

Hardandsoft engineering coastal management essay sample

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The Isle of Wight has 65 miles of spectacular coastline, 28 miles of which are designated Heritage Coast. This varied coastline is one of the Island's main assets.

The Isle of Wight has four coastal defence options:

1. Hold the Line - retain existing coastline - maintain current defences, upgrade or install new ones
2. Do nothing but monitor - it may not be technically, environmentally or economically possible to do coastal defence work
3. Retreat the line - this is used to manage the rate and process by which the coast retreats
4. Advance the line - build new defences seaward, in front of the land, to protect the land behind

Monks Bay

- * Cliff failure after the 1990/91 severe storms gave motivation to upgrade coastal defence
- * Offshore breakwater, six rock groynes and rock revetment
- * This reinforced the existing sea wall - 25, 000 tonnes - Norwegian granite
- * Beach nourishment was used - 40, 000 m³ of sand
- * Re-profiling the slope and installing land drainage

- * This was to reduce the risk of Mass Movement

Cost-benefit analysis - value of property exceeded £1. 4 million cost

- * Completed in 1992

- * £1. 4 Million - but value of property exceeded this

- * Sediment in groyne has been a problem, as some has overtopped the rock groynes since 1992

Wheeler's Bay

- * Ageing sea walls were in danger of collapsing

- * This could have reactivated ancient landslides

- * Property was becoming unsellable

- * 15, 000 tonnes of Norwegian granite

- * This formed a rock revetments and the coastal slopes were regarded to make a shallow profile before installing land drainage

- * Completed in 2000 at a cost of £1. 6 million - increased property value

Castle Cove

- * Existing wooden revetments were becoming ineffective as clay cliffs retreated

- * Properties costing over £10 million were at risk

- * Coastal processes would activate ancient landslides
- * Stabilising the slopes with thousands tonnes of chalk
- * Installing land drainage (before replacing the top soil)
- * Cliff was protected by a rock revetment of Somerset limestone - concrete walkway and gabion wall
- * Defences cost £2.3 million - completed in 1996

Castlehaven

- * £6.2 million coast protection and slope improvement was completed in 2004
- * 500m rock revetment to protect cliff at Reeth Bay
- * Extension system of drainage pipes and syphon drains

Hard Engineering - Singapore

Breakwaters

- * 3 Breakwaters were installed at Siloso Beach, Singapore
- * They cost \$1 million dollars each, 80 metres long.
- * Effective as they reduce the amount of erosion from waves as the waves break before - the energy dissipates. Siloso beach is a high tourist attraction

and the breakwaters have been used and integrated in tourist attractions such as ' MegaZip'.