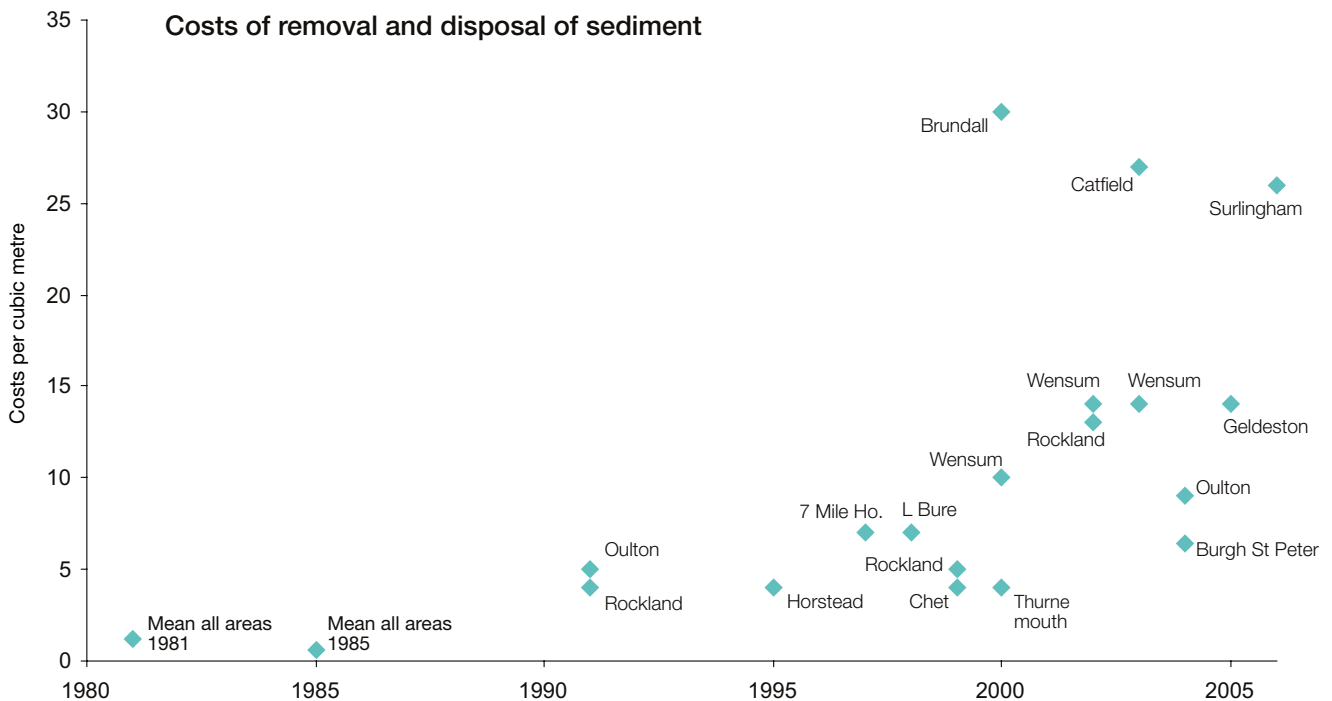


6 Investment scenarios

Looking back over dredging records for the last 50 years the pattern of dredging activity has been very variable and reflected a reactive approach to dredging need, as addressed through specific campaigns. Since 1982 the dredged volumes achieved annually have been consistently below 60,000 m³, which reflects the changing use of the navigation as well as the impact of rising costs.

Figure 10
Summary of dredging
project costs
Great Yarmouth Port Authority,
Broads Authority

The rising costs in removal and disposal of dredged material from 60p to £1 in the early 1980s to an average of £13.83 per cubic metre now has greatly reduced the volume that can be dredged at current budget levels. Figure 10 shows how costs have risen, with sediment management costs in the Yare sometimes reaching £30 per cubic metre.



