

# Great Yarmouth Surface Water Management Plan - Options Appraisal Summary

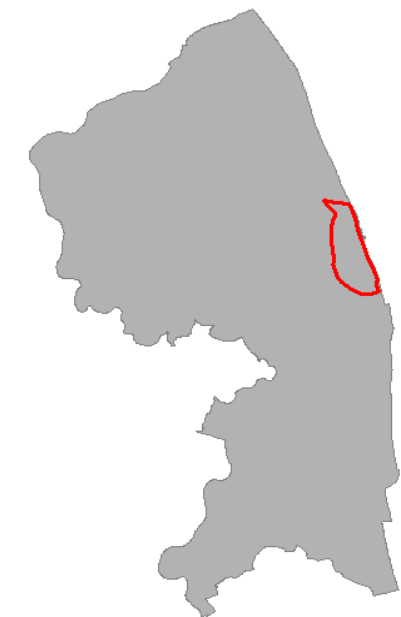
## PROBLEM IDENTIFIED:

Caister-on-Sea CDA is located north of Great Yarmouth. Surface water flows generally from west to east towards the coastline. The FMfSW indicates surface water flooding across localised pockets within the CDA as a result of the natural valley topography. This flooding may be a result of a historic ordinary water course being lost due to urban expansion. The CDA neighbours low lying land and the Norfolk Broads. Local reports suggest that existing land drains are unable to convey flood water away from built up areas (Winfred Way). Increasing overland flow conveyance capacity and embankments to prevent water collecting around properties may mitigate the surface water flood risk in specific vulnerable locations. The central inland area is predominately occupied by residential properties. Property level flood mitigation measures are proposed where there is limited scope to attenuate surface water or where increasing the conveyance capacity is not viable. (Price of Wales Road and St Nicholas Drive). Pockets of flooding closer to the sea are exacerbated by the dune system adjacent to the beach. Caister-on-Sea CDA is classified as being at low risk of ground water flooding, however areas to the north of the CDA have been identified as potentially vulnerable to groundwater flooding.

## Critical Drainage Area

### Caister-on-Sea

#### Great Yarmouth Borough



## LEGEND

- Improved Maintenance Regimes
- Embankments / Walls
- Identified Overland Flow Path
- Increase Conveyance Capacity / Partial Separation
- Residential Property Resilience Measures
- Improved Land Management Practices
- Infrastructure Resilience Measures
- Further Investigation Required (results uncertain)
- Development Control / Planning Policy
- Sustainable Drainage Solutions (SUDS) - Small Scale
- Sustainable Drainage Solutions (SUDS) - Large Scale
- Pipe Network
- Surface Water 1 in 200 year (Deep)
- Surface Water 1 in 200 year (Shallow)
- Critical Drainage Area

## 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
Ordinary Watercourse	No
Fluvial	No
Tidal	Yes

## 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: Caister-on-Sea**

Description	Unit Type	Unit Measure	Unit Rate	Quantity (approx)	Cost (rounded)	Assumptions
Managed overland flows open spaces	Managing overland flows Non-Road Aras	Volume of excavation m <sup>3</sup>	£5	1562.5	£7,000	2500m long by 2m wide by 0.25m deep
Property level resilience	Improved resilience and resistance measures	per property protected	£5,000	44	£220,000	
SUDS - Small Scale	Water butts & rainwater harvesting	m <sup>3</sup> of stored volume	£1,188	1500	£1,781,000	Approx. 2m <sup>3</sup> of storage per house
SUDS - Small Scale	Road side Rain Garden	m <sup>2</sup> area	£21	6000	£123,000	Rain garden on one side of road in indicated residential areas
SUDS - Large Scale	Detention basins	m <sup>3</sup> Detention Volume	£27	15000	£403,000	
Embankment	Embankment	Volume of Embankment m <sup>3</sup>	£5	650	£3,000	
Development Policy						No cost associated - set policy to be implemented by developer
Improve Land Management						No cost associated - assumed that land owner can implement changes at no additional cost
				TOTAL	£2,537,000	

**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.