

## Appendix A

### Coastal Strategy Plan 2007 Summary

#### Coastline Evolution and Sediment Transport

- Cliffs are eroding very slowly (<0.3m/yr) with the exception of those to the north of St Mary's Island.
- There has been significant erosion (>0.8m/yr) of the low water line at the southern end of Whitley Bay and Long Sands Bay.
- The longshore movement of sediment is from north to south. Transport of sediment is very small because of the limited input of new material and frequent shoreline obstructions.
- Transported sediment tends to be held within the confines of the bays.
- The coastline is dominated by manmade structures and rocky headlands between which concave bays have formed.
- The coastline is stable in terms of alignment and principal characteristics.
- The current levels of dredging and typical land use are unlikely to change.
- The Tyne north pier provides an effective barrier to sediment, only limited quantities enter the estuary from the north.
- Sea level rise will lead to the gradual increase in wave energy over time.

#### Waves and Water Levels

- Inshore wave climate is depth limited, the maximum wave height is controlled by the water level.
- A sea level rise of 4mm/yr over 50 years would require defences to be raised by 400mm to offer the same level of protection.
- The highest inshore extreme wave heights are observed at Long Sands due to the absence of headlands.
- Failure of the Tyne piers would produce severe wave conditions in the port.
- Failure of the piers at Cullercoats would lead to a significant amount of wave penetration causing extensive damage to property on the periphery of the bay.

#### Flood Events and Historical Expenditure

- Few reported flood incidents over recent times indicates that the defences against flooding are adequate.
- Frequent flooding has occurred at the Fish Quay.
- There are significant lengths of coastal defences in a poor condition
- There has been no significant expenditure on maintenance of coastal structures.
- Major maintenance was carried out on the north pier at Cullercoats following a breach in 1995.
- The overall level of expenditure has been extremely low leading to a maintenance and improvement backlog.

## Strategic Environmental Assessment

- Establishment of an environmental baseline
- Review of environmental data, policies and plans
- Consultation with statutory consultees and key stakeholders
- Analysis and evaluation of options in relation to their impact on the environment

## Options Appraisal

The boundaries of the management units were adopted as:-

Management Unit
MU 44/45 Hartley Cove to Whitley Sands
MU 46 Whitley Sands to Whitley Bay
MU 47 Cullercoats to North Pier
MU 48 North Pier to Fish Quay

The preferred strategic options were confirmed to be the same as those determined in the shoreline management plan.

Management Unit	Strategic Option
MU 44/45 Hartley Cove to Whitley Sands	Selectively hold the line
MU 46 Whitley Sands to Whitley Bay	Hold the line
MU 47 Cullercoats to North Pier	Selectively hold the line
MU 48 North Pier to Fish Quay	Selectively hold the line

- **Do Nothing** – Involves no coastal defence activity apart from safety measures and monitoring
- **Hold the Existing Defence Line** – holding the existing defence line at its present location.
- **Advance the Existing Defence Line** – moving the existing defence line seaward of its present position.
- **Retreat the Existing Defence Line** – moving the existing defence line landward of its present position.

## Implementation

Main works only, not listing maintenance.

Defence Element	Name	Length	Improve Option
7102 and 7105A	Ramp and Causeway to St. Mary's Island	200m	Refurbishment of Ramp. Extension landward to counter outflanking.
7105	Trinity Road Sea Wall	680m	Rock works to the southern end to counter outflanking.
7110	Lower Central Promenade	190m	Construction of new sea wall, infilling of voids and relocation of sewer.
7116	South Promenade	620m	Major repair to sea wall access point.
7123	Cullercoats North Pier	120m	Concrete block overlay of seaward side.
7128	Cullercoats South Pier	90m	Toe protection, concrete repair of seaward face and steps.
7129and 7130	Long Sands and Bears Back Sea Wall	100m	Replace wall toe works and rock armour.
7135 and 7136	Tynemouth Outdoor Pool	220m	New sea wall.
7137	Sea Banks	280m	Concrete overlay to apron.
7147,7148 and 7148A	Low Lights Revetment Lloyds Hailing Revetment Northern Wave Trap	320m	Extensive revetment works.

## **Monitoring**

A programme of further monitoring is recommended to build up data that will inform future policy and decision making. The monitoring needed should include:-

- Topographic survey of beaches and cliffs
  - Update Keyshore data base
  - Aerial photographs
  - Beach walkover and structure condition
  - Bathymetric survey
  - Collection of water level survey data
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