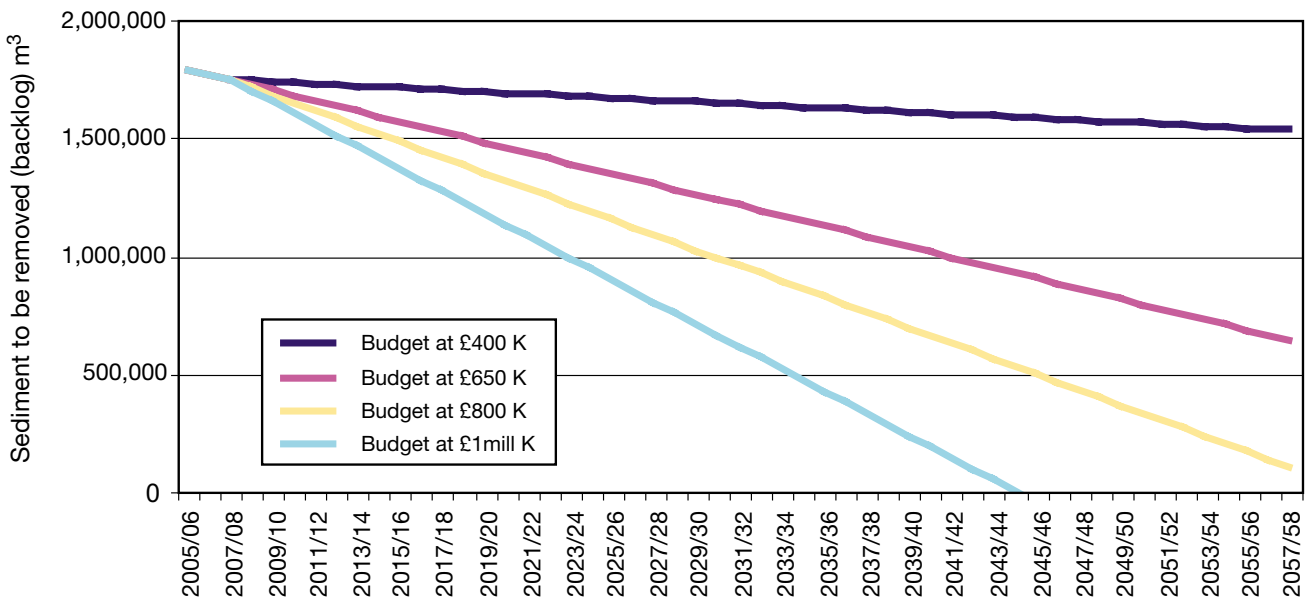
The relationship between dredging cost and time is complicated by a number of factors including inflation, location of works, disposal opportunities, dredging techniques, contamination issues and any required transportation. There is no clear trend which can be used to predict future costs. For example, the traditional practice of disposal to the adjacent bank side has only remained possible in a few locations following the introduction of regulations in the 1990s. This does indicate however, that for a static budget the achievable volumes dredged can be assumed to reduce as unit rates increase, and so inflationary rises need also be budgeted for over the long term.

Four investment scenarios have been considered, with the objective to remove the historic backlog held within the system, and create a balanced situation with annual outputs equalling the annual inputs.

For this purpose the following assumptions have been made:

- Annual budget figures are assumed to increase in line with cost increases, ie the budget will require inflationary increases annually to keep pace with increasing costs.
- Annual inputs will remain at current levels (despite the potential for reduction, further long term influences such as climate change are likely to increase potential for catchment run-off).
- The total backlog is calculated by a comparison of the ideal waterway specifications and 2005 hydrographic survey.
- Annual inputs have been added yearly at 24,300 m³, the maximum total inputs, or worse case, identified through the Cranfield Study (Sediment Management Strategy, Appendix 3) at an ongoing annual cost of £340,000.
- The total backlog held within the Broads waterways is considered, including navigation area and open waterbodies.
- Average removal cost at £14 m³/yr.

Figure 11
Scenarios of sediment removal based on annual budgets of £400,000, £650,000, £800,000 and £1 million



SCENARIO	Budget	Total volume removed m ³	*Net volume removed m ³	* after accounting for annual inputs
1	£400k	28,751	4,271	2006/07 Navigation budget
2	£650k	46,429	22,129	2006/07 Navigation budget plus £250k additional DEFRA grant
3	£800k	57,143	32,843	2006/07 Navigation budget increased by 100%
4	£1m	71,429	47,129	2006/07 Navigation budget increased by 25% and match funded by DEFRA

Figure 12
 Years by which sediment backlog is achieved based on annual budget scenarios

	£400,000	£650,000	£800,000	£1,000,000
Total Broads water space	2414	2085	2060	2043
Navigation Area only	2302	2063	2045	2033

From this analysis it can be seen that whilst at existing budget levels there is some progress being made towards achievement of the waterway specifications, and removal of the backlog, the timeframe is considerable, and inevitably waterbodies will be lost as a result of siltation in the intervening period.

The Authority had previously identified an optimum budget level of £1m through its Best Value review, and these figures confirm that investment at that level is the minimum necessary to secure the long-term future of the Broads.