

Great Yarmouth Surface Water Management Plan - Options Appraisal Summary

PROBLEM IDENTIFIED:

This CDA is located in the Bradwell area of Great Yarmouth. The pluvial modelling indicates surface water flooding across the central portion of the CDA as a result of the natural valley topography. This flooding may be a result of a historic ordinary water course (OWC) being lost due to urban expansion. It is noted that there are more than 15 properties on the AWS DG5 register along Beech Road, Lords Lane, Yew Tree Close and Green Lane. NCC Highways have recently installed a separated surface water pipe system including two storage areas - however, these are designed to accommodate a 1 in 10yr probability event and are unlikely to deliver substantial benefits for events exceeding this return period. Current pluvial flood models for the 1% AEP event with an allowance for climate change indicates areas to the south of Jews Lane flooding to depths up to 400mm.

Fluvial Flood Zones 2 in is located near the north west boundary of the CDA along a small portion of open land. The region is classified as being at low risk of groundwater flooding. The area to the south Jews Lane has been identified for possible development and presents an opportunity for 3rd party funding of a mitigation solution. The preferred flood mitigation solution for this CDA includes a combination of storage / runoff reduction SUDS at Jews Lane, designation of overland flow paths, embankments and property level resilience.

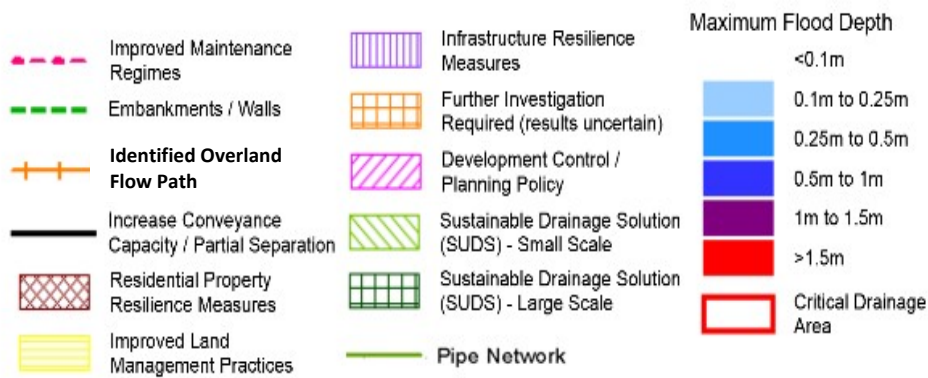
Critical Drainage Area

Bradwell

Great Yarmouth Borough



LEGEND



PREFERRED OPTIONS SUMMARY:

