Road. This area is located at a lower ground level.

Tidal/fluvial flood zones are not located within the OA.

The OA is highlighted to have a 'low' susceptibility to groundwater flooding (due to superficial deposits).



LEGEND

Flow Direction
Main River
Ordinary Watercourse

Surface Water Flood Depth (m)

< 0.1m	0.5m to 1.0m
0.1m to 0.25m	1.0m to 1.5m
0.25m to 0.5m	> 1.5m

PREFERRED OPTIONS SUMMARY:

Options Summary	Available Option	Preferred
Do Nothing		
Do Minimum		
Improved Maintenance		
Planning Policy		
Source Control, Attenuation and SUDS		
Flood Storage / Permeability		
Separate Surface Water and Foul Water Sewer Systems		
De-culvert / Increase Conveyance		
Preferential / Designated Overland Flow Routes		
Community Resilience		
Infrastructure Resilience		
Other - Improvement to Drainage Infrastructure		
Other or Combination of Above		

Opportunity Area

Ramsgate_05

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Town Centre

Flood Risk Source	
Surface Water	Yes
Groundwater	No
Ordinary Watercourse	No
Fluvial	No
Tidal	No

Validation	
Historic Events	Yes
Site Inspection	Yes

Kent County Council

RAMSGATE SURFACE WATER MANAGEMENT PLAN
SURFACE WATER OPTION SCORING MATRIX

IDENTIFICATION OF MEASURES

	Opportunity Area ID:	Ramsgate_05			
	Measure	Opportunity Assessment	Description	Location / Specific Details	Comments
SOURCE	**Green Roof**		Generic Measure	Throughout OA -Possible locations are the Courts Furnishers UK Ltd building, the Clarendon House Grammar School and the Chatham House Grammar School.	Implementation of this measures is to be identified on site-by-site basis when opportunities arise but likely to be limited opportunity for implementation of measure within the OA.
	Soakaways		Generic Measure	Throughout OA - based on Infiltration suitability	Further investigation is needed to assess the infiltration potential due to geology.
	Swales		Generic Measure	Throughout OA where possible - main location is within Ellington Park and within the playing fields of Chatham House Grammar School.	To be identified on site-by-site basis but likely to have limited space within OA.
	Permeable Paving		Generic Measure	Throughout OA	Infiltration from base of measure is likely to be limited due to geology. Permeable paving with subsurface drainage may be suitable for the area. Further investigation is needed to assess the infiltration potential due to geology.
	Rainwater Harvesting		Generic Measure. For all new development and within existing dwelling (retrospective application)	Throughout OA - review incorporation on all large buildings	
	Detention Basins		A strategically located detention basin could be constructed where runoff flows out of bank (or is diverted into) as a result of the OWC/main river being culverted under the downstream urban area or lost due to urban creep.	Possibly within Ellington Park and within the playing fields of Chatham House Grammar School.	Impacts on the dual use (recreation and runoff management) of the area should be assessed.
	Ponds and Wetlands		A strategically located pond could be constructed to manage the surface water from the upstream catchment of the OA or within the OA.	Possibly within Ellington Park and within the playing fields of Chatham House Grammar School.	Review of preferred type of SuD should be considered bioretention, wetland or pond preferred over detention basin.
	Other 'Source' Measures		Strategically placed bioretention devices / rain gardens can be incorporated throughout the OA	Where possible locate these devices in sag points within the road to capture runoff for attenuation and treatment	An assessment of any parking requirements (based on number of properties etc.) should be undertaken along with a review of any impacts to services and a determination of the drainage network that it would connect into.
PATHWAY	**Increasing Capacity in Drainage Systems**		The existing drainage system capacity could be increased to accommodate storm water	It is recommended that additional gullies and drainage are included within the OA to store more water.	Review the incorporation of these measures once large SuDS attenuation and diversion measures have been implemented.
	Separation of Foul and Surface Water Sewers		Separation of combined drainage networks into foul and surface water systems	The combined network in this OA could be separated. This would require a cost benefit analysis.	
	Improved Maintenance Regimes		Generic Measure. More regular inspection of the current sewer system to remove debris and improve conveyance.	Throughout OA	To be identified on site-by-site basis focussing on those areas / streets known to regularly flood and the maintaining and clearing debris of the ordinary water course.
	Managing Overland Flows (Online Storage)		Creating areas for temporarily storing runoff during a storm event	Refer to 'Detention Basin' and 'Ponds and Wetlands' comments above.	Impacts on the dual use (recreation and runoff management) of the area should be assessed.
	Managing Overland Flows (Preferential Flowpaths)		Modifying street and kerb levels to create a formal flow path (blue corridor)	Modifying kerb and flow patterns along High Street to divert flow into SUDs features within Ellington Park.	Disabled access along the road would need to be considered when assessing this measure.
	Land Management Practices		Manage runoff rates / volumes from upstream catchment areas to ensure they are not increase from the existing scenario	Include policy to manage runoff rates.	Not applicable due to OA being heavily urbanised.
	Deculverting Watercourse(s)	N/A	Deculverting watercourses to a natural condition or reducing the length of a culverted ditch	N/A	No watercourses impact the OA.
	Other 'Pathway' Measures	N/A	Modify flow paths within a OA - could include introducing culverts to reduce area of ponding with overland flow paths that are obstructed etc.	N/A	N/A
RECEPTOR	**Improved Weather Warning**		Provide greater warning to residents on the risk of a possible flood event.	Depending on the timings of the storm event evacuation of these properties could be possible.	This measure is likely to be more affective if coupled with community education. Added flood alleviation value could be achieve if this measure was carried in tandem with a property level demountable flood barriers.
	Planning Policies to Influence Development		Generic Measure	Throughout OA	For all new development or areas of urban creep which may increase the total volume of runoff within the OA
	Temporary or Demountable Flood Defences		Household / building level demountable flood barriers.	Review areas at risk once other measures have been implemented within the OA	This measure will need to be deployed in parallel with an efficient flood warning system and community education so that site users are aware of their roles and responsibilities before and during a flood event
	Social Change, Education and Awareness		Generic Measure	Throughout OA	Will be dependent on engagement opportunities with community. In areas with a large migration of population it will be difficult to undertake / pass on information from one property owner to other. The inclusion of advice on flooding during the sale and lease of properties may assist in promoting this measure.
	Improved Resilience and Resistance Measures		Commercial or property level resilience measures	Review flood risk management measures within the OA and improve as necessary.	This measure would achieve additional effectiveness when coupled with an appropriate flood warning system as well as education and awareness. To be identified on site-by-site basis.
	Other 'Receptor' Measures	N/A			

