

# Mount Martha North Beach Coastal Engineering Options

This document is intended to help visualise the coastal structures discussed in Section 4 of this survey

The following examples are extracts from the Mount Martha North 2017 coastal processes study, plus photos of comparable examples installed at other beaches in Port Phillip Bay. Please consider the impact these options might have on what you value about your use of Mt Martha North beach.

## Survey question 4.1: Construction of large-scale coastal structure

### Large groynes and large-scale renourishment

- This option would involve installing a 250–300m long groyne at Balcombe Creek and 200m long groyne at Mt Marth North.
- Coarse sand would be imported to provide large-scale nourishment (approx. 50,000m<sup>3</sup>) for long-term application.
- This scale of renourishment has been carried out previously at Hampton beach (photo shown below).



Figure 1: Illustration of large groynes and a large scale renourishment, from Mount Martha North 2017 coastal processes study.



Figure 2: Large groyne installed at Hampton Beach with a large-scale renourishment. This groyne is 143m long, with approximately 50m partially buried. **Groynes at Mount Martha would need to be 1.5–2 times longer.**

### Large off shore reef and large-scale renourishment

- Constructing an offshore reef is another option that would be considered a large coastal structure under 4.1.
- This option would aim to produce a salient (detached breakwater) by constructing a large offshore reef
- The location is not ideal for an offshore reef due to the fact an offshore bar already restricts wave action reaching beach.
- If this option is considered for further modelling, Birdrock beach would be considered for the location.



Figure 2: Illustration of large off shore reef and renourishment, from Mount Martha North 2017 coastal processes study.

## Survey question 4.2: Smaller coastal construction

### Small groyne and renourishment

- This option would involve installing a short groyne (approx. 25-35m) at Mount Martha North beach headland.
- The groyne could either be a rock groyne or geotextile bag.
- A groyne of similar size has been installed at Brighton beach.

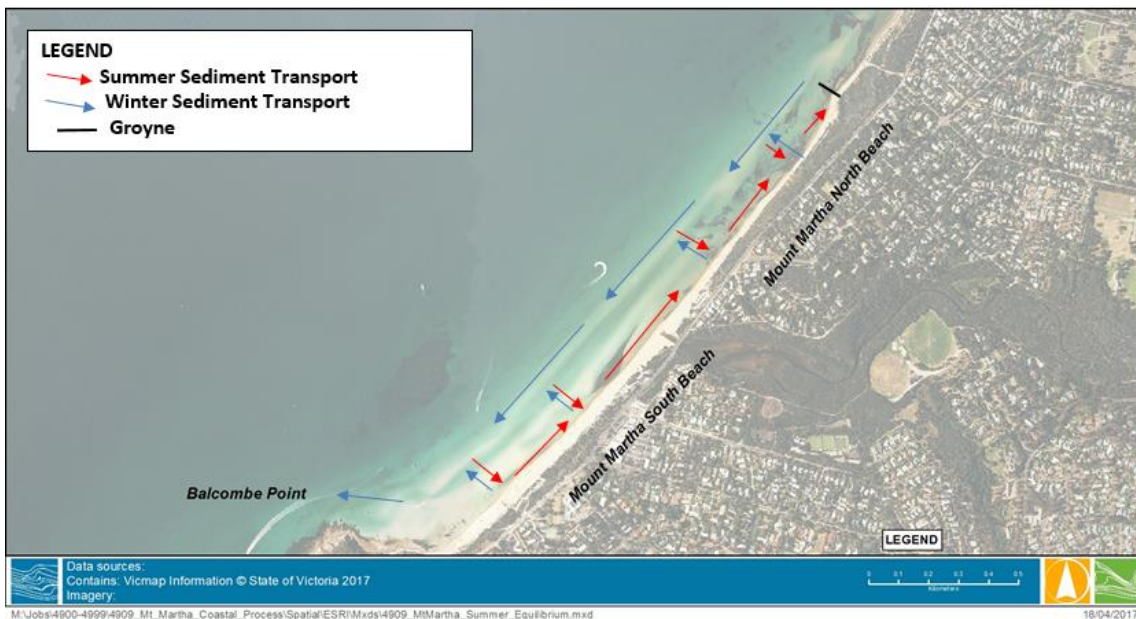


Figure 3: Illustration of a small groyne and renourishment, from Mount Martha North 2017 coastal processes study.



Figure 4: Illustration of sand movement resulting from installing a small groyne combined with a renourishment, from Mount Martha North 2017 coastal processes study.



Figure 5: Small groyne (80m long) installed at Brighton beach.

### Small nearshore reef and renourishment

- Constructing a small, nearshore reef is another option considered a small coastal structure under 4.1.
- This option would not disrupt recreational activities on beach.



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Figure 6: Illustration of small nearshore reef and renourishment, from Mount Martha North 2017 coastal processes study.

### Survey question 4.3: No coastal management structures

- This option would let coastal processes, such as sand movement, take place without installing coastal structures.
- The existing cliff toe protection will remain as it protects the Esplanade and services above the cliff.

### Survey question 4.4: Only beach renourishment

#### Nourishment with no engineered infrastructure

- Previously undertaken in 2010, 11,300m<sup>3</sup> moved from Mount Martha South to Mount Martha North – lasted three years.
- Modelling suggests a similar remediation but with coarser sand could last longer – however, sea level rise and lack of sediment inflow will continue to pressure coastline. Sea level rise may force beach boxes to require higher floor levels.



Figure 7: Illustration of renourishment only, from Mount Martha North 2017 coastal processes study.