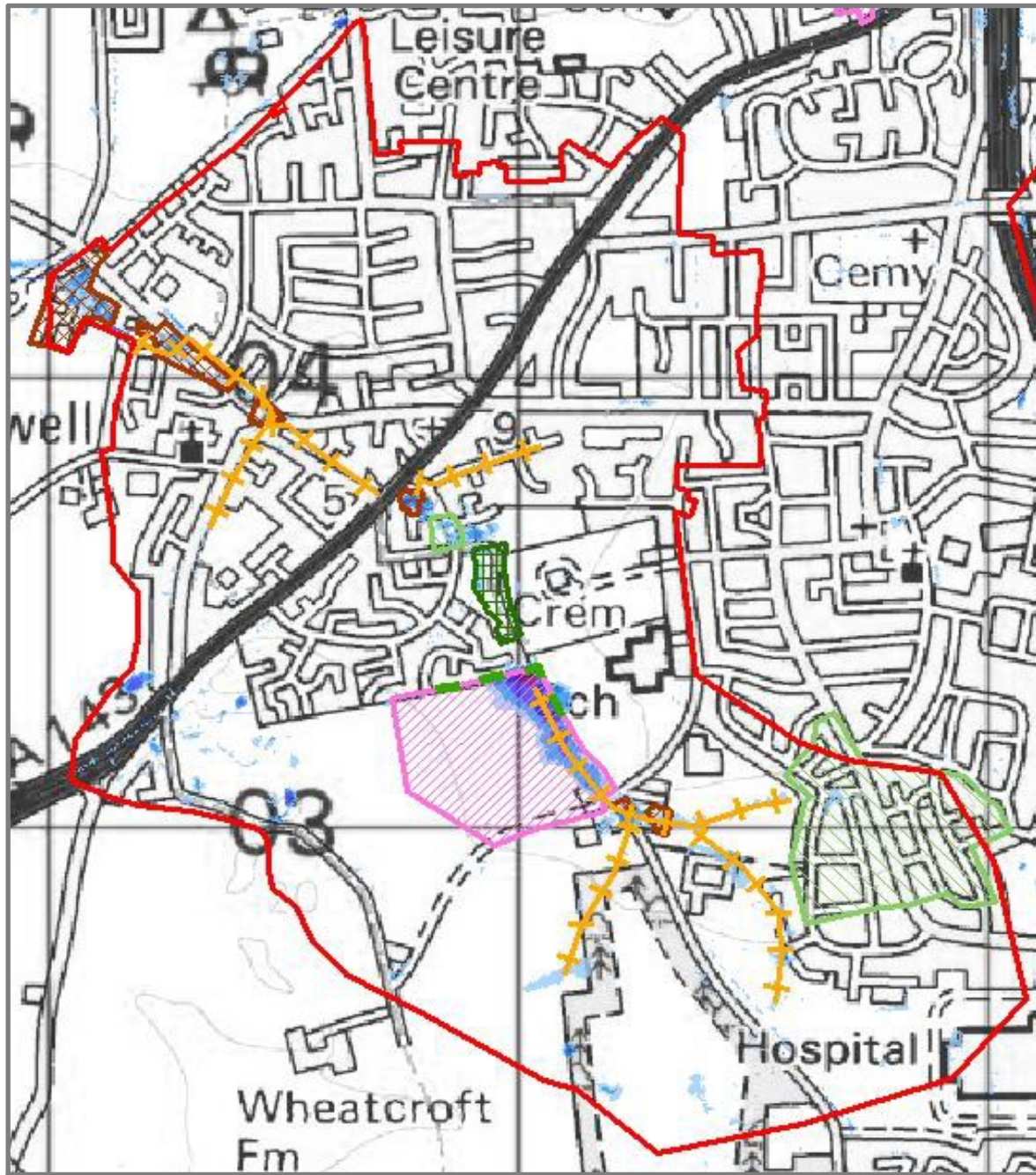
Options Summary	Available Option	Preferred
Do Nothing		
Do Minimum		
Improved Maintenance		
Planning Policy		
SUDS (Source Control - Small Scale)		
SUDS (Large Scale - Flood Storage)		
Separate Surface Water and Foul Water Sewer Systems		
De-culvert / Increase Conveyance		
Identified Overland Flow Routes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

Flood Risk Source

Surface Water	Yes
Groundwater	No
Sewer	Yes
Fluvial	Yes
Tidal	No

Validation

Historic Events	Yes
Site Inspection	Yes



**GREAT YARMOUTH SURFACE WATER MANAGEMENT PLAN
SURFACE WATER OPTIONS**

HIGH LEVEL CONSTRUCTION COST ESTIMATE

Critical Drainage Area ID: Bradwell

Description	Unit Type	Unit Measure	Unit Rate	Quantity (approx)	Cost (rounded)	Assumptions
Managed overland flows - Along Roads	Managing overland flows Roads	m of kerb raised	£11	2000	£21,000	
Managed overland flows open spaces	Managing overland flows Non-Road Aras	Volume of excavation m ³	£5	937.5	£4,000	1500m long by 2m wide by 0.25m deep
Property level resilience	Improved resilience and resistance measures	per property protected	£5,000	36	£180,000	
SUDS - Small Scale	Water butts & rainwater harvesting	m ³ of stored volume	£1,188	50	£59,000	
SUDS - Small Scale	Road side Rain Garden	m ² area	£21	4000	£82,000	2km of road in upper catchment - 1m wide rain gardens on both sides
SUDS - Large Scale	Ponds and wetlands	m ³ Detention Volume	£40	10000	£403,000	
Embankment	Embankment	Volume of Embankment m ³	£5	450	£2,000	400m long, 1.5m tall, 1.5m wide, triangular
Development Policy						No cost associated - set policy to be implemented by developer
				TOTAL	£751,000	

NOTES:

The following standard assumptions have also been applied:

The costs are the capital costs for implementation of the scheme only.

Costs do not include provisions for consultancy, design, supervision, planning process, permits, environmental assessment or optimum bias.

No provision is made for weather (e.g. winter working).

No provision is made for access constraints.

Land acquisition costs are not included

No operational or maintenance costs are included.

No provision is made for disposal of materials (e.g. for flood storage or soakaway clearance).

These should be considered as approximate order of magnitude costs only.