RAMSGATE SURFACE WATER MANAGEMENT PLAN
SURFACE WATER OPTION SCORING MATRIX

OPTIONS IDENTIFICATION AND SHORTLISTING

Opportunity Area ID: **Ramsgate_05**

Option No.	Option (Scheme Category)	Standard Measures: SOURCE: Green Roof	Soakaways	Swales	Permeable Paving	Rainwater Harvesting	Detention Basins	Ponds and Wetlands	Other 'Source' Measures	PATHWAY: Increasing Capacity in Drainage Systems	Separation of Foul and Surface Water Sewers	Improved Maintenance Regimes	Managing Overland Flows (Online Storage)	Managing Overland Flows (Preferential Flowpaths)	Land Management Practices	Deculverting Watercourse(s)	Other 'Pathway' Measures	RECEPTOR: Improved Weather Warning	Planning Policies to Influence Development	Temporary or Demountable Flood Defences	Social Change, Education and Awareness	Improved Resilience and Resistance Measures	Other 'Receptor' Measures	Appropriate Measures Available?	Short listing Options: Technical	Economic	Social	Environmental	Objectives	Overall	Take Forward Option to Detailed Assessment?	Comments
1	**Do Nothing**																							✓	2	-1	-2	0	-2	-3	×	In line with PAG the 'do nothing' option (no intervention and no maintenance) and 'do minimum' (continuation of current practise) should be taken forward to the detailed options assessment.
2	**Do Minimum**																							✓	2	0	-1	0	-1	0	×	
3	**Improved Maintenance**																N/A							✓	2	2	1	0	1	6	✓	This option will be relatively easy to implement by increasing the regularity of the existing maintenance regime. It is however only likely to see localised flooding benefits.
4	**Planning Policy**																							✓	2	2	0	1	0	5	✓	To implement this option into new developments would be relatively simple. Once an area has been identified as being in a OA policies to manage the surface water on the site are already in place. These could be reiterated in forthcoming policy documents. This could relate to development on Greenfield land within the OA.
5	**Source Control, Attenuation and SUDS**																						N/A	✓	1	1	1	1	1	5	✓	Implementation of property level SuDS measures such as rainwater harvesting systems, bioretention devices, permeable driveways etc. are likely to offer the some social and flood risk benefits.
6	**Flood Storage / Permeability**																N/A							✓	1	1	0	2	1	5	✓	Providing additional storage within the OA may assist with reducing the overall risk to properties and residents/site users. It is recommended that temporary storage of flows is investigated within the area of open space im the northern part of the OA.
7	**Separate Surface Water and Foul Water Sewer Systems**																							✓	-1	-2	0	0	2	-1	×	The OA uses a combined system. A cost benefit analysis is required to determine if this should be investigated further.
8	**De-culvert / Increase Conveyance**																N/A	N/A						×	1	1	0	1	2		✓	N/A
9	**Preferential / Designated Overland Flow Routes**																N/A							✓	2	1	0	0	2	5	✓	Modifying kerb and flow patterns along High Street to divert flow into SUDs features within Ellington Park.
10	**Community Resilience**																						N/A	✓	2	1	1	0	1	5	✓	This option could protect properties from flooding through the installation of flood barriers on the doors of properties. There may be local resistance to the uptake of the barriers and the success of the barriers relies on human intervention and the dissemination of appropriate flood warnings. It is also a costly exercise to fit multiple properties with demountable barriers and/or property level resilience measures. Property level measures, such as ensuring building and gate thresholds and installation of water butts, for example, may provide some benefits.
11	**Infrastructure Resilience**																							✓	2	1	1	0	1	5	✓	This option could be considered for schools and infrastructure predicted to flood in the OA, but is likely to be achieved through improved education / awareness and small scale SuDS measures such as rainwater harvesting.
12	**Other - Improvement to Drainage Infrastructure**																N/A							✓	1	0	1	1	2	5	✓	A local increase in drainage capacity within the OA is technically feasible and will achieve local flood alleviation and potentially more widespread flood alleviation. However, further investigation into the local drainage capacity is required prior to implementation.
13	**Other or Combination of Above**																							✓	2	0	1	1	2	6	✓	It is recommended that a combination of rainwater harvesting, bioretention / rain garden devices and preferential overland flows could assist in 'cutting off' the overland flow routes within the OA.