

Great Yarmouth Surface Water Management Plan - Options Appraisal Summary

PROBLEM IDENTIFIED:

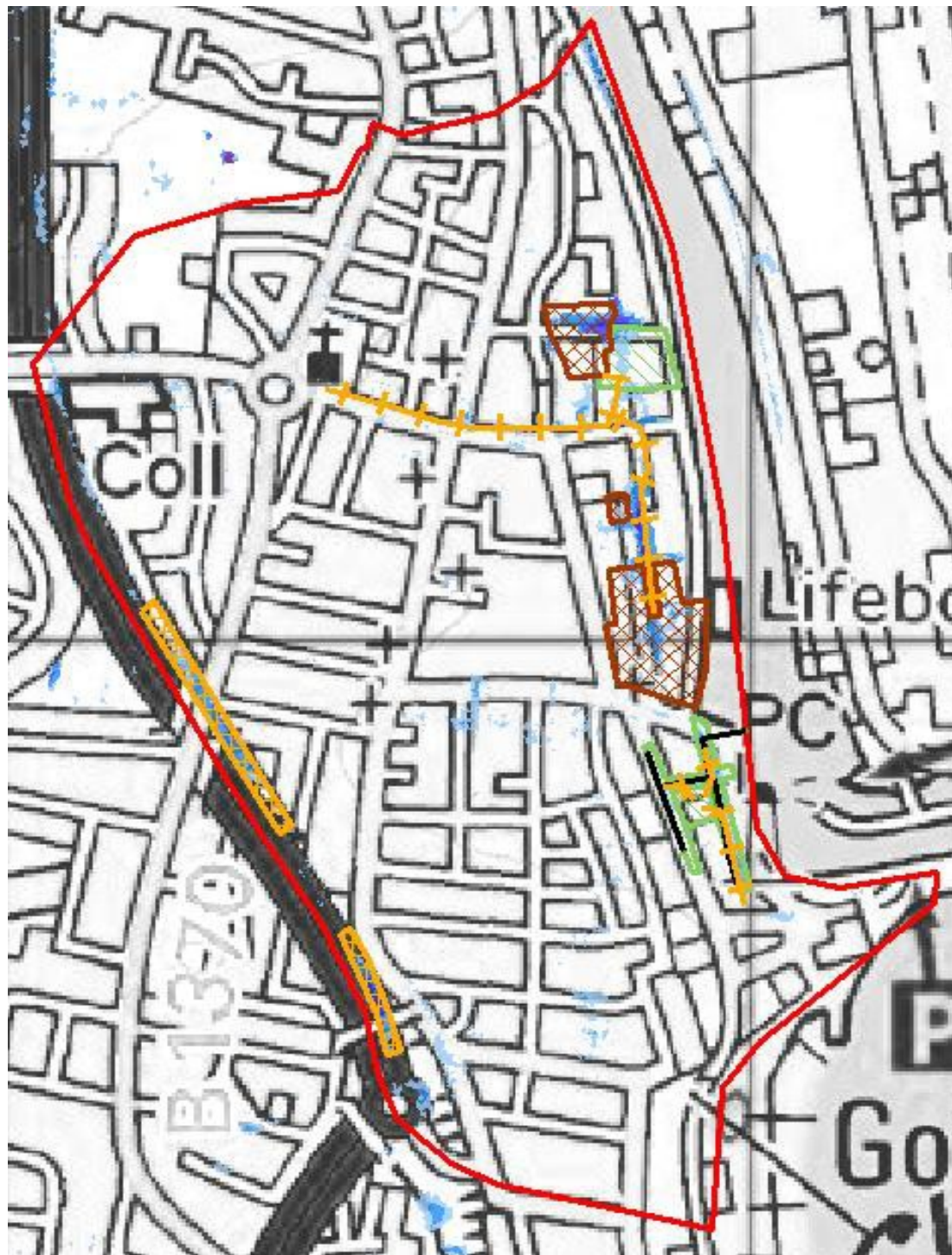
This CDA is located in the Gorleston-on-Sea area of Great Yarmouth. It is in close proximity to the River Yare. Flooding is shown to collect around buildings and pond on roads in built up areas. To the east flooding is shown to affect commercial premises (Bell Marsh Road and Blackwall Reach) and residential properties (Beach and Springfield Road). To the west, the modelling shows surface water collecting on the A12 Road at underpasses and cuttings - no historic incidents have been noted in these locations, so it is proposed that further consultation is undertaken with the Highways Agency / NCC Highways to confirm drainage arrangements in these locations.

The proposed mitigation option aims to direct overland flow and ponding into preferential areas for temporary storage. Property level protection is proposed where localised topography prevents overland flows from directing surface water away from the area. A small area of partial sewer separation is also proposed. Partial separation includes disconnection of existing catch pits from the combined sewer system, installation of small scale SUDS pre-treatment (gully filters or rain gardens), then connection to a new separated sewer. It is noted that two properties are on the AWS DG5 register in this area and the combined system would substantially benefit from partial separation. An existing series of outfalls exist to the north east adjacent to Pier Walk that could be utilised for the outfall.

Critical Drainage Area

Gorleston-on-Sea

Great Yarmouth Borough

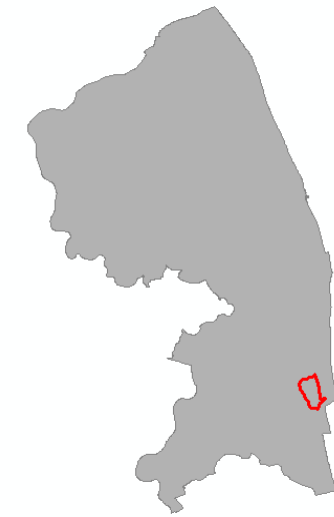


LEGEND



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	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: Gorleston-on-Sea

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	1000m of road - raised kerbs on both sides
Managed overland flows open spaces	Managing overland flows Non-Road Aras	Volume of excavation m ³	£5	62.5	£1,000	100m long by 2m wide by 0.25m deep
SUDS - Small Scale	Road side Rain Garden	m ² area	£21	1200	£25,000	600m of road - 1m wide rain gardens on both sides
SUDS - Small Scale	Permeable paving	m ² Surface Area	£54	2500	£134,000	Beach Road playground
Property Level Resilience	Improved resilience and resistance measures	per property protected	£5,000	30	£150,000	
SUDS - Small Scale	Permeable paving	m ² Surface Area	£54	7500	£403,000	Dock Tavern Lane Car Park
Increased Capacity			£900	450	£405,000	Assumed 450m of new 600mm diameter pipe with associated manholes and outfall @ £900/m
Further Investigation			£2,000	1	£2,000	Consultancy fee to complete further investigation around A12
				TOTAL	£1,141,000	

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.