

7 SUMMARY AND CONCLUSIONS

7.1 SUMMARY

The Murrrough is a coastal wetland system that stretches for 15km north of the New Pier at Wicklow Harbour and in parts extends inland for up to 1km. The section of the coast included in the study stretches from Wicklow Harbour to Five Mile Point. The main area of interest to the Council is the southern section of the Murrrough which is an important amenity area for Wicklow and is popular with swimmers, walkers and anglers.

The Murrrough is a naturally eroding coastline with a retreat rate generally ranging between 0.26m – 0.35m per annum. However, locally, the rate of erosion can be considerably higher during specific events. Rock armour protection was installed along about 800 metres north of the New Pier at Wicklow in the 1980s.

The Murrrough is fixed at either end by rocky headlands, composed of Cambrian metasediments, at Wicklow Head and hard strata at Five Mile Point. The erosion of the coastline in Wicklow Bay is a result of the alignment of the relatively soft coastline and the coastal processes in the area. The erosion rate between 1973 and 2000 has been used to assess the future erosion up to 2050. The high water mark at the areas which are currently unprotected by rock armour are predicted to retreat by between 15 and 30 metres by 2050 if no action is taken.

The coastal processes along the frontage have been analysed using advanced computational modelling techniques. The normal spring tidal range at Wicklow is 2.0m with a mean high spring tide level of +0.89m OD Malin. Extreme storm surges are predicted to give levels of +2.26m during a 1 in 200 year return period event. This level is below the level of the coastline at the Murrrough so coastal flooding is not a significant issue at the site.

The combination of high waves with high water levels is particularly influential in potential coastal retreat at the Murrrough. Thus a joint probability analysis of waves and water levels was undertaken for storms approaching the Murrrough from the southeast, east and northeast sectors as part of the study. The height of the waves approach the beach during 1 in 200 year events will be about 3.3m at the southern end of the frontage and about 3.9m at the centre of the study area.

The sediment transport analysis showed that only a relatively small amount of sediment bypasses Wicklow Harbour and that the general net drift is from south to north along the frontage. The main area for longshore sediment transport is in the coarse sands that lie in the lower part of the beach with the net drift being from south to north. There is only a small amount of longshore drift of the shingle with the sediment transport being mainly cross-shore draw down during storm events.

A range of options was considered for possible coastal protection works at the Murrrough. These may be summarised under the general headings;

- Do Nothing.
- Re-nourish the beach to maintain beach and shingle volumes.
- Use groynes or artificial headlands to control sediment drift.
- Install revetments to protect against wave attack.
- Build a series of offshore breakwaters to protect the shoreline and build up the beach.
- A combination of one or more of the above.

The do nothing option for the frontage to the north of the bridge across the Broad Lough was found to be the least intrusive and the most sustainable and economically viable option for this section of the coast.

The new bridge across the Broad Lough estuary for the Port access route will require the existing rock revetment to be extended north from the end of the existing structure for about 300 metres. A graded rock beach transition will be required at the northern end of this revetment to prevent cut back of the existing shingle beach at the termination of the revetment.

There is a shortage of recreational beach area to serve the Wicklow Town area and a good location for such a recreational beach would be in front of the existing revetments between the harbour and the Broad Lough Bridge. Installing one or two 120m long shore parallel breakwaters could provide a beach in this area. These structures would allow a beach to be naturally maintained in this area and would have the additional advantage of preventing undermining of the toe of the existing revetment.

7.2 CONCLUSIONS

The study concluded that no hard defences should be installed along the frontage to the north of the Broad Lough Bridge works and that the shoreline in this area should be allowed to retreat naturally.

A rock revetment will be required to protect the new bridge for the Wicklow Port access route. This revetment should extend for about 300 metres north from the end of the existing revetment. A rock beach transition zone should be installed at the northern extent of this revetment to prevent additional cut back of the shoreline in this area.

There is a shortage of recreational beach area to serve the Wicklow Town area and a good location for such a recreational beach would be in front of the existing revetments between the harbour and the Broad Lough Bridge. Installing one or two 120m long shore parallel breakwaters could provide a beach in this area. It is recommended that a shore parallel breakwater system be included in any seafront development scheme for this section of the Murrrough.